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**PART–I**

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Members of the Council of
Indian Institutes of Technology

1. Dr. M. Mangapati Pallam Raju, Upto 26-05-2014
   Former Hon’ble Minister of Human Resource Development
   Smt. Smriti Zubin Irani, From 27-05-2014 - Present
   Hon’ble Minister of Human Resource Development

2. Smt. Vasanthi Stanley,
   Hon’ble Member of Parliament (RajyaSabha)

3. Shri Janardhana Swamy,
   Hon’ble Member of Parliament (LokSabha)

4. Shri Deepender Singh Hooda
   Hon’ble Member of Parliament (LokSabha)

5. Shri Ashok Thakur, Secretary (HE), MHRD, New Delhi

6. Dr. Vijay P. Bhatkar, Chairman, Board of Governors, IIT Delhi

7. Dr. R.P. Singh, Chairman, Board of Governors, IIT Guwahati

8. Prof. M. Anandakrishnan, Chairman, Board of Governors, IIT Kanpur

9. Prof. M.M. Sharma, Chairman, Board of Governors, IIT Madras

10. Dr. Lalji Singh, Chairman, Board of Governors, IIT (BHU), Varanasi

11. Shri B.V.R. Mohan Reddy, Chairman, Board of Governors, IIT Hyderabad

12. Shri Ajai Chowdhry, Chairman, Board of Governors, IIT Patna

13. Prof. Goverdhan Mehta, Chairman, Board of Governors, IIT Jodhpur

14. Prof. Devang V. Khakhar, Director, IIT Bombay

15. Prof. R.K. Shevgaonkar, Director, IIT Delhi

16. Prof. Gautam Biswas, Director, IIT Guwahati

17. Prof. Indranil Manna, Director, IIT Kanpur

18. Prof. Bhaskar Ramamurthi, Director, IIT Madras

19. Prof. Pradipta Banerji, Director, IIT Roorkee

20. Prof. Rajeev Sangal, Director, IIT (BHU), Varanasi

21. Prof. Sudhir K. Jain, Director, IIT Gandhinagar

22. Prof. Anil K. Bhowmick, Director, IIT Patna
23. Prof. U.B. Desai, Director, IITHyderabad
24. Prof. M.K. Surappa, Director, IIT Ropar
25. Prof. Madhusudan Chakraborty, Director, IIT Bhubaneshwar
26. Prof. C.V.R. Murty, Director, IIT Jodhpur
27. Prof. Timothy Gonsalves, Director, IIT Mandi
28. Prof. Pradeep Mathur, Director, IIT Indore
29. Prof. Partha P. Chakrabarti, Director, IIT Kharagpur
30. Prof. Ashok Misra, Former Director, IIT Bombay & India Intellectual Ventures, Bangalore
31. Prof. Ashok Jhunjhunwala, Deptt. of Elect. Engg., IIT Madras
32. Prof. R.C. Budhani, Director, Director’s Secretariat, NPL, New Delhi
33. Prof. S.K. Joshi, Former Director General, CSIR
34. Dr. V.K. Saraswat, DRDO (Former SA to Raksha Mantri) – Special Invitee
35. Admiral D.S.P. Verma – Special Invitee
36. Shri K.D. Nayak, CC&DS, DRDO (on behalf of Dr. Avinash Chandra)
37. Smt. Amita Sharma, Additional Secretary (TE), MHRD, New Delhi and Secretary of the IIT Council.
38. Shri Yogendra Tripathi, JS&FA, MHRD
39. Shri Alok Mishra, Director (IITs), MHRD, New Delhi
40. Shri R.N. Mishra ADG – PIB
41. Shri S. Gopal Krishna, Under Secretary, MHRD
42. Ms. Prisca Mathew, Under Secretary, MHRD
43. Shri R.A.S. Kushwaha, Project Officer, Secretariat of Council of IITs
44. Shri V.K. Wadhwa, Project Officer, Secretariat of Council of IITs
45. Shri. Kamal R. Saha, Project Officer, Secretariat of Council of IITs

**Outgoing Members**

1. Prof. T. Ramasami, Chairman, Board of Governors, IIT Ropar
2. Prof. Dhananjai Pandey, Former Officiating Director, IIT (BHU), Varanasi
3. Prof. S.K. Som, Former Officiating Director, IIT Kharagpur
4. Prof. Gautam Barua, Former Director, IIT Guhawati
5. Prof. Prem Kumar Kalra, Former Director, IIT Jodhpur

**New Members**

1. Prof. V.S. Ramamurthi, Chairman, BOG, IIT Ropar
2. Prof. Rajeev Sangal, Director, IIT (BHU), Varanasi
3. Prof. Partha P. Chakrabarti, Director, IIT Kharagpur
4. Prof. Gautam Biswas, Director, IIT Guhawati
5. Prof. C.V.R. Murty, Director, IIT Jodhpur
Board of Governors, IIT Kharagpur
From 1st April, 2013 to 31st March, 2014

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<thead>
<tr>
<th>Sl. No</th>
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<th>Position</th>
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<tbody>
<tr>
<td>1.</td>
<td>Dr. Shiv Nadar (Upto 20.03.2014) Chairman, BoG, IIT Kharagpur &amp; Founder- HCL Technologies Ltd. A-10/11, Sector-3 Noida-201301, U.P.</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Dr. Srikumar Banerjee (From 21.03.2014) DAE Homi Bhabha Chair Professor Room No. A 419, 4th Floor Central Complex Bhabha Atomic Research Centre, Trombay Mumbai - 400085</td>
<td>Chairman</td>
</tr>
<tr>
<td>3.</td>
<td>Dr. Srikumar Banerjee (Upto 20.03.2014) DAE Homi Bhabha Chair Professor Room No. A 419, 4th Floor Central Complex Bhabha Atomic Research Centre, Trombay Mumbai - 400085</td>
<td>Member</td>
</tr>
<tr>
<td>4.</td>
<td>Prof. B. B. Bhattacharya Professor of Economics A-44, Sarve Sanjhi Apts. Plot No.8, Sector-9, Dwarka New Delhi-110077</td>
<td>Member</td>
</tr>
<tr>
<td>5.</td>
<td>Shri Sandipan Chakravortty Managing Director Tata Steel Processing &amp; Distribution Limited (TSPDL) Tata Centre (Ground Floor), 43, Chowringhee Road Kolkata – 700071</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Prof. N. Balakrishnan Supercomputer Education and Research Centre Indian Institute of Science Bangalore - 560012</td>
<td>Member</td>
</tr>
<tr>
<td>7.</td>
<td>Shri Tamal Dasgupta (Upto 16.12.2013) A-3, Royal Greens 49/1, PGM Shah Road Golf Garden Kolkata – 700033</td>
<td>Member</td>
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<tr>
<td>8.</td>
<td>Shri Sanjiv Goenka (From 17.12.2013) Chairman, RP-Sanjiv Goenka Group CESC House 1, Chowringhee Square Kolkata – 700001</td>
<td>Member</td>
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</table>
9. Prof. S. K. Som  (Upto 27.07.2013 FN) Director (Officiating)
   IIT Kharagpur  
   Member

10. Prof. Partha P. Chakrabarti  (From 27.07.2013 AN) Director
    IIT Kharagpur  
    Member

    IIT Kharagpur  
    Member

12. Prof. Rajendra Singh (From 01.01.2014) Dept. of Agricultural & Food Engineering
    IIT Kharagpur  
    Member

    IIT Kharagpur  
    Member

14. Prof. Swagata Das Gupta  (From 01.01.2014) Dept. of Chemistry
    IIT Kharagpur  
    Member

15. Dr. T.K. Ghosal Registrar
    IIT Kharagpur  
    Secretary
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<td>Chairman</td>
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<td>Dr. Srikumar Banerjee  (From 21.03.2014) DAE Homi Bhabha Chair Professor Room No. A 419, 4th Floor, Central Complex, Bhabha Atomic Research Centre, Trombay Mumbai – 400085</td>
<td>Chairman</td>
</tr>
<tr>
<td>4.</td>
<td>Director (IITs) Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan, New Delhi -110115</td>
<td>Member</td>
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<tr>
<td>5.</td>
<td>Shri Tamal Dasgupta  (Upto 16.12.2013) A-3, Royal Greens 49/1, PGM Shah Road, Golf Garden Kolkata – 700033</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Shri Sandipan Chakravortty  (From 28.04.2014) Managing Director, Tata Steel Processing &amp; Distribution Limited (TSPDL), Tata Centre (Ground Floor), 43, Chowringhee Road, Kolkata – 700071</td>
<td>Member</td>
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<tr>
<td>7.</td>
<td>Prof. S. K. Som  (Upto 27.07.2013 FN) Director (Officiating) IIT Kharagpur</td>
<td>Member</td>
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<td>8.</td>
<td>Prof. Partha P. Chakrabarti  (From 27.07.2013 AN) Director IIT Kharagpur</td>
<td>Member</td>
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<tr>
<td>10.</td>
<td>Prof. Rajendra Singh  (From 28.04.2014) Dept. of Agricultural &amp; Food Engineering IIT Kharagpur</td>
<td>Member</td>
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<td>11.</td>
<td>Dr. T.K. Ghosal Registrar IIT Kharagpur</td>
<td>Secretary</td>
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Building and Works Committee
From 1st April, 2013 to 31st March, 2014

1  Prof. S. K. Som  (Upto 27.07.2013 FN)
   Director (Officiating)
   IIT Kharagpur

2  Prof. Partha P. Chakrabarti (From 27.07.2013 AN)
   Director
   IIT Kharagpur

3  Superintending Engineer & Circle Manager
   Midnapore Distribution Circle
   West Bengal State Electricity
   Distribution Co. Ltd. (WBSEDCL)
   190, S. K.Bose Road
   Paschim Medinipur
   PIN - 721101

4  Superintending Engineer
   South Western Circle
   Public Works Department (PWD)
   Saheed Mangal Pandey Sarani
   Paschim Medinipur
   PIN - 721101

5  Head
   Department of Civil Engineering
   IIT Kharagpur

6  Head
   Department of Electrical Engineering
   IIT Kharagpur

7  Head
   Dept. of Architecture & Regional Planning
   IIT Kharagpur

8  Registrar
   IIT Kharagpur
### Administrative Heads

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<td>Director</td>
<td>Prof. S.K. Som</td>
<td></td>
<td>26.07.2013</td>
</tr>
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<td></td>
<td>Prof. Partha P. Chakrabarti</td>
<td>27.7.2013(AN)</td>
<td>27.7.2018(FN)</td>
</tr>
<tr>
<td>Deputy Director</td>
<td>Prof. Souvik Bhattacharyya</td>
<td>04.11.2013</td>
<td>03.11.2016</td>
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<td>Dean (Faculty)</td>
<td>Prof. Amit Basak</td>
<td></td>
<td>30.09.2013</td>
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<td>Prof. Pratim Kumar Chattaraj</td>
<td>01.10.2013</td>
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<td>Dean (UGS)</td>
<td>Prof. Somnath Sengupta</td>
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<td>Prof. A. N. Samanta</td>
<td>01.07.2013</td>
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<td>Prof. Rajendra Singh</td>
<td>16.08.2013</td>
<td>15.08.2016</td>
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<td>Dean (PGS&amp;R)</td>
<td>Prof. Amar Nath Samanta</td>
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<td>Dean (SA)</td>
<td>Prof. Nisit Ranjan Mandal</td>
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<td>Prof. P.P. Chakrabarti</td>
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<td>Dean (SRIC)</td>
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<td>Prof. Amit Patra</td>
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<td>30.09.2016</td>
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<td>Prof. B.K. Mathur</td>
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<td>Prof. K.K. Guin</td>
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### Heads of the Dept./ Centre/School/Unit

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<th>Start Date</th>
<th>End Date</th>
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<tr>
<td>Agricultural &amp; Food Engineering</td>
<td>Prof. P.B. S. Bhadoria</td>
<td>01.09.2011</td>
<td>31.08.2014</td>
</tr>
<tr>
<td>Architecture &amp; Regional Planning</td>
<td>Prof. Subrata Chattopadhyay</td>
<td>01.08.2014</td>
<td>31.07.2017</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>Prof. Narayan Chandra Pradhan</td>
<td>01.01.2012</td>
<td>31.12.2015</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Prof. Tanmaya Pathak</td>
<td>01.06.2014</td>
<td>31.05.2017</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>Prof. Subhasish Dey</td>
<td>01.01.2013</td>
<td>31-12-2015</td>
</tr>
<tr>
<td>Computer Science &amp; Engineering</td>
<td>Prof. Rajib Mall</td>
<td>01.04.2013</td>
<td>31.03.2016</td>
</tr>
<tr>
<td>Cryogenic Engineering</td>
<td>Prof. Kanchan Chowdhury</td>
<td>01.01.2013</td>
<td>31-12-2015</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>Prof. Siddhartha Sen</td>
<td>01.05.2013</td>
<td>30.04.2016</td>
</tr>
<tr>
<td>Geology &amp; Geophysics</td>
<td>Prof. Debashish Sengupta</td>
<td>01.01.2013</td>
<td>31.12.2015</td>
</tr>
<tr>
<td>Humanities &amp; Social Sciences</td>
<td>Prof. Vijai Nath Giri</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
</tr>
<tr>
<td>Industrial &amp; Systems Engineering</td>
<td>Prof. Manoj Kumar Tiwari</td>
<td>01.01.2013</td>
<td>31.12.2015</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Prof. Umesh Chandra Gupta</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
</tr>
<tr>
<td>Material Science Centre</td>
<td>Prof. Susanta Banerjee</td>
<td>08.05.2014</td>
<td>07.05.2017</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>Prasanta Kumar Das</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
</tr>
<tr>
<td>Metallurgical &amp; Materials Engineering</td>
<td>Prof. Gour Gopal Roy</td>
<td>01.04.2014</td>
<td>31.03.2017</td>
</tr>
<tr>
<td>Physics</td>
<td>Prof. Arghya Taraphder</td>
<td>01.02.2014</td>
<td>31.01.2017</td>
</tr>
<tr>
<td>Rubber Technology Centre</td>
<td>Prof. Dipak Khastgir</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
</tr>
<tr>
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<td>Biotechnology</td>
<td>Prof. Tapas Kumar Maiti</td>
<td>01.01.2013</td>
<td>31.12.2015</td>
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<td>School of Information Technology</td>
<td>Prof. Rajib Mall</td>
<td>01.04.2013</td>
<td>31.03.2016</td>
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<td>School of Medical Science &amp; Technology</td>
<td>Prof. Pranab Kumar Dutta</td>
<td>07.03.2012</td>
<td>06.03.2015</td>
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<tr>
<td>Centre for Oceans, Rivers, Atmosphere &amp; Land Sciences (CORAL)</td>
<td>Prof. Arun Chakraborty</td>
<td>29.06.2013</td>
<td>28.06.2016</td>
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<td>GS Sanyal School of Telecom</td>
<td>Prof. Saswat Chakrabarti</td>
<td>01.04.2012</td>
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<td>Rural Development</td>
<td>Prof. P. B. S. Bhadoria</td>
<td>01.10.2013</td>
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<td>Ranbir &amp; Chitra Gupta School of Infrastructure Design &amp; Management</td>
<td>Prof. U.K. Banerjee</td>
<td>01.09.2011</td>
<td>31-08-2014</td>
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<td>School of Water Resources</td>
<td>Prof. Dhrubajyoti Sen</td>
<td>01.04.2013</td>
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<tr>
<td>Computer &amp; Informatics Centre</td>
<td>Prof. Prabir Kumar Biswas</td>
<td>10.03.2011</td>
<td>09.03.2014</td>
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<tr>
<td>Centre for Educational Technology</td>
<td>Dr. Bani Bhattacharya</td>
<td>06.07.2012</td>
<td>31-12-2013</td>
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<tr>
<td>Institute Information Cell</td>
<td>Prof. B. K. Mathur</td>
<td>06.09.2002</td>
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<td>Admin Computer Service Support Centre (ACSSSC)</td>
<td>Prof. Soumya Kanti Ghosh</td>
<td>01.12.2013</td>
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<tr>
<td>Rajendra Mishra School of Engineering</td>
<td>Prof. Partha Pratim Das</td>
<td>01.10.2013</td>
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<td>Entrepreneurship</td>
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<tr>
<td>School of Bioscience</td>
<td>Prof. Amit Basak</td>
<td>18.02.2014</td>
<td>17.02.2017</td>
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<tr>
<td>School of Nano-Science</td>
<td>Prof. Samit Kumar Ray</td>
<td>18.02.2014</td>
<td>17.02.2017</td>
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and Technology


School of Environment Science and Engineering  Prof. Jayanta Bhattacharya  03.03.2014  02.03.2017

Chairman of the Various Centres / Committees

Chairman (Civil Construction & Maintenance)  Prof. Baidurya Bhattacharya  01.10.2013  30.09.2016

Hall Management Centre (HMC)  Prof. Pallab Banerji  04.08.2014  03.08.2017

Chairman, Career Development Centre (Previously - Training & Placement Section)  Prof. S. K. Barai  01.01.2014  31-03-2015

Central Library  Prof. Subrata Chattopadhyay  26.06.2012  25.06.2015

GATE  Prof. B. C. Meikap  12.05.2014  GATE-2015

JEE  Prof. M.K. Panigrahi  01.09.2013  JEE-2014

JAM  Prof. B. C. Meikap  12.05.2014  JAM–2015


(Extension)

II. Central Research Facility (CRF), Chairman, Life Science Division,  Prof. Amit Kumar Das  01.12.2013  30.11.2016

Central Workshop & Instruments Service (CWISS)  Prof. Asimava Roy Choudhury  10.08.2012  09-08-2015


Nehru Museum of Science & Technology  Prof. Dhrubajyoti Sen  01.10.2013  30.09.2015

Kalpana Chawla Space  Prof. Dipanwita Roy Chowdhury  01.01.2013  31.12.2015
<table>
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<th>Committee</th>
<th>Chair</th>
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<tr>
<td>Technology Cell (KCSTC)</td>
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<td>Staff Benefit Fund</td>
<td>Registrar</td>
<td>01.07.2002</td>
<td>U. F. O.</td>
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<tr>
<td>Students’ Brotherhood Fund (SBF)</td>
<td>Dr. V. R. Desai</td>
<td>03.03.2003</td>
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<tr>
<td>House Allotment Committee (HAC)</td>
<td>Prof. Ashis Bhattacharjee</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Commercial Establishments &amp; Licencing Committee (CELC)</td>
<td>Prof. P.B.S. Bhadoria</td>
<td>20.05.2010</td>
<td>31.12.2013</td>
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<tr>
<td>Standing Consultative Committee on Community Issues (SCCCI)</td>
<td>Director (Ex-officio)</td>
<td>01.01.2014</td>
<td>31.12.2014</td>
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<td>Security and Transport Advisory Committee (STAC)</td>
<td>Deputy Director (Ex-officio)</td>
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<td>Space Allocation Committee (SAC)</td>
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<td>Campus Schools Advisory Committee (CSA)</td>
<td>Prof. B. Mahanty</td>
<td>20-02-2013</td>
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<td>Industrial Training Centre, Hijli</td>
<td>Dean, Continuing Education</td>
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<td>Campus Green Cover (CGC)</td>
<td>Prof. Adinpunya Mitra</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<tr>
<td>Canteen Management Committee</td>
<td>Prof. A. K. Deb</td>
<td>01.02.2013</td>
<td>31.01.2015</td>
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<td>Technology Film Society</td>
<td>Dean, Students’ Affairs,</td>
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<td>House Building Advance</td>
<td>Registrar</td>
<td>01.08.1996</td>
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<td>Computer Purchase, Maintenance &amp; Networking Committee</td>
<td>Prof. P.K.Biswas</td>
<td>01.10.2013</td>
<td>31.03.2014</td>
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<td>Furniture *</td>
<td>Deputy Director</td>
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<td>Budget &amp; Allotment of Fund</td>
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### Vice-chairmen/Others

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<tr>
<td>Vice-Chairman, GATE</td>
<td>Prof. M. Ramgopal</td>
<td>12.05.2014</td>
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<td></td>
<td>Dr. K. S. Rao</td>
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<tr>
<td>Vice-Chairman, JEE</td>
<td>Prof. Surjya Kanta Pal</td>
<td>01.09.2013</td>
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<tr>
<td>Vice-Chairman, JEE</td>
<td>Prof. D. Chakravarty</td>
<td>01.09.2013</td>
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<td>Vice-Chairman, JAM</td>
<td>Prof. M. Ramgopal</td>
<td>12.05.2014</td>
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<td>Vice-Chairman, Career Development Centre</td>
<td>Prof. Debasis Deb</td>
<td>01.01.2014</td>
<td>31.12.2015</td>
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<td>Dr. A Rajakumar</td>
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<td>Dr. Sujoy Kumar Kar</td>
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<td>Vice-Chairman, Technology Aquatic Society (TAS)</td>
<td>Dr. T. K. Goswami</td>
<td>01.10.2013</td>
<td>30.09.2014</td>
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<tr>
<td>Vice-chairman, Technology Film Society (TFS)</td>
<td>Prof. Arnab Roy</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Treasurer, TFS</td>
<td>Prof. Saikat Kumar Paul</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<tr>
<td>Treasurer, TSG</td>
<td>Dr. Somesh Kumar</td>
<td>01.09.2011</td>
<td>31.08.2014</td>
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<tr>
<td>Head, NSS</td>
<td>Dr. P. K. Bhowmick</td>
<td>01.07.2002</td>
<td>U.F.O</td>
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<tr>
<td>Coordinator, EAA</td>
<td>Dr. S. C. Mahapatra</td>
<td>01.07.2002</td>
<td>U.F.O</td>
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<tr>
<td>Convener, Centre for Theoretical Studies (CTS)</td>
<td>Prof. Sayan Kar</td>
<td>07.10.2013</td>
<td>06.10.2016</td>
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<td>Convener, Inst. Lecture Series Comm.</td>
<td>Dean, Continuing Education</td>
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<tr>
<td>Coordinator, PGDMOM</td>
<td>Prof. S. C. Misra</td>
<td>01.10.2007</td>
<td>30.09.2010</td>
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<tr>
<td>Coordinator, PGDST</td>
<td>Prof. P K Sen</td>
<td>01.10.2013</td>
<td>30.09.2015</td>
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<tr>
<td>Head, B. C. Roy Technology Hospital</td>
<td>Dr. B. Mishra</td>
<td>04.12.2010</td>
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<tr>
<td>Chief Vigilance Officer</td>
<td>Prof. Balbir Kumar Mathur</td>
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<tr>
<td>Managing Director, STEP</td>
<td>Prof. Indranil Sengupta</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<tr>
<td>Vice-Chairman (Civil Construction &amp; Maintenance)</td>
<td>Prof. Sushanta Chakraborty</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Vice-Chairman (Civil Construction &amp; Maintenance, Architecture &amp; Planning)</td>
<td>Prof. Shankha Pratim Bhattacharya,</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Faculty Coordinator, Counseling Services</td>
<td>Dr. S.D. Bhattacharya</td>
<td>19.08.2013</td>
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<td>Coordinator, National Knowledge Network (NKN)</td>
<td>Prof. P.K. Biswas</td>
<td>09.03.2010</td>
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<td>Vice Chairman, ERP &amp; Co-PI, IER Project</td>
<td>Dr. Shyamal Kumar Das Mandal</td>
<td>28.05.2014</td>
<td>27.05.2017</td>
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<td>Programme Coordinator, International Summer Winter Term (ISWT)</td>
<td>Prof. A Goswami</td>
<td>25.03.2014</td>
<td>24.03.2017</td>
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**Professors-in-Charge**

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<th>Position</th>
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<tr>
<td>Associate Professor-in-Charge (Electrical Works)</td>
<td>Dr. Prabodh Bajpai</td>
<td>01.01.2014</td>
<td>31.12.2017</td>
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<td>Refrigeration &amp; AC Unit</td>
<td>Prof. M. Ramgopal</td>
<td>01.08-2011</td>
<td>31-07-2014</td>
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<td>Institute Guest Houses</td>
<td>Prof. B. K. Sengupta</td>
<td>01.08.2011</td>
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<td>Technology Telecom Centre</td>
<td>Prof. Raja Datta</td>
<td>04.02.2011</td>
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<td>Prof. Dilip Kumar Baidya</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Prof. Madan Kumar Jha</td>
<td>01.10.2013</td>
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<td>Prof. A.N. Samanta, Dean(PGS&amp;R)</td>
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<td>Advanced VLSI Laboratory</td>
<td>Prof. T.K. Bhattacharyya</td>
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<td>IPR &amp; IR</td>
<td>Prof. Goutam Saha</td>
<td>07.10.2013</td>
<td>06.10.2016</td>
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<td>IIT Kharagpur Kolkata Campus</td>
<td>Prof. A.P. Gupta</td>
<td>01.08.2013</td>
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<td>IIT Kharagpur Bhubaneswar Campus</td>
<td>Prof. G. C. Mitra</td>
<td>01.10.2013</td>
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<td>Advanced Laboratory for Plant Genetic Engineering</td>
<td>Prof. Sudip Kumar Ghosh</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Incubation &amp; Entrepreneurship Activities of SRIC along with TIETS</td>
<td>Prof. Indranil Sengupta</td>
<td>01.10.2013</td>
<td>30.09.2016</td>
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<td>Automobile Section</td>
<td>Registrar</td>
<td>17-9-2010</td>
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<td>B.C. Roy Technology Hospital</td>
<td>Prof. Chhanda Chakraborti</td>
<td>26.06.2012</td>
<td>25.06.2015</td>
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<td>Centre for Railway Research (CRR)</td>
<td>Prof. Suhranshu Roy</td>
<td>10.02.2014</td>
<td>09.02.2017</td>
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<td>Radiological Safety Officer</td>
<td>Prof. Ananta Kumar Ghosh</td>
<td>24.06.2010</td>
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<td>P. K. Sinha Centre for Bio Energy</td>
<td>Prof. Debabrata Das</td>
<td>01.02.2014</td>
<td>31.01.2017</td>
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<tr>
<td>Co-Professor in-Charge, Centre for Railway Research (CRR)</td>
<td>Prof. Arghya Deb</td>
<td>04.04.2014</td>
<td>03.04.2017</td>
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<tr>
<td>Co-Professor-in-Charge, Refrigeration &amp; AC Unit</td>
<td>Dr. Parthasarathi Ghosh</td>
<td>01.08.2014</td>
<td>31.07.2017</td>
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</table>

**Miscellaneous Assignment**

Institute’s Representative at the Indian Member Council

Prof. Om Prakash Sha, Dept. of OE&NA  Dean (CE)  26.05.2014  UFO
## List of Senate Members

<table>
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<tr>
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<tr>
<td><strong>Director</strong></td>
<td>Prof. Partha P. Chakrabarti</td>
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<tr>
<td><strong>Deputy Director</strong></td>
<td>Prof. Souvik Bhattacharyya</td>
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### AEROSPACE ENGINEERING
- Prof. P.K. Datta
- Prof. N. Singh
- Prof. K. P. Sinhamahapatra
- Prof. B. N. Singh
- Prof. Dipak Kumar Maiti

### AGRICULTURAL & FOOD ENGG.
- Prof. K.P. Pandey
- Prof. B.C. Mal
- Prof. R. Singh
- Prof. V.K. Tewari
- Prof. K.N. Tiwari
- Prof. R.K. Panda
- Prof. R. Banerjee
- Prof. S.K. Das
- Prof. P.B.S. Bhadoria
- Prof. B.C. Ghosh
- Prof. A. K. Datta
- Prof. H. N. Mishra
- Prof. N. S. Raghuwanshi
- Prof. S. N. Panda
- Prof. T. K. Goswami
- Prof. Nirupama Mallik
- Prof. Madan Kumar Jha
- Prof. Hifjur Raheman
- Prof. S. Dutta Gupta
- Prof. Adinpunya Mitra

### ARCHITECTURE & REGIONAL PLANNING
- Prof. R.N. Datta
- Prof. B.K. Sengupta
- Prof. U.K. Banerjee
- Prof. Jaydip Barman
- Prof. S. Chattopadhyay
- Prof. Joy Sen

### BIOTECHNOLOGY
- Prof. S.C. Kundu
- Prof. D. Das
- Prof. S. Dey
- Prof. A.K. Ghosh
- Prof. A.K. Das
- Prof. T. K. Maiti
- Prof. Sudip Kumar Ghosh

### CENTRE FOR EDUCATIONAL TECHNOLOGY
- Prof. B. Bhattacharya

### CENTRE for Ocean, Rivers, Atmosphere and Land Sciences
- Prof. Arun Chakraborty

### CHEMICAL ENGINEERING
- Prof. D. Mukherjee
- Prof. A.N. Samanta
- Dean (PGS&R)
- Prof. S. Dasgupta
- Prof. N. C. Pradhan
- Prof. S. De
- Prof. Gargi Das
- Prof. Sudarsan Neogi
- Prof. Jayanta Kumar Basu
- Prof. Goutam Kundu
- Prof. B.C. Meikap

### CHEMISTRY
- Prof. D. Mal
- Prof. T.K. Sarkar
- Prof. J.K. Roy
- Prof. P.K. Chattaraj
- Prof. T. Pathak
- Prof. T. S. Pal
- Prof. A. Basak
- Prof. D. Ray
- Prof. M. Bhattacharjee
- Prof. S. K. Srivastava
- Prof. Nilmoni Sarkar
- Prof. Swagata Dasgupta
- Prof. Sarbani Taraphder
- Prof. Sanjoy Bandypadhyay
- Prof. Saumen Hajra
- Prof. Joykrishna Dey
- Prof. P. Pramanik
- Prof. Kumar Biradha
- Prof. C.R. Raj

### CIVIL ENGINEERING
- Prof. Dhrubajyoti Sen
- Prof. S.K. Bhattacharyya
- Prof. K.S. Reddy
- Prof. L.S. Ramachandra
Prof. S. Dey
Prof. D. K. Baidya
Prof. N. Dhang
Prof. S. K. V. Barai
Prof. V. R. Desai
Prof. S. P. Dasgupta
Prof. Ashok Kumar Gupta
Prof. M. M. Ghangrekar
Prof. Baidurya Bhattacharya
Prof. Damodar Maity
Prof. Debasis Roy
Prof. Bhargab Maitra
Prof. Anirudha Sengupta

**COMPUTER SCIENCE & ENGINEERING**
Prof. A. Pal
Prof. A. K. Majumdar
Prof. S. Ghose
Prof. P. P. Chakraborty
Prof. Anupam Basu
Prof. I. Sengupta
Prof. J. Mukhopadhyay
Prof. S. P. Pal
Prof. R. Mall
Prof. D. Sarkar
Prof. D. Roy Chowdhury
Prof. Pallab Dasgupta
Prof. Rajeev Kumar
Prof. Sudeshna Sarkar
Prof. Chittaranjan Mandal
Prof. Arobinda Gupta
Prof. Partha Pratim Das
Prof. Niloy Ganguly

**CRYOGENIC ENGINEERING**
Prof. S. S. Bandyopadhyay
Prof. T. K. Dey
Prof. V. Rao Vutukuru
Prof. K. Chowdhury

**ELECTRICAL ENGINEERING**
Prof. S. K. Das
Prof. A. K. Sinha
Prof. J. Pal
Prof. A. Patra
Prof. N. K. Kishore
Prof. A. Barua
Prof. Goswaidas Ray
Prof. S. Mukhopadhyay
Prof. S. Sen
Prof. P. K. Dutta
Prof. B. M. Mohan
Prof. Debapriya Das
Prof. Sabyasachi Sengupta
Prof. T. K. Bhattacharya
Prof. Chandan Chakraborty
Prof. Srinivasu Maka
Prof. Ashok Kumar Pradhan
Prof. Debaprasad Kastha
Prof. Aurobinda Routray

**ELECTRONICS & ELECTRICAL COMM. ENGINEERING**
Prof. A. Chakraborty
Prof. D. Dutta
Prof. Ajoy Kr. Roy
Prof. S. Banerjee
Prof. C. K. Maity
Prof. V. R. K. Ratnam
Prof. P. K. Biswas
Prof. M. Chakraborty
Prof. Sant Sharan Pathak
Prof. Subrata Sanyal
Prof. D. Biswas
Prof. K. K. Bandyapadhyya
Prof. Santanu Chattopadhyay
Prof. Ramesh Garg
Prof. Tarun Kanti Bhattacharyya
Prof. Goutam Saha
Prof. Anindya Sundar Dhar

**GEOLOGY & GEOPHYSICS**
Prof. S. K. Nath
Prof. B. Mishra
Prof. A. K. Gupta
Prof. D. Sengupta
Prof. A. Bhattacharya
Prof. S. Tripathy
Prof. Anindya Sarkar
Prof. Subhasish Das
Prof. M. K. Panigrahi
Prof. S. K. Bhowmik
Prof. Saibal Gupta
Prof. S. P. Sharma
Prof. Manish A Mamtani
Prof. William K. Mohanty

**G S SANYAL SCHOOL OF TELECOMMUNICATION**
Prof. S. Chakraborty

**HUMANITIES & SOCIAL SCIENCES**
Prof. (Ms.) B. Chatterjee
Prof. P. Basu
Prof. H. R. Tewari
Prof. D. Suar
Prof. A. Gera Roy
Prof. K.B.L Srivastava
Prof. S. Chopra Chatterjee
Prof. V. N. Girii
Prof. Chhanda Chakraborti
Prof. Priyadarshi Patnaik
Prof. N.C. Nayak

INDUSTRIAL & SYSTEMS ENGINEERING
Prof. P.K.J. Mohapatra
Prof. B. Mahanty
Prof. P.K. Ray
Prof. M. K. Tiwari
Prof. P. L. Narasimhan
Prof. Jhareswar Maiti

MATERIALS SCIENCE
Prof. D. Bhattacharya
Prof. C.K. Das
Prof. B. Adhikari
Prof. S. Ram
Prof. Susanta Banerjee
Prof. Pallab Banerjee
Prof. Chako Jacob

MATHEMATICS
Prof. A. R. Roy
Prof. P.D. Srivastava
Prof. A. Sarkar
Prof. U.C. Gupta
Prof. M.P. Biswal
Prof. D.K. Gupta
Prof. V. K. Jain
Prof. S. Bhattacharyya
Prof. A. Goswami
Prof. Somesh Kumar
Prof. Rajni Kant Pandey
Prof. G. P. Raja Sekhar
Prof. P.V.S.N. Murthy

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Prof. A. Mukherjee
Prof. S.K. Som
Prof. V.V. Satyamurty
Prof. A. K. Chattopadhyay
Prof. S. Bhattacharya
Prof. R. Bhattacharyya
Prof. S. K.Dash
Prof. P. K. Das
Prof. A. R. Mohanty
Prof. S. N. Bhattacharyya

Prof. R. N. Maiti
Prof. S. Paul
Prof. M. C. Ray
Prof. A. K. Nath
Prof. S. Roy
Prof. D. K. Pratihar
Prof. S. Chakraborty
Prof. A. Dasgupta
Prof. A. Guha
Prof. S. K. Roy Chowdhury
Prof. M. Ramgopal
Prof. Ashimava Roy Chowdhury
Prof. Manab Kumar Das
Prof. Surjya Kanata Pal
Prof. Arun Kumar Samantaray
Prof. Kumar Siva Cheruvu

METALLURGICAL & MATERIALS ENGINEERING
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Prof. S. K. Pabi
Prof. K.K. Ray
Prof. N.Chakraborty
Prof. I. Manna
Prof. Siddhartha Das
Prof. Sanat Kr. Roy
Prof. K. Das
Prof. Gour Gopal Roy
Prof. Rahul Mitra
Prof. P.K. Sen
Prof. Jyotsna Dutta Majumdar
Prof. Shiv Brat Singh

MINING ENGINEERING
Prof. S.S. Bhamidipati
Prof. A. Bhattacharya
Prof. K. U. M. Rao
Prof. S. K. Das
Prof. K. Pathak
Prof. J. Bhattacharyya
Prof. S. K. Mukhopadhyay
Prof. Samir Kumar Pal
Prof. Debasis Deb

OCEAN ENGINEERING & NAVAL ARCHITECTURE
Prof. S.K. Satsangi
Prof. N.R. Mandal
Prof. D. Sen
Prof. O. P. Sha
Prof. Trilochan Sahoo

PHYSICS
Prof. B.K. Mathur
Prof. S.L. Sharma
Prof. S.K. Ray
Prof. A. Taraphder
Prof. K. Kumar
Prof. Somnath Bharadwaj
Prof. Sayan Kar
Prof. Anushree Roy
Prof. Prasanta Kumar Datta

RAJENDRA MISHRA SCHOOL OF ENGG.
ENTREPRENEURSHIP

RAJIV GANDHI SCHOOL OF
INTELLECTUAL PROPERTY LAW
Prof. Khushal Vibhute,

RELIABILITY ENGINEERING
Prof. V.N.A. Naikan

RUBBER TECHNOLOGY
Prof. A.K. Bhowmick
Prof. G.B. Nando
Prof. D. Khastgir
Prof. T. K. Chaki

SCHOOL OF INFORMATION
TECHNOLOGY
Prof. Shamik Sural
Prof. Soumya Kanti Ghosh

SCHOOL OF MEDICAL SCIENCE &
TECHNOLOGY
Prof. S. K. Guha
Prof. A.K. Bardhan

STEEL TECHNOLOGY CENTRE
Prof. R. N. Ghosh

VINOD GUPTA SCHOOL OF
MANAGEMENT
Prof. K. K. Guin, Dean
Prof. G. Sinha
Prof. Prabina Rajib

Central Library
Dr. B. Sutradhar, Librarian

Students' Representatives:
1. Mr. Apoorv Jain, Vice President, TSG
2. Mr. Ishan Garg, UG Representative
3. Mr. Avinash Kumar Sharma, PG Representative
4. Mr. Shubhankar Chakraborty, RS Representative

Secretary
Dr. T. K. Ghosal
DIRECTOR’S REPORT

Over the last sixty years, not only has IIT Kharagpur spearheaded setting up new standards in engineering education but has also put its best limbs forward in all spheres of national development from the strategic sectors of Defense, Space and Atomic energy to the Economic, Public and Development sectors that directly or indirectly touch the lives of all the citizens of India. IIT Kharagpur has been producing students who are global citizens over these years. Today, in addition to its continued academic excellence, the nation looks up to the IITs to address some of its major problems that will lead to a better and a more promising future. These include concerns about all round sustainability including safety and security, food and nutrition, shelter and habitat, energy and environment, economy and employment. Moreover, the IITs are now mandated to be able to spread their educational excellence beyond the boundaries of their own Institutions and reach out to a much larger number of people requiring quality education. During the last year, we at IIT Kharagpur have responded to this challenge by taking up major projects related to Future of Cities, Food and Nutritional Sustainability, Signals and Systems in Life Sciences, Science and Heritage Initiative and other major research projects related to Clean Water, Bio-energy, Environment and the like. In parallel, we continue to pursue technology development in cutting edge areas like Nano-Science, Bio-MEMS, Materials, Circuit Design and Mathematical Methods, which produce research publications in top quality journals keeping us at par with the best in the world.

IIT Kharagpur’s major strength lies in its ability to recognize the continued need for achieving greater heights. In order to increase the scope for our international exposure, the Institute has successfully started an International Summer and Winter Programme which has brought several international faculty to this Institute enabling not only exchange of ideas in teaching and research but also fostering collaborations with Institutes of the highest repute. We have also embarked on an outreach programme through which we are able to communicate with ten thousand teachers of college level institutions and help them in the pedagogy of imparting quality education. We have tried to instill competitive and collaborative excellence through promotion of Research Challenge Grants which have excited both our young and senior faculty members simultaneously. Attracting sufficient high quality faculty remains the biggest challenge of the IIT System and IIT Kharagpur is not an exception. We have, therefore, initiated an aggressive recruitment process through which we screen quality applications and provide appointments as soon as possible. Special efforts are made to identify and induct brilliant faculty from industry and academia within the country and from abroad.

ACADEMIC PROGRAMMES

The Institute presently offers BTech (Hons) programme in seventeen different branches of Engineering, BArch (Hons) programme in Architecture, fifteen Dual Degree programmes, seven Integrated MSc programmes, four Joint MSc-PhD programmes, and fifty-one Postgraduate degree programmes leading to Joint MTech / MCP-PhD, MBM, MHRM, LLB and MMST degrees. The curricula and syllabi of these programmes are periodically updated with focus on quality and excellence to meet the demands of the changing world.

The existing ERP System has also been strengthened. All academic issues including faculty recruitment, students’ registration, enrollment, course allocation, examination results, students’ feedback and sponsored project details are now available on-line through this system.

59TH CONVOCATION

Fifth-ninth Annual Convocation of the Institute was held on July 27, 2013. Shri Sandipan Chakravortty, Managing Director of Tata Steel Processing and Distribution Limited / Dr. M. M.
Pallam Raju, Hon’ble Minister of Human Resource Development Government of India, was the Chief Guest. The convocation conferred degrees to 2157 graduates that include 164 Ph.D., 29 MS, 771 M.Tech., 32 MCP, 123 MBA, 04 MMST, 17 MHRM, 27 LLB, 270 Dual Degree, 472 B.Tech. (Hons), 20 B.Arch. (Hons.) and 228 M.Sc. degrees.

- Shri Utsav Banerjee of the Department of Electronics and Electrical Communication Engineering is the recipient of President of India Gold Medal for the best academic performance among the outgoing B.Tech. (Hons.) and B.Arch. (Hons.) students.
- Shri Srijan Kumar of the Department of Computer Science and Engineering has won the Dr. Bidhan Chandra Roy Memorial Gold Medal for the best all-round performance among the B.Tech. (Hons.) and B.Arch.(Hons.) outgoing students.
- The Prime Minister of India Gold Medal for the best academic performance among the Dual degree and Integrated M.Sc. outgoing students goes to Shri Mayank Shrivastava of the Department of Computer Science and Engineering.
- Dr. Jnan Chandra Ghosh Memorial Gold Medal for the best all-round performance among the outgoing Dual Degree and Integrated M.Sc. students is awarded to Shri Abhishek Raj of the Department of Chemical Engineering.
- Shri Suvar Kanti Chakraborty of the Department of Mathematics has won the Professor Jagadish Chandra Bose Memorial Gold Medal for the best academic performance among the outgoing students of all 2-year M.Sc. courses in the Science Disciplines.
- Shri Santigopal Samanta of the Department of Metallurgical and Materials Engineering is the recipient of The Director’s Gold Medal for the best academic performance among the students completing M.Tech. and MCP courses.

The Senate and the Board of Governors of the Institute conferred the highest honor, the degree of Doctor of Science (Honoris Causa), on the following distinguished personalities:

- Shri Arun Sarin in recognition of being a doyen of the telecommunications industry making Vodafone the world’s largest mobile phone company
- Shri Y. C. Deveshwar for his visionary leadership in making ITC to become a truly global company

In the convocation, the Distinguished Alumnus Awards were conferred on:

- Dr. Aditi Chattopadhyay, Ira A. Fulton Chair Professor of Mechanical and Aerospace Engineering and the Director of the Adaptive Intelligent Materials and Systems Research Center at Arizona State University
- Shri Aniruddha Roy, Former Executive Director of Eveready Industries Limited
- Shri Devinder Kumar Gupta, President of the All India Federation of Plastic Industry
- Professor Jay Chatterjee, Dean Emeritus and Emeritus Professor of Architecture and Planning at the University of Cincinnati
- Dr. K. G. Narayanan, Technology Adviser of Indian industry
- Shri Kamal Kumar Sarvadhikari, Former CEO of Sensi Vida Medical Technologies, Inc.
- Professor Keshab K. Parhi, Distinguished McKnight University Professor and Edgar F. Johnson Professor in the Department of Electrical and Computer Engineering at the University of Minnesota
- Dr. Parimal Kanti Bharadwaj, Senior Professor and Head of the Department of Chemistry at IIT Kanpur
- Shri Rabindra Nath Nayak, Chairman and Managing Director of Powergrid Corporation of India Ltd.
• Professor Somnath Ghosh, Michael G. Callas Professor in the Department of Civil Engineering and Professor of Mechanical Engineering at the Johns Hopkins University.

RESEARCH AND DEVELOPMENT ACTIVITIES

Aerospace Engineering: Research activities are being carried out in different fields, namely, Composite and smart structures, Structural dynamics and aeroelasticity, Design and development of MR-fluid damper, Analysis of aerospace structures using DQM, DTFM, FEM, Nanomaterials and nanomechanics, Development of reconfigurable autonomous air vehicle, Lunar gravity modeling, topography modeling and orbit determination for the Chandrayaan-I, Fault tolerant and reconfigurable architecture development for the automotive, Real time system identification, system identification using neural sensitivity analysis, Fault detection and identification for aircraft, Low Reynolds number airfoils for micro air vehicles, Analysis of high Reynolds number three dimensional flows, Supersonic and hypersonic flows for various configurations, Large eddy simulation of turbulent flow, Flow-induced vibration and fluid-structure interaction, Development of micro-aerial vehicles.

Agricultural and Food Engineering: Current areas of research focus include the Application of GIS and neural network command area and watershed management, Ballast management of agricultural tractors, Biofiltration technology, Bio-fuels from tree-based oils, Biosynthesis of phenolic fragrance and xanthones, Climate change analysis and applications in water and crop management, Coal biotechnology, Design and development of continually variable transmission for tractors, Design and development of slip meter for two-wheel drive tractors, Design and development of automatic depth control system and noise and vibration reducing device for tractors, Design and development of noise and vibration reducing device for vertical conveyor reaper, Development of aseptic packaging system for milk, Development of environment-friendly aquaculture, Development of rice transplanter, Development of endless chain pressure dryer for orthodox tea, Development of cashew nut sheller and peeler, Microwave assisted drying of high moisture food, Nutrient management, Polyhydroxyalkanoates from Cyanobacteria, Predicting traction performance using artificial neural network, Process technology for dehydration of mushrooms, Production and processing of tea, Production of tannase under solid state fermentation, Process technology for dahi powder and dahi powder based energy drink mix, Process technology for antioxidant rich RTE health food, Process technology for manufacture of RTE health food (herbal kurkure), Rainwater harvesting and groundwater recharge, Software development for machinery management, Spectral characterization of soils, Starch based edible and biodegradable film, Thermal analysis of food materials, Traction potential of bias-ply tyres used in agricultural tractors.

Architecture and Regional Planning: The Department focuses on areas such as Performance studies, Design simulation and intelligent architecture, Building automation and management systems, Sustainable development, Energy efficient design, Appropriate technologies, Spatial environmental planning, Eco-sensitive and green architecture, Indian traditional architecture and heritage studies, Vernacular architecture, Visual communication, Visual simulation, Product design and industrial design, Transportation planning, Traffic engineering and management, Hazards and disaster mitigation and management, Urban design, Eco-tourism, Recreation and landscape planning, Conservation and preservation studies, Housing and shelter, Social infrastructure, Urban development Management and finance, Advanced planning informatics, Geographical information systems, Decision support systems and Expert systems, Urban settlement and systems dynamics, Cultural studies, Media and architectural journalism, Symbolism and cultural sustainability.

Biotechnology: Research activities are being carried out in the following areas: Production of an anti-tumor biosurfactant, Alkaline lipase, Biodiesel, Bioremediation of heavy metals, radionuclides and organic pollutants, Development of methods of o-antigens and its relation with pathogenicity in Gram negative bacteria, Bioreactor strategies for the enhanced production of probiotic endospores for nutraceutical formulations and their clinical evaluation, Molecular
characterization of metronidazole activation and deactivation pathways in *Entamoeba histolytica*, Molecular cloning, expression and characterization of *E. invadens* encystation specific proteins, Structural and functional studies of protein from *M. tuberculosis* and *S. aureus* aiming at drug and inhibitor design, Biomicrofluidics and biochip development, Microbial fuel cell, Molecular cloning, expression and characterization of *E. invadens* encystation specific proteins, Molecular analysis of *cypovirus* infecting * tasar* silkworm, Development of low fat content transgenic oilseed plant, Development of silk (fibroin and sericin) based biomaterials and cell based tissue (skin and bone) engineering, Improvement of hydrogen production from industrial waste using hybrid bioreactor, and Characterization of *Antarctic microbiota* probiotic nutraceutical development.

**Chemical Engineering:** Current research includes chemical process development with special emphasis on greener alternatives, Utilization of non-edible oils for manufacturing of value-added chemicals, Steam reforming of petroleum feedstock in mini and micro-reactors for production of hydrogen, Advanced separation processes involving membranes with emphasis on water purification, dye removal, effluent treatment processes, Simulation and modeling of coal and biomass combustion processes in pulverized and fluidized combustors, Multi-phase processes and reactions in gas-liquid, liquid-solid, solid-liquid and liquid-liquid systems using pipelines, ejector based systems, fluidized bed, column flotation, Development of innovative catalysts from fly ash for organic chemical synthesis (alkylation, isomerisation etc.), Plasma assisted surface modification for chemical engineering applications, Development and performance of novel bubble column scrubber/reactor for removal of *SO₂* and fly ash, technology of composite materials, Pattern formation of soft materials utilizing interfacial instability, Microscale transport processes and microfluidics including droplet based digital microfluidics, Training of personnel for construction and maintenance of bio gas plants, Beneficiation of coal and mineral by column flotation cell.

**Chemistry:** The Department’s areas of research include Synthesis of bioactive natural products, Enzyme mediated synthesis, Isolation and characterization of an angiogenic protein, Supramolecular chemistry, Development of highly selective and green methodologies, Development of micellar, zeolite, and bimetallic catalysts, Synthesis of advanced functional materials for fuel cell application, Crystal engineering and electroanalytical chemistry, Development integrated biosensing platform for clinical and environmental applications, electron transfer processes with emphasis in dioxygen chemistry, Colloidal systems, especially vesicles formed by chiral surfactants and their potential applications in i.v drug delivery, Development of hydrogels and organogels for applications in transdermal drug delivery, Aqueous medium polymerization, metal nanoparticles, nanocrystalline ferrites, ceramics and composites, Materials for high temperature and superconducting applications, Studies relating to density functional theory, chemical reactivity, *ab initio* calculations, quantum chaos, chemical reaction dynamics in liquids and biological macromolecules, molecular modeling and computer simulation studies of complex biological systems.

**Civil Engineering:** Research activities are being carried out in the following areas: Application for wastewater treatment and energy recovery, Onsite treatment of domestic sewage from small community, Studies on granulation in UASB reactor treating low strength wastewater to enhance efficiency of the reactor, Water quality and health assessment, Biological treatment of solid waste, Factors affecting the use of chlorine in water supply systems, Nanoparticle synthesis, their characterization and application, Photodegradation of organic pollutants, Adsolubilization/adsorption, Monitoring and modelling of tropospheric solid state polydisperse aerosols and ozone and assessment of pulmonary deposition, Recycled construction materials, Stability of plates and shells, Biomechanics, Reliability of bridge structures, Low cost housing, Seismic analysis of dams, Fluid-structure interactions, Structural health monitoring, Cell filled low cost rural roads, Analysis and evaluation of concrete and flexible pavements, Specifications for bituminous mixes and urban
transportation planning, Investigations of effect of lateral flow on turbulent submerged jets, Study of coherent turbulent structure over gravel beds and bed-forms, Development and application of flood inundation and urban flood simulation models, Drought characterization and forecasting, Erosion control and mechanical stabilization of soils using natural fibers, Ground improvement, soil-microbe interaction, Insitu testing, Geotechnical earthquake engineering, Landslides and slope stabilization.

**Computer Science and Engineering:** Current research includes Artificial intelligence, Bioinformatics, Combinatorial and computational geometry, Computer graphics, Digital geometry, Design and analysis of algorithms, Graph / hypergraph theory and algorithms, Computer networks, Cryptography, Hardware security, Computer architecture, Databases, Embedded systems, Fault tolerant computing, Formal verification, Image processing and computer vision, Mobile computing, Multimedia, Natural language processing, Object oriented design tools, Parallel and distributed processing, Real time systems, Software engineering, Speech recognition and synthesis, VLSI Design and CAD tools, Complex networks.

**Electrical Engineering:** Research is being carried out in Magnetic levitation, Superconducting magnetic energy storage, Variable frequency AC-Drives, Resonant converters, Design of integrated circuits for power management, Automotive electronics, Diagnostic of drives, Drive fatigue analysis, Neuro-fuzzy controllers, Control of chaotic systems, Fault-tolerant control of aero-space systems, Attitude control of satellites and launch vehicles, Control of variable air-volume air-conditioning systems, Bifurcation theory of hybrid dynamical systems, Delta domain digital control analysis and design, Decentralised control of large scale systems, Wind turbines, Power system dynamics, Power system protection, Intelligent relaying, State estimation of power systems, Neural net application to partial discharge phenomenon, Lightning protection, Material characterization, Laser based profile measurement, Image based measurement systems, Motion estimation using MRI and colour Doppler imaging, Non-Linear and statistical signal processing, Real time algorithms for detection and diagnostics, Condition monitoring of machines and power apparatus, Fault detection and diagnosis of analog circuits, Control and instrumentation of bio-reactors, Fiber-optic components and sensors, Biomedical signal processing, Analysis of ECG signals, Sensors fusion, Multimedia security, Design and development of MEMS accelerometer, Seismic signal processing, active noise control, Fast algorithms for real time signal processing.

**Electronics and Electrical Communication Engineering:** The Department focuses on the Design and development of an embedded system-on-chip solution for an adaptive intelligent biomedical system, low cost Doppler Ultrasonography system, design of an Ultrasound Imaging system, development of non-invasive blood glucose monitor based on laser induced photo acoustic spectroscopy, early detection of oral cancer via image processing. Fiber optics and networking: The current research involves dispersion compensation of 40 Gb/s optical transmission system with optical phase conjugation and distributed Raman amplifier as well as with chirped fibre Bragg grating. In the optical networking area, innovative schemes have been developed for guaranteeing WDM network survivability and IP-over-WDM integrated routing, Development of a RISC DSP for Modems. Development of a dual standard baseband processor for 3G wireless systems, Automated visual inspection of industrial objects, VLSI Architecture for low bit rate video coding, Medical image processing, Gesture recognition from video sequences, Face recognition, Content based retrieval of texture images, Fuzzy neural network, Automated visual inspection of industrial objects, VLSI architecture for low bit rate video coding.

**Geology and Geophysics:** Current research focus includes Tectonic evolution of craton – mobile belt ensembles in parts of the Indian shield, Gold mineralization in greenstone belts of Dharwar Craton, Metamorphic remobilization of massive sulphide deposits, Studies on Indian microvertebrates,
Lithospheric structure across Himalaya, Deformation at collisional boundaries, Stable isotopes in Himalayan foreland sediments, Paleogene climate of Kutch, Rajasthan, Environment in ancient sedimentary basins in India, Seismic hazard assessment and microzonation in the NE India and metropolitan cities, Improvement of rock index test methods and mechanical characterization of rock materials, Groundwater potential assessment and pollution by natural and anthropogenic causes, Waste utilizations, wasteland development and acid marine drainage, Natural radiation hazard estimation, Studies on Indian monsoon (both modern and ancient) and paleoclimate studies of the Indian subcontinent and paleoceanography of the Indian Ocean.

**Humanities and Social Sciences:** Research is being carried out in Quantitative economics, Financial economics, Economics of growth, Industrial economics, Development economics, Environmental and resource economics, Developing world bioethics, Gender and trade, Financial institutions and markets, Sociology of health and medicine, Human resource Development, brain and behavior, Interpersonal, intercultural and organizational communication, Visual aesthetics, Indian aesthetics, Translation studies, Literature and communication, Business ethics, Corporate social responsibility, Economics of biofuels, Bioethics and public health ethics. Special focus is on studies involving end of life care, the science of generosity, music and audience response, Indian art and aesthetics, creative economy, and food security.

**Industrial and Systems Engineering:** Research activities are being carried out in the following areas: Operations management: Production planning and inventory control, Logistics and supply chain management, E-Business, Quality Engineering and control, Facility layout and design, Total quality management and Six Sigma. Simulation and soft computing: Genetic Algorithms and its variants, Heuristics, System dynamics, Discrete event Simulation. Work system design: Ergonomics/human factors engineering, occupational safety and health management, and probabilistic risk assessment, Data analytics and different domains of Industrial Engineering.

**Mathematics:** The Department focuses on Fuzzy Mathematics, Fluid Mechanics, Clifford analysis, Fuzzy Mathematics, Soft Algebra, Bio-Mechanics, Dynamics of nonlinear systems, Inventory management, Graph theory, Integral equations, Cryptography, Queuing theory, Statistical decision theory, Statistical data analysis, Compiler design, Combinatorics, Fractional calculus, Optimization theoretical computer science, Information and coding theory and cryptology.

**Mechanical Engineering:** Research areas include Design and development of expert systems in robotics, manufacturing science, Medical diagnosis and others using soft computing, bio-micro-fluidics and microscale transport processes, Transport phenomena in phase change problems, Laser materials Processing, CFD, Lattice Bolzmann Method in complex flows, Rotor dynamics and dynamics of lubricated ball bearings, Numerical simulation on two phase flow pertaining to bottom injected gas stirred ladles, Multi Layer TiN-MoS2 coating on cutting tools by unbalanced magnetron technique, Machinability study of Inconel 718, Development of control strategies for autonomous underwater vehicles, Model based fault detection and isolation, Simulation of liquid sloshing in a tank using numerical grid generation techniques, Prediction of fluid flow and heat transfer from wavy surfaces, 3-D printing, Noise and vibration engineering, Lab-on-a-chip based devices, Smart composite materials and structures, Micromechanics of novel radially aligned carbon nanotube reinforced composites.

**Metallurgical and Materials Engineering:** Areas of research include Extractive metallurgy, Mechanical metallurgy, Melting, casting and solidification processing, Modeling, simulation and multimedia in Metallurgical Engineering, Physical metallurgy, Powder metallurgy, Corrosion science and technology, Surface engineering, Genetic algorithm for the optimization of metallurgical systems, Mathematical simulation of high temperature metallurgical systems by application of computational
fluid dynamics, heat and mass transfer, Molecular dynamic simulation of nanostructured materials, Development of Lithium Ion Battery (LIB) technology for applications in electric vehicles in India.

**Mining Engineering:** The Department’s current focus areas are Application of LCA, GIS and remote sensing for soil and water analysis as a part of mine closure planning, Experimental and computational fluid dynamics studies for shock loss determination in mine air flow, Biological and passive treatment of mine waste water, Investigation of soil and water contamination vis-à-vis land use changes near mining fields. Study of human behavior related accidents in mines, Finite element analysis for long wall strata control problems, and design of shield supports, Assessment of fly ash composites as a substitute fill material for underground mine voids, Risk analysis for the safety management of coalmines, Application of various grade estimation techniques namely kriging, co-kriging, stochastic simulation and neural networks for estimation of mining blocks for quality control in mines, Investigation of different statistical quality control techniques including univariate and multivariate control charts for controlling the grade of mineral at various locations, Grade control aspects in limestone and bauxite operation, Integration of GPS and ISAR ground deformation data over mining areas, Use of lasers for assessment of stability of dumps and vision based semi-automatic mine navigation system.

**Ocean Engineering and Naval Architecture:** Research is being carried out in Ship structures, Dynamics of marine vehicles, Wave-Structure interactions, Marine and ocean hydrodynamics, Marine design and production, Numerical hydrodynamics, Ocean turbulence CFD, Coastal marine hazards, Ocean structures, Marine structural analysis, Ocean wave and circulation modeling, Marine design and production, Welding technology, Coastal processes and engineering, Hydroelasticity, Storm surge prediction and Tsunamis, Suspended sediment dynamics, Marine acoustics.

**Physics:** The Department focuses on Astrophysical spectroscopy, Astrophysics, Atmospheric sciences, Atomic and molecular physics, Biophysics, Condensed matter physics, Physics of complex systems, Cosmology, Electronic properties of solids, ERP, Bio-Photonics, Optical imaging, Nuclear physics, Ferroelectricity, Fiber and integrated optics, Optoelectronics, Gravitation and geometry, High energy physics, Hydrodynamics, Laser physics, Nonlinear optics, Photonics, magnetic semiconducting nanoparticles and thin films, magnetism, Spintronics, Materials engineering, Mathematical physics, Mechanical and magnetic stress, Microprocessors based systems, Monte Carlo simulation of radiation detectors, Semiconductor devices, Nano- and bulk-material science, Nanostructured magnetic materials, Magnetic thin films and multilayers, Multiferroics, Nanotechnology, Nonlinear dynamics, Nonlinear instabilities, Nuclear condensed matter physics, Nuclear structure, Double Beta decay and Neutrino physics, Optoelectronics, Organic electronics, Particle and cluster emission in fission and fusion-fission, Physics of semiconductor crystals and thin films, Quantum many-body theory, Radiation measurement techniques, Radiation sensors and dosimetry, Renewable energy sources, Semiconductors, Nanostructures, Solid state ionics, Thermoelectricity, Web based services, Engineering and characterization of materials using ion beams, String theory, Superconductivity.

**Centre for Educational Technology:** Under National Programme on Technology Enhanced Learning, CET, IIT Kharagpur has already developed 186 courses (7,440 hours of video courses) as a part of NPTEL phase I & II which are available in the LAN for internal feedback. Development of suitable pedagogical methods for various classes, intellectual calibers and research in e-learning is underway. 90 courses have been completed in the pilot phase. These courses consist of detailed curriculum documents for each course with instructional objectives, assessment and references to learning resource materials. Creation of Integrated Development Environment (IDE) for generation of pronunciation lexicon for Indian languages (PL-IL) in W3C Pronunciation Lexicon Standard (PLS) and example lexicon in Hindi and Bangla languages have been initiated.
Centre for Oceans, Rivers, Atmosphere and Land Sciences: Areas of study include Ocean modeling for Bay of Bengal, Indian Ocean and North Indian Ocean, Observation and modeling of thunderstorm, Modeling and prediction of tropical cyclone, Study of forest biomass and carbon sequestration, Monsoon meteorology, Air pollution study, Observations and modeling of land surface processes, Mesoscale and land surface data assimilation, Cloud microphysics, Cryospheric studies, Satellite oceanography.

Cryogenic Engineering Centre: The Centre carries out a number of activities including teaching at UG and PG levels, sponsored research and consultancy on various areas, focus on Continuing Education through training engineers from industries, faculty from academic institutions, and scientists from R&D organisations in specialised areas like Cryogenic Engineering, Air separation, Vacuum technology etc.

Materials Science Centre: Research focus includes Novel polymers, ceramics and semiconductor materials, Polymer modification, Synthesis of new polymers for application as electronic materials, Membranes for gas separation, Nano-clay and carbon nano-tube reinforced composites for automobiles and other high performance specialty applications, Welding thermoplastics, Recycling waste polymers and direct fluorination of polymers, Synthesis of nano-crystalline shape memory materials for biomedical applications, Nano-fluids, nano-ceramics for drug delivery, nano-structured oxides for ceramic gas sensor and cathode materials for lithium rechargeable batteries, Ferroic and multiferroic thin/thick films, sensors magnetic and magnetocaloric materials, Novel inorganic and organic semiconductor materials are being synthesized and characterized for various electronic and optoelectronic applications, MOCVD growth of InGaP epitaxial layers as well as quantum dots are also being carried out for various applications such as solar cell, etc., Synthesis and characterization of wide band gap materials like SiC, ZnO and nitride semiconductors and nano materials for device applications, Multiwall carbon nanotubes are also being synthesized by CVD on silicon substrates.

Reliability Engineering Centre: The Centre conducts research in Virtual Lab (under construction) on fault diagnosis of rotary systems useful for virtually creating certain faults in rotating systems and then diagnose the fault and its severity, Remote monitoring system (under development) for fault diagnosis of industrial system which can be used for e-maintenance. Other activities include organizing short term courses on latest topics of Reliability Engineering for officers and engineers of the Industry, Defense Organizations and R&D Establishments, Safety and reliability studies of nuclear power plants and missile systems are other activities.

Rubber Technology Centre: The focus areas of research for the Centre are Polymer composites and nanocomposites, Chemical modification of rubbers, Thermoplastic elastomers based on novel blends and alloys, Recycling of rubber waste, Ionomers, Conductive rubber composites for electrical and electronics application, Electron beam modification of polymers, Rheology and processability of rubber compounds and polymer blends, Polymer foam and microcellular rubber composite for various critical and industrial applications, Development of rubber blends and composites for different industrial application like cable, oil seal, tank track pad, vibration isolators, high voltage insulators, Development of adhesives and coatings, Development of biodegradable polymer and recycling of rubber and polymer, Controlled radical polymerization, Development of polymers for biomedical application.

Rural Development Centre: Current focus includes Essential oil production technology, Fish feed production from non-conventional biological sources, Farm level technology for processing of agricultural products. Transfer of agricultural products processing technology, Organization of training and workshops on rural technology application.

Rajiv Gandhi School of Intellectual Property Law: Research is in areas such as Corporate legal affairs with special reference to corporate governance under the IICA, River basin management, Development of law and policy framework with special reference to Ganga, Creation of multimedia based courseware for E&IT students to be implemented by IIT Kharagpur, Plant metabolic pathway laboratory, Implementation of feature in the Indian Patent Office Search Platform-IPATS, GI registration and post registration measures of traditional handloom textiles from Orissa, Intellectual property education, research and public outreach programme, Legal and policy framework in renewable energy sector, Corporate governance in energy sector in India, etc.

Ranbir and Chitra Gupta School of Infrastructure Design and management: Planning, design, operation and management of highways, airport and seaport infrastructure, Planning, design, operation and management of water supply and waste management systems, Environmental impact assessment, Urban infrastructure planning and design, Facility programming and specialised building design, Building automation systems design, Building management systems, Regional infrastructure planning and construction, Planning, design, operation and management of thermal, hydel and nuclear power plants, Renewable power plants. Power generation, transmission and distribution, power system planning and reliability. Infrastructure project management infrastructure financing and infrastructure regulatory issues are the School’s key areas of research.

School of Information Technology: Research focus includes Development of architectures, protocols and algorithms for mobile ad-hoc networks, vehicular ad-hoc networks, wireless sensor networks and wireless mesh networks, smart grid communications, cloud computing, Enterprise-wide GIS database development and its policies and protocols, Development of user interfaces for the under privileged users such as language illiterate, physically disabled etc., Application of Information Communication Technology (ICT) for the mass such as multimodal interaction, multimodal text composition mechanism, user modeling, interface adaptation, personalization, Computational modeling to brain for informatics, cognitive behavior is also another active area of research. Characterization and incorporation of emotions in speech, speaker recognition system for handheld devices in varying background environments and development of Text-to-Speech (TTS) system for Indian languages. Penetrating testing, development of new algorithms for cryptography, their efficient and attack-resistant hardware implementation etc., Survivable information system architecture to tolerant with potential information warfare attacks.

School of Medical Science and Technology: The School conducts research in various areas including Development of micro-fluidic biochips/bio-MEMS for medical application, Laser speckle imaging of blood-flow in microcirculation, Development of statistical analyzer & disease pattern recognizer for Oral pre-cancer and cancer, Design of an intelligent diagnostic tool through the extraction of diagnostic rules for asthma, Proteomics and reproductive health, Vaccine preventable diseases in HIV infected children, Integrated macro and micro-imaging on various healing and non-healing wounds including oral and breast precancer and cancer for their early characterization through image processing and analysis, Physico-chemical characterization of natural wound healing agents for the development of wound dressing technology, Development of detailed database on respiratory rhythms for identifying their temporal and spatial characteristics in health and disease, Development of biodegradable scaffold for tissue engineering and wound research, In vitro screening of anti-diabetes molecules, Design of a three dimensional scaffold and drug
delivery system in arthritic hip joint, Signal transduction and cancer biomarker, Oxidative stress and infertility, Development of natural antioxidant nanoparticles, Proteomics and metabolomics in reproductive health, Neutraceuticals and herbal medicine.

School of water Resources: The School focuses on Surface and groundwater modeling of the lower Ganga basin between Farakka and Ganga Sagar, Land use and land cover dynamics study in Mahanadi river basin, Urban water supply and waste water management, Development of a pollutant transport model for meso-scale application.

Vinod Gupta School of management: Important areas of research for the School include Big data analytics including financial analytics, marketing analytics and HR analytics, Banking, Derivatives and risk management, Project management, Conducting management development programmes and in-house training programmes for various industries.

INFRASTRUCTURE DEVELOPMENT

A core component of any technological institute is its infrastructure. The Institute constantly upgrades its existing facility and keeps on adding new ones. Listed below are some recent additions.

Aerospace Engineering: ePIV System including hardware and FLOWEX Software for Particle Image Velocimetry System meant for Laboratory demonstrations in Aerodynamics Laboratory, DataTaker DT80 Logger with accessories, which is a general purpose data acquisition system with 5 channels for strain measurements, 3 DOF Gyro Workstation (QPID/QPIDe)-Quanser for Flight Mechanics and Control Laboratory, Pulsejet Nozzle AA 10000 JJAU-VI, Spraying Systems Co., for Propulsion Laboratory.

Agricultural and Food Engineering: Microprocessor controlled testing machine-5KN, Instron, USA.

Architecture and Regional Planning: Digital-cum-computerized Universal testing machine model MUTC-60 Capacity 600KL.

Biotechnology: Mercury/ Hydride system, Horizontal high pressure steam steriliser, Laminar flow, Sonicator and ultra sonicator, Filtration system, PH meter with electrode, Typhoon, Spectrophotometer, Ice flaker, Millipore water purification system, Incubator shaker, Akta Purifier UPC-10, CO₂ Incubator.

Chemical Engineering: Cluster computer, High speed parallel computing server, High speed camera, Stereo zoom microscope, Plasma source, Gas manifold purification system, Autolab, Ion Chromatograph.

Civil Engineering: Seismic piezocone, In situ testing vehicle, MASW system for shear wave velocity profiling, Resonant column for small strain dynamic testing system for soil, Digital direct shear apparatus for soil testing, Carry Eclipse Fluorescence Spectrophotometer, GC, Autolab potentiostat / Galvanostat, Online water quality analyzer, etc., Shaker table for earthquake simulation.

Geology and Geophysics: Two Stable Isotope Ratio Mass Spectrometers (IRMS), State of art MC-ICPMS Laboratory, Ground penetration radar system (GSSI SIR-3000) with multi- low frequency (16-80 MHz) and 2000 MHz Bistatic antennas for geo-exploration, Low level portable Gamma NaI (Tl) based gamma ray scintillation equipment.

Mathematics: Dell desktop computers - 60 units, Online UPS 30 KVA - 1 Unit, HP Heavy duty Photocopying machine -1 unit, HP Laserjet P3015 Printer -1 unit.
Mechanical Engineering: Micro bath, PHD Ultra I/W programmable syringe pump, ANSYS academic research software, Experimental module optical elasto-hydro-dynamics, CVC 10MR, Motorized pendulum impact test M/C, Plasma hand-held Gun, Zeiss stereo microscope, Micro hardness tester, Fiber coupled laser diode system, Friction stir welding machine, Portable TIG welding machine, Upgrade of rapid prototyping system, Micrometer, Climatic chamber.


Centre for Educational Technology: The video studios are being updated to HD (High definition) system and new sets of instruments like camera, switcher etc are being installed, Upgradation of M Tech software laboratory, Upgradation of project laboratory, Installation of new pedagogy server.

Materials Science Centre: Solar simulator system, Photoluminescence system, Differential scanning calorimetry, Thermogravimetric analyzer, Probe station, Thermal conductivity measurement system, Universal tensile testing machine, Internal- Mixer, PE Loop, Keithley 4200, Gas permeation apparatus.

Rajendra Mishra School of Engineering Entrepreneurship: Monte Carlo simulation software, Work stations with 2X Intel Xenon processor, Heavy duty scanner and printer added to faculty facilities.

Rubber Technology Centre: DSC/TGA, Optical microscopy, Goniometer, Magneto Rheometer, GPC, Dynamic light scattering analyzer, Electrochemical Workstation, Modulated DSC.

School of Water Resources: Double Ring Infiltrometer, and Automatic Raingauge.

Infrastructure Development in the Institute

As a part of the ongoing infrastructural development to cater to the needs of a growing student, faculty and staff population, the following projects have been taken up by Estate Civil Head Office. Major developments in the recent months are outlined below.

• Student accommodation: 390 rooms of B. R. Ambedkar Hall of Residence have been opened to boarders. Renovation of 118 capacity Girls’ Hostel in the old Kendriya Vidyalaya has been completed and 76 rooms have already been handed over to HMC.
• Nalanda Classroom Complex: 58 classrooms have been handed over and 30 classrooms have been completed for use.
• J. C. Ghosh Science Block and P. C Roy Laboratory Block: Floor slabs for both the Blocks up to 7th floor have been laid.
• A. J. C. Bose Laboratory Complex: Construction of extension building is being expedited and all laboratories have been handed over for use.
• New water supply project: 8.40 km of pipelines have been laid. Construction at river bed is going on.
• Development of children’s parks in Campus: Six children’s parks have been developed within the Campus.
• Expansion work in academic buildings: Expansion work in the departments of Industrial and Systems Engineering, Chemical Engineering, Mechanical Engineering and Computer Science & Engineering have been completed. Expansion works of Department of Architecture & Regional Planning, Materials Science Centre, SMST, NCC etc. are in good progress.
• Construction of A-type faculty apartments: RCC frameworks have been completed for two blocks. The first block with 28 apartments is scheduled to be completed in August, 2014 and the balance 28 flats will be handed over in December, 2014.
• Construction of Nivedita Hall of Residence: Work has been completed and students have moved in.

INTERNATIONAL RELATIONS

The Institute and the members of its faculty make active efforts in establishing relationships with universities abroad. Every year faculty members visit universities across the world on various academic programmes. These result in signing of Memoranda of Understanding with them. During the academic year 2013-14 agreements were signed by the Institute with:

• University of Tokyo, Japan
• National Chiao Tung University, Taiwan
• University of Dublin, Ireland

The Institute also had a number of visitors from international universities with whom possibilities of active collaborations were discussed. Some of these were, Rhein Waal University of Germany, Melbourne University, Wollongong University, Queensland University and Curtin University of Australia, Southampton University, Warwick University and University of Hull of UK.

Significant student interactions also took place with Warwick Manufacturing Group, University of Warwick, UK and Curtin University of Australia.

RELATION WITH NATIONAL ORGANISATIONS

The Institute maintains its relationship with a number of national organizations related to academic as well as professional matters. During the academic year 2013-14, the Institute has signed Memoranda of Understanding with the following national organizations.

• Confederation of Indian Industry, Eastern Region, Kolkata
• Tata Medical Centre, Kolkata
• Hindustan Aeronautics Limited
• Gujarat Mineral Development Corporation

SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY

The academic excellence of an educational institution stands on its research capability, where learning and innovation complement each other. IIT Kharagpur has been committed to developing and maintaining the highest standards in both fundamental research as well as applied research. The
A wide variety of engineering sciences at IIT Kharagpur provides a unique environment that fosters interdisciplinary research in areas of cutting-edge technology such as energy, nanotechnology, semiconductors, bioengineering, and computational sciences. The diversity of in-house expertise at IIT Kharagpur has also catalyzed the development of a healthy ecosystem for large-scale industrial collaborations in multidisciplinary areas such as automotive control software, railways research, steel technology, petroleum, and biofuels research, industrial robotics, and many more. IIT Kharagpur’s research programmes reach across the campus and beyond, linking together 19 departments, 16 academic centres and a large number of advanced R&D laboratories, stimulating the integration of inquiry, new knowledge, and education.

The year 2013-2014 has been a landmark for IIT Kharagpur in terms of its outreach towards ambitious science and technology missions of national importance. The new research portfolio includes the following missions:

1. **Food Sustainability**: This includes technology for food production, processing and distribution logistics. This mission brings together researchers from agricultural engineering, biotechnology, operations research and industrial engineering.

2. **Future of Cities**: Technology for the development and maintenance of our cities and future cities. This includes building technology, road and pavement technology, waste and hygiene management, traffic, age friendliness, and governance. This mission brings together researchers from Civil Engineering, Architecture and City Planning, Industrial Engineering, Computer Science, and Law School.

3. **Signals and Systems for Life Sciences**: Technology for leveraging biometric signal processing for analysis, prognostics, diagnostics and affordable healthcare. This mission brings together researchers from Electrical, Electronics and Telecommunication Engineering, School of Medical Science and Technology, Biochemical Engineering, Computer Science and Information Technology and practicing medical professionals.

4. **Artificial Intelligence for Societal Needs**: Technology for knowledge discovery and intelligent decision making for solving problems in the sectors of energy, climate, water, disaster management and traffic. This mission brings together researchers from Computer Science, Electrical and Energy Engineering, Environmental Sciences, Geology and Geophysics, Civil Engineering, Humanities and Social Sciences, and Architecture.

5. **SANDHI-Science-Heritage and Creative Economic Projects**: Technology for preservation, archival, development and scientific exploration of our heritage. This mission brings together researchers from Architecture, Humanities and Social Sciences, Geophysical Sciences, Computer and Information Sciences, Electrical Sciences, and Management.

6. **Centre for Robotics**: Technology for robotics, unmanned intelligent vehicles, intelligent exploration and surveillance, biomedical and nano-robotics. This mission brings together researchers from Mechanical Engineering, Mining Engineering, Electrical Sciences, Computer and Information Sciences, Material Science and Architecture.

7. **Centre for Microfluidics**: Technology based on micro-fluidics for mechanical, biomedical, chemical and semiconductor processes. This Centre brings together researchers from Mechanical and Chemical Engineering, Biomedical Engineering, Material Sciences, and, Computer and Electrical Sciences.

The above initiatives have leapfrogged the intake of research students at IIT Kharagpur and have created new exciting brands of research and career building. In yet another iconic step having historic ramifications towards promoting research excellence, the institute has launched several types of challenge grants for developing individual and collaborative research infrastructure in the Institute. Seed grants towards infrastructure development for departmental and collaborative research include:
• Setting up an advanced membrane separation facility in the Department of Chemical Engineering
• Setting up an interdepartmental bio-informatics research facility combining wet labs and computational facilities
• Development of a facility for design, development and testing of next generation telecom gears at the School of Telecommunications
• Setting up an automated servo-controlled direct shear-cum- triaxial testing machine with computer control system and power pack at the Department of Mining Engineering

New research endeavors seeded under the new challenge grants include the following:

• Plant on a chip
• Next-generation secured Internet of Things (IOT)
• Design, synthesis, and advanced applications of new polymers and polymer composites
• Studies on ultrafast processes for electronic, spintronic, magnonic and photonic applications

In addition to the above projects awarded to groups of researchers, 19 individual seed grants were awarded on a competitive basis to individual faculty members in various areas, and 4 high-value research grants were awarded on a competitive basis for inter-departmental collaborative research problems of strategic significance. In order to promote social awareness and for the greater benefit of the Institute and its neighborhood, 15 challenge grants were awarded for research and development leading to service to the society.

The total funding received by IIT Kharagpur in the last 5 years is more than 630 crore, through 1513 Research and Consultancy Projects. During the year 2013-2014 the Institute received from the Government, private and international funding agencies/ enterprises 193 research projects having a total value of Rs. 149.31 crore and 125 consultancy projects worth Rs. 12.83 crore aggregating a total of 318 projects worth Rs. 162.14 crore.

Some of the noteworthy research initiatives and collaborative research facilities created in the recent past in the Institute include:

• Centre for Railway Research
• P. K. Sinha Centre for Bio-energy
• Tea Engineering Research Centre
• Centre of Excellence in Information Assurance
• National Programme in Marine Hydrodynamics
• Vodafone-Essar-IIT Kharagpur Centre of Excellence in Telecommunications
• Rural Technology Action Group (RUTAG)
• Advanced VLSI Design Laboratory
• Intel Embedded Innovation Laboratory
• Synopsys CAD Laboratory

In the past year IIT Kharagpur has received a number of high-value and flagship projects from the government and the industry such as:

• Connectivity and role of inhibitory neurons in auditory perception
• Evaluation of the applicability of a dominant nuclear male sterility system in rice for hybrid seed production
• Measurement to Management (M2M): Improvised water use efficiency and agricultural productivity through experimental sensor networks
• Stope design and stability, production and paste backfilling
• Improving groundwater levels and quality through enhanced water use efficiency
• Development of remote educational centres in Eastern India
• Post disaster situation analysis and resource management using delay tolerant peer to peer wireless networks
• Indigenous design methodologies for elliptic curve cryptography on FPGAs
• Generation of insect resistant sweet sorghum plant
• Requirements for delivering RISUG pre-loaded syringes
• Clinical decision support system and self-learning tool for radiologists for lung CT using content based image retrieval
• Design and synthesis of coordination polymers and coordination induced gelating materials exploration of gas absorption
• Fundamental studies on the reduction kinetics, heat and mass transfer during reduction of iron ore coal composite pellets in rotary hearth furnace
• Asymmetric catalysis TOS/DOS of nitrogen hetero-cycles
• A study of the operation and control of a proposed voltage source converter based HVDC transmission highway with offshore wind power integration
• A study of hybrid controllers for transmission and high voltage distribution applications
• Generation and applications of photo addressed surface gaps.
• Industrial scale investigation for the fabrication of wear resistant ceramic tiles using coal ash
• Engineered silk matrices for optimization of in-vitro 3D tumor model
• Evaporative drying assisted meso-patterning under lateral confinement
• Tuning of metal and metal oxide nanostructures for super-hydrophobicity
• High resolution Bay of Bengal circulation using adjacent point source river discharge
• Exploration of microbial diversity and function in acid mine drainage and mine tailings
• Extensional rheometer for microscale samples
• Synthesis of Al-based bulk metallic glass composite with improved ductility via mechanical alloying and spark plasma sintering
• Study on mill tiling based composites as backfill material in uranium mines
• Improvement of energy recovery from waste water by dark fermentation followed by microbial fuel cells
• Development of membrane electrode based portable e-tongue device for rapid taste characterization of tea

The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the licensing and the transfer of technologies developed by researchers at IIT Kharagpur to the commercial sector. Till date, more than 400 patents have been filed and more than 120 have been granted and a total of 19 technologies have been transferred. This year, the IPR&IR Cell under SRIC carried out a special patent drive on the lines of the “100 Days 100 Patents” initiative of the previous year. The Institute faculty members, students and staff support and respond whole-heartedly to this activity leading to submission of more than 200 abstracts. More than 100 patent applications have been sent out to patent attorneys for the filing applications to patent office under this drive.

The Entrepreneur Cell under SRIC supports a variety of incubation programmes funded by the Government.
Various student activities are encouraged and supported through SRIC. Notable activities include the following:

- **TeamKart activity for design and implementation of single seat racing car:** Formula Student (FS) is Europe’s most established educational motorsport competition, run by the Institution of Mechanical Engineers. It seeks to challenge university students to conceive, design, build, cost, present and compete as a team with a small single-seat racing car in a series of static and dynamic competitions. Recently IIT Kharagpur team has participated in Silverstone track in UK.

- **RoboSoccer activity for design and implementation of a team of soccer playing robots:** The Federation of International Robo-soccer Association (FIRA) arranges the FIRA cup. The team from IIT Kharagpur participated in this competition last year under the MiroSot category, where participants need to devise artificial intelligence strategies, and develop sharp sensing and precise real-time control for the physical soccer-playing robots.

- **TeamAGV activity for design and implementation of autonomous ground vehicles:** The team has participated in the Intelligent Ground Vehicle Competition (IGVC).

- **TeamAUV activity for design and implementation of autonomous underwater vehicle:** The team participated in the 3rd National Students Autonomous Vehicle competition earlier this year.

In addition to the above, students are also involved in several areas of innovation such as the green policy initiative that aims to reduce the carbon footprint of the campus through technology advances.

**SCIENCE AND TECHNOLOGY ENTREPRENEURS’ PARK, IIT KHARAGPUR**

Science and Technology Entrepreneur’s Park, IIT Kharagpur, the core of IIT Kharagpur entrepreneurship ecosystem, is dedicated to extend every possible support for promotion and development of innovation and entrepreneurship in this country. Since its inception over 26 years ago, STEP has been engaged in various kind of activities to enhance the economic condition of this part of the country through innovation and enterprise creation. It has gradually transformed itself into a sustaining innovation and entrepreneurship ecosystem as well as enterprise creation platform. It is the most active innovation and incubation activity hub within the entire IIT system. STEP provides leading-edge financial, managerial, technical, legal and expert mentoring support to innovators and entrepreneurs in and around Eastern India. In association with various departments of state and central government and nodal agencies, it facilitates various kinds of financial support, i.e., financial grants and seed loan facilities for product development and enterprise creation. STEP, IIT Kharagpur, is at present headed by Prof. Indranil Sen Gupta of the Department of Computer Science and Engineering. STEP has achieved a great deal of success in the field of entrepreneurship and incubation in the last one year. A number of new incubators have moved into the scene due to immense infrastructural growth. STEP now offers 4,500 sq. ft of office space at its Gopali Campus which is now in use and proposes to create a Science Park at Gopali Campus for entrepreneurs who wish to venture into STEP. STEP Campus at IIT Kharagpur has also enriched itself by creating twenty new cubicles for entrepreneurs to incubate. Since June, 2013 a total of 18 new companies have been incubated at STEP. At present, 86 companies are being incubated in various domains such as information and communication technology, health care, manufacturing, agriculture, electrical, electronics, chemical, waste management, renewable energy domain.

STEP has always been an immense prospect for Start-up companies as it provides mentoring support to Start-up companies by tagging them with IIT professors. It also provides technical knowhow and technology transfer facilities to its entrepreneurs. STEP IIT Kharagpur has facilitated various kinds of financial grants and seed support to innovators and entrepreneurs. Since June 2013, around Rs. 57 lakh grant money to 4 innovators have been approved for funding through Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM) supported by DSIR and Rs 11.25 lakh grant money to 2 microenterprises by the Department of MSME, Govt. of India for scale up and also to facilitate ample
funds for technology transfer and commercialization through TIETS funding. Since June 2013, STEP and TIETS have disbursed around Rs 49 lakh of seed support to 4 startups like M/s Suncraft Energy Pvt. Ltd., M/s Auro Robotics Pvt. Ltd., and M/s Red Button Software Labs Pvt. Ltd.

A high-tech VLSI product design and testing lab is available for the incubatees which fulfills the fast prototyping, design and test measurement requirements of Techno Entrepreneurs.

STEP, IIT Kharagpur has organised a number of programmes, such as TIFAC-SIDBI Technology Innovation Programme (SRIJAN) on 10th January, 2014; The Global Entrepreneurship Summit (GES) on 10th January 2014; TIETS-TIDE–Screening Committee Meeting & TDB Screening Committee Meeting on February 7, 2014; STEP Entrepreneurs’ Meet & PRISM Awareness Camp on March 29, 2014. Prof. Paul Lillrank (Aalto University, Finland) visited STEP, IIT Kharagpur in January, 2013 and delivered lectures on “Quality Management for Entrepreneurial ventures”.

CONFERENCES, SEMINARS, SYMPOSIA AND WORKSHOPS

Department of Agriculture and Food Engineering:

- CII-IIT Certified Food Professional Course on Food Safety & Quality Management (2 weeks)
- Farmers Field Day, Bishnupur, Bankura (September 25, 2013)
- Food Processing & Preservation – Food Grains / Fruit-Vegetable Processing (January 20-22, 2014)
- Greenhouse Management and Plasticulture in Horticulture (September 30-October 1, 2013)
- On-site waste water treatment and management (June 31 to July 11, 2014)
- Plasticulture Applications in Horticultural crops (April 25-26, 2013)
- Precision Farming in Horticulture (December 16-17, 2013)
- Protected Cultivation Technology (October 22-23, 2013)
- Scope of Greenhouse and Plasticulture in Horticulture (January 16-17, 2014)

Cryogenic Engineering Centre:

- Cryogenic air separation-2014 (March 22-27, 2014)
- Cryogenic Technology: Materials, Processes & equipment (February 17-21, 2014)
- Prevention of fire in oxygen-enriched systems-2014 (March 28-29, 2014)
- Two week course on Vacuum Technology and Process Applications (November 18-27, 2013)

Department of Civil Engineering:

- Finite Element Analysis for RDSO Engineers (5 days)
- In-service Training Programme on Hydrology and Water Resources Engineering (April 25-27, 2013)

Department of Computer Science and Engineering:

- Computational Biology, Bioinformatics & their Application to Healthcare (October 28 - November 1, 2013)
- Computational Systems Biology (March 31, 2014 - April 04, 2014)
- Data Mining and Image Analytics for Medical Informatics (April 8-20, 2013)

Advanced Technology Centre:

- Advanced DSP Design Techniques (June 27 - July 1, 2013)
• Electromagnetic Environmental Effects Management (E3) (Feb 17 - 27, 2014)
• One week Coordinator workshop on Fluid Mechanics (March 11 - March 15, 2014)
• One week Coordinator workshop on Signals and Systems (September 30 - October 4, 2013)
• One week Coordinators Workshop on Analog Electronics (April 1-5, 2013)
• Short term course on computation systems biology (March 31 - April 4, 2014)
• Short Term Course on Telecom Networks with State-of-the-art Hands-on Experiments (July 8-13, 2013)
• Two Week ISTE Main workshop on Analog Electronics (June 4-14, 2013)
• Two Week ISTE Main workshop on Signals and Systems (January 2-January 12, 2014)
• VLSI Signal Processing (December 3-7, 2013)

Department of Humanities and Social Sciences:

• Emotional Intelligence and Organizational Excellence (June 5-7, 2013)
• Training for Trainers (18-20 September 2013)

Department of Industrial and Systems Engineering

• Executive Training Programme on Project Management (May 11-14, 2013)
• One-Day Interaction Meet on ‘UKIERI-sponsored Project on Environmental Performance of Industries (August 2, 2013)
• Short-term course on Service Science (July 08-12, 2013)
• Three-Day Duration Short-Term Course on ‘Continuous Improvement and Process Excellence (LMW Executives at LMW Limited, Coimbatore)
• Workshop on ‘Current Industrial Problems and Workplace Stress Management (November 1, 2013)

Department of Mechanical Engineering:

• Power Plant Engineering for CESC Engineers (one week)

Department of Mining Engineering:

• Land Acquisition and Environmental Clearance of Projects (5 day)
• Risk Assessment and Accident Prevention in Mines (November 5-8)

Materials Science Centre:

• Materials Engineering & Industrial Applications: Hybrid Nanocomposites for Photonics, Energy & Electronic Devices (November 11-22, 2013)
• Materials for Advanced Applications (Sept 2-13, 2013)
• Materials for Advanced Applications (2 weeks)

Department of Ocean Engineering & Naval Architecture:

• In-house Training Programme on Practical Ship-building (Mar. 03-14, 2014)
• Integrated Coastal Zone Management with Gujarat perspective (20-27 February, 2014)

Reliability Engineering Centre:
• Reliability Modeling of Sensors Network System for Critical Applications IV (December 09-14, 2013)

Vinod Gupta School of Management:
• 6-day Supervisory Development Programme for L&T Construction (6 Days)
• MDP for E2 & E3 Level Executives of UCIL (Two days)
• Supervisory Training workshop for L & T (One week)

Rajendra Mishra School of Engineering Entrepreneurship:
• Big data analytics (Two weeks, Summer 2014)

CONTINUING EDUCATION PROGRAMME

The Continuing Education Programme is a significant academic activity of the Institute. Over the years, it has diversified in terms of coverage of disciplines, duration and level of the programmes and industries served. The activities include providing continuing education and training to professionals from industries, large and small, providing opportunities to teachers of Engineering Colleges to update their knowledge through short term courses and for pursuing MTech and PhD programme under QIP. Also, CEP promotes teaching-learning resource materials in the form of printed texts, CDs and computer aided instruction packages etc.

During 2013-2014 the Continuing Education Centre organised seven QIP short term courses with 210 participants while the number of self-sponsored short term courses conducted was 60 with as many as 1600 participants. Also, in this period 18 conferences/workshops were conducted with 800 participants. The centre also coordinates 3 year MTech programmes for AICTE approved college teachers and industry professionals in which, during the past four years,

190 college teachers and professionals joined the departments of Electrical Engineering, Electronics and Electrical Communication, and Information and Communication Technology. The three year executive MBA programme organised by the unit had 25 and 4 students in its Kolkata and Bhubaneswar centres respectively. During this year seven QIP scholars were awarded PhD degrees.

Under the scheme for empowerment of students and teachers through synchronous and asynchronous instruction (EIT) under NMEICT, MHRD, more than 600 faculty coordinators and 24000 engineering college teachers were trained.

Indian Institute of Technology Kharagpur started its first International Summer and winter Term (ISwT) in May 2014, where the national and international participants will get an opportunity to seek knowledge and experience from reputed International faculty through intensive study of subjects and personal interactions. Nineteen subjects were offered during the summer term (May-July) and 10 subjects will be offered during the winter term (December). These subjects are designed around current and multidisciplinary themes of Science, Engineering, Management and Law. The duration for each subject is of 2 weeks or 10 working days with a judicious blend of lectures and tutorials/practicals per day.
Recent facilities of the Centre include Video-Conferencing Studios for use as on-line classrooms at Kharagpur (5), Kolkata (3), Bhubaneswar (3) and Raipur (2) with seating capacity of 280, 140, 130 and 100 respectively.

HIGHLIGHTS OF ACHIEVEMENT DURING THE PAST YEAR

Some of the outstanding achievements over the past year are as follows:

- **Initiation of Schools and Centres:** Four new Schools which were initiated during the past year include (a) School of Energy Science; (b) School of Environmental Science and Engineering; (c) School of Nanoscience and Technology, and (d) School of Biosciences.
- **Creation of Dr. B. C. Roy Institute of Medical Science and Research:** This institute is going to have: 1) 750 Bed Super-speciality Hospital, 2) Technology-enabled Medicine Teaching Clinic, 3) Bio-medical Innovation Centre, 4) Healthcare Outreach Centre and 5) Paramedic Training College.
- **Research initiatives and collaborative research programmes started:** These initiatives and advanced research laboratories include the following: P. K. Sinha Centre for Bio-Energy, Tea Engineering Research Centre, Centre of Excellence in Information Assurance, Research Laboratory in Electronics Controls and Software, Nano & Microfluidics Research Laboratory, Communication Empowerment Laboratory, Micro-Electronics & MEMS Laboratory etc.
- **Innovative and socially relevant funded research activities:** The Institute is funding seventeen innovative and socially relevant research projects in the areas of railway research, nanosensors, deep excavation, polymeric composite membranes, microbial fuel cells, expert system for blast furnaces, catalytic hydrolysis, sustainable waste water treatment, fast fixed point algorithms etc.
- **International Summer and Winter Term:** Indian Institute of Technology Kharagpur started its first international summer and winter term (ISWT) where participants got an opportunity to seek knowledge and experience from reputed international faculty through intensive study of subjects and personal interactions.
- **Alumni grant:** Shri. Gopla Rajagarhia International Programmes has been initiated under which Rs. 10 crore has been pledged of which Rs. 3.6 crore has been received so far.

LAURELS AND DISTINCTIONS AWARDED TO FACULTY

Every year, the teachers and students of IIT Kharagpur receive a number of awards and honours, laurels and distinctions in recognition to their excellence. This year, too, faculty members have been honoured with prestigious awards and elected as Fellows of the National Science and Engineering Academies. The students have also been rewarded with various scholarships and their contributions have been recognized for their stellar performance in various conferences, symposia etc. The details of the achievements follow:

**Shanti Swarup Bhatnagar Award**

Dr. Suman Chakraborty (ME) was honoured with the prestigious Shanti Swarup Bhatnagar Award for 2013, by the Council for Scientific and Industrial Research (CSIR), New Delhi, recognizing his achievement in the field of Engineering Sciences

**Fellowships**

Dr. Kamlesh Narayan Tiwari (Ag&FE): Elected as a Fellow of the the National Academy of Sciences, India, Allahabad. He is also elected as a Fellow of the Indian Society of Agricultural Engineers, New Delhi.
Dr. Sudhindra Nath Panda (Ag&FE): Elected as a Fellow of the National Academy of Agricultural Sciences, New Delhi

Dr. Pratim Kumar Chattaraj (CY) : Elected as a Fellow of The World Academy of Sciences (TWAS), Trieste, Italy in recognition to his outstanding contributions on Chemical Sciences

Dr. Partha Pratim Chakrabarti (CSE) and Director: Awarded the J. C. Bose National Fellowship, by the Ministry of Science and Technology, Government of India, in recognition of his outstanding performance and contribution to Science

Dr. Sankar Kumar Nath (G&G): Elected as a Fellow of the Indian Geophysical Union (IGU), Hyderabad

Dr. Subhasish Tripathy (G&G) (currently on lien to the School of Earth, Ocean and Climate Sciences, IIT Bhubaneswar): Elected as a Fellow of The National Academy of Sciences, India, Allahabad. Also elected as a Fellow of the Indian Geophysical Union, Hyderabad

Dr. Prasanta Kumar Das (ME): Elected as a Fellow of The National Academy of Sciences, India, Allahabad

Dr. V. N. Achutha Naikan (REC): Elected as a Fellow by The Institution of Engineers (India), Kolkata

Dr. Mahitosh Mandal (SMST): Elected as a Fellow of the West Bengal Academy of Science and Technology for his notable contributions in the field of Cancer Biology

Awards

Dr. Madan Kumar Jha (Ag&FE): Awarded an “Outstanding Book Award” for the year 2013, by the Indian Society of Agricultural Engineers, New Delhi, for his book entitled “Hydrologic Time Series Analysis : Theory and Practice”, published by Springer

Dr. Rintu Banerjee (Ag&FE): Selected as one of the most inspiring Women Engineers/ Scientists for the year 2014, by the Engineering Watch. Also selected for the “Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences-2013” by Indian Council of Agricultural Research, New Delhi

Dr. Satyahari Dey (BT): Received the Dr. Jagadish Chandra Bose Hindi Granth Lekhan Puraskar, awarded by the Department Biotechnology, Government of India, New Delhi, for Biotechnology Glossary in Hindi, published by Dunwoody Press, USA. Also elected as the Deputy Secretary General in Asian Federation of Biotechnology

Dr. Sirshendu De (ChE): Received the NASI-Reliance Industries Platinum Jubilee Award (2013), by The National Academy of Sciences India, Allahabad, for his contribution in application oriented innovations

Dr. Rabibrata Mukherjee (ChE): Selected for the prestigious MRSI Medal for 2014 by the Materials Research Society of India, Bangalore

Dr. Amit Basak (CY): Selected for the Chemical Research Society of India (CRSI) silver medal

Dr. Swagata Dasgupta (CY): Selected as one of the most inspiring Women Engineers/ Scientists for the year 2014, by the Engineering Watch
Dr. Modhu Sudan Maji (CY): Selected for the Innovation in Science Pursuit for Inspired Research (INSPIRE) Faculty Award by the Ministry of Science and Technology, Government of India, New Delhi

Dr. Subhasish Dey (CE): Being within the top 100 authors worldwide in Civil Engineering (75th position)

Dr. Animesh Mukherjee (CSE): Selected as ICTP Associate (Simons Associate), supported by funds from the Simons Foundation, Italy. Also selected for the INSA Young Scientist Medal 2014 awarded by the Indian National Science Academy, New Delhi, for his significant contributions in language dynamics in cognition and perception

Dr. Arindam Basu (G&G): Selected for the “GSI Sesquicentennial Commemorative Award” for the year 2013 in the field of Engineering Geology by the Council of the Geological Society of India, Bangalore

Dr. Rabindra Kumar Pradhan (HSS): Selected for the “Best Teacher Award-2013”, by the Indian Society for Training and Development (ISTD), New Delhi, for his outstanding contribution in the field of HR Training and Development

Dr. Gourishankar S. Hiremath (HSS): Selected for Prof. M. J. Manohar Rao Young Research Award for the year 2013 by The Indian Econometric Society

Dr. Manoj Kumar Tiwari (ISE): Considered as the Number One author from among the top hundred authors in the *International Journal of Production Research*, published by Taylor and Francis, UK

Dr. Jagadis Chandra Misra (MA) Former Professor: Selected for the Outstanding Teachers Award-2013 by the Indian National Academy of Engineering, New Delhi

Dr. Souvik Bhattacharyya (ME): Selected for the Outstanding Teachers Award-2013 by the Indian National Academy of Engineering, New Delhi

Dr. Prasanta Kumar Das (ME): Accredited as recognized expert in the field of Advanced Heat Exchangers (Multistream), by the European Process Intensification Centre (EUROPIC)

Dr. Suman Chakraborty (ME): Selected as INAE Chair Professor for a period of two years (from June 01, 2014 to May 30, 2016), by the Indian National Academy of Engineering, New Delhi

Dr. Indranil Manna (MME) (currently on lien as Director, Indian Institute of Technology Kanpur): Awarded with the TWAS Prize 2013, by The World Academy of Sciences (TWAS), Trieste, Italy, in recognition to his outstanding contributions in establishing microstructure-property correlations to nanometric materials

Dr. Jyotsna Dutta Majumdar (MME): Recipient of the “Friedrich Wilhelm Bessel Award” by the Alexander von Humboldt Foundation, in recognition of her past accomplishments in research and teaching

Dr. Ing. M. A. Ramlu (MinE) Former Professor: Recipient of the MEAI - Lifetime Achievement Award 2011, presented by the Mining Engineers’ Association of India, for his outstanding contribution to Mining Engineering Education and the Industry, besides significant contribution to Mining Engineers’ Association of India during his lifetime

Dr. Subir Kr. Mukhopadhyay (MinE): Selected for the Distinguished Alumnus Award-2014, by the Department of Mining Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi
Dr. Khanindra Pathak (MinE): Selected for the “Life Time Achievement Award”, by the Indian Mining and Engineering Journal, for his life time contribution in the field of Mining Engineering Education, Research and Innovation

Dr. Debarati Sen (GSSST): Honoured with the “IETE-N V Gadadhar Memorial Award (2013)“, awarded by the Institution of Electronics and Telecommunication Engineers, New Delhi, in recognition of her outstanding contributions in design and development of a bandwidth and energy efficient sub-band based radio technology for wideband communication

Dr. Mahitosh Mandal (SMST): Awarded Shuva Mukherjee Memorial Award (2012), by The Physiological Society of India, Kolkata, in recognition to his outstanding contributions in Cancer Research

Dr. Chandan Chakraborty (SMST): Selected for the DAE-Young Scientist Research Award 2013, by the Department of Atomic Energy, Government of India

**Membership of Editorial Boards**

Dr. Tanmaya Pathak (CY): Invited to join the Editorial Board of Biochemical Compounds, an open access journal, published by Herbert Publications Limited, UK

Dr. Sudhir Kumar Barai (CE): Invited to serve as an Associate Editor on the Editorial Board of Sadhana, proceedings of Indian Academy of Sciences, Bangalore, in engineering sciences

Dr. Anjali Pal (CE): Considered as a Regional Editor of the journal Recent Patents on Nanotechnology, published by Bentham Science Publishers

Dr. Rajib Maity (CE): Invited to serve as an Associate Editor on the Editorial Board of the ISH Journal of Hydraulic Engineering, published by Taylor and Francis. Also invited to the Editorial Board as an Associate Editor, for the international journal Journal of Earth System Science, published by Springer (Indian Academy of Sciences, Bangalore)

Dr. Partha Pratim Das (CSE): Invited by the Institution of Engineers (India), Kolkata, to be the Editor-in-Chief of the Journal of the Institution of Engineers (India) : Series B

Dr. Abhijit Mukherjee (G&G): Invited to be an Associate Editor for the journal Frontiers in Environmental Science : Water Resources Quality, published jointly by Nature Publishing Group and Frontiers, Switzerland

Dr. Soumitra Paul (ME): Invited to be a Member of the Editorial Board of Sadhana, published by Springer, on behalf of Indian Academy of Sciences. Also invited to serve as an Associate Editor on the Editorial Board of Sadhana, proceedings of Indian Academy of Sciences, Bangalore, in engineering sciences

Dr. Suman Chakraborty (ME): Invited to serve as an Editorial Board Member for Scientific Reports, a journal from Nature Publishing Group

Dr. Dilip Kumar Pratihar (ME): Appointed as an Associate Editor of International Journal of Computer Information Systems and Industrial Management Applications (IJCISIM), published by Machine Intelligence Research (MIR) Lab

Dr. Tapas Kr. Bandyopadhyay (MME): Invited to serve as an Editorial Board Member of the journal Recent Patents on Nanotechnology, published by Bentham Science Publishers

Dr. Samit Kumar Ray (PH): Invited to serve on the Associate Editorial Board of Frontiers in Optics and Minerals, a section of Frontiers in Materials

Dr. Amreesh Chandra (PH): Invited to serve as an Editorial Board Member for Scientific Reports, a journal from Nature Publishing Group, the publishers of Nature

Dr. Subhasish Basu Majumder (MS): Invited to serve as an Editorial Board Member for Scientific Reports, a journal published by the Nature Publishing Group

ACHIEVEMENTS BY THE STUDENTS

Laurels

Dr. Pijus Kundu, Ex-Research Student 08AT9703: Innovative Student Projects Award 2013 by ITER, Siksha ‘O’ Anusandhan University, Bhubaneswar

Dr. Chandan Karfa, Ex-Research Student, 08CS9702: Innovative Student Projects Award 2013 by ITER, Siksha ‘O’ Anusandhan University, Bhubaneswar

Ms. Shahab Fatima, Research Student, 10RE90R02: International Student Travel Award by 20th International Congress on Sound and Vibration (ICSV20), Bangkok

Ms. Sangita Singh, Research Student, 11RT91P01: Best Presentation (Oral) Award at International Elastomer Conference by Rubber Division of American Chemical Society (ACS), Cleveland, Ohio, US

Shri Divij Sharma, MBA Student Vinod Gupta School of Management, 12BM60046: First prize in TCS Smart Manager Case Study Contest conducted by Tata Consultancy Services across B-schools in India & abroad

Shri Sourav Kumar Bagchi, Research Student, 11AG92P04: Best Poster Award by the National Conference on “Frontiers in Algology and Algal Biotechnology”, Visva-Bharati, Santiniketan

Shri. Rupam Biswas, Research Student, 11BT92F07: ‘Professor Kailasam Venkatesan Award’ by the Indian Crystallographic Association for the Best Oral Presentation, 2013

Ms. Anuja Das, MTech student: Late Lakshmi Nandakumar Award of IICHE for Best Paper Presentation at SCHEMCON-2013

Shri Partha Laskar, Research Scholar, 10CY90P01: Best Poster Award at the 5th Asian Conference on Colloid and Interface Science organised by Asian Society for Colloid and Surface Science at North Bengal University.

Ms. Nagalaxmi, MTech student, First Prize for Oral Presentation in the 67th Annual Technical Meeting of the Indian Institute of Metals

Shri. Manab Mallik, Research Scholar: Second Prize for Oral Presentation in the 67th Annual Technical Meeting of the Indian Institute of Metals

Ms. Nitika Gupta, Research Scholar: Young Scientist Award for the Best Technical Presentation by the Central University of Odisha, Koraput.
Shri Bharat Reddy Kunduru, Mr. Arun Kumar Kota and Mr. Bhargava Gorthy, MBA Students, Vinod Gupta School of Management: First Prize in Finance Flagship Event ‘Prometheus’ of Ensemble 13 - The annual international management conclave of XLRI, Jamshedpur

IIT Kharagpur team comprising Kausik Basak, Debdoott Sheet, Phani Krihna Karri of SMST

And Tomaghna Ojha of SIT won GE Edison Challenge 2013 with cash prize of Rs. 10 Lakhs

Shri Rajiv Chandra Rajak, Research Scholar, 12AT91F03: Best Poster Award at Asian Congress on Biotechnology-2013 at India Habitat Centre, New Delhi

Shri Srikanth Madala, Research Scholar, 11CL91R02: ‘Gold Medal for the Best Poster Presentation at the International Tropical Meteorology Symposium (INTROMET-2014)

Shri Abhishek Dwivedi, MHRM student: Ranked 1st in the City Round and also in the State Round in the Campus2Corporate Contest, 2013

Ms. Priyanka Dasgupta, MHRM student: Ranked 2nd in the City Round and also in the State Round in the Campus2Corporate Contest, 2013

Shri. S. Abhilash (UG 1st Yr.), Shri Subham Vidyant (UG 1st Yr.), Ms. Priyanka Dasgupta (MHRM 1st Yr.), Shri Chetan Pandey (MHRM 1st Yr.): Won prizes for their exemplary entries in the All India Essay Event organised by the Shri Ram Chandra Mission

Shri Gaurav Jain, BTech student, 12MT10013: Governor’s Medal at Governor’s House for exceptional achievements and contribution as Cadet of 3 Bengal Tech Air Squadron NCC

Shri Narendra Gogurla, Research Scholar, 12PH90J01: Nanoscale Poster Prize, awarded by Royal Society of Chemistry for paper presentation at the International Conference on Nano Science and Technology, Chandigarh


Shri Bikas Kumar Arya, Ex-Research Scholar, SMST, 09MM6003: Won “Robert Austrian Award” in Pneumococcal Vaccinology carrying a grant of $25,000

Shri Ranabir Dey, Research Scholar, 10ME90R24: Gandhian Young Technological Innovation Award/Appreciation 2014

Shri Shantimoy Kar, Research Scholar, 12AT91F01: Gandhian Young Technological Innovation Award/Appreciation 2014

Shri Pijus Kundu, Ex-Research Scholar: Gandhian Young Technological Innovation (GYTI) Awards - 2014 with Technological Edge(TE) Award

Ms. Raka Mukherjee, Research Scholar, 12CH91R05: Gandhian Young Technological Innovation Award/ Appreciation 2014

Shri Arijit Sarkar, MTech student, 12PH62R05: Received 2nd best SPIE Student award of US$200 at International Conference on Optics and Optoelectronics (ICOl-2014) , Dehradun
Shri Narendar G., Research Scholar, 12PH90J01: Awarded the “Excellent Paper Presentation Award” at International Conference on Optics and Optoelectronics (ICOL 2014), Dheradun

Shri Vishwatosh Mishra, Research Scholar, 12PH92F05: Awarded the “Excellent Paper Presentation Award” at International Conference on Optics and Optoelectronics (ICOL 2014), Dheradun

Shri Rao Rutwik Kishan, Shri Kamat Vighnesh Satish and Shri Bibhunanda Mishra, 2nd Year LLB students Rajiv Gandhi School of Intellectual Property Law: Runner-up position in the prestigious Oxford University India Moot Court Competition (2013 – 14) organised by Oxford, Delhi

Shri Amritanshu Anand, Department of Geology & Geophysics and Shri Anshul Singhle, Department Computer Science & Engineering: Won the Mercury Fund Investment Prize. The team also received several financial commitments totaling over $1 million at the Rice Business Plan Competition (RPBC)

 Scholarships
Shri Soumen Kar, Research Scholar, 10CR90R02: IEEE CSC Student Fellowship award
Dr. Bikas Kumar Arya, Research Scholar, 12MM91P03: Fulbright Scholarship 2014
Ms Riya Bubna, BTech student, 13CS10041: Aditya Birla Scholarship
Shri Santanu Pradhan, Research Scholar, 10PH90R05: Bhaskara Advanced Solar Energy (BASE) Fellowship
Ms. Sneha Rani, Research Scholar, 11M91R01: Selected for IEAGHG International Interdisciplinary CCS Summer School, University of Texas at Austin, TX, USA
Ms. S. Fatima, Research Scholar, 10RE90R02: Schlumberger Foundation Faculty for the Future Scholarship for the year 2014

 HEALTH CARE

B. C. Roy Technology Hospital (BCRTH)

IIT Kharagpur provides primary health care and round the clock emergency services to the campus community through B C Roy Technology Hospital, which is a 32 bedded (including ICU and Isolation Wards) hospital located strategically within the campus. Approximately 7000 patients attend the Out Patient Department at B C Roy Technology Hospital every month. Constant efforts are on to upgrade and improve the existing facilities at the B. C. Roy Hospital. Health Care remains a top priority in the activities of the Institute. The hospital and its services are fully utilised by students and other institute beneficiaries. A round the clock pharmacy has been made available within the hospital. Medical Insurance coverage through the Institute is available for the students.

B C Roy Technology Hospital has a Pathology and Microbiology lab, and a Radiology unit. It has many modern diagnostic equipment such as Computerized Radiology Unit, Ultrasonography with Colour Doppler, Fully Automatic Biochemical analyzer, Telemedicine, Video Slit Lamp and Auto-Refractometer. In addition to General OPD service, special clinics are provided in General Medicine, Cardiology, Paediatrics, Chest, Skin, Psychiatry, General Surgery, Obstetrics & Gynaecology, Orthopaedics, Eye, ENT and Dental by appointing visiting consultants in the various disciplines. Immunization clinics are operated with the help of Consultant in Public Health and Paediatrician.

A Hospital Management Committee, comprising of representatives from all stake holders of the Institute and headed by Professor- In-Charge, B C Roy Technology Hospital as the Chairperson,
meets regularly to overview the functioning of the hospital, listen to the grievances and suggest to the authority regarding all round development of the hospital and its services.

The following are some of the most recent major achievements at and by B C Roy Technology Hospital in 2013:

1. The procedure for referring patients to higher medical care centres is continuously examined and MOUs are drawn with suitable Corporate Hospitals in Kolkata, e.g. R N Tagore International Institute of Cardiac Sciences, Ruby General Hospital, Kothari Medical Centre. In 2013, visits to reputed Super specialty Hospitals in Kolkata were organised by B C Roy Technology Hospital for the campus community representatives. Subsequently, MOUs have been drawn between IIT Kharagpur and the recommended reputed Super specialty Hospitals in Kolkata, such as B M Birla Heart Research Centre, Medica Superspecialty, and Fortis Hospital.

2. A 120 kV Generator Set has been installed to ensure uninterrupted power supply to the B C Roy Technology Hospital.

3. The OPD Registration Counter at B C Roy Technology Hospital has been upgraded and relocated in the interest of better service to the community.

4. A new Operation Theater with all required equipments has been added to B C Roy Technology Hospital.

5. Air Conditioners have been installed in all the Indoor Wards to provide additional comfort to the patients.

6. A new USG Machine with Colour Doppler has been installed.

7. A proposal for installing a Bed Lift, to carry patients with the bed, was initiated and the work has started.

8. To improve the OPD service and to cater to the needs of the community, a number of visiting consultants in specialised fields such as Cardiology, General Surgery, Orthopedics, have been appointed. Advertisements for visiting consultants in other areas, such as Gynecology, have been sent out.

9. For community health care promotion, support from B C Roy Technology Hospital to NCC, NSS and other socially active units were extended for conducting Health Check up Camps and Blood Donation Camps in the Institute.

10. As part of Preventive Health Care initiative for campus community, B.C Roy Technology Hospital arranged special clinics, such as Bone Mineral Density Screening Clinic, Diabetes clinic.

11. As part of Public Health measures, regular immunization clinics have been organised with the help of Consultant in Public Health and Pediatrician.

12. Also, Halls of residence were regularly visited by a Public Health Consultant with special attention to cleanliness, and sanitation.

ALUMNI AFFAIRS

The alumni contribute significantly towards upholding the name of the Institute and the country. They also contribute substantially to the evolution of their Alma Mater. The Institute is thankful to its alumni for the bountiful support it receives from them. It strives to maintain a close bond and share
various current events and policies with alumni. The Office of the Dean, Alumni Affairs & International Relations (AA&IR), the Institutional Development (ID) Programme Team and the Students Alumni Cell strive to create a platform for organizing the alumni interactions, relations and activities such as branding and fundraising. Some of the activities undertaken during 2013-14 are given below.

**Interactions with National and Global Alumni:** The institute sent a delegation to the PAN IIT Meet at Houston, Texas, organised by the PAN IIT Alumni of USA. During and after the meet several interaction meetings with alumni took place at Houston, Washington DC and New York City. Back home meetings have been held between the Director and the Alumni chapters at Kolkata and also at Bangalore. Representatives of the Alumni Chapters from Delhi, Kolkata, Hyderabad, Chennai etc. also visited the institute during the Alumni Meet.

**Student-Alumni Regional Meets:** Regional Student-Alumni Chapter Meets were organised in Delhi in December 2013 and in Bangalore in June 2014 which witnessed excellent participation of students as well as alumni. These regional Chapter meets are conducted to foster student-alumni interaction and provide a gateway for the alumni community to connect to their Alma Mater.

**Annual Alumni Meet at IIT Kharagpur:** The 11th Annual Alumni Meet was organised during January 17 - 19, 2014 with high tempo both from the Institute and the visiting alumni. The special batches invited were those belonging to 1964, 1974 and 1989. This year saw a significant increase of about 50% in the number of visiting alumni. A total of 221 alumni including 52 family members were part of this reunion. The batches relived their golden days of college life with batch mates. They also experienced the growth of the Institute and interacted with present faculty members, students, and staff. The Students Alumni Cell received all round appreciation from the alumni for their excellent efforts and cordial behavior during the meet. Alumni ID cards were given away to several alumni.

**Foundation Day:** The 62nd Foundation Day was celebrated on August 18, 2013. The office coordinated the organization of the Foundation Day on behalf of the Institute. Mr. Amit Chatterjee of 1984 batch, General Manager at Microsoft India and a Distinguished Alumnus was the chief guest for the occasion. Faculty and staff members who completed 25 years of service were felicitated by the Director. The Nina Saxena Excellence in Technology Award was handed over to the recipients. Later that day, a debate, football competition and entertainment programme were organised by the students.

**Awards:** Like every year the Distinguished Alumnus Award is to be given away by the Institute to the alumni during the Annual Convocation 2014. Fourteen distinguished alumni have been selected for the award in the current year. The IIT Kharagpur Alumni Association USA has indicated that it wishes to recognize Faculty and Student Excellence at the institute through several new awards funded individually and collectively by the US alumni. The Institute is currently in the process of setting up the norms and criteria for these awards to be given away in the years to come.

**Guest Lectures:** Several alumni were invited for giving lectures this year: Mr. Arjun Malhotra (EC/1970), DSc (Honoris Causa) of the Institute shared the challenges in his early entrepreneurial endeavors. Being the Chairman of IIT KGP Vision 2020, Mr. Malhotra also briefed the audience about various aspects of the programme. Mr. Vinod Gupta (AG/1967), Distinguished Alumnus, vividly shared his experiences about how IIT Kharagpur has shaped him in life. He urged the students; never to forget what IIT Kharagpur has done for their life. Mr. Rajeev Agarwal (ME/1986), Founder and CEO, MAQ Software explained his transition from IIT Kharagpur to the outside world after graduation and what difficulties he faced during his constant quest for knowledge and fulfillment. Prof. Farrokh Mistree, Distinguished Alumnus along with his wife and colleague, Prof. Janet Allen inspired the students to take up an academic career.
Leadership Summit: A Leadership Summit was organised on 10th November, 2013 for the students to draw inspiration from the alumni who have made it large in their lives. This year the following alumni were invited viz. Mr. Ashok Khemka (CS/1988), DG, Archives and Archaeology, Haryana; Mr. Arunabh Kumar (EE/2006), Founder and CEO, The Viral Fever; Mr. S.V Mani (EE/1974), Vice President, Tata Consultancy Services; Mr. Peshwa Acharya (CH/1989), CEO, Aasaanpay Solutions India Pvt. Ltd; Mr. Subrata Paul (ME/1974), CEO & Director, Bengal Aerotropolis Project Ltd and Mr. Tulsidas Banerjee (ME/1979), Vice President and Head-Strategy, TIL LTD Kolkata. The event received a very positive response from the students.

Mentorship Programme: Launched in 2010-2011 with only a limited number of mentors this has now grown into a full-fledged affair with around 330 alumni and 780 enthusiastic students. Under this programme the esteemed alumni of our Institute provide guidance to the students on various professional and extra-professional matters to prepare them well before they step into the real world. The great success of this programme holds testimony to its effectiveness.

My Imprint Programme: This is a programme ‘By the Students, For the Students’ where, the outgoing students pledge their support towards the Institute initially by donating their caution money towards students’ services. Last year around 274 outgoing students from the Class of 2013 contributed towards this cause. A portion of this money was utilised in funding international travel of talented students so that they could participate in various international competitions such as Hult Prize, GRIFTECH, TEAMKART Formula, Intelligent Ground Vehicle Competition, FIRA World Cup. This year the concept of a Class Gift has been introduced in which part of the outgoing students’ donation shall be used towards a unique gift that the batch decides to make towards the future generation of students. This year the donating students have opted for “Financial Support for International Travel” as “Class Gift from Class of 2013”. The rest of the money collected remains with the endowment fund of IIT-KGP.

Founding Batch Endowment Campaign: This is one of the various fund raising campaigns, initiated aiming to bring together alumni from individual batches and motivate them to donate collectively in the name of their batch. Each batch has a minimum target of INR 50 lakhs. Once it is achieved, the batch is honoured by naming a classroom after them in the Nalanda Academic Complex. Till now 5(five) batches have already succeeded. A classroom endowed in the name of 1991 batch has already been unveiled on December 10, 2012. Nineteen sixty-eight batch is the next one to receive it this year. An amount of Rs. 2.23 crore was generated through various fund raising campaigns in FY 2013-14.

Shri Gopal Rajgarhia International Programmes: This is a unique programme launched this year by IIT Kharagpur and facilitated by our alumnus Shri Gopal Rajagarhia of 1968 batch with a seed fund of 3.6 crore endowment funding which will offer assistance to students and scholars who can exhibit their excellence on various international platforms. It also encourages talented scholars to conduct research at IIT Kharagpur thereby boosting exchange programmes and research activities and helps the Institute to make its presence felt strongly across international academia which is correlated with the ranking of the Institute. Thus the programme is a significant step towards achieving the Vision 2020 programme of IIT Kharagpur to improve its global stature. It has few sub-programmes viz: SGR International Faculty Outreach Programme, SGR International Research Scholar Support Programme, SGR Student International Travel Programme, SGR International Student Scholarship and Internship Programme. The total money pledged for the above programmes is 10 crore from Shri. Gopal Rajgarhia.

Brand Building: An effective mass mailing system to update our alumni, students, faculty members, retired faculty members and parents regularly about the Institute news and progress is maintained. Seasonal Greetings and various fund-raising campaign updates were also sent via mass mails.
Through various public relation activities, regular communication, social media and ranking data submission, the Institute has started taking small steps towards the big goal of Vision 2020 thus enhancing the IIT-KGP brand both internationally and domestically. Recently the ID team worked in close coordination with students and faculty members and developed a new website for JEE-Advanced Qualifiers to attract higher JEE rank holders to study at IIT Kharagpur. The connectivity of the Institute with individual alumni also improved from 23000 to 33000 during this year.

**Publications:** Like every year, the print publications including *KGPian* – quarterly newsletter, Alumni Annual Report and the Annual souvenir *Yearnings of Yore* have been published during Alumni Meet. *KGP Connection*, a fortnightly e-newsletter is in regular circulation. Additionally brochures for different campaigns, Foundation Day Celebrations, Alumni ID Cards, separate Yearbooks for UG, PG and PhD students were also published.

**Hall of Fame:** The institute wishes to develop a Hall of Fame to preserve its history and achievements. It is planned that this work would be undertaken in two phases and in the first phase the Office of Alumni Affairs and the ID programme would be modernized. Fund raising shall be undertaken to realise the necessary funds. An amount of INR 50 lakhs has been pledged towards this cause by Prof. Tapan Prasad Bagchi, an ex- Professor and an alumnus of the institute, of which about Rs. 27 Lakhs has already been donated.

**CAREER DEVELOPMENT CENTRE**

The Career Development Centre (formerly known as Training and Placement Office) is responsible for arranging practical training for 3rd year BTech / Dual Degree and 4th year MSc degree students and job placement of final year students graduating from the Institute. The Centre is actively engaged in forging synergistic relationships between the Institute and various industries and user systems of technical and scientific manpower. Based on these interactions, the CDC gives feedback to the Institute on the academic programmes.

**Summer Training Details**

Eight weeks of summer practical training at the end of 3rd year BTech/ Dual Degree and 4th year MSc degree is a compulsory part of the curriculum at IIT Kharagpur, carrying 2 credits. All efforts are made to place the concerned students in the best of organizations in India and abroad for summer training through the Career Development Centre section and various departmental supports. An emergent trend is that more and more students are seeking summer training abroad.

A total of 1250 companies/organizations in India were contacted for training facilities for the current summer vacations in May-July 2014. Among these 78 in India had offered training facilities, out of which 48 organizations had extended out-of pocket allowances (covering 225 students) and many other extended facilities such as subsidized transport, subsidized canteen, subsidized accommodation and to- and fro travel expenses (e.g. 3AC fare, air fare etc.) for our students. The highest out of pocket allowance of Rs. 60,000/- per month was paid by ITC Ltd. and Hindustan Unilever. Some other organizations such as Times Internet and American Express offered Rs. 50,000/- per month, Amazon and Adobe offered Rs. 30,000/- per month, Yahoo, Qualcomm, and Microsoft offered Rs. 20,000/- per month. Fifteen companies offered stipends in the range of Rs. 10,000/- to 20,000/- per month. In addition to the above, some students arranged internship by themselves with good stipends.

Out of 1282 third/fourth year BTech / Dual Degree / MSc students, 86 students will be attending summer internship abroad in many Institutes/organizations likes EPFL, Switzerland, University of Warwick, National University of Singapore, University of Tokyo, Max Plank Institute for Software Systems, Germany University of Alberta, Biotechnology & Bio Chemical Engineering, Belgium,
Rhinewall University, Germany  Bremen University Dong A University, Busan , etc. and foreign companies like Finisar, Malaysia, Mitsubishi, Works Application, Japan, during May- July, 2014.

**Placement Details**

Two hundred and sixty companies/organizations have considered our students for employment during 2013-2014. The details of number of students who had registered for placement and those actually placed through campus interviews including those who have opted either for higher studies or arranged job through off campus as on 30.06.2014 are as follows:

<table>
<thead>
<tr>
<th>Course/Degree</th>
<th>No. of students registered</th>
<th>No. of students placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTech (Hons) &amp; BArch</td>
<td>615</td>
<td>524</td>
</tr>
<tr>
<td>5-year Integrated MSc</td>
<td>138</td>
<td>113</td>
</tr>
<tr>
<td>2-year MSc</td>
<td>116</td>
<td>61</td>
</tr>
<tr>
<td>Dual Degree (BTech + MTech)</td>
<td>387</td>
<td>329</td>
</tr>
<tr>
<td>MSc/ MCP</td>
<td>710</td>
<td>448</td>
</tr>
<tr>
<td>MBA</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>MS/PhD</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2056</strong></td>
<td><strong>1560</strong></td>
</tr>
</tbody>
</table>

The Highest Overseas salary received in 2013-14 is $125000 per annum and the second highest is $100000 per annum.

The Highest salary received in INR is Rs. 36.9 Lakh per annum and the second highest is Rs.28.5 Lakh per annum in 2013-14.

**Average Salary for 2013-14 is as follows.**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Average Salary (CTC) (Rs. Lakh per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTech &amp; BArch</td>
<td>11.21</td>
</tr>
<tr>
<td>Dual Degree</td>
<td>11.37</td>
</tr>
<tr>
<td>5 yr. Integrated MSc</td>
<td>10.71</td>
</tr>
<tr>
<td>VGSOM (MBA)</td>
<td>11.78</td>
</tr>
<tr>
<td>2 yr. MSc</td>
<td>6.6</td>
</tr>
<tr>
<td>M Tech</td>
<td>7.9</td>
</tr>
<tr>
<td>MS/ PhD</td>
<td>8.3</td>
</tr>
<tr>
<td>All UG and PG Courses</td>
<td>9.97</td>
</tr>
</tbody>
</table>

Some companies like ITC Ltd., Schlumberger, Hindustan Unilever, Qualcomm, Barclay’s Capital, etc have offered pre-placement offers. The total number of Pre-Placement offers received is 113.

**Student Participation**

Career Development Centre at IIT Kharagpur has taken an initiative to harness the students’ management skills through a formal system during the placement season since 2005-2006. The system has progressed extremely well and from year 2010 onwards, the CDC has immensely benefitted from
students participating in placement process. The organizational skill of students has helped CDC to conduct 12-15 companies’ placement interviews per day and round the clock. During the placement season students play an active role from contacting the companies to the final selection at campus by providing complete logistic support.

STUDENTS’ AFFAIRS

The development of all-round activities of the students of IIT Kharagpur centres around the Technology Students’ Gymkhana which houses the following facilities, many of which have been added in the last few years:

- Modern Gymnasium
- Billiards
- Athletics Stadium
- Two Cricket Fields with two turf wickets with jogging track along with modern practice facilities in Tata Sports Complex
- Six Tennis Courts including four flood light Courts
- Three flood light Basketball (Cemented) Courts
- Three flood light Volleyball (Cemented) Courts
- Four wooden Indoor Badminton Courts
- Table Tennis room with four tables
- Yoga room
- Standard Swimming Pool
- One Squash court

The activities of the students of IIT Kharagpur are many and what follows is a brief summary of highlights.

Inter-IIT Sports Meet

The 49th Inter-IIT Sports Meet was organised at IIT Guwahati. The first phase of Sports Meet began with the Inter-IIT Aquatic Meet held from October 1st to 4th, 2013. IIT Kharagpur secured 2nd position in Swimming and 3rd in water polo. Extraordinary performance in swimming was given by Shreyash Mahajan, a final year UG student. Shreyash was declared as the individual champion. The second phase which included all other games, started from December 16th to 23rd 2013. The men’s section, IIT Kharagpur secured in the third position in Badminton while in Basketball it fetched the first position, in Cricket the second position, in Football the third position; in Lawn Tennis the second position; in Squash the fourth position; in Table Tennis the third position, and in Volleyball the fourth position.

On the whole, in 49th Inter IIT Championship, IIT Kharagpur after six long years secured overall Third Position in men’s section. In Women’s Section, it secured the first position in Lawn Tennis; and the third in Badminton. “Mr. Inter IIT” position was secured by Nitish Balal of IIT Kharagpur.

Out-station Participation

Basketball Boys and Girls Team participated in IMG Reliance BFI Inter College Basketball League held at Kolkata and they secured the first position. IIT Kharagpur Boys Team Secured the first position and Girls Team secured the third position. The boy’s basketball Team qualified and subsequently participated in National Inter College Basketball league held at New Delhi, which is the first national level participation in the history of IIT Kharagpur.
Besides, IIT students participated in various cricket, football and lawn tennis tournaments organised in different parts of the country.

**Spring Fest 2014**

The 55th edition of Spring Fest, the annual social cultural fest of IIT Kharagpur, was held from 23rd-26th January 2014. Eminent bands like Agnee, Swarathma, Underground Authority, Salim-Sulaiman, and Pentagram performed here. Under International Carnival, performers from various countries like Chris Cheong, a magician and mentalist from Malaysia, Jack Glatzer, a violinist from Portugal, Benny Prasad, a well travelled musician, Murray Molloy, a sword swallow from Ireland, Almost Trio, a juggling duo from Hungary and Jonathan Kay, an Indo- Jazz saxophonist from Canada participated.

**Kshitij 2014**

The Annual Tech Fest Kshitij 2014 was organised from 31 January to 3rd February 2014. The event occurred under the patronage of UNESCO, and is currently rated as Asia’s biggest techno management fest with major state-of-the-art scientific events and certifications.

The Fest consisted of many workshops such as Investigative Journalism, IFC, Technophilia, etc, while Mega-shows included Pyrolerra, BMX, Skate Driving, Roller Skating, Stunt Mania and EDM. Exhibitions included Orbit-brain controlled helicopter, Face Android, Miniature Models, NAO Robots, etc., while events included Genesis, Quizzard, Conceptualize, Theories N Core, Robotix, Strategia, Tech4fun, and many others.

The Principal Guest lecturers during the event were:

- Dougal Jerram, British geologist/earth scientist, media presenter/contributor, and author.
- Nawazuddin Siddiqui, Critically Acclaimed Actor
- Shazia Ilmi, Journalist, ex-anchor at Star News
- Jonathan Forman, Scientific Advisor- OPCW (Nobel Peace Prize 2013)
- Rajiv Malhotra, Author, Multi Millionaire and Philanthropist
- Amitabha Ghosh, Chairman-Mars Rover Mission
- Roel Vertegaal, Pioneer in Human-Computer Interaction

**Other Highlights**

Technology Students Gymkhana is active in launching many Students centric and participatory Cells in major Research and Development initiatives sponsored by the MHRD, Government of India. During the year 2013-14, a few modules along this line of action has been opened to cater to ‘The Future of Cities’ initiative, projects under the Technology Robotics Society and the ‘Science-Heritage’ initiative called ‘SANDHI’.

Important partnerships or exchanges are in the offing. To name a few, Technology Students Gymkhana has developed a potential collaboration with the Cricket Association of Bengal (CAB) and the two associations look forward to organising non-profitable matches in IIT Kharagpur and also at the regional level to augment the spirit of ‘sports’ amongst the Youth; another event is that of Hockey organised by Central Reserve Police Force in association with TSG.

TSG also played a major initiative in mobilizing the youth spirit of the Campus by organizing the ‘Reach out week’, various adventure clubs and societies, and various spot based sports and arts activities like SPECTRA etc.
Courses of Study

Aerospace Engineering
- B.Tech.- Aerospace Engineering
- Dual Degree - Aerospace Engineering
- Dual Degree - Aerospace Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Aerospace Engineering

Agricultural and Food Engineering
- B.Tech.- Agricultural & Food Engineering
- Dual Degree - Agricultural & Food Engineering/ Farm Machinery & Power
- Dual Degree - Agricultural & Food Engineering/Post Harvest Engineering
- Dual Degree - Agricultural & Food Engineering/Dairy & Food Engineering
- Dual Degree - Agricultural & Food Engineering/Food Process Engineering
- Dual Degree - Agricultural & Food Engineering/Aqua Cultural Engineering
- Dual Degree - Agricultural & Food Engineering/Agricultural Systems & Management
- Dual Degree - Agricultural & Food Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Farm Machinery and Power
- M. Tech. – Land and Water Resources Engineering
- M. Tech. – Food Process Engineering
- M. Tech. – Agricultural Biotechnology
- M. Tech. - Aquacultural Engineering
- M. Tech. - Agricultural Systems and Management

Architecture and Regional Planning
- B.Arch.
- Master of City Planning

Biotechnology
- B.Tech.- Biotechnology & Biochemical Engineering
- Dual Degree - Biotechnology & Biochemical Engineering
- Dual Degree - Biotechnology & Biochemical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Biotechnology and Biochemical Engineering

Chemical Engineering
- B.Tech.- Chemical Engineering
- Dual Degree - Chemical Engineering
- Dual Degree - Chemical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Chemical Engineering

Chemistry
- M.Sc. - Chemistry
- Joint M.Sc.- Ph.D. in Chemistry (with effect from 2009 admissions)

Civil Engineering
- B.Tech.- Civil Engineering
- Dual Degree - Civil Engineering/ Hydraulic & Water Resources Engineering
- Dual Degree - Civil Engineering/ Transportation Engineering
- Dual Degree - Civil Engineering/ Geotechnical Engineering
- Dual Degree - Civil Engineering/ Structural Engineering
• Dual Degree - Civil Engineering/ Environmental Engineering & Management
• Dual Degree - Civil Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Hydraulic and Water Resources Engineering
• M. Tech. - Transportation Engineering
• M. Tech. - Environmental Engineering and Management
• M. Tech. - Geotechnical Engineering (Withdrawn due to less than 5 students admission)
• M. Tech. - Structural Engineering

**Computer Science and Engineering**

• B.Tech.- Computer Science & Engineering
• Dual Degree - Computer Science & Engineering
• Dual Degree - Computer Sc. & Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Computer Science and Engineering

**Centre for Educational Technology**

• M. Tech. - Media and Sound Engineering

**Centre for Oceans, Rivers, Atmosphere and Land Sciences**

• M. Tech. - Earth System Science and Technology

**Cryogenic Engineering**

• M. Tech. - Cryogenic Engineering

**Electrical Engineering**

• B.Tech.- Electrical Engineering
• B.Tech.- Instrumentation Engineering
• Dual Degree - Electrical Engineering/ Machine Drives & Power Electronics
• Dual Degree - Electrical Engineering/ Control System Engineering
• Dual Degree - Electrical Engineering/ Power System Engineering
• Dual Degree - Electrical Engineering/ Instrumentation Engineering
• Dual Degree - Instrumentation Engineering/ Control Systems Engineering
• Dual Degree - Electrical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• Dual Degree - Instrumentation Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Machine Drives and Power Electronics
• M. Tech. - Control System Engineering
• M. Tech. - Power and Energy Systems
• M. Tech. - Instrumentation

**Electronics and Electrical Communication Engineering**

• B.Tech.- Electronics & Electrical Communication Engineering
• Dual Degree - Electronics & Elect. Comm. Engineering/ Fibre Optics and Lightwave Engineering
• Dual Degree - Electronics & Elect. Comm. Engineering/ Microelectronics & VLSI Design
• Dual Degree - Electronics & Elect. Comm. Engineering/ Visual Information & Embedded
System

- M. Tech. - Fibre Optics and Light wave Engineering (not offered in the session 2008-2009)
- M. Tech. - Microelectronics and VLSI Design
- M. Tech. - RF and Microwave Engineering
- M. Tech. - Telecommunication Systems Engineering
- M. Tech. - Visual Information and Embedded Systems Engineering

Geology and Geophysics

- M.Sc. - Exploration Geophysics
- M.Sc. - Applied Geology
- Joint M.Sc.- Ph.D. in Geophysics (with effect from 2009 admissions)
- Joint M.Sc.- Ph.D. in Geology (with effect from 2009 admissions)
- M. Tech. - Exploration Geosciences
- M. Tech. - Computational Seismology (Withdrawn due to less than 5 students admission)

Humanities and Social Sciences

- M.Sc. - Economics
- Master of Human Resource Management

Industrial and Systems Engineering

- B.Tech.- Industrial Engineering
- Dual Degree - Industrial Engineering/ Industrial Engineering & Management
- Dual Degree – Quality Engineering Design and Manufacturing
- Dual Degree - Industrial Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Industrial Engineering and Management

Materials Science


Mathematics

- M.Sc. - Mathematics & Computing
- Joint M.Sc.- Ph.D. in Mathematics (with effect from 2009 admissions)
- M. Tech. - Computer Science and Data Processing

Mechanical Engineering

- B.Tech.- Mechanical Engineering
- B.Tech.- Manufacturing Science & Engineering
- Dual Degree - Mechanical Engineering/ Manufacturing Science and Engineering
- Dual Degree - Mechanical Engineering/ Thermal Science and Engineering
• Dual Degree - Mechanical Engineering/ Mechanical Systems Design
• Dual Degree - Mechanical Engineering/ Mechanical Systems, Dynamics & Control
• Dual Degree - Manufacturing Science & Engineering/ Industrial Engineering & Management
• Dual Degree - Mechanical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• Dual Degree - Manufacturing Science & Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Manufacturing Science and Engineering
• M. Tech. - Thermal Science and Engineering
• M. Tech. - Mechanical Systems Design

Metallurgical and Materials Engineering

• B.Tech.- Metallurgical and Materials Engineering
• Dual Degree - Metallurgical & Materials Engineering
• Dual Degree - Metallurgical & Materials Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Metallurgical and Materials Engineering
• Master of Steel Technology

Mining Engineering

• B.Tech.- Mining Engg.
• Dual Degree - Mining Engineering/ Mining Engineering
• Dual Degree - Mining Engineering/ Safety Engineering and Disaster Management
• Dual Degree - Mining Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Mining Engineering

Ocean Engineering and Naval Architecture

• B.Tech.- Ocean Engineering and Naval Architecture
• Dual Degree - Ocean Engineering & Naval Architecture
• Dual Degree - Ocean Engineering & Naval Architecture/MBA/Engineering Entrepreneurship/ Financial Engineering
• M. Tech. - Ocean Engineering and Naval Architecture

Physics and Meteorology

• M.Sc. - Physics
• Joint M.Sc.- Ph.D. in Physics
• M. Tech. - Solid State Technology

Rajendra Mishra School of Engineering Entrepreneurship

• Dual Degree - B.Tech. in Parent Dept/ Entrepreneurship Engineering

Rajiv Gandhi School of Intellectual Property Law
• Bachelor of Laws - Intellectual Property Rights (3 Years)

Ranbir & Chitra Gupta School of Infrastructure Design and Management

• M. Tech. - Infrastructure Design and Management

Reliability Engineering

• M. Tech. - Reliability Engineering

Rubber Technology

• M. Tech. - Rubber Technology

School of Information Technology

• M. Tech. - Information Technology
• M. Tech. – Information and Communication Technology

School of Medical Science and Technology

• Master of Medical Science and Technology (3 Years)
• M.Tech – Medical Imaging and Image Analysis (Withdrawn due to less than 5 students admission)

School of Water Resources

• M. Tech. - Water Management

Vinod Gupta School of Management

• MBA - Business Administration (2 Years) • Executive MBA (3 Years)

Distance Mode (Kolkata & Bhubaneswar Centre) (3 Years)

• M.Tech - Electronics and Communication Engineering
• M.Tech - Electrical Engineering
• M.Tech - Information and Communication Technology
Department of Aerospace Engineering

**Head**
Prof. Bhrigu Nath Singh

**Professors**

Datta, Prosun Kumar  
*Ph.D. (Georgia Tech)*, Aerospace Structures

Maiti, Dipak K  
*Ph.D. (IIT Kharagpur)*, Aerospace Structures, Composite and Smart Structures, Structural Dynamics & Aeroelasticity, Design & Development of MR fluid damper & Landing Gear Dynamics, Structural Health Monitoring

Singh, Bhrigu Nath  
*Ph.D. (IIT Kanpur)*, Smart and Composite Structures, Uncertainty Quantification in Aircraft Analysis & Design, Multi-scale Modelling, FGM Plates and Shells, Adaptive Nonlinear FEM, Aerospace Structures, Solid Mechanics

Singh, Navtej  
*Ph.D. (IIT Kharagpur)*

Sinha Mahapatra, Kalyan Prasad  
*Ph.D. (IIT Kharagpur)*, Computational Fluid Dynamics, Aeroacoustics, Large Eddy Simulation, Fluid-Structure Interaction

**Associate Professors**

Laha, Manas Kumar  
*Ph.D. (IIT Kharagpur)*, computational fluid dynamics and flight mechanics

Pradhan, Suresh Chandra  
*Ph.D. (IIT Kanpur)*, Aerospace structures, Nonlocal elasticity, FEM, FGM, Smart Structures, composite materials and nano-composites, Optimization

Roy, Arnab  
*Ph.D. (IIT Kharagpur)*, Aerodynamics, Computational Fluid Dynamics

Sinha, Manorajnan  
*Ph.D. (IIT Kanpur)*, Flight Dynamics Controls System-Identification Neural Networks

**Assistant Professors**

Ghosh, Anup  
*Ph.D. (IIT Kharagpur)*, Aerospace Structures, Composite Structures, Micro Air Vehicle

Ghosh, Somnath  
*Ph.D. (T.U., Munich)*, DNS, LES, compressible turbulence, turbulence-radiation interaction, turbulent reacting flows, high performance computing

Joarder, Ratan  

Karmakar, Srinibas  

Kaushik, Mrinal  
*Ph.D. (IIT Kanpur)*, Theoretical studies on passive controlled
jets, Theoretical studies on shock-boundary layer interactions, Theoretical studies on active feedback controlled jets, Experimental studies on aeroacoustics

Peyada, Naba Kumar  Ph.D., System Identification/Parameter Estimation - Neural Networks, Flight Dynamics & Control and Flight Testing, Design Guidance and Control of Rockets Parafoil UAV MAV WIG-Craft etc.

Faculty Appointments

Naba Kumar Peyada  Assistant Professor
Somnath Ghosh  Assistant Professor
Ratan Joarder  Assistant Professor
Manoranjan Sinha  Associate Professor
Arnab Roy  Associate Professor
Srinibas Karmakar  Assistant Professor
Mrinal Kaushik  Assistant Professor

Faculty Retirement

Rao, T. V.  Associate Professor
Gautam Bandyopadhyay (expired)  Professor

Faculty Re-employment

Datta, Prosun Kumar  Professor

Brief Description of on-going activities


Thrust Areas

1. Computation of High-Speed High-Temperature Reactive Flows, Turbulent flow and large-eddy simulation, Combustion, Composite and smart structures, probabilistic analysis & design, Autonomous reconfigurable flight vehicle development and Chandrayaan-I project

New Acquisitions
1. ePIV System including hardware and FLOWEX Software. Make: Interactive Flow Studies Corporation, USA. It is an educational Particle Image Velocimetry System meant for Laboratory demonstrations in Aerodynamics Laboratory.
2. DataTaker DT80 Logger with accessories- General purpose data acquisition system with 5 channels for strain measurements.
3. 3 DOF Gyro Workstation (QPID/QPIDe)-Quanser for Flight Mechanics and Control Lab
4. Pulsejet Nozzle AA 10000 JJAU-VI, Spraying Systems Co., for Propulsion Lab
5. Multimedia Projector, Make NEC, 3000 ANSI Lumens, 1024x768 resolution

Doctoral and MS Degrees Awarded

1. Kalyan Kumar Das : Experimental and Large-eddy simulation of thunderstorm downburst(Ph.D.)
2. Shravankumar B. Kerur : Geometrically Nonlinear Static and Dynamic Analysis of Piezoelectric Fiber Reinforced Composite Plates and Shells(Ph.D.)
3. Bharadwaj Nanda : VIBRATION BASED DAMAGE ASSESSMENT OF FRAME STRUCTURES USING UNIFIED PARTICLE SWARM OPTIMIZATION(Ph.D.)

Member - Professional Bodies

1. Pradhan, Suresh Chandra, Member - IE(I)
2. Pradhan, Suresh Chandra, Member - Aeronautical Society of India
3. Pradhan, Suresh Chandra, Member - ISSS
4. Pradhan, Suresh Chandra, Member - Computational Mechanics India
5. Maiti, Dipak K, Member - Aeronautical Society of India
6. Singh, Bhrigu Nath, Life - ISTE, India
7. Kaushik, Mrinal, Life - Indian Society of Theoretical and Applied Mechanics
8. Sinha Mahapatra, Kalyan Prasad, Fellow - Institut of Engineers
9. Sinha Mahapatra, Kalyan Prasad, Member - Aerospace Resources Panel of AR&DB
10. Sinha Mahapatra, Kalyan Prasad, Life - Aeronautical Society of India
11. Sinha Mahapatra, Kalyan Prasad, Life - Wind Engineering Society of India
12. Sinha Mahapatra, Kalyan Prasad, Member - Aerodynamics Panel of AR&DB
13. Datta, Prosun Kumar, Senior Member - Japan Soc. of Aeronautical and Space Sciences
14. Datta, Prosun Kumar, - Korean Society of Aeronautical and Space Sciences

Member - Editorial Board

1. Datta, Prosun Kumar (0) Editorial Board - International J. of Struct. Stability and Dynamics
3. Pradhan, Suresh Chandra (2010) Member - IJVSS

Awards & Honours

3. Sinha, Manoranjan (2013) President of India Gold Medal (IEI)
Sponsored Research Projects

1. Aerodynamic design of traction rolling stock with speed potential of 250 km/h upgradeable to 350 km/h (CRR, Indian Railways, Rs.734.24 Lakhs)
2. Aerodynamics modeling of chaff bloom (DRDO, Defence Laboratory, Jodhpur, Rs.9.78 Lakhs)
3. Analysis and Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion-Phase II (IIT – ISRO KCSTC, Rs.17.50 Lakhs)
4. Boeing University Relations, IIT Kharagpur- Campus Engagement Plan (Boeing Co., USA, Rs.23.50 Lakhs)
5. Combustion Characteristics of Single Droplets (ISIRD,SRIC, IIT Kharagpur, Rs.28.00 Lakhs)
6. Damage Assessment of Aircraft Structures From Limited Vibration Data (AR&DB, New Delhi, Rs.8.45 Lakhs)
7. Damage assessment of composite structures using swarm based optimization techniques from changes of vibrational response (ISRO IIT Kharagpur Cell, Rs.2756250.00 Lakhs)
8. DEVELOPMENT OF A NUMERICAL SCHEME TO STUDY THE AERODYNAMICS OF CHAFF CLOUD (AR&DB, Rs.17.05 Lakhs)
9. Estimation of Acoustic Load in MCA weapon bay and Hinge moment on the doors (ADA, Rs.17.28 Lakhs)
10. Large Eddy Simulation of AURA-type Flying Wing Configurations with Dragerons at Operating Speed Range (ADA, Bangalore, Rs.70.20 Lakhs)
11. Least square finite element analysis of adhesively bonded joint (AR & DB, Rs.4.45 Lakhs)
12. Nonlinear Analysis and Reconfigurable Control of Advanced Medium Combat Aircraft (AMCA) Operating at High Angle of Attack (AOA) (ADA, Bangalore, Rs.678000.00 Lakhs)
14. NUMERICAL STUDY ON ELECTRO-HYDRODYNAMICS OF IMMISCIBLE OR MISCIBLE FLUIDS WITH CONDUCTIVITY GRADIENT (DST, Rs.10.66 Lakhs)
15. Real time detection of face/core debond initiation and interfacial delamination propagation morphology in sandwich composite panels using fiber-optic (ISRO, Rs.49.80 Lakhs)
16. Studies on Passive Controlled Jets (ISIRD, IIT Kharagpur, Rs.28.00 Lakhs)
17. Study of Flow Structure and Associated Accoustics in Weapon Bay Cavity using LES (ADA, Bangalore, Rs.8.16 Lakhs)
18. THERMOHYDRAULIC SIMULATION OF LOX BOOSTER TURBOPUMP FOR SEMI-CRYOGENIC ROCKET ENGINE (ISRO, IIT KHARAGPUR Space Technology Cell,, Rs.10.18 Lakhs)
19. Uncertainty Quantification in Aircraft Analysis and Design (AR & DB, DRDO, New delhi, Rs.27.58 Lakhs)
20. WIND TUNNEL TESTING OF SCALED DOWN MODELS OF RAILWAY LOCOMOTIVE (Heavy Electro Works Private Ltd., Rs.1.25 Lakhs)

Consultancy Projects

1. AERODYNAMICS MODELING OF CHAFF BLOOM (DLJ, Rs.2.58 Lakhs)
2. WIND TUNNEL TESTING OF SCALED DOWN MODELS OF RAILWAY LOCOMOTIVE (HEWPL, Rs.1.25 Lakhs)

Visits Abroad by Faculty Members

1. Roy, Arnab - Visited the Institute under the DAAD Faculty Exchange Programme (Institute for Aerodynamics and Gas Dynamics, TU Stuttgart, ) May-July, 2013

Invited Lectures by Faculty Members
1. Mixed Variational Approach for the Analysis of FGM Plate by Singh, Bhrigu Nath (NIT Durgapur)

**Papers Published in Journals**


**Papers Presented in Conferences**


7. CFD study of the effects of nozzles number on turbulent flow and energy separation in a Ranque Hilsch vortex tube,  By Bej Nilotpala, Sinhamahapatra K.P.,  *ICME2013*, Universiti Tun Hussein Onn Malaysia,  (2013)


13. Flow field studies over V-shaped rear face cavities at supersonic speed, By Srinivasan G., Sinhamahapatra K P. and Das S., 14th CFD Symposium, Bangalore, (2012)


Department of Agricultural & Food Engineering

Head
Prof. P B Singh Bhadoria

Professors
Banerjee, Rintu
Ph.D. (IIT Kharagpur), Food Biotechnology, Bioenergy, Enzymology & its Biotechnological applications, Protein Chemistry

Bhadoria, P B Singh
Ph.D. (IIT Kharagpur), Development and transfer of rural technology, Soil Science & Plant nutrition

Das, Susanta Kumar
Ph.D. (IIT Kharagpur), Mechanized Food Processing and Food Engineering

Datta, Ashis Kumar
Ph.D. (Pennsylvania), Dairy and Food Process Engineering, Process Systems Analyses and Simulations

Dutta Gupta, Snehasish
Ph.D. (Kalyani Univ), Plant Tissue Culture & Biotechnology

Ghosh, Bijoy Chandra
Ph.D. (IIT Kharagpur), Soil less culture Organic farming Tea production and processing

Goswami, Tridib Kumar
Ph.D. (IIT Kharagpur), Cold Storage, CA and MA storage of fruits and vegetables, Cryogenic grinding of spices, Discrete Element Analysis of grinding, CFD analysis of temperature distribution in precooler

Jha, Madan Kumar

Mal, Bimal Chandra
Ph.D. (IIT Kharagpur), Aquacultural Engineering

Mallick, Nirupama
Ph.D. (BHU, Varanasi), Microalgal Biofuel, Biodegradable Polymers (Polyhydroxyalkanoates) from Cyanobacteria, Bioremediation with Microalgae, Bioactives from Microalgae

Mishra, Hari Niwas
Ph.D. (IIT Kharagpur), Algal Food Biotechnology, RTE Health Foods & Nutraceuticals, Innovative Food Processing Technologies, Horticultural & Plantation Crop Products Processing, Food Safety & Quality Control, High pressure processing of high value perishables

Mitra, Adinpunya
Ph.D. (East Anglia UK), Exploring biological activities from in vitro conserved Gentianaceae medicinal plants, Regulation of shikimate/phenylpropanid and MVA/MEP pathways in hairy root cultures of Daucus carota, Understanding molecular oscillations of scent volatiles emission in moth-pollinated flowers, Enzymatic route to phenolic fragrance formation in Hemidesmus indicus roots, Evaluating metabolic perturbations in cryptogein-cotransformed root cultures of Nicotiana tabacum, Medium-term in vitro conservation and sustainable utilization of Gentianaceae fragile bioresources, Identification of flavour trait(s) in Darjeeling tea accessions by targeted metabolomics, Targeted metabolomics of scented rice cultivars
Panda, Rabindra Kumar  
*Ph.D.(IARI Delhi)*, Watershed Management, Non-point Source Pollution of Soil & Water, Climate Change Effect on Agriculture, Rainwater Management

Panda, Sudhindra Nath  
*Ph.D.(PAU, Ludhiana)*, Integrated Land and Water Resources Planning and Management, Rainwater Conservation and Reuse for Climate Resilient Agriculture

Pandey, Keshaw Prasad  
*Ph.D.(IIT Kharagpur)*, 1 Tractor power systems 2. Traction modelling 3. Precision agriculture

Raghuwanshi, Narendra Singh  
*Ph.D.(California)*, Irrigation and Water Management, Hydrological Modelling, Watershed Management

Raheman, Hifjur  
*Ph.D.(Bangkok)*, Development of farm Implements, Biofuel production and hybrid power generation, Traction and tillage performance improvement in walking tractor

Singh, Rajendra  
*Ph.D.(IIT Kharagpur)*, Hydrological Modelling, Irrigation System Management

Tewari, Virendra Kumar  
*Ph.D.(IIT Kharagpur)*, Farm Machinery & Power, Ergonomics & Safety, Precision Agriculture

Tiwari, Kamlesh Narayan  

**Associate Professors**

Chatterjee, Chandranath  

Das, Bhabani Sankar  
*Ph.D.(Kansas)*, Spectral characterization of soils and water, Rice hydrology, Measurement and modeling of water and nutrient status in soil, Pedotransfer functions

Das, Madhusweta  
*Ph.D.(Jadavpur Univ)*, Functional Foods, Starch based edible and biodegradable film, Isolation of bioactive component from food waste

Majumdar, Gautam Chandra  
*Ph.D.(IIT Kharagpur)*, Food Process Engineering

Mishra, Ashok  
*Ph.D.(IIT Kharagpur)*, Hydrological modelling & Watershed management, Crop yield modelling, Climate change analysis & applications in water and crop management

Mitra, Arunabha  
*Ph.D.(Calcutta Univ)*, Value based education, Waste utilization in aquaculture, Ecology and environmental pollution, Chemical-free farming, Mind and consciousness, Stress management and control

Srinivasa Rao, Pavuluri  
*Ph.D.(IIT Kharagpur)*, Recirculatory Aquacultural Systems, Post Harvest & Food Process Engineering, High Pressure Processing of High Value Perishable Commodities, Grain Storage Structures and Stored Grain Quality, Non-thermal Methods of Food Processing

Swain, Dillip Kumar  
*Ph.D.(IIT Kharagpur)*, Sustainable & Precision Production Agriculture, Climate Change Adaptations & Mitigations, Crop Growth & Yield Simulation
Thomas, E V  
Ph.D.(IIT Kharagpur), Farm Machinery & Power, Rice Transplanter, Tea Process Machinery

Assistant Professors

Guha, Proshanta  

Mailapalli, Damodhar Rao  
Ph.D.(IIT Kharagpur), Agricultural water and waste management, Irrigation hydraulics and modeling, Nonpoint source agricultural pollution, Cold region hydrology

Mukherjee, Chanchal Kumar  
MS (New Jersey), Cage for mariculture

Nalavade, Parish Prakash  
D. Eng. (A I T, Thailand), Tillage and Traction, Soil-Tool Interaction, Precision Agriculture

Shrivastava, Shanker Lal  
Ph.D.(IIT Kharagpur), Post Harvest Engineering, Dairy & Food Process Engineering, Development of low cost farm level processing equipment

Srivastav, Prem Prakash  
Ph.D.(IIT Kharagpur), Food Science and Technology

Tripathy, Punyadarshini Punam  
Ph.D.(IIT Delhi), Heat and Mass transfer during drying of food products, Mathematical modeling and simulation in food drying process, CO2 mitigation in solar dryers, CO2 capture and storage

Faculty Appointments

Mishra, Ashok  
Associate Professor

Faculty Retirement

Majumdar, Gautam Chandra  
Associate Professor

Faculty Re-employment

Ghosh, Bijoy Chandra  
Professor

Brief Description of on-going activities

Application of GIS in both command area & watershed management, Application of neural network in hydrology, Ballast management of agricultural tractors, Biofiltration Technology, Bio-fuels from tree-based oils, Biosynthesis of phenolic fragrance and xanthones, Cage for mariculture, Climate change analysis & applications in water and crop management, Coal biotechnology, Design and development of continually variable transmission for tractors, Design, development and field evaluation of a small power tractor, Design and development of slip meter for two-wheel drive tractors, Design and development of automatic depth control system for tractors, Design and development of a centrifugal press for semi-continuous production of paneer, Development of aseptic packaging system for milk, Development of environment-friendly aquaculture, Development of food products, Development of machineries and process technology for cereals & pulses based snacks, Development of rice transplanter, Development of a continuous chhana making device, Development of jacketted scraped surface vessel for kneading, heating and concentration of high viscosity liquids and pastes, Development of endless chain pressure dryer for orthodox tea, Design of a centrifugal press for semicontinuous production of paneer, Development of Cashew nut sheller and Cashew peeler, Evaluation of cosmetic properties of Aloe vera L., Flow and
solute transport in sub-surface environment, Food Packaging, High pressure processing of high value perishables, Hydrological modelling of small watersheds, Imaging photosynthesis of micropropagated plants, Integration of surface irrigation and two-dimension infiltration model, Machinery systems and ergonomics, Microalgal biofuel, Microbial degradation of plant phenolics for value-added products, Impact of light emitting diodes (LEDs) on plant morphogenesis, Microwave assisted drying of high moisture food, Nutrient management, Polyhydroxyalkanoates from Cyanobacteria, Predicting traction performance using artificial neural network, Process technology for dehydration of mushrooms, Production and processing of tea, Production of tannase under solid state fermentation, Process technology for dahi powder & dahi powder based energy drink mix, Process technology for antioxidant rich RTE health food, Process technology for manufacture of RTE health food (herbal kurkure), Rainwater harvesting and groundwater recharge, Software development for machinery management, Spectral characterization of soils, Starch based edible and biodegradable film, Thermal analysis of food materials, Traction potential of bias-ply tyres used in agricultural tractors, Water quality and watershed management

**Thrust Areas**

1. Agricultural Biotechnology
2. Agro-Informatics
3. Mechanized Food Processing
4. Natural Resources Management
5. Precision Farming

**New Acquisitions**

1. Microprocessor Controlled Testing Machine-5KN, Instron, USA

**International Collaborations**

Technical University of Braunschweig, Germany

Department of Geoinformatics, Geohydrology and Modeling, Friedrich-Schiller-University, Jena, Germany

Biosystems Engineering Department, College of Agriculture, Sam Ginn College of Engineering, Auburn University, USA

Institute of Water Resources Management, Hydrology and Agricultural Hydraulic Engineering, Leibniz University Hannover, Germany

ALTERRA-Centre for Water and Climate, Wageningen University, The Netherlands

Waikato Institute of Technology, Hamilton, New Zealand

United Nations University, Tokyo, Japan (Collaborator: Prof. Srikantha Herath): Research and education, Network on climate change adaptation research

MoU Agreement : Signed MoU as Focal Point for ‘University Network for Climate and Ecosystem Change Adaptation Research (UNCECAR)’, with United Nations University, Tokyo, JAPAN

Dr. Thomas Crawford, Department of Geography, East Carolina University, Greenville, NC USA 27858 USA. Under a scoping project-“Human Responses to Catastrophic Monsoon Events in South
Asia: Designing a Spatially Explicit Model in Low-Lying Coastal Bangladesh and India" funded by Asian Pacific Network for Global Change Research (APN).

The Coordinated Climate-Crop Modeling Project, USA (Collaborators: Dr. Cynthia Rosenzweig, NASA-Goddard Institute for Space Studies and Columbia University, USA, Agricultural Model Intercomparison and Improvement Project): Research, Analysis of uncertainty in the agricultural impacts of climate change

Lectures by Visiting Experts

1. Food engineering and technology research at University of Reading and global trends by Prof. K. Niranjan (University of Reading, UK)

Doctoral and MS Degrees Awarded

1. Jitendra Kumar : Design and development of a Chironji Nut (Buchanania lanza) decorticator(Ph.D)
2. Arindam Kuila : Enzymatic Hydrolysis and fermentation of non-edible lignocellulosic feedstocks for ethanol production(Ph.D)
3. Shovik Deb : Dynamics of organic carbon in soils under coastal Agro-ecosystem(Ph.D)
4. Kadam Swati Appasahheb : Optimized process parameters based heat and mass transfer guided design and process simulation of continuous kheer (rice pudding) machine(Ph.D)
5. Shalini Mishra : Symbiotic soy yoghurt: process technology, quality characteristics and storage stability(Ph.D)
6. Anish Kundu : Understanding fragrant methoxybenzaldehyde biosynthesis in Hemidesmus indicus roots and evaluation of the bioactive capacity of this phenolic aldehyde(Ph.D)
7. Sudhansu Sekhar Mahanand : Development of a biofloc based tank aquaculture system for Rohu, Lobeo rohita (Hamilton) culture(Ph.D)
8. Avinash Kumar : Engineering and economic analysis of pooled circular stepped cascade aeration system(Ph.D)
9. Swarnalok De : Extraction characterisation of humic acid from lignite and evaluation of its biological activities(MS)
10. Sumeet Kaur : Development and characterization of barley flaxseed based functional dry soup mix(Ph.D)
11. Mainak Mukhopadhyay : Production, purification, characterisation of yellow Laccase and its application for lignin degradation(Ph.D)
12. Kshirod Kr. Dash : Fluidized bed preconditioning of rice and its microwave puffing(Ph.D)
13. Upadrasta Laksmishri : Bioliquefaction of lignite for production of humic acid and bio-methane(Ph.D)
14. Anirban Ray : Physical and Biochemical characterization of gel from different growth periods of Aloe vera L.(Ph.D)
15. Uttam Kumar : Force requirement for separating rice seedlings from seedling mats(Ph.D)

Member - Professional Bodies

1. Mallick, Nirupama, Regular - Life Member: Biotech Research Society of India
2. Mitra, Adinpunya, Life Member - Society for Plant Biochemistry and Biotechnology (India)
3. Mitra, Adinpunya, Life member - Association of Microbiologists of India
4. Mitra, Adinpunya, Life Member - Biotech Research Society of India
5. Mitra, Adinpunya, Life Member - Plant Physiology Forum
6. Das, Madhusweta, Regular - American Society of Agricultural and Biological Engineers
7. Guha, Proshanta, Life Member - Indian Society of Plant Physiology
8. Guha, Proshanta, Life Member - Association of Rice Research Workers
9. Guha, Proshanta, Life member - Indian Science Congress Association
10. Guha, Proshanta, *Life member* - Indian Society of Weed Science
11. Srivastav, Prem Prakash, *Member* - Institute of Food Technologists
12. Srivastav, Prem Prakash, *Life Member* - ISTE
13. Srivastav, Prem Prakash, *Life member* - AFST(I)
14. Srivastav, Prem Prakash, *Life Member* - IDA
15. Srivastav, Prem Prakash, *Member* - American Society of Agricultural and Biological Engineers
16. Srivastav, Prem Prakash, *MTIE* - Institution of Engineers
17. Srivastav, Prem Prakash, *Life member* - Association of Microbiologists of India
19. Shrivastava, Shanker Lal, *Life Member* - Association of Food Scientists and Technologists (India)
20. Swain, Dillip Kumar, *Life member* - Indian Science Congress Association
22. Mishra, Ashok, *Life Member* - Indian Society of Agricultural Engineers,
23. Mishra, Ashok, *Life Member* - Indian Water resources Society (IWRS)
24. Mishra, Ashok, *Member* - Environmental & Water Resources Institute (EWRI), American Society of Civil Engineers (ASCE)
25. Mailapalli, Damodhar Rao, *Member* - Institution of Engineers
26. Tripathy, Punyadarshini Punam, *Life member* - Indian Society of Agricultural Engineers
27. Bhadoria, P B Singh, *Member* - Ministry of Rural Development (NREGA Division), Govt. of India
28. Bhadoria, P B Singh, *Life Member* - German Society of plant nutrition and soil science
29. Bhadoria, P B Singh, *Member* - Directorate of Micro & Small Scale Enterprise (Govt. of West Bengal)
30. Bhadoria, P B Singh, *Life Member* - Indian Society of Soil science
32. Mukherjee, Chanchal Kumar, *Associate member* - Aquaculture Engineering society, USA
33. Mukherjee, Chanchal Kumar, *Member* - World Aquaculture Society
34. Mukherjee, Chanchal Kumar, *regular* - Society of Fisheries technologists of India
35. Mukherjee, Chanchal Kumar, *regular* - Institution of Engineers India
36. Mukherjee, Chanchal Kumar, *Regular* - Society of Naval Architects & marine Engineers USA
37. Tiwari, Kamlesh Narayan, *Regular Member* - American Society of Agricultural and Biological Engineers
38. Tiwari, Kamlesh Narayan, *Life Member* - Indian Society of Agricultural Engineers
39. Tiwari, Kamlesh Narayan, *Life Member* - Institute of Engineers (India)
40. Tiwari, Kamlesh Narayan, *Senior Member* - Institution of Engineers (India)
41. Mitra, Arunabha, *Full Founding Member* - Asian Fisheries Society, Philippines
42. Mitra, Arunabha, *Life Member* - Research Advisory Committee, Central Institute of Fisheries Education, ICAR, Govt. of India
55. Mitra, Arunabha, Member - Board of Studies, Aquaculture Management & Technology, Vidyasagar University, Midnapore
56. Mitra, Arunabha, Member - Expert Body on Water Resilient Aquaculture - Vision for 2050, Central Institute of Freshwater Aquaculture (ICAR), Bhubaneswar
57. Mitra, Arunabha, Life Member - Zoological Society of India
58. Mitra, Arunabha, Regular - World Aquaculture Society, USA
59. Mitra, Arunabha, Life Member - Inland Fisheries Society of India
60. Das, Susanta Kumar, Regular - American Society of Agricultural and Biological Engineers, USA
61. Datta, Ashis Kumar, Ordinary - Indian Dairy Association (IDA)
62. Datta, Ashis Kumar, Life Member - All India Council for Technical Education (AICTE)
63. Datta, Ashis Kumar, Member - American Society of Agricultural and Biological Engineers (ASABE)
64. Datta, Ashis Kumar, Life Member - Indian Dairy Engineers Association (IDEA)
65. Mal, Bimal Chandra, Life Member - Institution of Engineers (I)
66. Mal, Bimal Chandra, Life Member and Fellow - Feloow, Indian Society of Agricultural Engineers
67. Mal, Bimal Chandra, Life Member - Indian Association of Soil and Water Conservationists
68. Mal, Bimal Chandra, Life Member - Water Management Society of India
69. Mal, Bimal Chandra, Member - American Society of Agricultural and Biological Engineers
70. Singh, Rajendra, Member - Irrigation Management Network, UK
71. Singh, Rajendra, Life Member - ISAE
72. Thomas, E V, Regular Member - American Society of Agricultural and Biological Engineers
73. Thomas, E V, Associate Member - Institution of Engineers (India)
74. Thomas, E V, Regular Member - Indian Society of Agricultural Engineers
75. Goswami, Tridib Kumar, Life - Indian Society of Cryogenic Engineers
76. Goswami, Tridib Kumar, Life - Association of Food Scientists and Technologists (AFST)
77. Goswami, Tridib Kumar, Regular - American Society of Agricultural and Biological Engineers (ASABE)
78. Goswami, Tridib Kumar, Life - Indian Association of Chemical Engineers (AIChe)
79. Tewari, Virendra Kumar, Regular - Indian Society for Technical Education
80. Tewari, Virendra Kumar, Regular - American Society of Agricultural and Biological Engineers
81. Tewari, Virendra Kumar, Regular - Indian Society of Weed Science
82. Tewari, Virendra Kumar, Regular - Association of Food Scientists and Technology (India)
83. Tewari, Virendra Kumar, Regular - Indian Society of Ergonomics
84. Dutta Gupta, Snehasish, Fellow Member - Plant Tissue Culture Association (India)
85. Dutta Gupta, Snehasish, Regular - Society for In Vitro Biology, USA
86. Dutta Gupta, Snehasish, Regular - European Federation of Biotechnology
87. Dutta Gupta, Snehasish, Life - Indian Society for Plant Physiology
88. Panda, Rabindra Kumar, Life Member - Asia Pacific Association of Hydrology and Water Resources
89. Panda, Rabindra Kumar, Life Member - Indian Society of Agro-meteorologist
90. Panda, Rabindra Kumar, Associate Member - American Society of Agricultural and Biological Engineers
91. Panda, Rabindra Kumar, Life Member - Indian Society of Agricultural Engineers
92. Panda, Rabindra Kumar, Life Member - Indian Society of Water Management
93. Mishra, Hari Niwas, Past President & Life Member - Association of Food Scientists & Technologists (India)
94. Mishra, Hari Niwas, Member - All India Food Processors Association
95. Mishra, Hari Niwas, Member - Indian Society of Agricultural Engineers
96. Mishra, Hari Niwas, President - Association of Food Scientists & Technologists (Kharagpur Chapter)
97. Panda, Sudhindra Nath, Life Member - Indian Assoc. of Soil & Water Conservationists
98. Panda, Sudhindra Nath, Member - International Assoc. of Hydrological Sciences
<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Membership Details</th>
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<tr>
<td>99</td>
<td>Panda, Sudhindra Nath</td>
<td>Member - American Soc. of Agric. and Biological Engineers</td>
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<td>100</td>
<td>Panda, Sudhindra Nath</td>
<td>Life Member - Indian Society of Water Management</td>
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<td>101</td>
<td>Panda, Sudhindra Nath</td>
<td>Member - American Society of Civil Engineers</td>
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<td>102</td>
<td>Panda, Sudhindra Nath</td>
<td>Life Member - Systems Society of India</td>
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<td>103</td>
<td>Panda, Sudhindra Nath</td>
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<td>Raheman, Hifjur</td>
<td>Member - Member of the American Society of Agricultural &amp; biological Engineers</td>
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<td>Raheman, Hifjur</td>
<td>Fellow - Institution of Engineers India</td>
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<td>107</td>
<td>Jha, Madan Kumar</td>
<td>Life Member - Institution of Engineers India (IEI), Kolkata</td>
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<td>Jha, Madan Kumar</td>
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<td>Jha, Madan Kumar</td>
<td>Life Member - AIT Alumni Association, Bangkok, Thailand</td>
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<td>Jha, Madan Kumar</td>
<td>Life Member - Indian Water Resources Society (IWRS), Roorkee</td>
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<td>Jha, Madan Kumar</td>
<td>Life Member - National Environmental Science Academy (NESA), New Delhi</td>
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<td>Jha, Madan Kumar</td>
<td>Life Member - Association of Global Groundwater Scientists (AGGS), Dhanbad</td>
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<td>Jha, Madan Kumar</td>
<td>Life Member - Indian Society of Agricultural Engineers (ISAE), New Delhi</td>
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<td>Jha, Madan Kumar</td>
<td>Member - International Association of Hydrogeologists (IAH), U.K.</td>
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<td>Jha, Madan Kumar</td>
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<td>Jha, Madan Kumar</td>
<td>Member - European Water Resources Association (EWRA), Greece</td>
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<td>Jha, Madan Kumar</td>
<td>Life Member - International Commission of Agricultural and Biosystems Engineering (CIGR)</td>
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<td>Jha, Madan Kumar</td>
<td>Fellow Member - International Congress of Chemistry and Environment, M.P.</td>
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<td>Das, Bhabani Sankar</td>
<td>Member - Indian Society of Soil Science</td>
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<td>Member - The Institution of Engineers (India)</td>
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<td>Ghosh, Bijoy Chandra</td>
<td>Life Member - Indian Society of Weed Science</td>
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<td>128</td>
<td>Ghosh, Bijoy Chandra</td>
<td>Life Member - Indian Society of Agronomy</td>
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**Member - Editorial Board**

2. Bhadoria, P B Singh (0) Member - International Journal for Agricultural Research
3. Bhadoria, P B Singh (0) Member - Asian Journal of Earth Science
4. Das, Bhabani Sankar (0) Associate Editor - Agricultural Water Management
5. Das, Bhabani Sankar (0) Member, Editorial Board - Indian J. Agricultural Physics
6. Das, Madhusweta (0) Member - International Journal of Chemoinformatics and Chemical Engineering
7. Das, Madhusweta (2011) Editor - Research and Reviews: Journal of Food Science and Technology
8. Das, Madhusweta (2011) Editor - Research and Reviews: Journal of Agricultural Science and Technology
11. Dutta Gupta, Snehasish (2011) Editorial Board Member - Journal of Biological Research (Hong Kong)
12. Goswami, Tridib Kumar (0) Editorial Board Member - The Standard International Journals (The SIJ)
14. Guha, Proshanta (2014) Received invitation as Member of Editorial Board - Journal of Advance Research in Agriculture Science & Technology
15. Guha, Proshanta (2011) Member of Editorial Board - Research & Reviews: Journal of Food Science and Technology
24. Mishra, Hari Niwas (0) Member - Food
25. Mishra, Hari Niwas (0) Member - Indian Food Industry
27. Mishra, Hari Niwas (2012) Member - Focusing Modern Food Industry
29. Mishra, Hari Niwas (0) Member - Indian Food Packer
30. Mishra, Hari Niwas (0) Member - Journal of Food Science & Technology
31. Mishra, Hari Niwas (0) Member - Fresh Produce
33. Panda, Rabindra Kumar (2012) Editorial Board Member - International Journal of Agricultural and Biological Engineering
42. Tiwari, Kamlesh Narayan (2012) Member Editorial Board from India - International Journal of Agricultural & Biological Engineering
Awards & Honours

1. Mal, Bimal Chandra (2013) Best Vice Chancellor of the Year Award by the Clinical Research Summit 2013
2. Mitra, Adinpunya (2013) DBT CREST Award
3. Jha, Madan Kumar (2014) Outstanding Book Award by the Indian Society of Agricultural Engineers, New Delhi
4. Banerjee, Rintu (2014) Received Most Inspiring women Engineer/Scientist for the year-2014, for the exemplary work in the field of Science & Technology by Engineering Watch, New Delhi.
5. Banerjee, Rintu (2013) Received Panjabrao Deshmukh Award for Outstanding Women Scientist 2012, from ICAR, New Delhi on 16th July 2013

Sponsored Research Projects

1. Advanced Agro-techniques for Improving Productivity of Tea Garden (Tea Board, Govt. of India, Kolkata, Rs.12.48 Lakhs)
2. AICRP on Ergonomics & Safety in Agriculture (ICAR, New Delhi, Rs.126.24 Lakhs)
3. AICRP on Farm Implement and Machinery (ICAR, New Delhi, Rs.140.78 Lakhs)
4. AICRP on Post Harvest Technology (Indian Council of Agricultural Research, Rs.14.00 Lakhs)
5. Assessing the nitrogen fixing ability of cyanobacteria under the climate change scenarios for improving soil health (IIT Kharagpur, Rs.25.00 Lakhs)
6. Assessment of harvest and post harvest losses of major crops and commodities in India (ministry of Food Processing Industries, New Delhi, Rs.6.40 Lakhs)
7. Award of Fellowship under National Rebewable Fellowships (MNRE, Rs.61.76 Lakhs)
8. Bioactive peptide synthesis from honey protein and its biochemical characterization (CSIR, Rs.0.00 Lakhs)
9. Biodepolymerization of low grade lignite to Biomethane and Humic acid (ONGC, New Delhi, Rs.248.00 Lakhs)
10. Characterization of soil reflectance in the visible and near-infrared region for the iron-rich soils of eastern India (SERC, DST, New Delhi, Rs.19.65 Lakhs)
11. Climate Change Adaptations to Improve Agricultural Production in Eastern India (Sustainable Food Security) (MHRD, Department of Higher Education, New Delhi, Rs.18.85 Lakhs)
12. Climate change and rice-based crop production system of eastern and south eastern India: Impact assessment and risk management through simulation (C-MMACS, CSIR, Bangalore, Rs.16.67 Lakhs)
13. Design of drainage system and multi-purpose detention pond for storm water management of IIT Kharagpur campus (IIT Kharagpur, Rs.45.00 Lakhs)
14. Development of a conceptual water balance model for various ecosystems of India (Department of Space, SAC Ahmedabad, Rs.20.30 Lakhs)
15. Development of a GIS based decision support system for irrigation system management (Indian National Committee on Surface Water (INCSW), Ministry of Water Resources (MoWR), Rs.42.47 Lakhs)
16. Development of a Prototype for Continuous Production of Kheer (NDDB, Anand, Rs.6.25 Lakhs)
17. Development of Agricultural Machines (NIFP) (National Innovation Foundation, Ahmedabad, Rs.5.73 Lakhs)
18. Development of cage for mariculture through numerical & physical modeling (MOES, New Delhi, Rs. 47.00 Lakhs)
19. Development of e-Courses for B.Tech. (Agricultural Engineering) (ICAR-NAIP (New Delhi), Rs. 78.11 Lakhs)
20. Development of GIS based decision support system for irrigation system management (INCID, Min. of Water Resources, Govt. of India, Rs. 42.47 Lakhs)
21. Development of low energy requiring tillage implements for tractors and power tillers (MHRD, Dept. of Higher Education, New Delhi, Rs. 28.70 Lakhs)
22. Development of Process Technology for the Extraction and Purification of Ergothionein from Dried oyster Mushroom (Pleurotus Ostreatus)(PDO) (Department of Biotechnology, GOI, Rs. 0.00 Lakhs)
23. Development of Quality Control and Management System & Protocols for Stored Food Grains (MHRD, Department of Higher Education, New Delhi, Rs. 61.20 Lakhs)
24. Development of Solar Assisted Vapour Absorption Refrigeration System for Rural storage Needs (IIT Kharagpur, Rs. 1.00 Lakhs)
25. Development of storage technologies for improved food grain storage (MHRD, Department of Higher Education, New Delhi, Rs. 40.65 Lakhs)
26. Development of Technology and Prototype Facility for Enhancement of Shelf life of Fruits and vegetables through Active Packaging and Modified Storage (Department of Biotechnology, Govt of India, Rs. 89.00 Lakhs)
27. Development of Technology for processing and preservation of ripe Palmyra Palm fruits (ICAR, Rs. 23.00 Lakhs)
28. Enhancing Research Capacity and Initiating Integrated M Tech & Ph D programme in Food Science & Technology (Department of Biotechnology, Government of India, New Delhi, Rs. 837.80 Lakhs)
29. Ensemble modeling of rainfall-runoff transformation process (Ministry of Water Resources, Rs. 26.50 Lakhs)
30. Enzymatic approach to control celiac disease to an alternative treatment strategy (Department of Biotechnology, GOI, Rs. 0.00 Lakhs)
31. Estimation of crop coefficients from remotely sensed data to improve irrigation scheduling in India (Under Sustainable Food Security Project) (Ministry of Human Resources Development (MHRD), Rs. 30.50 Lakhs)
32. Experimental Agro-meteorological Advisory Service unit (AAS) (Ministry of Earth Science, Government of India, India Meteorological Department, Mausam Bhawan, Lodh, Rs. 0.00 Lakhs)
33. Food Security Research (MHRD, Rs. 200.00 Lakhs)
34. Forecasting Agricultural output using Space, Agrometeorology and Land based Observations (Ministry of Earth Sciences, Rs. 12.00 Lakhs)
35. Formulation and Pilot Scale Unit for Production of Therapeutic Food in Ready-to-Eat Form (TF-RTE) for Management of SAM Children (Department of Biotechnology, Govt of India and M/s GCPL New Delhi, Rs. 218.70 Lakhs)
36. Geophysical and Hydrogeologic Characterization of Aquifers and Artificial Recharge of Groundwater at IIT Kharagpur Campus for Sustainable Water Supply (MHRD, Rs. 100.00 Lakhs)
37. Implementation of Agro-techniques towards recovery of lost soil fertility to salinity after Aila incidence in Dayapur, island of Sunderban areas: An i (NABARD, Kolkata, Rs. 9.00 Lakhs)
38. Improving Groundwater Levels and Quality through Enhanced Water Use Efficiency in Eastern India Agriculture (Information Technology Research Academy (ITRA), Ministry of Communication and Information Technology, Rs. 114.41 Lakhs)
39. Indo-Denmark Collaborative research project on High rate algal biomass for food, feed and bioenergy (DBT, GOI, Rs. 0.00 Lakhs)
40. Integrated Agromet Advisory Services (Ministry of Earth Sciences, Govt. of India, Rs. 30.00 Lakhs)
41. Integrated pilot project on food grain production and post-harvest processing and storage at farm level (MHRD, DEPARTMENT OF HIGHER EDUCATION, Govt. of India, Rs. 186.30 Lakhs)
42. Integration of rain water harvesting and climate resilient agriculture in sustaining productivity and profitability of rainfed agroclimatic zones of e (ICAR, CRIDA, NICRA, Hyderabad, Rs. 0.00 Lakhs)
43. Interdisciplinary network for holistic environment system analysis, eco-system services, integrated modelling and sustainable resources management (BMBF, Germany, Rs. 264.00 Lakhs)
44. Investigation of Groundwater Dynamics and Recharge Potential under Salient Crop Production Systems of Eastern India (MHRD, Rs. 33.10 Lakhs)
45. Kheer Making (NDDB, Rs. 6.25 Lakhs)
46. Land use land cover dynamics in relation to human dimension and climate in Mahanadi river basin, Orissa (NRSC, Hyderabad, Rs. 22.80 Lakhs)
47. Measurement to management (M2M): Improved water use efficiency and agricultural productivity through experimental sensor network (MoIT, Information Technology Research Academy (ITRA), Rs. 155.64 Lakhs)
48. Modeling the performance of a few major cropping systems in eastern India in the light of projected climate change (National Agricultural Innovation Project, ICAR, New Delhi, Rs. 50.00 Lakhs)
49. NAIP project entitled ‘Precision Farming Technologies .......... in Production Agriculture’? (ICAR, New Delhi, Rs. 59.74 Lakhs)
50. Operational Research Project on Agro-processing centre (ICAR, New Delhi, Rs. 5.54 Lakhs)
51. Perturbing phenolic natural product metabolism in tobacco by expressing a cryptogein gene of novel elicitor function (DST-SERB, New Delhi, Rs. 34.50 Lakhs)
52. Power generation with reduced emissions using de-oiled cake and biodiesel from non-edible oil seeds (Department of Science & Technology, Rs. 33.07 Lakhs)
53. Precision Farming Development Centre (National Committee on Plasticulture Application in Horticulture, Min. of Agriculture, Govt. of India, Rs. 250.00 Lakhs)
54. Precision Farming Technologies based on Microprocessor & Decision Support Systems for Enhancing Input Application Efficiency in Production Agriculture (ICAR, NAIP, Rs. 46.49 Lakhs)
55. Production of Citrus Juice through enzymatic debittering (DBT, Rs. 0.00 Lakhs)
56. Production of ethanol from lignocellulosics: Lab to Pilot scale (DBT, Rs. 345.00 Lakhs)
57. Rapid soil carbon mapping using soil reflectance in the visible and near-infrared region (NRDMS, DST, New Delhi, Rs. 60.00 Lakhs)
58. Rural Technology Action Group (Office of Principal Advisor to Prime Minister, Rs. 6.00 Lakhs)
59. Seed drill with flow detecting sensors (MHRD, Dept. of Higher Education, New Delhi, Rs. 13.60 Lakhs)
60. Standardization of process parameters in withering, maceration, rolling, fermentation and drying of tea (Tea Board, Govt. of India, Kolkata, Rs. 366.96 Lakhs)
61. Studies on High Pressure Processing of High Value Perishables (NAIP, Indian Council of Agricultural Research (ICAR), New Delhi, Rs. 465.00 Lakhs)
62. Studies on Microalgal Triacylglycerols as a Source of Biodiesel (ICAR, Rs. 170.29 Lakhs)
63. Study of heat and mass transfer and estimation of CO2 mitigation during solar drying of food products (ISIRD, SRIC, Rs. 4.87 Lakhs)
64. Survey to Identify the Practices for Ripening of Fruits (ICAR-ICMR, Rs. 0.00 Lakhs)
65. Sustainable Food Security through Technological Interventions for Production, Processing and Logistics (SAL) (MHRD, Rs. 2600.00 Lakhs)
66. Synthesis and characterization of green silver nano from medicinal plants for surface sterilization of Mango: an indigenous fruit of West Bengal. (CSIR, Rs. 0.00 Lakhs)
67. Targeted metabolomics-based selection of superior scented rice cultivars appropriate for growing in local agro-climatic zones (Department of Higher Education, MHRD, New Delhi, Rs. 100.00 Lakhs)
68. Understanding scent volatiles emission in Polianthes tuberosa flowers (CSIR, New Delhi, Rs.25.00 Lakhs)
69. Upgradation of laboratory and library facilities for renewable energy programe (MNRE, Rs.50.00 Lakhs)

Consultancy Projects

1. Construction of periphery road in the BRBNMPL campus (Bharatiya Reserve Bank Note Mudran Ltd., Salboni, Rs.10.00 Lakhs)
2. Evaluation of Antioxidant Potential, Synergestic Behaviour and Stability of Rosemary & Sage Extracts (M/s Synthite Industries Ltd., Kolenchery, Kerala, Rs.49.90 Lakhs)
3. Evaluation of capacity of Rice Mill at Midnapur (Rice Millers’ Association, Rs.0.00 Lakhs)
4. Evaluation of Probable Maximum Flood for Nagarjun Sagar Dam (Irrigation and CAD Department, Govt. of Andhra Pradesh, Rs.29.00 Lakhs)
5. Multipurpose cold storage (MRCS) (M/s Greenfield Wintrade Pvt Ltd. Kolkata, Rs.3.25 Lakhs)
6. Performance Evaluation of Agricultural Machines (PEAM) (M/s Vijay Engineering and Machinery Co., Laxmipuri, Kolhapur - 416002, Maharashtra, Rs.1.45 Lakhs)
7. Performance evaluation of Texas Allegator (PETA) (M/s Texas Farm & Garden Technologies Pvt. Ltd., Pace City, Sector 37, Gurgaon 122001, Haryana, Rs.0.35 Lakhs)
8. Performance of a bias ply tyre (PBPT) (TVS Tyres Ltd, Madurai, Rs.5.52 Lakhs)
9. Planning and Design of Rainwater Harvesting Systems for Cement Grinding Unit in Purulia-West Bengal (Reliance Cement Company Pvt. Ltd. Mumbai, Rs.4.91 Lakhs)
10. Preservation of fresh betel leaves cultivated in and around Midnapore District (Private party (Sri Krishna Cold Storage, Nonakuri Bazaar, East Midnapore, WB), Rs.0.22 Lakhs)
11. Rainwater Harvesting at Arati Steel Ltd. (Arati Steel Ltd., Cuttack, Rs.4.20 Lakhs)
12. Rainwater Harvesting at Bokaro Steel Ltd. (Bokaro Steel Ltd., SAIL, Rs.7.50 Lakhs)
13. Rainwater Harvesting in the UAL Bengal Campus (UAL Bengal, Rs.2.00 Lakhs)
14. Study of effect of mining activities on water quality in surrounding areas (Tata Steel, Noamundi, Rs.15.00 Lakhs)
15. Technology for extraction of essential oil from Betel Leaf (TEBL) (Private party: Md. Rafique Md. Yaqub, Sadi Wada Infront of School No.1, Ward No.15, Deulgaon Raja-4432, Rs.30000.00 Lakhs)
16. Testing of Brush Cutters (TTBC) (M/s Texas Farm & Garden Technologies Pvt. Ltd., Pace City, Sector 37, Gurgaon 122001, Haryana, Rs.0.78 Lakhs)
17. Testing of Green Field Equipments (TGFE) (M/s Green Field Material Handling Pvt. Ltd. Manish Nagar, Thane, Maharashtra 400605, Rs.0.72 Lakhs)
18. Testing of Rice Mills (TRRM) (B K Agro Products Pvt Ltd, Rs.0.10 Lakhs)
19. Testing of TATA Power Weeders and Tillers (TTPW) (M/s Texas Farm & Garden Technologies Pvt. Ltd., Pace City, Sector 37, Gurgaon 122001, Haryana, Rs.2.54 Lakhs)
20. Testing of Texas Tiller (TGTT) (M/s Texas Farm & Garden Technologies Pvt. Ltd., Gurgaon, Haryana, Rs.1.55 Lakhs)
21. TPIA for Creation of Teaching Labs for NIFTEM (Ministry of Food Processing Industries, Govt of India, Rs.13.80 Lakhs)
22. Tractive performance of bias-ply and radial-ply tyres (Apollo Tyres Ltd, Vadodara, Rs.19.85 Lakhs)
23. Vermicomposting (Greenfield Agrotech, Rs.0.25 Lakhs)

Technology Transferred

1. NGOs - An Improved Pedal driven Sabai Grass Rope Making Machine : Rs. 0.00 Lakh
2. NGOs - Bamboo Sliver Making Machine : Rs. 0.00 Lakh
3. NGOs - Coir Rope Doormat Making Machine : Rs. 0.00 Lakh
4. Purvachal Kalyan Aashram (NGO) - Design and construction of on-farm pond in rainfed districts of West Bengal : Rs. 0.00 Lakh
5. NGOs - Dual Fibre Extractor Machine : Rs. 0.00 Lakh
6. M/s G C P L, New Delhi - Formulation and Process Technology for Production of Ready-to-Eat Therapeutic Food For Management of SAM children : Rs. 0.00 Lakh
7. NGO-Keshiary - Integrated Muri Making machine : Rs. 0.00 Lakh
8. NGOs - Leg Operated Jute Rope Making Machine : Rs. 0.00 Lakh
9. Department of Horticulture, Min. of Food Processing & Horti. Govt. of West Bengal - Micro Irrigation and Greenhouse Structures Design for Horticultural Crops : Rs. 0.00 Lakh
10. NGOs, SHG of Nayagram - Muri Making Machine (Hand-operated) : Rs. 0.00 Lakh
11. NGOs - Sabai Grass Rope Polishing Machine : Rs. 0.00 Lakh
12. NGOs - Sisal Fibre Extractor : Rs. 0.00 Lakh

**Patents (filed / granted)**

1. A spoon feed type of seed metering mechanism
2. An edible film from Soy Whey and a process for the Preparation.
3. Biodepolymerization of humic acid from lignite
4. Coir Rope Doormat Making Machine
5. Continuous Soil Moisture Recorder
6. Development of a novel anaerobic consortium for biomethane production from lignite
7. Dual Fiber (Ramie-Sisal) Extractor
8. Enzymatic peeling of potatoes
9. Enzymatic saccharification and fermentation of pretreated lignocellulosic raw material
10. Flow Regulated Drip Emitter
11. Formulation and Process Technology for Production of Ready-to-Eat Therapeutic Food For Management of SAM children
12. Grain puffing cum roasting machine
13. Granular Matrix Soil Moisture Sensor
14. High Pressure Pasteurization of Mango Juice
15. High Pressure Pasteurized Litchi Juice
16. In situ aquaculture water remediation using sediment microbial fuel cell
17. Integrated Composite Anthropometer
18. Integrated Muri (Puffed Rice) Making Machine
19. Jamun fruit extraction machine
20. Mechanical loading-unloading and uniform spreading system for tea leaf on withering trough
21. Motorized Jute Rope Making Machine (Model 2)
22. Motorized Rice Pounder – Horizontal Type
23. Production of bioethanol from potato waste
24. Purification of lactic acid and its polymerisation to Polylactic acid (PLA) with improved property.
25. Single screw extruder for third generation snacks
26. Strategic enhancement of lignite biomethanation by fungal pretreatment
27. Sun tracking solar dryer
28. Sweat Irrigation System
29. Tea maceration machine

**Visits Abroad by Faculty Members**

1. Tiwari, Kamlesh Narayan - International training on Distance education methods and e-learning tools (Department of Agricultural & Biosystem Engineering, North Dakota State University, Fargo, North Dakota, USA, ) May 27 2013 to June 09, 2013.
2. Tiwari, Kamlesh Narayan - Advanced Labs visit and to establish reseach linkage. (University of Guelph, Canada, ) June 15 2013 to June 18, 2013
3. Srinivasa Rao, Pavuluri - Presenting a paper at International conference (IICBE) (Dubai, UAE, ) 2 days 17-18 March 2014
5. Srivastav, Prem Prakash - To deliver a lecture and interact with doctoral graduate students (South Dakota State University, Brookings, USA, ) July 18 - 20, 2013
6. Srivastav, Prem Prakash - To present papers in 2013 ASABE Annual International Meeting (Kansas City, Missouri, USA, ) July 21 – 24, 2013
8. Raheman, Hifjur - For attending international conference (Dubai, ) 17-18th March 2014
9. Swain, Dillip Kumar - To deliver lecture at UNUN, Tokyo (Japan, ) 20-22 October 2013
10. Panda, Sudhindra Nath - As Visiting Professor: Hydrology and Sustainable Water Resources Management of Arid Environments (Arid Land Research Center, Tottori University, Tottori, Japan, ) 1st April, 2013 to 31st March, 2014 (one-year)
11. Mal, Bimal Chandra - To participate in the Vice Chancellors Conference and present a paper (Istanbul, ) 4 days
12. Mal, Bimal Chandra - To present 2 papers, to chair 3 technical sessions and to take part in Rectors Forum meeting. (Cape Town, ) 5 days

Invited Lectures by Faculty Members

1. Climate change impacts on food security by Swain, Dillip Kumar (United Nations University, Tokyo, JAPAN)
2. Toxicity and product safety of oils and fats by Das, Madhusweta (varanasi)
3. Rainwater Harvesting and Artificial Groundwater Recharge: Emerging Tools for Mine Site Restoration by Jha, Madan Kumar (Department of Mining Engineering, Indian Institute of Technology Kharagpur)
4. Digital soil mapping by Das, Bhabani Sankar (Bengaluru)
5. Biophysical Characterization and Various Measurement Techniques for Quantifying Ecosystem Services by Das, Bhabani Sankar (ICRISAT, Hyderabad)
6. Microwave-convectional drying of oyster mushroom by Srivastav, Prem Prakash (South Dakota State University, Brookings, USA)
7. Aquaculture - Social Issues by Mitra, Arunabha (Expert Body on Water ResilieCentral Institute of Freshwater Aquaculture(ICAR), Bhubaneswar)
8. Metabolic phytochemistry-based approaches for studying secondary pathways in hairy root cultures by Mitra, Adinpunya (Indian Institute of Science Education & Research Pune)
9. High pressure processing of perishable fruits by Srinivasa Rao, Pavuluri (Anand Agricultural University, Gujarat)
10. “Food quality measurement - A key factor in consumer acceptability: Sensory versus objective methodo by Das, Susanta Kumar (IIT-BHU)
11. Experiences with microalgal biodiesel production by Mallick, Nirupama (Visva-Bharati, Santiniketan)
12. High pressure processing of fruits and fruits products. by Srinivasa Rao, Pavuluri (Central Institute of Fisheries Technology Cochin)
13. High pressure processing of perishable foods by Srinivasa Rao, Pavuluri (A D Patel Institute Technology, Anand, Gujarat)
14. Continuous operation of milk sterilizer based on control algorithm application by Datta, Ashis Kumar (Chennai, India)
15. Effect of Greenhouse Shapes and Cladding Materials on Micro Climate for Vegetable and Flower Product by Tiwari, Kamlesh Narayan (College of Agricultural Engineering & Technology MPUA&T, Udaipur)
16. Economic Analysis of Micro-irrigation in Fruits and Vegetable Crops by Tiwari, Kamlesh Narayan (CISH (ICAR) Lucknow)
17. Water for Agriculture in Eastern India by Panda, Sudhindra Nath (Faculty of Agriculture, Tottori University, Tottori, Japan)
18. Integrated Land and Water Resources Planning and Management in Semi-arid Regions of North-west India by Panda, Sudhindra Nath (Arid Land Research Center, Tottori, Japan)
19. Simulation-Optimization Modelling for Integrated Land and Water Resources Management in India by Panda, Sudhindra Nath (International Research Centre for River Basin Environment, Univ. of Yamanashi, Yamanashi, Japan)
20. Water Conservation and Reuse for Climate Resilient Sustainable Rainfed Agriculture in Eastern India by Panda, Sudhindra Nath (Laboratory of Regional Planning, Graduate School of Global Environmental Studies, Kyoto University, Japan)
21. Rainwater Conservation and Reuse for Sustainable Agriculture in Rainfed Ecosystem of Eastern India by Panda, Sudhindra Nath (ALRC, Tottori University, Tottori, Japan)
22. Development of Pooled Circular Stepped Cascade Aeration System for Water Treatment by Mal, Bimal Chandra (Rungta College of Engineering and Technology, Bilai)
23. Roadmap for Upgradation of Technical Education in Chhattisgarh by Mal, Bimal Chandra (Istanbul)
24. Technological Options for Rural Development of Chhattisgarh by Mal, Bimal Chandra (Bastar University, Jagdalpur)
25. Importance of Human Values in Technical Education by Mal, Bimal Chandra (O.P. Jindal Institute of Technology, Raigarh)
26. Vocational Training, Skill Development and Entrepreneurship by Mal, Bimal Chandra (National Institute of Technical Teachers Training and Research (NITTTR), Bhopal)
27. Common Mistakes in Writing Ph.D. Thesis and Remedial Measures by Mal, Bimal Chandra (Ravishankar Shukla University, Raipur)
28. e-Governance for Universities by Mal, Bimal Chandra (New Delhi on U.N. Public Service Day)

Short-Term Courses, Training Programmes and Workshops organised

1. CII-IIT Certified Food Professional Course on Food Safety & Quality Management (2 weeks)
2. Farmers Field Day, Bishnupur, Bankura (September 25, 2013)
3. Food Processing & Preservation – Food Grains / Fruit-Vegetable Processing (January 20-22, 2014)
4. Greenhouse Management and Plasticulture in Horticulture (September 30-October 1, 2013)
6. On-site waste water treatment and management (June 31 to July 11, 2014)
7. Plasticulture Applications in Horticultural crops (April 25-26, 2013)
8. Precision Farming in Horticulture (December 16-17, 2013)
9. Protected Cultivation Technology (October 22-23, 2013)
10. Scope of Greenhouse and Plasticulture in Horticulture (January 16-17, 2014)

Papers Published in Journals

4. Enhanced lipase recovery through RSM integrated differential evolutionary approach from the fermented biomass By Garlapati VK and Banerjee R, Brazilian Archives of Biology and Technology 56(5), 699-709 (2013)

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10. A panoptic study of antioxidant potential of foliar gel at different harvesting regimens of Aloe vera L. By A. Roy and S. Dutta Gupta Industrial Crops & Products 51: 130-137 (2013)


31. Combining climatological and participatory approaches for assessing changes in extreme climatic indices at regional scale By Neha Miital, Ashok Mishra, R. Singh *Climate Change* (2013)


37. Comparative pretreatment method for efficient enzymatic hydrolysis of Salvinia cucullata and sewage treatment in ponds containing this biomass By • Mishra, G.S., Mitra, A., Banerjee, R., Ghangrekar, M.M. *Clean Technologies and Environmental Policy* DOI 10.1007/s10098-0 (2013)


46. Effect of Antimicrobial on Mechanical, Barrier and Optical Properties of Corn Starch Based Self-Supporting Edible Film By Tania Chowdhury and Madhusweta Das *International Journal of Food Studies* 2, 212-223 (2013)


54. Effect of synbiotic interaction of fructooligosaccharide and probiotics on the acidification profile, textural and rheological characteristics of fermented soy milk. By Shalini Mishra and H N Mishra *Food Bioprocess Technology* (2013)


64. Fermentation of vegetable juice mixture by probiotic lactic acid bacteria By Sharma V, Mishra HN Nutrafoods 12: 17-22 (2013)
68. Flood hazard assessment with multi-parameter approach derived from coupled 1D and 2D hydrodynamic flow model By Mani, P., Chatterjee, C., and Kumar, R. Natural Hazards 70(2), 1553-1574 (2014)
75. Growth Characteristics Modelling of Lactobacillus acidophilus using RSM and ANN, By Meena GS, Kumar N , Majumdar GC and Banerjee R, Meena,PK and Yadav V, Brazilian Archives of Biology and Technology 57(1), 15-22 (2014)
77. High-Pressure Inactivation of Enzymes: A Review on Its Recent Applications on Fruit Purees and Juices By Chakraborty, S., Kaushik, N., Rao, P.S., Mishra, H.N. Comprehensive Reviews in Food Science and Food Safety Accepted (2014)


83. Microcontroller based roller contact type herbicide applicator for weed control under row crops. By Tewari V.K., A. Ashok Kumar, Nare Brajesh, Satya Prakash and Tyagi Ankur *Computers and Electronics in Agriculture* (Ref. COMPAG3038) (2014)


108. Solvent-free synthesis of flavour esters through immobilized lipase mediated transesterification By Garlapati VK and Banerjee R, Enzyme Research article no. 367410 (2013)


110. Starch and Cellulose Based Edible Films: Role of Ingredients By Madhusweta Das Food Marketing and Technology 5 (1), 30-32 (2014)


Papers Presented in Conferences


5. A Microcontroller Based Contact Type Herbicide Applicator For Weed Control Under Row Crops, By Tewari, V.K., Ashok Kumar, A., Ankur Tyagi, Swarup Patil, Vikas Patil, Gaurav


8. Advocating the ‘Culture of Mushroom Consumption’ within the Pre-dominant Discourse of Cancer Treatment and the Politico-Economic Challenges to its Adoption (Paper Number: 131619462), *By* Nath, S. Bhattacharya, M. Srivastav, P. P., 2013 ASABE Annual International Meeting, Kansas City, Missouri, (2013)


10. Antioxidant activity of Syzygium cumini of various geographic locations, *By* Aseem Vat, Sneha Sehwag and Madhusweta Das, *International congress on Agriculture, Food Engineering and Environmental Sciences- Sustainable Approaches*, Jawaharlal Nehru University, New Delhi, (2014)


22. Diverse pathways contribute to floral odour volatiles in Polianthes tuberosa, By Saborni Maiti, Paramita Bera and Adinpunya Mitra, National Symposium on Advances in Plant Molecular Biology & Biotechnology, IISER Pune, (2014)
23. Diversion of metabolic flow from phenylpropanoid biosynthesis to methyl-erythritol 4-phosphate pathway in green hairy roots of Daucus carota, By Chiranjit Mukherjee and Adinpunya Mitra, National Symposium on Advances in Plant Molecular Biology & Biotechnology, IISER Pune, (2014)
34. Electronic Nose Based on Metal Oxide Semiconductor Sensors as an Alternative Technique for the Spoilage Classification of Oat Milk, By A Deswal, N S Deora and H N Mishra., International Conference on Agriculture and Food Engineering, Miami, USA, (2014)


44. Extraction, characterization and food utilization of bioactive from algal biomass, By H N Mishra, Asian Biotechnology Conference, IIT Delhi, (2013)


47. Future predictions of changes in seasonal streamflow characteristics as a consequence of changing climatic extremes, By Neha Mittal, Ashok Mishra, R. Singh, 6th International Conference on Water Resources and Environment Research., Koblenz, Germany, (2013)


49. Importance, applications and future prospect of nanotechnology in the field of Food, Agriculture and Medicine, By Anupam Roya, Shanker Lal Shrivastavab, Subhasish khamraic, Santi M. Mandald, International Conference on Nanotechnology (ICNT 2013), Haldia Institute of Technology, Haldia., (2013)


51. Improving the Livelihood of Rural People through Rural Technologies, By Prof. P. B. S. Bhadoria, India Innovation Initiative - i3 National Fair, New Delhi, (2013)


54. Integrated Land and Water Resources Planning and Management for Water Table and Salinity Control in an Irrigation System of South-West Punjab (India), By S. N. Panda, International Symposium on Answers to Asian Aquatic Problem 2013 (AAA+2013), Tokyo Metropolitan Univ., Tokyo, Japan, (2013)

55. Interseasonal and Multicrop Conjunctive Use Planning in a Canal Irrigation System for Sustainable Land and Water Resources Management, By Biswadip Das, Ajay Singh,

57. Managing Environmental Concern of Waterlogging in Irrigated Agriculture through a Simulation Model, By Ajay Singh, Hiroshi Yasuda, S. N. Panda, 6th International Congress of Environmental Research (ICER-13), Aurangabad, India, (2013)


61. Modeling of drying kinetics of Indian berry leather, By Aditya Thatte, Sneha Sehwag and Madhusweta Das, International congress on Agriculture, Food Engineering and Environmental Sciences- Sustainable Approaches, Jawaharlal Nehru University, New Delhi, (2014)


63. Molecular oscillationss of scent volatile emission in Jasminium sambac, By Paramita Bera, Tanmoy Samanta and Adinpunya Mitra, National Symposium on Advances in Plant Molecular Biology & Biotechnology, IISER Pune, (2014)

64. Multiple scenarios based hydrological analysis of adaptation strategies for better decision making, By Ajay G. Bhave, Ashok Mishra, N.S. Raghunwanshi, 6th International Conference on Water Resources and Environment Research, Koblenz, Germany, (2013)

65. Mustard protein concentrate, By Swati, Sneha Sehwag and Madhusweta Das, International Congress on “Agriculture, Food Engineering and Environmental Sciences- Sustainable Approaches, Jawaharlal Nehru University, New Delhi, (2014)


68. Performance and emissions of emulsified biodiesel operated diesel engine, By H. Raheman and Sweety Kumari, International Conference on Biological, Civil, and Environmental Engineering (BCEE-2014), Holiday Inn, Dubai, (2014)


72. Polyvinyl Pyrrolidone (PVP) as an additive in starch based biodegradable films, By Neha Bisht, Chandani Sen and Madhusweta Das, International congress on Agriculture, Food Engineering and Environmental Sciences - Sustainable Approaches, Jawaharlal Nehru University, New Delhi, (2014)


75. Production of bioethanol from potato waste, By Chintagunta AD and Banerjee R., International Symposium on New Horizons in Bioenergy Research, at IIT Kharagpur, India, (2013)


78. SDS low molecular weight lipase interaction study by ITC, By Adak S, Banerjee R., Poster presented at Asian Congress on Biotechnology - Bioprocessing for Sustainable Development, New Delhi, India, (2013)

79. Simulation-optimization modeling for optimal management of groundwater in a well command of eastern India, By Mohanty, S., Jha, M.K. and Kumar, A., 54th Annual Technical Session, The Institution of Engineers (India), Odisha State Center, Bhubaneswar, Odisha, (2013)


85. Ultrasound assisted extraction of essential oils from residual turmeric feed, By Aditi K, Haldar S, Mishra H N, National Seminar on Non Thermal Processing Techniques: Emerging Innovations for Sustainable, Safe and Healthy Foods, HIT, Haldia, India, (2013)
Department of Architecture & Regional Planning

Head
Prof. Jaydip Barman

Professors

Barman, Jaydip  Ph.D. (IIT Kharagpur), Urban Design, Green Buildings and Eco Habitat, Tourism Planning and Management, Urban Waterfront Development, Crime Prevention through Landscape Design in Urban Public Spaces

Chattopadhyay, Subrata  Ph.D. (IIT Kharagpur), Effect of transit on housing choice, peri urban dynamics, residents satisfaction in company housing, energy efficient intervention in affordable housing, housing and human performance index

Datta, Rabindranath  Ph.D. (IIT Kharagpur), City Planning, Urban and Regional Transportation Planning


Sen, Joy  Ph.D. (IIT Kharagpur), Community and Regional Planning Analyses & Programming, Architecture and Planning related Heritage Studies and Documentation

Associate Professors
Basu, Sanghamitra  Ph.D. (IIT Kharagpur), Tourism Planning in Historic Areas, Urban Conservation & Heritage Management, Architectural Design and Pedagogy, Quality of Life in Residential Neighbourhoods with focus on needs of senior citizens, Traditional Architectural and application of Shape Grammer, GIS in Urban Planning, Post Modernism & Contemporary Architecture, Quality of Life and Social Cohesion in various types of built environment

George, Abraham  Ph.D. (Calicut University), Architecture Design-Pedagogy-Sustainable Age-friendlyDesigns-Landscape-Elderly Housing-Preservation

Sen, Somnath  Ph.D. (IIT Kharagpur), Environmental Planning, Land Use and Development Control Planning

Assistant Professors
Banerji, Haimanti  Ph.D. (IIT Kharagpur), Barrier Free Architecture, Behavioral Architecture, Urban Design, Town Planning and Settlement Planning, Ergonomics and Product Design

Bhattacharya, Shankha  Ph.D. (BIT, Mesra), Earthquake Resistant Building, Structural Systems, Building Physics

Pratim
Faculty Re-employment
Prof. Rabindranath Datta  Professor

New Academic Programmes

M. Arch: Master of Architecture in Sustainable Built Environment is under consideration.

Brief Description of on-going activities


Art and Architecture: (Indian Traditional Architecture and Heritage studies, Vernacular Architecture, Design, Visual Communication, Visual Simulation, Product design and Industrial design)

Infrastructure and spatial Planning: (Transportation Planning, Traffic Engineering and Management, Hazards and Disaster Mitigation and Management, Urban Design, Eco-tourism, Recreation and Landscape Planning, Conservation and Preservation Studies, Housing and Shelter, Social Infrastructure)

Architecture, Media and Communication: (Cultural studies, Media and Architectural journalism, Symbolism and Cultural sustainability)

**Thrust Areas**

2. Urban information system
3. Universal Design in Built Environment

**New Acquisitions**

1. Digital cum computerized Universal Testing Machine model MUTC- 60 Capacity 600KL

**Lectures by Visiting Experts**

1. Contemporary Architecture of Fernando Menis by Ar. Fernando Menis and Associates (Visiting Expert from Spain)
2. Modern Lighting concepts and LED applications in Interior Design and Urban Design. by Ms. Sudesh Mukhopadhyay (Director, Philips Lighting Education Program)
3. Clay Modelling, Pottery and Ceramics by Mr. Somnath Raha and group (Artist, Delhi Art College)
4. Approaches towards Transit Oriented Development (TOD) in current transportation planning. by Prof. S.L. Dhingra (Professor Emeritus, Civil Engineering, IIT Bombay)

**Doctoral and MS Degrees Awarded**

1. Keya Chakravarty : A Methodology to Assess inequality Variation within Kolkata Urban Agglomeration Applying Human Development Index based Indicators (PhD)
2. Lakshmi Thilagam : Comparative Analysis of Spatial Configuration of Historical Temple Towns of Tamil Nadu applying Space Syntax and Urban Image Analysis(PhD)
3. Paul Varghese : Shape Algebra and Rules in Design: Bridging the Gap between Formal and Intuitive Thinking (PhD)

**Member - Professional Bodies**

1. Mazumder, Tarak Nath, Associate Member - Council of Architecture
2. Mazumder, Tarak Nath, Associate Member - Institute of Town Planners, India
3. Paul, Saikat Kumar, Regular - Council of Architecture
4. Paul, Saikat Kumar, Associate - Institute of Town Planners India
5. Paul, Saikat Kumar, Associate - Indian Society of Remote Sensing
6. Pandit, Debapratim, Associate Member - Transport Research group of India
7. Pandit, Debapratim, Associate Member - Institute of Town Planners India
8. Pandit, Debapratim, Member - Council of Architecture
9. George, Abraham, Graduate Member - Haggai Institute for Leadership Training
10. George, Abraham, Life Member - Indian Society of Technical Education - ISTE
11. George, Abraham, Registered Architect - Council of Architecture - CoA
12. George, Abraham, Associate Member - Indian Institute of Architects
13. George, Abraham, Member - Indian National trust for Art and Cultural Heritage
14. George, Abraham, Member - Fulbright Academy
15. Das, Sutapa, Life - Indian Society for Technical Education (ISTE)
16. Das, Sutapa, Life - Building & Estate Management Alumni (BEMA), Singapore
17. Das, Sutapa, Life memer - Institute of Smart Structures and Systems (ISSS), India
18. Das, Sutapa, *Observer* - Hong Kong Building Environmental Assessment Method (HK-BEAM), Hong Kong
20. Das, Sutapa, *Associate* - Institution of Facilities Management (IFM), Singapore
22. Banerji, Haimanti, *Associate Member* - Institute of Town Planners India
23. Bhattacharya, Shankha Pratim, *Member* - Global Science and Technology Forum
24. Bhattacharya, Shankha Pratim, *Associate Member* - The Institution of Engineers (India)
25. Bhattacharya, Shankha Pratim, *Life Member* - Indian Society for Technical Education
27. Gupta, Sumana, *Life Member* - Institute of Town Planners India
28. Gupta, Sumana, *Life Member* - Council of Architecture
29. Chakraborty, Banhi, *Associate member* - Institute of Town Planners India
30. Chakraborty, Banhi, *Country Representative* - Regional Network for Poverty eradication (RENPER)
31. Banerjee, Uttam Kumar, *Life Member* - Indian Society for Technical Education
32. Banerjee, Uttam Kumar, *Life Member* - Council of Architecture
33. Basu, Sanghamitra, *Associate Member* - Institute of Town Planners, India
34. Basu, Sanghamitra, *Associate Member* - Indian Institute of Architects
36. Barman, Jaydip, *Member* - Indian Society of Lighting Engineers (ISLE)
38. Barman, Jaydip, *Registered member* - Council of Architecture, New Delhi
39. Barman, Jaydip, *Member* - Institute of Indian Interior Designers (IIID)
40. Sen, Sonnath, *Senior Member* - FITP-84/35 - Institute of Town Planners INDIA
41. Sen, Sonnath, *Associate* - Institute of Architects
42. Sen, Sonnath, *Regular* - Institute of Public Administration
43. Chattopadhyay, Subrata, *Member* - Council of Architecture
44. Chattopadhyay, Subrata, *Member* - Institute of Town Planners, India, Education Standing Committee
45. Majumdar, Tapan Kumar, *Life Member* - Council of Architecture
46. Majumdar, Tapan Kumar, *Associate* - Indian Institute of Town Planners
47. Majumdar, Tapan Kumar, *Associate* - The Indian Institute of Architects
48. Majumdar, Tapan Kumar, *Life Member* - Indian Society for Technical Education
49. Sen, Joy, *Associate Member Lifetime* - Institute of Town Planners India
50. Sen, Joy, *Associate Member* - Asia Pacific Network of Housing Research APNHR Hong Kong
51. Sen Gupta, Biplab Kanti, *Registered Member* - Council of Architecture
52. Sen Gupta, Biplab Kanti, *Associate* - Indian Institute of Architects
53. Datta, Rabindranath, *Member* - INSTITUTE OF TOWN PLANNERS INDIA
54. Ghosh, Mainak, *Registered Architect* - Council of Architecture - CoA
55. Ghosh, Mainak, *Associate Member* - Indian Institute of Architects

**Member - Editorial Board**

1. Basu, Sanghamitra (0) *Member* - IAHS 2014 organising committee
3. Datta, Rabindranath (2010) *Member of Editorial Advisory Board* - SPANDREL
10. George, Abraham (2016) *Member of the Scientific Committee* - ICSA-2016-Spain

**Awards & Honours**

1. Paul, Saikat Kumar (2013) *Fulbright Fellowship Awarded for research at Cornell University*

**Sponsored Research Projects**

1. A Creative economic regeneration and urban design revival project: Boipara - college street, Kolkata (MHRD,DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.105.00 Lakhs)
2. Application of Artificial Intelligence on Mapping Coastal Inundation and Evacuation route planning through multiple scenarios of Storm Surge Simulatio (, Rs.50.00 Lakhs)
3. Artificial intelligence for societal needs: Knowledge discovery and intelligent decision making for solving problems in Indian context related to ener (IIT Kharagpur, Rs.500.00 Lakhs)
4. ASSESSING THE CURRENT & FUTURE CREATIVE ECONOMIC REGENERATION SCOPE OF TRADITIONAL RIVER -BASED HERITAGE & ECO-TOURISM NETWORKS IN KMA, BENGAL (MHRD, Rs.50.00 Lakhs)
5. Assessing the current and future creative economic regeneration scope of traditional river based heritage and eco - tourism networks in KMA, Bengal ( (MHRD,DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.50.00 Lakhs)
6. Creation of a Universally Stimulating and Responsive Environment within Hospitals - A Conceptual Research Model (SRIC, Rs.4.70 Lakhs)
7. Design and Development of Paddle Driven Wheel (2005-2008) (Herons Bonsai Ltd., UK, Rs.0.00 Lakhs)
8. Development of a Methodology for Bus Transit Reform and Redesign: Case study Kolkata (ISIRD, SRIC, IIT Kharagpur, Rs.2.80 Lakhs)
10. Development of Trend-generating Communication Model in Architecture (SRIC/IIT Kgp, Rs.3.00 Lakhs)
11. Development of Women Technology Park in Nayagram Tribal Block, West Midnapore, West Bengal (Department of Science and Technology, Govt. of India, Rs.24.71 Lakhs)
12. Elderly-Friendly Built Form Design And Infrastructure Management Model And Knowledge Networking (MHRD-Future of Cities, Rs.251.81 Lakhs)
13. Empowerment of Village Youth Through Improved Mud Block Making (Faculty Challenge Grant- IIT Kharagpur, Rs.1.00 Lakhs)
14. Energy efficient intervention for affordable housing (HUDCO, Rs.21.00 Lakhs)
15. Ferro-Cement as a Cost Effective Building Material (SGFSS, SRIC, IIT Kharagpur, Rs.1.00 Lakhs)

16. Framework for improving bicyclists accessibility to rail stations (MHRD, Department of Higher Education, Rs.32.32 Lakhs)

17. Future of cities (MHRD, Rs.2500.00 Lakhs)

18. Future of Cities (MHRD Goct of India, Rs.2500.00 Lakhs)

19. Improving quality of life of senior citizens in residential neighborhoods in an Indian context (MHRD, Department of Higher Education, Rs.31.72 Lakhs)

20. Land use interventions in Peri-urban areas for managing urban growth (MHRD, Rs.43.50 Lakhs)


22. Modeling Relationship between Urban Development and Water Use, (MHRD, Rs.96.00 Lakhs)

23. Planning Recommendation for Urban Neighborhoods to regulate Thermal Fluxes in a Hot-Humid Climate Region: Case Study of Kolkata (MHRD, Rs.53.00 Lakhs)

24. Rural Industrialisation in West Bengal: Technology Intervention & Management of Development (TMD) (Khadi and Village Industries Commission, Govt. of India, Rs.60.00 Lakhs)

25. SANDHI A Science-Heritage Exploratory Initiative (16 projects) (MHRD Govt of India, Rs.2000.00 Lakhs)

26. SURVEY AND DEMARCATION OF DEFENCE LAND IN BARRACKPORE CANTONMENT (Barrackpore cantonment Board, Rs.8.69 Lakhs)

27. Technology Dissemination Program of IIT Kharagpur Interface of KVC programme (Khadi and Village Industries Commission, Govt. of India, Rs.12.00 Lakhs)

28. To establish a scientific correlation between 2 - D ecologic footprints and 3 - D built formulation in a) Indian architecture and b) its relationship w (MHRD, DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.100.00 Lakhs)

29. TO ESTABLISH A SCIENTIFIC CORRELATION BETWEEN 2-D ECOLOGIC FOOTPRINTS & 3-D BUILT FORMULATION IN A) INDIAN ARCHITECTURE & B) ITS RELATIONSHIP WITH THE (MHRD, Rs.50.00 Lakhs)

30. To establish linkages between Iconographic Re - interpretation of Architecture and engineering patterns of Pre - Buddhist / Vedic and Buddhist period (MHRD, DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.75.00 Lakhs)

31. Urban - design, planning & urban engineering exploration of Varanasi (UDE) (MHRD, DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.150.00 Lakhs)

32. Women Technology Park at Nayagram Tribal Block, Paschim Medinipur, West Bengal (Science & Society Division, Deptt. of Science & Technology, Govt. of India, Rs.46.00 Lakhs)

Consultancy Projects

1. Architectural Design of Nalanda Class Room Complex at IIT Kharagpur (IIT Kharagpur, Rs.72.00 Lakhs)

2. Comprehensive Architectural Services for SOEE at the STEP IIT Complex as well as Enterpreneurship Park at Gopali (Executive Director STEP, IIT Kharagpur, Rs.8.00 Lakhs)

3. Consultancy Services for construction of Sister Nivedita Hall of Residence at IIT Kharagpur (National Building Construction Corporation, Rs.3300000.00 Lakhs)

4. CONSULTANCY SERVICES FOR INTERIOR DESIGN WORKS AND PROJECT MANAGEMENT SERVICES OF SECRETARIAT BUILDING IN CAPITOL COMPLEX AT NAYA RAIPUR (Naya Raipur Development Authority, Rs.3309000.00 Lakhs)

5. Development plan preparation for Korbu Chhattisgarh (Directorate of Town & Country Planning, CG govt. of Orissa, Rs.30.00 Lakhs)
6. Development Strategies for Coochbehar District (NREG, Coochbehar, Rs.10.00 Lakhs)
7. Establishment of Indian Institute of Corporate Affairs (Ministry of Corporate Affairs, Govt. of India, New Delhi, Rs.160.70 Lakhs)
8. GIS based land use preparation and environmental planning for Commercial Center at Wadala, Mumbai (MMRDA, Rs.2000000.00 Lakhs)
9. GIS based map preparation for Old Planning Area of Siliguri Jalpaiguri Development Authority (Siliguri Jalpaiguri Development Authority, Rs.3870802.00 Lakhs)
10. Land Use and Development Control Plan, Asansol Sub-Division (ADDA, Rs.40.00 Lakhs)
11. Monitoring landuse changes at Barrackpore Cantonment (Barrackpore Cantonment Board, Rs.8.50 Lakhs)
12. Optimum Utilisation of Land Resources (Pilot work in Bihar) (GICPL, STEP IIT Kharagpur, Rs.2.50 Lakhs)
13. PRELIMINARY MASTER PLAN FOR CSIR INNOVATION COMPLEX AT BARUIPUR (CSIR, Rs.533710.00 Lakhs)
14. Preparation of a GIS based mapping system for SJPA (SJDA, Rs.38.00 Lakhs)
15. Preparation of Architectural construction drawings for St Xaviers campus in New Town Kolkata (Basumati Enterprise on behalf of St Xaviers College Kolkata, Rs.30.00 Lakhs)
16. Preparation of Land Use and Development Control Plan for Haldia (RLDC) (HDA, Rs.55.00 Lakhs)
17. Preparation of Land Use and TOD plan for Hyderabad Metro Rail Project (Hyderabad Metro Rail Limited, Rs.28.00 Lakhs)
18. Preparation of Perspective Plan- Vision 2030 and Comprehensive Development Plans for Planning Areas of Bhubaneswar & Cuttack Development Authority (Housing and Urban Development, Government of Orissa, Rs.165.29 Lakhs)
19. Preparation of Temple Plan in Midnapore (Loknath Temple Trust Midnapore, Rs.1.00 Lakhs)
20. PREPARATION OF ZONAL DEVELOPMENT PLANS FOR 14 PLANNING ZONES OF BHUBANESWAR DEVELOPMENT PLAN AREA (Bhubaneswar Development Authority, Rs.39163000.00 Lakhs)
21. REVISION/AMENDMENT OF THE LANDUSE AND DEVELOPMENT CONTROL PLAN FOR OLD HALDIA PLANNING AREA (Haldia Development Authority, Rs.5515000.00 Lakhs)
22. Survey of Defence Land at Barrackpore Cantt. (Cantt. Board, Rs.8.70 Lakhs)
23. Survey of Defence Land at Jalapahar Cantt. (Cantt. Board, Rs.5.50 Lakhs)
24. Survey of Defence Land at Lebong Cantt. (Cantt. Board, Rs.4.80 Lakhs)
25. Survey of Defence Land at Shillong Cantt. (Cantt. Board, Rs.26.50 Lakhs)
26. Third Party Inspection of Construction of Pravasi Bharatya Kendra, at Chanakyapuri, New Delhi (Ministry of Overseas Indian Affairs, Govt. of India, New Delhi, Rs.89.89 Lakhs)
27. Third Party Inspection of Retrofitting, Restructuring & Interior Decoration works of Khadi Gramadyog Bhawan, at Connaught Place, New Delhi (Khadi and Village Industries Commission, Ministry of MSME, Govt. of India, New Delhi, Rs.8.99 Lakhs)

Visits Abroad by Faculty Members

2. Sen, Joy - Conference of APNHR (Asia Pacific Network of Housing Research) (Kuala Lumpur Malaysia, ) August 2013 5 days
3. Chattopadhyay, Subrata - To attend 39 IAHS World Housing Conference, chair session, present paper (Milan Italy, ) 17-20 September, 2013
4. Basu, Sanghamitra - presenting paper in conference and visiting universities (UK, ) 10 days
Invited Lectures by Faculty Members

1. Environmental Protection and Sustainable Development of Coastal Settlements by Paul, Saikat Kumar (Raipur)
2. A timeline of housing by Chattopadhyay, Subrata (BIT Mesra)
3. Social Housing-lessons from world examples by Chattopadhyay, Subrata (SPA Bhopal)
4. Gems from the return trip - glimpses of Swamiji and Science and Technology in the Americas by Sen, Joy (150 years Birthday celebrations of Swami Vivekananda)
5. B Arch Thesis - framework and deliverables by Sen, Joy (NASA Panel discussion Jadavpur University)
6. Future of Cities - Heritage and Continuity by Sen, Joy (Future of Cities Workshop at IIT Bombay)
7. Cultural studies and History - case of Varanasi by Sen, Joy (SANDHI Workshop at IIT BHU)
8. Deconstruction workshop by Sen, Joy (MHRD SANDHI & Future of Cities Meet New Delhi)
9. Future of Cities - Varanasi project series 1 by Sen, Joy (MHRD Future of Cities Meet 1 New Delhi)
10. Varanasi - a mega exploratory project by Sen, Joy (MHRD Future of Cities Meet 2 New Delhi)
11. SANDHI lecture 1 MHRD Meet by Sen, Joy (IIT Kanpur)
12. Science and Technology in the IIT System on March 28 2014 by Sen, Joy (The Asiatic Society Kolkata)
14. Protecting Environment through Sustainable Urban Planning: Green Cities by Banerji, Haimanti (AISECT University, Bhopal)
15. Earthquake Resistant Reinforced Concrete Structures by Bhattacharya, Shankha Pratim (AISECT University, Bhopal, MP, India)
16. Planning Guidelines for a Sustainable Habitat – Managing Urban Transport, by Datta, Rabindranath (SPA Bhopal)
17. Indian Cities in Transition-Sustainable Options by Sen, Somnath (New Delhi, Centre for Science & Environment (CSE))
18. Design for Architectural and Urban Spaces towards Crime Prevention by Barman, Jaydip (Department of Architecture, National Institute of Technology, Patna)
20. WSUP- a contemporary approach for sustainable urban development by Sen, Somnath (GOA, Panjim, CSE Reg. Workshop on Urban water Management)
21. Role of Water sensitive Urban Design in UWM by Sen, Somnath (New Delhi, India Habitat Centre, CSE Workshop)
24. The Shadow of a Capital City to a Cultural Capital: Rediscovering Old Bhubaneswar by Basu, Sanghamitra (New Delhi (IIC) Monthly Lecture Series, India international Centre, New Delhi)

Books Published


Papers Published in Journals

9. Desirable physical and psychosocial dimensions in high-rise group housing, By Bhunia, A., Chattopadhyay, S., Journal of Institute of Town Planners India vol. 10, no.03 (2013)
10. Determination of Level-of-Service scale values for quantitative bus transit service attributes based on user perception By Shreya Das and Debapratim Pandit Transportmetrica A: Transport Science Accepted (2014)
12. Developing Strategies for the Application of Rajiv Awas Yojana in Howrah By Dey, P., Chattopadhyay, S. Spatio Development Record vol. 20, pp 118-131 (2013)
19. MGNREGA and sustainability issue of rural built-up structures in India, By Chakraborty, B. & Das, S. Journal of Construction in Developing Countries Accepted (2014)
20. MGNREGA and Water Management: Sustainability Issues of Built Forms of Rural India By Banhi Chakraborty Journal of Construction in Developing Countries (2014)
23. Relevance of New Urbanism in the Context of Developing Countries – A Literature Review By Suparna Saha, Dr. Sanghamitra Basu and Dr. Debapratim Pandit ABACUS Vol. 8, No.1,19 -27 (2013)

Papers Presented in Conferences

10. Dynamics and Growth Dichotomy of Urban Villages - Case Study Delhi, By Chattopadhyay, S., Dey, P., Michael, J., 39th IAHS World Housing Conference, Milan, Italy, (2013)
11. Dynamics in Metropolitian Fringes in the context of urban sprawl, By Prof B.K. Sengupta and Janani Tyagarajan, Management of land in urban fringes: Controlling urban sprawl, Kolkata, (2013)
17. Methodology to determine commuter preference for a proposed bus rapid transit corridor, By Debapratim Pandit and Shreya Das, 2nd Conference of Transportation Research Group of India, Agra, India, (2013)
18. Methodology to determine Level of Service for Bus Transit in a developing country like India, By Shreya Das and Debapratim Pandit, 13th International Computers in Urban Planning and Management Conference, Utrecht, Netherlands, (2013)
23. Social Equity: A missing link towards sustainable development., By Sarkar B., Banerji H., Sen J, National Symposium on Sustainability and Built Environment, Indian Institute of Engineering Science, (0)
Department of Biotechnology

Head
Prof. Tapas Kumar Maiti

Professors
Das, Amit Kumar Ph.D. (Calcutta Univ), Structural Biology and Biochemistry, Crystallographic study of proteins from M.tuberculosis and S. aureus, Structural Bioinformatics

Das, Debabrata Ph.D. (IIT Delhi), Biohydrogen production processes, CO2 sequestration for algae cultivation, Microbial fuel cell


Ghosh, Ananta Kumar Ph.D. (Calcutta Univ), Recombinant DNA Technology, Hybridoma Technology, Molecular Virology, Antimicrobial peptides

Ghosh, Sudip Kumar Ph.D. (Kalyani Univ), Plant Molecular Biology, Nanobiotechnology, Molecular and Cellular Parasitology

Kundu, Subhas Chandra Ph.D. (BHU, Varanasi), Cell based tissue engineering and regenerative medicine, Silk biomaterials and bioactive molecule delivery

Maiti, Tapas Kumar Ph.D. (Kalyani Univ), Plant lectins and lectin derived peptides in cancer therapy, Mushroom derived glucans as immunomodulators, Biomicrofluidics and biochip development, Tissue engineering through top down and bottom up approach

Associate Professors
Ghosh, Anindya Sundar Ph.D. (Calcutta Univ), Microbial genetics, Antimicrobial chemotherapy, Bacterial biofilm, Physiology and Biochemistry of Penicillin-binding proteins (PBPs)

Maiti, Mrinal Kumar Ph.D. (Calcutta Univ), Metabolic engineering of plant and fungal storage-lipids, Functional genomics of rice crop for improved productivity, Bioprospecting of endophytic microbes for healthcare products

Sar, Pinaki Ph.D. (BHU, Varanasi), Geomicrobiology of arsenic contaminated groundwater, Bioremediation of Petroleum refinery waste, Microbial diversity-Metagenomics and Environmental biotechnology, Molecular methods in detection of microbes in drinking water, Microbial diversity and bioremediation of Acid Mine Drainage

Sen, Ramkrishna Ph.D. (IIT Madras), Biosensor, Algal Biofuels and Bio-CCS, Biorefinery, Bioprocess Development Modeling & Optimization, Marine Biotechnology, Biochemical Engineering, Enzymes and Biofuels Technology, Bioenergy, Probiotics and Nutraceuticals, Environmental Biotechnology
Assistant Professors
Bahadur, Ranjit Prasad  
*Ph.D.(Jadavpur Univ)*, Bioinformatics and Computational Structural Biology

Ganguly, Agneyo  
*Ph.D.(IICT, Kolkata)*, DNA repair mechanisms in kinetoplastid parasites, DNA repair mechanisms in response to topoisomerase I poisoning

Faculty Appointments
Agneyo Ganguly  
Assistant Professor

Brief Description of on-going activities

Thrust Areas

New Acquisitions
1. Deep Freezer
2. Mercury/Hydride System
3. Horizontal High Pressure Steam Sterilizer
4. Laminar Flow
5. Sonicator and Ultra sonicator
6. Filtration System
7. PH Meter with Electrode
8. Typhoon
9. Spectrophotometer
10. Ice flaker
11. Millipore Water Purification System
12. Incubator Shaker (2 Nos.)
13. Akta Purifier UPC-10
14. CO2 Incubator

**International Collaborations**

Prof. S. C. Kundu has four collaborative research projects: (iv) Project on Immunogenic responses of silk biomaterial used for cell-based tissue engineering and regenerative medicine, Professor Heinz Reddl, LBI-Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Professor Martijin van Griensven, Indo-Austrian (DST-BMWF) in 2011 (two years)

Prof. D. Das has two international collaborative projects: (i) Indian-Norwegian-Swedish collaboration project entitled "BioCO2: An integrated multidisciplinary project using solar energy for production of renewable hydrogen combined with CO2 capture, to address global warming and energy production" sponsored by Norwegian Foreign Ministry. Collaborating Universities: USlo University, Norway and Uppsala University, Sweden (ii) Indian-Danish collaborating project entitled "High rate algal biomass production for food, feed, biochemicals and biofuels" sponsored by Department of Biotechnology, Govt. of India. Collaborating Universities: Technical University of Denmark and Copenhagen University, Denmark

Prof. R. Sen has two international collaborative projects: (i) Federal University of Rio-de-Janeiro (Brazil) through DST-CNPq program (Biofuel) (ii) University of Minho, Portugal through DST-Portugal program (Biosurfactant)

**Lectures by Visiting Experts**

1. Chasing Indian Pathogens by Prof. M. R. N. Murthy (Molecular Biophysics Unit, Indian Institute of Science, Bangalore-560 012)
2. MicroRNA mediated regulation of plant resistance towards phloem-feeding insect pest by Dr. Sampurna Sattar (Post Doctoral Fellow, College of Agricultural Sciences, The Pennsylvania State University, University Park, PA 16802)
3. Development of selectable marker-free transgenic rice: Transgene stacking by sequential Agrobacterium-mediated co-transformation by Dr. K. Veluthambi (Professor, School of Biotechnology, Madurai Kamaraj University, Madurai-625021)
4. Poor Stability of Peptide-MHC Complex in Leishmania Donovani Infection is reversed by Liposomal Cholesterol by Dr. Syamal Roy (Principal Scientist, Infectious Diseases & Immunology Division)
5. MicroRNAs associated with cancer: Search for signatures by Dr. Sumit Biswas (Assistant Professor of Dept. of Biological Sciences, BITS, Pilani-K K Birla Goa Campus)
6. Regulation of microtubule dynamics by unusual MAPs: Role of microtubule dynamics in cell motility by Dr. Dulal Panda (Professor, Department of Biosciences & Bioengineering, IIT-Bombay, Mumbai-400076)
7. Discerning the structure, function and dynamics of pro-apoptotic serine protease HtrA2 by Dr. Kakoli Bose (PI/Assistant Professor, ACTREC, TMC, Kharghar-410210, India)
8. Micro-organization and Plasticity of Auditory Cortical Circuits by Dr. Sharba Bandyopadhyay (National Brain Research Centre, Manesar, Haryana)
9. Molecular and functional characterization of replication initiator protein (Rctb) of Vibrio cholerae chromosome II by Dr. Jyoti K. Jha (Visiting Fellow, Laboratory of Biochemistry, NCI/CCR/NIH, 37 Convent Drive, Building 37, Room 6044, MSC 4260, Bethesda, USA)
10. Syndecan-4 Proteoliposomes Enhance Revasculatization and Wound Healing by Overcoming Growth Factor Resistance by Mr. Subhamoy Das (Graduate Student, Cardiovascular Bioengineering and Therapeutics Lab, Dept. of Biomedical Engineering, University of Texas, Austin)

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11. Development of Nanocatalysts for Fuels using Micro-channel and Tubular Reactors by Dr. Debasish Kuila (Professor and Head, NSF-CREST Bioenergy Center, North Carolina A & T State University, Greensboro, USA)

12. Cryogel Biomaterials for Biomedical Applications by Prof. Ashok Kumar (Dept. of Biotechnology, IIT Kanpur)

**Doctoral and MS Degrees Awarded**

1. Mr. Debasish Mishra (07BT9707) : Osteoblast Microtissues As Profunctional Modules for Improved Cell based Bone Tissue Engineering(Ph.D.)
2. Mr. Debajyoti Dutta (07BT9706) : Crystal Structure of Mycobacterial and Staphylococcal Ketoacyl Reductase and their Structure-Function Relationship(Ph.D.)
3. Ms. Sunita Nayak (08BT9703) : Characterization of silk sericin for potential biomedical applications(Ph.D.)
4. Mr. Sudipta Bhattacharyya (07BT9401) : Crystal structure based functional analysis of Staphylococcal dual specific Inositol monophosphatase/ NADP (H) Phosphatase(Ph.D.)
5. Ms. Namita Khanna (07BT9710) : Strain development and determination of suitable process parameters for maximization of hydrogen production using Enterobacter cloacae IIT-BT08(Ph.D.)

**Member - Professional Bodies**

1. Ghosh, Sudip Kumar, *Life Member* - Indian Science News Association
2. Ghosh, Sudip Kumar, *Life Member* - Society of Biological Chemists, India
3. Sar, Pinaki, *Regular* - American society for microbiology
4. Sar, Pinaki, *Annual member* - Japanese society for microbiology
5. Sar, Pinaki, *Regular* - European federation of biotechnology
6. Sar, Pinaki, *Regular with online and print journal subscription* - International society for microbial ecology (ISME)
7. Sen, Ramkrishna, *Life member* - Indian Institute of Chemical Engineers (IIChE)
9. Sen, Ramkrishna, *Member* - Asian Federation of Biotechnology
10. Sen, Ramkrishna, *Member* - European Federation of Biotechnology
12. Ghosh, Anindya Sundar, *Associate Member* - Horticultural Society of India
13. Ghosh, Anindya Sundar, *Life member* - Society for Biological Chemists, India
14. Ghosh, Anindya Sundar, *Life member* - Physiological Society of India
15. Ghosh, Anindya Sundar, *Ordinary member* - Society of General Microbiology (SGM), UK
17. Maiti, Mrinal Kumar, *Member* - Asian Federation of Biotechnology
18. Maiti, Mrinal Kumar, *Life Member* - Plant Physiology Forum, Kolkata
19. Maiti, Mrinal Kumar, *Life Member* - Institute of Science, Education and Culture (ISEC) Kolkata
20. Maiti, Mrinal Kumar, *Life Member* - Society for Plant Biochemistry & Biotechnology, IARI, New Delhi
21. Maiti, Mrinal Kumar, *Regular* - American Society of Plant Biologists
22. Bahadur, Ranjit Prasad, *Member* - Asian Federation of Biotechnology
23. Bahadur, Ranjit Prasad, *Life member* - Indian Science Congress Association
25. Das, Debabrata, *Regular Member* - International Association of Hydrogen Energy (IAHE)
26. Das, Debabrata, *Life member* - Indian Institute of Chemical Engineers (IIChE)
27. Das, Debabrata, *Life member* - The Institution of Engineers (India) (IE)
28. Das, Debabrata, *Life member* - Association of Food Scientists & Technologists (India) (AFST)
29. Dey, Satyahari, *Member* - Society for Biotechnology Japan
30. Dey, Satyahari, *Member* - Phytochemical Society of Europe
31. Dey, Satyahari, *Member, Executive Board* - Assian Federation of Biotechnology
32. Dey, Satyahari, *Life member* - Society for Plant Biochemistry & Biotechnology
33. Ghosh, Ananta Kumar, *Life member* - Physiological Society of India
34. Ghosh, Ananta Kumar, *Regular* - Biotechnology Society of India
35. Das, Amit Kumar, *Life* - National Crystallographic Society
36. Das, Amit Kumar, *Member* - ASM
37. Kundu, Subhas Chandra, *Elected Member, Asia Specific* - Tissue Engineering and Regenerative Medicine, International Society
38. Kundu, Subhas Chandra, *Life Member* - All India Cell Biology Society

**Member - Editorial Board**

2. Bahadur, Ranjit Prasad (2011) *Editorial Board Member* - ISRN Biomathematics
4. Das, Debabrata (2013) *Member of the Editorial board* - Indian Journal of Biotechnology
6. Das, Debabrata (2013) *Member of the Editorial board* - Biotechnology for Biofuels
12. Kundu, Subhas Chandra (2012) *Editorial Board Member* - Biomedical Materials

**Sponsored Research Projects**

1. A Dissection of macromolecular interactions in cellular assemblies (ISIRD (completed), Rs.5.00 Lakhs)
2. Algae mediated biosequestration and storage of CO2 (Bio-CCS) from coal-based flue gas.....and animal feed application (West Bengal Department of Science and Technology, Rs.27.39 Lakhs)
3. Analysis of macromolecular interactions in ribosome: implication to its self assembly Sponsor:Submitted (DST (ongoing), Rs.18.60 Lakhs)
4. Assessment of microbial communities and their biodegradation potentials in petroleum hydrocarbon contaminated environments in Assam (Department of Biotechnology, Rs.62.00 Lakhs)
5. Biofuel production in a biorefinery concept (PBC) (P K Sinha Center for Bioenergy - IIT Kharagpur, Rs.3.00 Lakhs)
6. Biofuels from marine microalgae (BMM) (CSIR (under NMITLI program), Rs.59.30 Lakhs)
7. Bioinformatics SUB-DIC (DBT, New Delhi, Rs.12.50 Lakhs)
8. Bioprocess development and bioreactor strategies for the ...... probiotic endospores for the lab scale manufacture of nutraceuticals (MNF) - Complete (CSIR, Rs.16.00 Lakhs)
9. Bioprocess development and optimization for the enhanced production of biosurfactants of marine origin for healthcare and commercial applications (HCA (DBT, Rs.36.16 Lakhs)
10. Bioprospecting of antarctic flora: screening of novel genes and healthcare molecules (Ministry of Earth Sciences, Rs.105.96 Lakhs)
11. Biotechnology based value addition of neem and jatropha leaves, oilcakes and oil (NOVOD, Rs.11.00 Lakhs)
12. Characterization of arsenic oxidizing bacteria from contaminated groundwater and their mechanisms of arsenite oxidation process for potential applicat (Council of Scientific and Industrial Research, Rs.27.30 Lakhs)
13. Characterization of a novel short chain dehydrogenase reductase (SDR) family enzyme involved in fatty acid metabolism in M. tuberculosis and structure (DBT, GoI, Rs.76.70 Lakhs)
14. Characterization of encystation specific kinase(s) of Entamoeba during encystation (DBT, Rs.35.98 Lakhs)
15. Continuous process for enzymatic biofuel production - Grant for exchange visit and project formulation - Completed (DST (India)-CNPq (Brazil), Rs.1.50 Lakhs)
16. Crystal structure determination, kinetic and biophysical characterization of glyceraldehyde 3 phosphate dehydrogenase from MRSA 252 (BRNS - DAE, Rs.3140500.00 Lakhs)
17. Development and characterization of ecofriendly jute geo-composites (EFB) (JMD, Rs.67.00 Lakhs)
18. Development of fluorescent whole cell optical fibre biosensor for heavy metal pollutants (DBT, Rs.31.79 Lakhs)
19. Development of multifunctional dendritic polymers for injectable bone tissue engineering (DBT, Rs.43.44 Lakhs)
20. Development of pod borer resistant transgenic pigeon pea and chickpea (ICAR, Rs.197.00 Lakhs)
21. Development of sensitive diagnostic kit for the detection of pathogens in stored food grains (MHRD, Rs.99.99 Lakhs)
22. Development of water-repellant and durable jute geotextiles (JGN) (JMD, Rs.170.00 Lakhs)
23. Dielectrophoretic separation of biological cells in microfluidic channels. (NPMASS programme Cell., Rs.10.35 Lakhs)
24. Effects of auxiliary membrane components on biofilm formation in Escherichia coli (Council of Scientific and Industrial Research (CSIR), Rs.24.76 Lakhs)
25. Engineered silk matrices for optimization of in vitro 3-D tumor model (ICMR, New Delhi (sanctioned), Rs.46.90 Lakhs)
26. Enhanced production and purification of a marine lipopeptide........breast cancer therapy (BCT) (MoES, Rs.100.36 Lakhs)
27. Exploration of microbial diversity and function in acid mine drainage and mine tailings: An integrated geomicrobiological approach for bioremediation (Department of Biotechnology, Rs.46.00 Lakhs)
28. Exploration of microbial diversity and microbial role in arsenic mobilization in As-contaminated groundwater of North Eastern states (Arunachal Prade (Department of Biotechnology, Rs.68.28 Lakhs)
29. Extraction, characterization and optimized production of biopigment from Amaranthus tricolor (ACA) - Completed (DBT, Rs.24.41 Lakhs)
30. Food security through reduced dietary intake: Low cost nutraceutical development from rice, wheat and coarse grain (MHRD/Govt. of India, Rs.101.10 Lakhs)
31. Functional characterization of soluble penicillin-binding protein 6 of E. coli (Department of Science and Technology, Govt. of India, Rs.22.86 Lakhs)
32. Genomics-supported screening of aromatic rice cultivars with high yielding potentiality for growing in local agro-climatic zones (MHRD/Govt. of India, Rs.105.90 Lakhs)
33. High rate algal biomass production for food, feed, biochemicals and biofuels (Department of Biotechnology, Rs.66.56 Lakhs)
34. Identification and characterisation of Phaseolus vulgaris microRNAs differentially expressed in biotic and abiotic stress conditions by deep sequen (DBT (ongoing), Rs.2.99 Lakhs)
35. Improvement of energy recovery from waste water by dark fermentation followed by microbial fuel cells (DRDO, Rs.42.41 Lakhs)
36. Indian origin silk based biomimetic scaffolds for engineering of load-bearing tissue (Department of Biotechnology, New Delhi, Rs.54.45 Lakhs)
37. Integrating large scale biohydrogen production and hydrogen fuel cell for sustainable power generation (DRDO, Rs.9.99 Lakhs)
38. Isolation and characterization of antifungal peptides from muga silkworm Antheraea assamensis Helfer (DBT, Rs.34.90 Lakhs)
39. Molecular analysis of efflux pump mediated antibiotic resistance in Gram negative bacilli (Department of Biotechnology, Govt. of India, Rs.87.65 Lakhs)
40. Molecular and structural analysis of Antheraea mylitta cytoplasmic polyhedrosis virus RNA dependent RNA polymerase. (DST, Rs.39.70 Lakhs)
41. Molecular characterization of DacD (a putative DD-carboxypeptidase) of Escherichia coli (DBT, Rs.20.86 Lakhs)
42. Molecular characterization of leptin in Indian major carps (DBT, Rs.28.00 Lakhs)
43. Molecular characterization of penicillin-interactive enzymes (Low Molecular Mass) of Mycobacterium smegmatis (Council of Scientific and Industrial Research (CSIR), New Delhi, Rs.28.64 Lakhs)
44. Molecular Characterization of Putative DD-Carboxypeptidase of Klebsiella pneumoniae (SGIRG, SRIC, IIT Kharagpur, Rs.25.00 Lakhs)
45. Molecular characterization of the emerging beta-lactamases in Gram negative bacilli (Department of Biotechnology, Rs.100.51 Lakhs)
46. Molecular cloning and characterization of Antheraea mylitta cytoplasmic polyhedrosis virus genome segments 4 and 5 (CSR, Rs.29.00 Lakhs)
47. Molecular Structural analysis of A mylitta cytoplasmic polyhedrosis virus RNA dependent RNA polymerase (DST-SERB, GoI, Rs.3970000.00 Lakhs)
48. North Eastern origin silk protein based matrices and nano/microparticles for biomedical applications (Department of Biotechnology, New Delhi, Rs.118.35 Lakhs)
49. Nutritional enhancement of rice bran oil through metabolic engineering of fatty acid biosynthesis (CSIR/GoI, Rs.22.82 Lakhs)
50. P K Sinha Center for Bioenergy (PKS) (IIT Foundation (Dr. Prabha Kant Sinha), Rs.400.00 Lakhs)
51. Peripheral nerve regeneration on silk matrices (British Council, Rs.13.00 Lakhs)
52. Potential use of biosurfactants for medical applications (PBM) (DST (under Indo-Portugal Collaboration Program), Rs.4.14 Lakhs)
53. Protein-protein interface targeted drug designing (DBT - New Delhi, Rs.3060000.00 Lakhs)
54. Reducing accumulation of toxic metals or metalloids in rice grains by RNAi-mediated gene silencing approach (DBT/GoI, Rs.29.81 Lakhs)
55. Role of Penicillin-binding proteins and O-antigens in the development of beta-lactam antibiotic resistance in Gram negative bacteria (Indian Council of Medical Research (ICMR), Rs.17.40 Lakhs)
56. Silk Protein mediated surface modification of NiTi alloy based stent material for improved endothelialization and reduced thrombogenicity (DBT, Rs.34.05 Lakhs)
57. Silk Protein/Blend Matrices in Tissue Engineering & Biotechnological Applications (Department of Science & Technology, Rs.41.43 Lakhs)
58. Silk scaffolds for peripheral nerve regeneration (British High Commission (UKIERI), Rs.13.99 Lakhs)
59. Structural and functional analysis of flavin dependent acyl CoA dehydrogenases of the igr operon from M. tuberculosis (Indo-Austria) (DST, GoI, Rs.3.00 Lakhs)
60. Targeted metabolomics-based selection of superior scented rice cultivars appropriate for growing in local agro-climatic zones (MHRD/GoI, Rs.100.04 Lakhs)
61. Technology Mission Mode Project on "Hydrogen Production through Biological Routes? (MNRE, Govt. of India, Rs.287.00 Lakhs)
62. Understand the Structural Mechanism of Function of Intrinsically Disordered Proteins and their Association with Diseases (IITKGP (SGIRG), Rs.25.00 Lakhs)
63. Understanding plant growth promoting traits of rhizospheric and endophytic microbes through metagenomics approach (SRIC (SGIRG), IIT-Kharagpur, Rs.25.00 Lakhs)
64. Whole cell modeling and simulation in bacterium Escherichia coli (SRIC (SGIGC), IIT-Kharagpur, Rs.250.00 Lakhs)

Consultancy Projects

1. Alcohol Loss Calculation during Transfer and Despatch Operation in the Distillery Plant of M/s IFB Agro Industries Ltd., Noorpur (M/s IFB Agro Industries Ltd., Noorpur, Rs.2.00 Lakhs)
2. Biocatalyst based continuous production of biodiesel (PfP Technology LLC., Houston, Texas, USA, Rs.11.00 Lakhs)
3. Calculation alcohol loss in the Distillery Plant (IFB Agro Industries Ltd., Noorpur, Rs.4.00 Lakhs)
4. Establishment of Biotechnology Park Kharagpur: Concept paper (WBIDC, Rs.27.00 Lakhs)
5. Validation trial for bioethanol production (VTBP) - Completed (DSS Corp., Kolkata, Rs.0.25 Lakhs)

Patents (filed / granted)

1. 1,4 triazole based polyphenol hybrids - in vitro inhibition of M. tuberculosis b-ketoacyl reductase FabG4 9Rv0242c by Debranjan Banerjee, D Dutta, B Saha, A K Das, Amit Basak
2. A biofuel additive for diesel engines
3. A novel microbial carbon capture cell design for simultaneous wastewater treatment and CO2 biofixation
5. An efficient, cost-effective, reusable and eco-friendly algal biomass dewatering system and an accelerated adsorption process thereof
6. Anticancer cyclic peptide from sandalwood and synthesis of the same
7. Antimicrobial peptide from jatropha
8. Bio-diesel additive for diesel engine
9. Continuous bio-catalytic production of bio-diesel in an integrated CSTR-PBR operation
10. Cost-effective natural salt formulation for sea water substitution, ...... precipitation thereof
11. Durability enhancement of lignocellulosic fibers by vegetable oil treatment
12. Earthen material based cathode separator assembly for scalable bioelectrochemical system.
14. Microbial transformation of lignocellulosic fibers using eco-friendly reagents for strength and durability enhancement
15. Natural resins and the use thereof for the production of jute fiber reinforced composites
16. Probiotic spore based novel drug delivery system
17. process for prebiotic oligosaccharide production

Visits Abroad by Faculty Members

2. Das, Debabrata - Invited talk on Carbon dioxide sequestration by algae and its challenges (Jiao Tong University, Shanghai, ) 1 hr.
3. Das, Debabrata - To chair the Biohydrogen Sessions and to Deliver Plenary lecture in the WHTC-2013 (WHTC-2013, Shanghai, ) 4 hrs. and 30 min.
4. Kundu, Subhas Chandra - Discussion for ongoing research work and guest lecture (The Curtin University, Australia) 12-15 May, 2013
5. Kundu, Subhas Chandra - To present Research Paper (British Columbia University, Canada) 3-6 June
6. Kundu, Subhas Chandra - Ongoing research discussion and seminar (The University of Sydney) 16-18 May, 2013
7. Kundu, Subhas Chandra - Invited lecture and research collaboration (National University of Singapore, Singapore) 19-20 May
9. Kundu, Subhas Chandra - To present Keynote address at TERMIS-AP (Shanghai) 21-27 October, 2013

Invited Lectures by Faculty Members

1. Early events of Entamoeba encystation by Ghosh, Sudip Kumar (JNU, New Delhi)
2. Cyst wall synthesis and encystation signaling in Entamoeba by Ghosh, Sudip Kumar (NIT Durgapur)
3. Hydration of protein-RNA recognition sites by Bahadur, Ranjit Prasad (IIT Kharagpur)
4. A Perspective on Structural Bioinformatics by Bahadur, Ranjit Prasad (Vidyasagar University)
5. Structure of FabG4 and strategies for Fabg4 inhibitor designing by Das, Amit Kumar (Vizag and Arraku Valley (GRC-2013))
6. Crystal structure of FabG-a beta ketoacyl reductase involved in fatty acid biosynthetic pathway by Das, Amit Kumar (JNU, New Delhi (42nd National seminar on crystallography))
7. Metabolic Engineering in Microbial Cell Factory: A Systems Approach by Maiti, Mrinal Kumar (IIT-Kharagpur (in the short term course on Computational Systems Biology))
8. Recent trends and promises in plant biotechnology, an Indian scenario by Maiti, Mrinal Kumar (Madurai Kamaraj University, Madurai)
9. Microbes: Essential & Influential Roles in our daily life by Maiti, Mrinal Kumar (Jawahar Navodaya Vidyalaya, Medinipur)
11. Bioremediation and genomics by Sar, Pinaki (VisvaBharti University, Santiniketan)
12. Microbial diversity and bioremediation: Insights from omics approaches by Sar, Pinaki (National Institute of Technology Rourkela)
13. Cleaning up with genomics: Evaluating microbial potential in bioremediation by Sar, Pinaki (Centre for Science and Environment, New Delhi)
14. Biohydrogen: a green fuel for the future by Das, Debabrata (Short Term Course on RENEWABLES IN SCIENCE AND ENGINEERING (RISE-2014), NIT Silchar)
17. Biohydrogen as zero carbon and pollution free fuel for the future: present state of art by Das, Debabrata (The 5th India-Korea Joint Workshop on Bioenergy, Trivandrum)
20. Carbon dioxide sequestration by algae and its challenges by Das, Debabrata (Jiao Tong University, Shanghai)
21. Natural biopolymers: Fibroin and Sericin by Kundu, Subhas Chandra (Indian Institute of Space Technology, Trivandrum)
22. Silk as biomedical materials for tissue engineering and regenerative medicine by Kundu, Subhas Chandra (Curtin University, Australia)
23. Non-mulberry silk as biomedical materials for regenerative medicine by Kundu, Subhas Chandra (The University of Sydney)
24. Non-mulberry silk as biomedical materials for tissue regeration by Kundu, Subhas Chandra (NUS, Singapore)
25. Point of Care Microfluidic Platform for Cancer Detection by Maiti, Tapas Kumar (Kolaghat Engineering college)
26. Microscale Engineering in 3D Cell Culture by Maiti, Tapas Kumar (NIT Durgapur)
27. Molecular characterization of cypovirus infecting tasar silk worm. by Ghosh, Ananta Kumar (Haldia Institute of Technology)
28. DNA Fingerprinting by Ghosh, Anindya Sundar (Assam University , Silchar)

Books Published


Papers Published in Journals


40. Microbial Diversity in Uranium Deposits from Jaduguda and Bagjata Uranium Mines, India as revealed by clone library and Denaturing Gradient Gel Electrophoresis analyses By Ekrumul Islam, Dhrajit Paul and Pinaki Sar Geomicrobiology Journal DOI:10.1080/01490451 (2014)


69. Thromboelastometric and platelet responses to silk biomaterials  By  Kundu B, Schlimp CJ, Nünnenberger S, Redl H and Kundu SC.  Scientific Reports  Accepted (2014)


Papers Presented in Conferences

5. Advances in biohydrogen production processes: present state of art, By Debabrata Das, Workshop on Interdisciplinary research towards the development of modern food and bioprocess technology, Jadavpur University, Kolkata, (2013)
7. An approach to bacterial chromosome seggregation system via partitioning proteins, By Bose M, Roychowdhury A, Das AK, National Seminar on Crystallography (NSC42), Jawaharlal Nehru University (JNU) New De, (2013)
17. Crystallization of glycerladehyde 3 phosphate dehydrogenase in different crystals forms, By Roychowdhury A, Mukherjee S, Das AK, National Seminar on Crystallography (NSC42), Jawaharlal Nehru University (JNU) New De, (2013)


23. Effect of parameters on CO2 sequestration by green algae, By Kumar, K., Das, D, New Horizons in Biotechnology (NHB), HIT, Haldia, (2013)


25. enhanced Betalain production in liquid media by Amaranthus tricolor L. in Growtek bioreactor, By S Dey Mousumi Biswas,, SIVB 2013, June 2013 USA, Rhode Islands, (2013)


32. Improvement of hydrogen production by semicontinuous operation using E. cloacae IIT-BT 08, By Preeti Mishra, Kanhaiya kumar, Debabrata Das., Asian Congress on Biotechnology (ACB 2013), New Delhi, (2013)


40. Prospecting cell wall prebiotic from cell suspension culture, By S Dey, Moumita patra, ACB2013, Delhi, (2013)

41. Regenerative medicine using silk protein, By S C Kundu, World Congress on preventive and regerative medicine, Bhubaneswar, (2013)

42. Silk 3D matrices for tissue regenration and drug delivery, By S C Kundu, Challenges in Biomedical Research, VIT, Vellore, (2013)

43. Silk as natural biomedical materials for regenerative medicine, By Kundu SC, Dey T, Nayak S., 10th International Symposium on Frontiers in Biomedical Polymers, British Columbia, Canada, (2013)

44. Silk materials for tissue regenation, By S C Kundu, Workshop on peripheral nerve regeneration, Wake Forest, USA, (2013)


46. Structural and functional characterization od acetyl CoA acyl transferase (Rv0243), By Kundu P, Dutta D, Das AK, National Seminar on Crystallography (NSC42), Jawaharlal Nehru University (JNU) New De, (2013)

47. Structural elucidation of Li/Mg inhibition of IMPases, By Dutta A, Bhattacharyya S, Dutta D, Das AK, National Seminar on Crystallography (NSC42), Jawaharlal Nehru University (JNU) New De, (2013)


49. Suitability of deoiled cakes (DOCs) as a substrate for biohydrogen production, By Balachandar G, Shantonu Roy, Subhabrata Roy and D Das, International Conferences on Advances in Biotechnology and Bioinformatics (ICABB), Pune, (2013)


51. Taxonomic and physiological characterization of an indigenous As transforming bacteria from arsenic contaminated ground water, By Balaram Mohapatra, Angana Sarkar, Sufia K Kazy and Pinaki Sar, National seminar on utilization of microbes for sustainable development, Bhubaneswar, (2013)


Department of Chemical Engineering

Head
Prof. Narayan Chandra Pradhan

Professors
Basu, Jayanta Kumar  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Adsorption and Separation Science, Waste Water Treatment, Reaction Engineering

Das, Gargi  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Multiphase flow, Two phase instrumentation, CFD simulation

DasGupta, Sunando  
Graduated from RPI, USA, Ph.D.  
Specialization: Microscale Transport Process and Microfluidics

De, Sirshendu  
Graduated from IIT Kanpur, Ph.D.  
Specialization: Membrane separations, Transport Processes, Flow through microchannels

Kundu, Gautam  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Multiphase Operation, Mineral Beneficiation, Rheology of Suspension, Catalysis

Meikap, Bhim Charan  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Industrial Environmental Pollution Monitoring & Control, Coal Beneficiation, CO2 Capturing, Fluidization

Mukherjee, Dibyendu  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Multi Phase flow, Column Flotation, Modeling & Simulation

Neogi, Sudarsan  
Graduated from Ohio Univ., USA, Ph.D.  
Specialization: Surface Modification And Engineering of Polymer Substrates For Biomedical Applications, Plasma Enhanced Chemical Vapor Deposition, Plasma Sterilization, Adhesive Development, Antimicrobial Coatings, Modeling And Simulation Of Chemical Process Plant, Environmental Pollution Control, Polymer Composites

Pradhan, Narayan Chandra  
Graduated from UDCT Bombay, Ph.D.  
Specialization: Heterogeneous Catalysis, Chemical Process Development, Petrochemical Technology, Petroleum Refining, Separations Technology

Samanta, Amar Nath  
Graduated from IIT Kharagpur, Ph.D.  

Associate Professors
Chakraborty, Sudipto  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Process Modelling and Simulation, CFD & Heat Transfer, Ultra-fast cooling of steel, Coal and mineral beneficiation

Kar, Debdulal  
Graduated from IIT Kharagpur, Ph.D.  
Specialization: Mineral Processing, Fluidization Engineering, Biogas Development

Mukherjee, Rabibrata  
Graduated from IIT Kanpur, Ph.D.  

Neogi, Swati  
Graduated from Ohio University, Ph.D.  
Specialization: Innovative composite technology, Lifetime and reliability study, Materials development, Composite fabrication technology
Assistant Professors

Atta, Arnab  
Ph.D. (IIT Delhi), Computational Fluid Dynamics, Multiphase Flow, Complex Fluids, Process Intensification, Interfacial Science and Engineering

Chakrabarty, Saikat  
Ph.D. (Univ. of Houston), Chemical Reaction Engineering, Biomedical Engineering, Bioenergy

Chakraborty, Jayanta  
Ph.D. (IISc., Bangalore), Particle technology, Population balance modeling, Synthesis of nanoparticles, Crystallization, Manufacturing of nanomaterial based solar cells

Deshpande, Parag Arvind  
Ph.D. (IISc., Bangalore), Electronic structure calculations, Computational catalysis, First principles analysis of physiological reactions

G, Harikrishnan  
Ph.D. (IIT Bombay), polymeric foams, polymer nanocomposites, rheology, polymeric coatings

Ganguly, Somenath  
Ph.D. (Univ. of Kansas, USA), Flow in thin channel and porous media, Hydrogel, Improved recovery of hydrocarbon

Jana, Amiya Kumar  
Ph.D. (IIT Kharagpur), Renewable energy, Process intensification, Nonlinear control, Modeling and simulation, Desalination

Padmanabhan, Venkat  

Ray, Subhabrata  
M.Tech. (IIT Kharagpur),

Sarkar, Debasis  
Ph.D. (IISc. Bangalore), Optimization and control of fed-batch bioreactors, Crystallization process engineering, Multi-objective optimization: Genetic Algorithms, Multivariate image analysis, Computational systems biology

Sengupta, Sonali  
Ph.D. (UDCT Mumbai), Reaction Engineering, Petroleum engineering, Heterogeneous and Homogeneous Catalysis

Faculty Appointments

Arnab Atta  
Assistant Professor

Brief Description of on-going activities


Thrust Areas

1. Green chemical process technology
2. Advanced separation processes & environmental process engineering
3. Multiphase flow and reaction engineering
4. Petroleum reaction engineering & petrochemical processes
5. Nonlinear process control
6. CFD application in chemical processes and equipment design
7. Technology of composite materials
8. Thin Films, Interfacial and Nano Science
9. Hydrogen Production by steam reforming in microreactor
10. Manufacture and testing of Polymer Composites
11. Plasma treatment
12. Microscale transport processes and microfluidics
13. Column Flotation

New Acquisitions

1. Cluster Computer
2. High speed parallel computing server
3. High speed camera
4. Stereo zoom microscope
5. Plasma source
6. Gas manifold purification system
7. Autolab
8. Ion Chromatograph

International Collaborations


C V RAMAN INTERNATIONAL FELLOWSHIP (2012-13) FOR MR. SOREL SAGU TCHEWONPI FROM CAMEROON UNDER VISITING FELLOWSHIP CATEGORY" sponsored by DST and FICCI. A researcher Mr. Sorel Sagu from Cameroon spent 3 months in Membrane Separation lab and worked in extraction of banana juice and had 3 publications (Prof. S. De).

"APPLICATION OF HYBRID MEMBRANE BASED SEPARATION PROCESSES FOR TREATMENT OF INDUSTRIAL WASTE WATER", sponsored by DST and EU involving India, Spain and Germany. This is a tri-national network building project. A workshop is organized at IIT Kharagpur from April 1 and 2. Students from IIT visited Spain and Germany (Prof. S. De).
Lectures by Visiting Experts

1. Optimization of enzymatic extraction and clarification of banana juice using membrane separation by Mr. Sorel Sagu Tchewompi (C V Raman Fellow of African Researchers, Cameroon)
2. Smart Polymer Hydrogels: Thermodynamics & Rheology by Dr. Ashis Lele (Senior Principal Scientist, National Chemical Laboratory)
3. Science and Engineering of Pores, Particles and Interfaces in Development of Green Chemical and Biological Processes by Prof. Ganapati D Yadav (Vice-Chancellor and R T Mody Distinguished Professor, J C Bose National Fellow, INSTITUTE OF CHEMICAL TECHNOLOGY (ICT), MUMBAI)
4. Rheology of Viscoelastic Materials - Principles and Applications by Dr Sumanta Raha (Anton Paar India)
5. Into the Mind of a Young Entrepreneur by Dr. Sunil Dhole (founder of M/s, Technorbital)
6. Water Purification Using Humidification Dehumidification Systems by Prof. Sarit K Das (DEAN Academic Research, IIT Madras)
7. Characterization of Dissolved Organic Matter in Petroleum Process Affected Waters by Dr. Subir Bhattacharjee (Professor of Mechanical Engineering at the University of Alberta)

Doctoral and MS Degrees Awarded

1. G. Uday Bhaskar Babu : Vapor Recompressed Batch Distillation: Feasibility, Analysis and Control(Ph.D.)
3. Uttam Maity : Low Severity Oxidation of Thiophenic S-Compounds Using Nanocrystalline Titanium Silicate Catalysts(Ph.D.)
4. Soumya Sanjeeb Mohapatra : Experimental Studies on Different Cooling Processes to Attain Ultra-fast Cooling rate for Hot Steel Plate(Ph.D.)
5. Soubhik Kumar Bhaumik : Electric Field Actuated Microflows(Ph.D.)
7. Debaprita Ghosal : Application of Ceramic Foam Supported Catalysts in Alkylation Reactions(Ph.D.)

Member - Professional Bodies

1. Das, Gargi, Life member - Indian Institute of Chemical Engineers
2. Sengupta, Sonali, Life-member - Indian Institute of Chemical Engineers
3. Sengupta, Sonali, Life Member - Catalysis Society of India
4. Meikap, Bhim Charan, Life Member - Indian Institute of Metals
5. Meikap, Bhim Charan, Member - American Institute of Chemical Engineers (AIChE)
6. Meikap, Bhim Charan, Member - Canadian Institute of Chemical Engineering
7. Meikap, Bhim Charan, Life Member - Indian Institute of Chemical Engineers
8. Meikap, Bhim Charan, Member - Institution of Chemical Engineers (IChemE), UK
9. Meikap, Bhim Charan, Member - The South African Institute of Chemical Engineers(SAIChE)
10. Meikap, Bhim Charan, Life Member - Indian Institute of Public Health Engineers (IPHE)
11. Meikap, Bhim Charan, Member - International Water Association (IWA), UK
12. Chakraborty, Sudipto, Life Member - IICHE
13. Chakraborty, Sudipto, Life Member - IIM
14. Chakraborty, Sudipto, Life Member - IE(I)
15. Neogi, Sudarsan, Member - Municipal Solid Waste Disposal Committee, WBPCB, Govt. of West Bengal
16. Neogi, Sudarsan, Member - Mobile Tower Radiation Committee by Ministry of Environment, Govt. of West Bengal
17. Neogi, Sudarsan, Member - Performance Review Committee WBPCB, Govt. of West Bengal
18. Neogi, Sudarsan, Chairman - State Level Expert Appraisal Committee, Govt. of India
19. Neogi, Sudarsan, Member - Indian Institute of Chemical Engineers
20. Neogi, Sudarsan, Member - Administrative Committee WBPCB, Govt. of West Bengal
21. Neogi, Sudarsan, Member - Sponge Iron Industries : Status of Environmental Pollution Investigation Committee by Ministry of Environment, Govt. of West Bengal
22. Neogi, Sudarsan, Member - West Bengal Pollution Control Board
23. Neogi, Sudarsan, Technical Advisor - Ministry of Environment, Govt. of West Bengal
24. Neogi, Sudarsan, Member - Refrigerants in Cold Storage review Committee, WBPCB, Govt. of West Bengal
25. Neogi, Sudarsan, Member of Gov. Body - Institute of Environmental Studies and Wetland Management, Govt. of West Bengal
26. Chakrabarty, Saikat, Life Member - Indian Institute of Chemical Engineers
27. Jana, Amiya Kumar, Life Member - Indian Society for Technical Education (ISTE)
28. Jana, Amiya Kumar, Life Member - Indian Institute of Chemical Engineers (IIChE)
29. Ganguly, Somenath, Senior Member - American Institute of Chemical Engineers
30. Ganguly, Somenath, Life Member - Indian Institute of Chemical Engineers
31. Mukherjee, Rabibrata, Life Member - Indian Ceramic Society
32. Mukherjee, Rabibrata, Life Member - Materials Research Society of India
33. Mukherjee, Rabibrata, Life Member - Indian Institute of Chemical Engineers (IIChE)
34. Mukherjee, Rabibrata, Life Member - Indian Society of Heat and Mass Transfer (ISHMT)
35. Sarkar, Debasis, Associate Member - Indian Institute of Chemical Engineers
36. Sarkar, Debasis, Associated Member - The Institution of Engineers (India)
37. Padmanabhan, Venkat, - American Physical Society (APS)
38. Padmanabhan, Venkat, - Indian Institute of Chemical Engineers (IIChE)
39. Padmanabhan, Venkat, - Division of Polymer Physics (DPOLY)
40. Padmanabhan, Venkat, - Division of Biological Physics (DBIO)
41. Atta, Arnab, Life Member - Indian Institute of Chemical Engineers (IIChE)
42. Mukherjee, Dibyendu, Life Member - Indian Institute of Chemical Engineers
43. Mukherjee, Dibyendu, Life Member - Indian Institute of Mineral Engineers
44. Kundu, Gautam, Life Member - Indian Institute of Chemical Engineers
45. Kundu, Gautam, Life Member - Indian Institute of Mineral Engineers
46. Kundu, Gautam, Life Member - Indian Society of Theoretical and Applied Mechanics
47. Basu, Jayanta Kumar, Life Member - Indian Institute of Chemical Engineers
48. Pradhan, Narayan Chandra, Life Member - Indian Institute of Chemical Engineers
49. De, Sirshendu, Life Member - Indian Institute of Chemical Engineering
50. De, Sirshendu, Life Member - Indian Society of Theoretical and Applied Mechanics

**Member - Editorial Board**

2. Chakrabarty, Saikat (2009) Honorary Editorial Board Member - International Journal of Medical Sciences and Technology
Awards & Honours

1. De, Sirshendu (2013) CSMCRI Distinguished Speaker Award in CHEMCON 2013 from Indian Institution of Chemical Engineers
2. De, Sirshendu (2012) DAE-SRC Outstanding Investigator Award from Department of Atomic Energy, Govt. of India
6. De, Sirshendu (2012) Silver Jubilee Young Engineer Award from Indian National Academy of Engineering, New Delhi
7. Jana, Amiya Kumar (2013) Visiting Professor: University of Alberta, Edmonton, Canada (May–December)

Sponsored Research Projects

1. A novel approach to a selective catalytic process for reducing thiophenic sulphur content from petroleum products (Council of scientific and industrial research, Rs.7.00 Lakhs)
2. A study of Microscale transport processes leading to the development of a cooling strategy for electronic components (Department of Information Technology, Rs.89.76 Lakhs)
3. Advanced Material Processing using Radiofrequency Plasma for Biomedical Applications (DST, Govt of India, Rs.0.00 Lakhs)
4. Ammonia Production By Using Urea For Flue Gas Conditioning (FGC) (National Thermal Power Corporation (NTPC), New Delhi, Rs.0.00 Lakhs)
5. ANALYSIS OF DOPED OXIDE CATALYSTS FOR PHARMACEUTICAL REACTIONS (DST, Rs.24.00 Lakhs)
6. Antimicrobial Coating on Plasma Treated substrates for biomedical application (Life Science Research Board, DRDO, Rs.20.00 Lakhs)
7. APPLICATION OF HYBRID MEMBRANE BASED SEPARATION PROCESSES FOR TREATMENT OF INDUSTRIAL WASTE WATER (DST, Rs.22.00 Lakhs)
8. Bio Gas Development & Training center (Ministry of New & Renewable Energy, Rs.10.00 Lakhs)
9. C V RAMAN INTERNATIONAL FELLOWSHIP (2012-13) FOR MR. SOREL SAGU TCHEWONPI FROM CAMEROON UNDER VISITING FELLOWSHIP CATEGORY (FICCI, Rs.3.50 Lakhs)
10. CENTRE OF EXCELLENCE FOR TRAINING AND RESEARCH IN MICROFLUIDICS (Golden Jubilee Grant, IIT Kharagpur, Rs.251.90 Lakhs)
11. Centre of excellence for training and research in Microfluidics (IIT Kharagpur, Rs.251.90 Lakhs)
12. Design, analysis and control of internally heat integrated distillation columns (DST, New Delhi, Rs.0.00 Lakhs)
13. Design, Modeling and Control of a High Pressure Pilot Scale HIX Reactive Distillation (DAE, BARC, Mumbai, Rs.0.00 Lakhs)
14. Development and characterization of a high efficiency wet scrubber with internals for air pollution control (IIT Kharagpur, Rs.0.00 Lakhs)
15. Development of experimental setup and study on upgradation of high ash Indian coal (DES) (Tata Steel, Jamshedpur, Rs.20.00 Lakhs)
16. DEVELOPMENT OF FRP - NANO COMPOSITE FOR MARINE STRUCTURAL APPLICATION (DRDO, Rs.42.96 Lakhs)
17. Development of low cost hemodialyzer cartridge (DST, Rs.35.00 Lakhs)
18. Development of Nano FRP Composites for Marine Applications sponsored by Naval Research Board (DRDO, Govt. of India, Rs.0.00 Lakhs)
19. Droplet based screening of Amyloid β-peptide aggregation (DBT, Rs.43.44 Lakhs)
20. Estimation of Life time & Life Cycle cost of FRP Pipes manufactured using various
technologies for Offshore and Onshore Application. (ONGC, Rs.30.00 Lakhs)
21. Evaporative drying assisted meso patterning under lateral confinement. (Jan 2014 - Dec
2016) (Science and Engineering Research Board (SERB), DST, Rs.48.75 Lakhs)
22. Experimenal Investigations and theoretical Analysis of Internal Hydraulic Jump in closed
conduits (DST, Rs.45.00 Lakhs)
23. EXPERIMENTAL AND THEORETICAL INVESTIGATIONS OF POLYMERIZATION-
GRADE ETHYLENE SYNTHESIS (DST, Rs.55.00 Lakhs)
24. Fabrication and Durability Studies of Structured Superhydrophobic Surfaces (GRO Program,
Samsung, Korea, Rs.63.30 Lakhs)
25. Fabrication of Nanostructured Surfaces by Soft Lithographic & Non Lithographic
Techniques (Solar Energy Research Initiative (SERI), DST, Govt. of India, Rs.80.39 Lakhs)
26. FIELD TRIAL OF LOW COST LATERITE BASED ARSENIC FILTER: DOMESTIC AND
COMMUNITY SCALE (DST, Rs.20.00 Lakhs)
27. Foam-gel formation in thin layer with flow complexities affecting the
placement (DST, Rs.35.00 Lakhs)
28. Heat Transfer, Simulation and Measurement of Thermal properties of Sheet Molding
Compound (CSP plastics, Troy, Michigan USA, Rs.0.00 Lakhs)
29. Hydrodynamic interactions and force measurements of the nematode Caenorhabditis
elegans (ISIRD, SRIC, IIT Kharagpur, Rs.500000.00 Lakhs)
30. Hydrodynamic Study of Vortex and Air-Core Formation in a Two Phase Flow for Simple
Geometries ( FSG) (Tata Steel Limited, Jamshedpur, Rs.0.00 Lakhs)
31. Hydrodynamics Studies on Micro Bubble Generators ( MBG) (M/s Tata Steel,
Jamshedpur, Rs.0.00 Lakhs)
32. IN SILICO MECHANISTIC INVESTIGATIONS OF DE NOVO SYNTHESIS OF
MYCOBACTERIUM TUBERCULOSIS DNA (ISIRD SRIC IIT Kharagpur, Rs.5.00 Lakhs)
33. IN SILICO STRUCTURAL AND FUNCTIONAL INVESTIGATIONS OF ISOZYMES OF
CARBONIC ANHYDRASE FAMILY (DBT, Rs.36.00 Lakhs)
34. Instability and Pattern Formation in Thin Polymer Bilayers (DST Nano
Mission, Rs.52.20 Lakhs)
35. INVESTIGATION OF SUZUKI- MIYAURA REACTION CATALYZED BY IONIC PD
IMMOBILIZED IN INORGANIC OXIDE MATRIX (DST India-Austria Collaborative
Research Programme, Rs.14.00 Lakhs)
36. LAB-ON-A-CHIP DEVICE FOR POINT-OF-CARE DIAGNOSIS (, Rs.9.00 Lakhs)
37. LIFETIME STUDY ON NANO-FRP FOR UNDERWATER
APPLICATION (NMRL, Rs.19.90 Lakhs)
38. Locomotion and chemotaxis of the nematode Caenorhabditis elegans in complex
media (DST, New Delhi, Rs.2715600.00 Lakhs)
39. MATERIAL CHARACTERIZATION, MODELLING & SIMULATION FOR PREPREG
BASED COMPOSITE FABRICATION PROCESSES (ASL, Hyderabad, Rs.29.60 Lakhs)
40. Modeling, Analysis and Control of Reactive Distillation Columns (CSIR, New
Delhi, Rs.0.00 Lakhs)
41. MODELLING FISH LOCOMOTION IN TURBULENT
VORTICES (CSIR, Rs.18.00 Lakhs)
42. MODELLING OF THE ELECTROTHERMAL PROCESS OF MAGNESIUM
PRODUCTION AND PROCESS OPTIMIZATION (NML, Rs.13.00 Lakhs)
43. National Renewable Fellowships (MNRE, Rs.61.76 Lakhs)
44. Optimization of batch crystallization processes under uncertainty (ISIRD Grant of SRIC, IIT
Kharagpur, Rs.5.00 Lakhs)
45. Performance Characterization of a Hydrocyclone with Internals for Separation of Fine
Particles( CHF) (CSIR, New Delhi, Rs.19.28 Lakhs)
46. Performance Evaluation of Bag Filters in the Sponge Iron Plants in Orissa-Field Investigation
( BFS) (State Pollution Control Board, Orissa ( Ministry of Environment & Forest, Govt. of
Orissa), Rs.0.00 Lakhs)
47. Performance Evaluation of Bag Filters in the Sponge Iron Plants in Orissa-Field Investigation (BFS) Phase-II (PEO) (State Pollution Control Board, Orissa (Ministry of Environment & Forest, Govt. of Orissa), Rs.0.00 Lakhs)
48. Performance Study of a Hydrocyclone (HDR) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
49. PK Sinha Center Project (IIT Foundation, Rs.1000.00 Lakhs)
50. Plasma Treatment of SMC on Surface Energy and Orange Peel Index of Painted Substrates (CSP Plastics, Troy, Michigan, USA, Rs.0.00 Lakhs)
51. Portable Electricity Generator from Organic Waste (IIT Kharagpur, Rs.1.98 Lakhs)
52. PREPARATION, CHARACTERIZATION AND PERFORMANCE OF FUNCTIONALIZED MEMBRANE WITH IMPROVED ANTI-FOULING PROPERTIES (BRNS, Rs.100.00 Lakhs)
53. PROCESSING OF TENDER COCONUT WATER USING MEMBRANE FILTRATION (Technoeagles Pvt. Ltd., Rs.10.00 Lakhs)
54. Production of monodispersed nanoparticles for a large class of materials using heat treatment based post processing technique (ISIRD SRIC IIT Kharagpur, Rs.5.00 Lakhs)
55. Production of Synthesis Gas and Its Clean Processing by a Multi-Stage Wet Scrubber (PSG) (Department of Science & Technology (DST), Govt. of India, Rs.10.35 Lakhs)
56. Rapid DNA hybridization in microfluidic channels (DBT, Rs.42.00 Lakhs)
57. Renewable Resource/Bio based Low Density SMC Development (CSP Plastics, Troy, Michigan, USA (Co-investigator), Rs.0.00 Lakhs)
58. Rheology of complex fluids in confined flows (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
59. Steel Technology Centre (TCB) (Ministry of Steel & DST, New Delhi, Rs.2025.00 Lakhs)
60. Studies on Effective Use of Microwave Energy for Green Mineral Beneficiation and Pipe Line Slurry Transport (MEG) (Council of Scientific and Industrial Research (CSIR), New Delhi, Rs.0.00 Lakhs)
61. Theoretical and experimental analysis of evaporation in the grooves of a micro heat pipe (ISRO, Rs.19.44 Lakhs)
62. Thermomechanically processed high strength bainitic steel rails for Indian Railways (TBR) (RDSO, Indian Railways, Rs.0.00 Lakhs)
63. Tuneable Meso Patterning of Polymer Bilayer Thin Films with Electric Field (ISIRD Grant of SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
64. Upgradation of facilities under Renewable Energy Program (MNRE, Rs.50.00 Lakhs)
65. Virtual Lab on Chemical Process Dynamics (MHRD, New Delhi, Rs.0.00 Lakhs)

Consultancy Projects

1. Antimicrobial Coatings On Plasma Modified Polymer Substrates (DRDO, Govt. of India, Rs.0.00 Lakhs)
2. Audit of the Coal Tar Distillation EIA Report (AVH Chemicals, Rs.1.80 Lakhs)
3. Blast Protection System For Vehicle Glass Windows (Army Technical Board, Govt. of India, Rs.0.00 Lakhs)
4. Composite Development Center (RDSO, Rs.7.50 Lakhs)
5. Consultancy Input on Design and Hydrodynamics Studies of Micro Bubble Generator (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
6. Consultancy services for implementation of APC in DCU and HCU (NRL Ltd, Rs.7.72 Lakhs)
7. Design and development of a mathematical model for ultra fast cooling of steel strips (DDMM) (Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
8. Design of an Industrial Scale Hydrocyclone (DISH) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
9. Design of Bubble Column with External Bubble Generator (BCEB) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
10. Design verification and critical analysis of bag filters installed at sponge iron plant in Orissa (CABF) (Orissa State PCB, Rs.0.00 Lakhs)
11. Design Verification of Bag Filters installed at various Sponge Iron Plants in Orissa (State Pollution Control Board, Orissa, Bhubaneswar, Rs.0.00 Lakhs)
12. Development of gas sweetening technology for removal of co2 from natural gas (Engineers India Limited, Rs.30.00 Lakhs)
13. DEVELOPMENT OF LIGHT WEIGHT COMPOSITE CYLINDERS FOR STORAGE OF COMPRESSED NATURAL GAS (CNG (Gail, Rs.221.05 Lakhs)
14. Development of Long Fiber Thermoplastic Composites (IIT Kharagpur, Rs.3.00 Lakhs)
15. Development of mixing model for alloy dissolution in steel ladles (MMAD) (Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
16. Development of Natural fiber SMC (Continental Structural Plastics, Troy, MI, Rs.32.00 Lakhs)
17. Development Of Software For Design Of Two Phase Flow System With Simple Geometries (DSSG) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
18. Examination of STPP Manufacture at Haldia (M/s Tata Chemicals, Durgachak, Haldia, Rs.0.00 Lakhs)
19. FIELD DEMONSTRATION OF LOW COST LATERITE BASED ARSENIC FILTER-COMMUNITY SCALE (UNICEF, Kolkata, Rs.13.00 Lakhs)
20. Modeling for Upscaling the Capacity of Ceramic Membrane based Wastewater Treatment Unit (Central Glass & Ceramic Reserach Institute, Rs.5.91 Lakhs)
21. Modelling of a closed cycle boiler reactor (CCBR) (NSTL (DRDO) Vizag, Rs.9.92 Lakhs)
22. Modelling of Chocolate behavior during tempering and cooling process (CBTP) (Cadbury India Ltd, Thane, Rs.4.00 Lakhs)
23. Modelling of thermite based closed cycle thermal system (CCTS) (HEMRL (DRDO), Pune, Rs.9.00 Lakhs)
24. MONITORING IN CRITICALLY POLLUTED AREA (CPA) KORBA OF CHHATTISGARH FOR ASSESSMENT OF COMPREHENSIVE ENVIRONMENTAL POLLUTION INDEX (CEPI) (CECB, Raipur, CG, Rs.30.35 Lakhs)
25. Optimization, characterization and casting of haemodialysis membranes (Acropetal Pvt. Ltd, Rs.21.00 Lakhs)
26. Pelletization of Zeolite Synthesized from Lignite Fly Ash and Application of Zeolite Pellets in Treatment of Ground Water and Blowdown Water (Neyveli Lignite Corporation Ltd., Rs.28.67 Lakhs)
27. PERFORMANCE EVALUATION OF BAG FILTER SYSTEM(EABS) (M/S-AARTI STEEL LTD., Rs.0.00 Lakhs)
28. Process Simulation and Material Balance of Uran Plant (Oil and Natural Gas Commission, Rs.6.47 Lakhs)
29. Renewable resource/bio-based low density SMC development (Continental Structural Plastics, 755 West Big Beaver Road, Suite 700, Troy, MI 48084, USA, Rs.30.00 Lakhs)
30. Study and Modeling of Gas Processing Plant at Uran (ONGC, Rs.6.70 Lakhs)
31. Surface energy Modification of SMC subtrates using RF Plasma (CSP Plastics, TROY, MICHIGAN, USA, Rs.6.00 Lakhs)
32. Survey of Biogas Plants in West-Bengal (West-Bengal Renewable Energy Agency, Rs.2.50 Lakhs)
33. Technical Support and guidance to Improve Quality of Lead Acid Battery ( QLAB) (M/S Bright Solar Ltd., Rs.0.00 Lakhs)
34. Testing & prototype manufacturing of composite products. (Various Organizations, Rs.5.00 Lakhs)
35. Training Programme on Pultrusion Technology with Introduction to other Fabrication Method. (Zoom Developers, Rs.0.60 Lakhs)
36. Verification of Bag Filter System at M/S Maithan Ispat Ltd. (M/S Maithan Ispat Ltd., Orissa, Rs.1.48 Lakhs)
**PATENTS (Filed / Granted)**

1. A Cheap and simple attachment to orient any object to desired direction accurately under microscope for efficient viewing and imaging.
2. A co-flow device to make a gel matrix with embedded voids of sub-millimeter tunable dimensions.
3. A method for generation of meso scale surface patterns with different feature height in polymer films Coated on Planar and non planar Surfaces using a single stamp.
4. A Novel Set up for Spinning Polymeric Hollow Fiber Membrane.
5. A process for enzymatic hydrolysis of cellulosic biomass for bioethanol production.
6. A process for ionic liquid based catalytic conversion of cellulose to fuel products.
7. A simple continuous flow device for process intensification in millimeter size conduits.
8. Creation of Complex micropatterns with flexible stamp.
9. Design of a laterite based arsenic filter for domestic and community scale.
10. Development of high capacity and cost effective arsenic adsorbent using modified laterite.
12. Electric field assisted membrane separation of pectin.
13. Generation of Submicron to Macroscopic Patterns and Objects by Successive Miniaturization Using Shrinkable Materials and Articles Formed Thereby.
14. Harikrishnan G, Macosko CW, Lindsay CI, Singh, SN. Clay – Isocyanate nano dispersions and polyurethane nanocomposite produced there with.
17. Implantable Device having Antimicrobial coating and a method of Manufacturing the same.
18. Membrane based water-extraction of polyphenols from green tea leaves.
19. Micro and sub micro patterning of soft solids and articles formed thereby.
20. Process for recovery of inorganic chemicals from kraft black liquor.
21. Production of organic fertilizer from tannery effluent.
22. Separator-collector for thin oil layers floating on water.
23. Vaginal Microencapsulated Effervescent Contraceptive and its delivery system.
24. Vehicle capable of dissipating explosion force and energy.

**VISITS ABROAD BY FACULTY MEMBERS**


**INVITED LECTURES BY FACULTY MEMBERS**

3. Modeling approaches of pressure driven membrane processes by De, Sirshendu (IIT Kharagpur)
4. How to functionalize membranes? by De, Sirshendu (ICT Mumbai)
5. Hierarchical modeling of pressure driven membrane processes by De, Sirshendu (BESU, Shibpur)
6. Functional polymeric membranes and their applications by De, Sirshendu (Goa)
7. Polymeric Membranes: Tailor-made casting and their applications by De, Sirshendu (TISCO, Jamshedpur)
8. Polymeric membranes and their applications by De, Sirshendu (Materials Science Center, IIT Kharagpur)
9. Low cost laterite based arsenic mitigation by De, Sirshendu (INSA, IIT Kharagpur)
10. Casting of membranes and its applications by De, Sirshendu (KIIT, Bhubaneswar)
11. Laterite based arsenic filters and their performance by De, Sirshendu (KIIT, Bhubaneswar)
12. Low cost laterite based arsenic filter at community scale by De, Sirshendu (Kolkata)
13. Fugitive Dust Emission Control in Sponge Iron Plants by Meikap, Bhim Charan (IIT Roorkee)

Books Published


Papers Published in Journals

21. 64. Confinement enhances dispersion in nanoparticle-polymer blend films By Sivasurender Chandran, Nafisa Begam, Venkat Padmanabhan, Jaydeep Basu Nature Communications (2104)


46. Lithographic Tuning of Polymeric Thin Film Surfaces by Stress Relaxation By Nandini Bhandaru, Sudeshna Roy, Suruchi, G. Harikrishnan, and Rabibrata Mukherjee* ACS Macro Letters* 2, 195 - 200 (2013)
50. Modeling of gel layer controlled fruit juice microfiltration in a radial cross flow cell By S. Mondal, A. Cassano and S. De *Food and Bioprocess Technology* 7, 355-370 (2014)
57. Percolation of high–density polymer regions in nanocomposites: the underlying property for mechanical reinforcement By Venkat Padmanabhan *Journal of Chemical Physics* 139 (2013)


**Papers Presented in Conferences**


7. Effect of solids on gas holdup characteristics in flotation column, By Kamalendu Bhunia, G. Kundu and D. Mukherjee, 8th International Conference on Multiphase Flow (ICMF 2013), Jeju, Korea, (2013)
19. On the bubble surface area flux of a laboratory flotation column, By Kamalendu Bhunia, Gautam Kundu and Dibyendu Mukherjee, International Mining Congress and Exhibition of Turkey (IMCET 2013), Antalya, Turkey, (2013)
Department of Chemistry

**Head**
Prof. Dipak Ranjan Mal

**Professors**

Bandyopadhyay, Sanjoy  
*Ph.D.(IISc Bangalore)*, Protein folding, Theoretical and Computational Chemistry, Hydration properties of biomolecules, Self-assembled molecular films at interfaces, Protein-ligand complexes, Phospholipid membranes, Cyclodextrin-guest interaction

Basak, Amit  
*Ph.D.(Cal),D.Phil.(Oxon)*, Bioorganic/Medicinal Chemistry/Selective protein capture/Synthetic Chemistry

Bhattacharjee, Manish  
*Ph.D.(NEHU)*, Catalysis, Synthetic Inorganic Chemistry

Biradha, Kumar  
*Ph.D.(Hyderabad)*, Gas sorption studies, Supramolecular Chemistry, Crystal Engineering, Polymorphism, Coordination Polymers, Structural Chemistry, Solid state reactions, Soft materials

Chattaraj, Pratim Kumar  
*Ph.D.(IIT Bombay)*, Density functional theory, Chemical reactivity, ab initio calculations, Quantum chaos, Aromaticity in metal clusters

Dasgupta, Swagata  
*Ph.D.(RPI New York)*, Protein-protein and Protein-small molecule interactions

Dey, Joykrishna  
*Ph.D.(Kanpur)*, Molecular Self-assembly, Colloidal Drug Delivery Systems, Polymer-Surfactant Interactions, Organogels and Hydrogels of Low-Molecular-Weight Amphiphiles

Hajra, Saumen  
*Ph.D.(Pune Univ.)*, Catalytic Asymmetric Reactions, Organocatalysis, Total Synthesis of Biologically Active Compounds

Mal, Dipak Ranjan  
*Ph.D.(Missouri)*, Benzannulation and Hauser annulation, Lateral lithiation Michael-initiated ring closure, Total synthesis of bioactive natural products: angucyclines anthracyclines carbazoles quinonoids, Oxidative dearomatization

Pal, Tarasankar  
*Ph.D.(Burdwan Univ.), D.Sc.(Visva Bharati Uni)*,

Pathak, Tanmaya  

Pramanik, P  
*Ph.D.(IIT Kharagpur)*, Nanoscience and Nanotechnology, Material Chemistry

Raj, C Retna  
*Ph.D.(M.K Univ Madurai)*, Optical and electrochemical sensors, Electrocatalysis and fuel cell, Inorganic multifunctional nanomaterials, Energy conversion and storage devices

Ray, Debashis  
*Ph.D.(Jadavpur Univ.)*, High nuclearity coordination cages,, Solution coordination chemistry crystallization and crystal structures,, Coordination driven supramolecular metal complex chemistry,, Cluster coordination chemistry,, Synthesis of ferromagnetic and single molecule magnetic metal complexes,, Interaction of DNA and cleavage by heterometallic alkali metal-transition metal clusters,, Self-assembly of dinuclear copper(II)
motifs and mechanochemical core conversions., Multimetallic constellation through lignad arm hydrolysis., Coordination driven fluorescence enhancement.

Ray, Jayanta Kumar  
*Ph.D. (Calcutta Univ)*, Synthetic Organic Chemistry

Sarkar, Nilmoni  
*Ph.D. (Jadavpur Univ)*, Characterization of Ionic Liquid containing Microemulsion, Photoinduced electron transfer in RTIL and RTIL containing confined media., Photophysics and Photodynamics of biologically relevant molecules, Excited state intramolecular proton transfer in organized assemblies, Characterization of surface active ionic liquids, Fluorescence Correlation Spectroscopy, Fluorescence lifetime imaging microscopy in single molecular level

Sarkar, Tarun Kumar  
*Ph.D. (Calcutta Univ)*, Synthetic Organic and Organometallic Chemistry

Srivastava, Suneel Kumar  
*Ph.D. (IIT Kharagpur)*, Semiconducting/Magnetic Nanomaterials, Polymer Nanocomposites

Taraphder, Srabani  
*Ph.D. (IISc Bangalore)*, Theoretical Physical Chemistry, Computer Simulation of Charge Transfer Processes, Theoretical Modelling of Functionalized Carbon Nanotubes

**Associate Professors**

Mahanty (Pathak), Amita  
*Ph.D. (IIT Kharagpur)*, Synthesis and Characterization of Inorganic Nanomaterials and their Biological Application

Mani, Ganesan  
Anion Receptors, Organometallic Chemistry

Nag, Ahindra  
*Ph.D. (Jadavpur Univ)*, Synthesis and Characterization of Natural Occurring Polyphenols

Nanda, Samik  
*Ph.D. (IICT-Hyderabad)*, Application of enzymes and microorganisms in organic synthesis, Total synthesis of complex natural products, Asymmetric synthesis

Singh, N D Pradeep  
*Ph.D. (Madras Univ.)*, Development of fluorescent photoremovable protecting groups, Generation of Photoresponsive surfaces and their applications, Two photon induced nanocarrier for regulated drug delivery, Light induced controlled release of agrochemicals, Visible light induced photocatalysis for organic transformation

**Assistant Professors**

Ayyappan, Anoop  
*Ph.D. (Univ. of Hyderabad)*, Computational Chemistry, Reaction Mechanisms, QM/MM studies of biological systems, Computational Photochemistry

Das, Madhab Chandra  
*Ph.D. (IIT Kanpur)*, Porous Metal/Covalent Organic Frameworks (MOFs/COFs)

Dhara, Dibakar  
*Ph.D. (Osmania Univ. Hyderabad)*, Synthetic Polymer Chemistry, Colloids and Nanomaterials, Physical Chemistry of Macromolecules

Halder, Mintu  
*Ph.D. (IACS Kolkata)*, Experimental Physical Chemistry, Biophysics, Photophysics of Nano-materials, Spectroscopy
Maji, Modhu Sudan  
*Ph.D.(Germany)*, Dual Catalysis & Asymmetric Synthesis (merging organo-catalysis with transition metal catalysis), Ru- and Pd-catalyzed selective C-H bond functionalization, N-tert.-butanesulfinyl imine in the synthesis of bio-active natural products, Multi Component Reaction in the light of Dual Catalysis

Mishra, Sabyashachi  
*Ph.D.(Tech. Univ., Munich, Germany)*, Theory of Relativistic Vibronic Coupling in Molecular Physics, Relativistic Quantum Chemistry, Molecular Structure and Spectroscopy in Excited States, Reactive Processes in Biology, Network Dynamics in Bio-(chemical/physical) processes

Patra, Sanjib Kumar  

Rajakumar Ananthakrishnan  

Samanta, Rajarshi  
*Ph.D.(Osmania Univ. IICT)*, Transition metal catalysis, Asymmetric synthesis, Total synthesis of natural products, Natural product inspired compound library

**Faculty Appointments**

Modhu Sudan Maji  
Assistant Professor

Madhab Chandra Das  
Assistant Professor

**Faculty Re-employment**

T K Sarkar  
Professor

P Pramanik  
Professor

**Brief Description of on-going activities**

The department is actively pursuing research embracing both basic and applied aspects of chemistry. Currently, the department is handling over 40 sponsored projects from various agencies. The department is equipped with various sophisticated instruments: Bruker APEX SMART CCD Single Crystal diffractometer, Bruker AVANCE II 400 MHz and AVANCE II 200 MHz spectrometer, Shimadzu DT-40 model 883 IR Spectrometer, PW-17291710 X-Ray Diffractometer, Cyclic Voltammeter Model P9001, Chrompack Gas Chromatograph and JASCO DIP 370 digital polarimeter, Spex Fluorolog 3 fluorimeter, and a Perkin Elmer C, H, N Analyzer. Active research in synthetic chemistry is underway on the design and synthesis of novel enediynes as DNA cleaving agents, on the total synthesis of bioactive natural products such as anthracyclines, angucyclines, furocoumarins, indole alkaloids, furoterpenes, lactams and heterocyclic quinonoids. Enzyme mediated synthesis and a substrate analog approach to determine the active site of enzymes is being studied as is the enzyme inhibition approach to drug design. Isolation and characterization of an angiogenic protein is in progress with an aim to determine the specificity by studying several dinucleotide substrates. Supramolecular chemistry relating to thia azarenes and redox switchable receptors is in progress. Development of highly selective and green methodologies based on organometallic, radical and chiron approaches. In the area of catalysis, micellar, zeolite, and bimetallic catalysts are being developed. Early transition metal based catalysts for aqueous medium polymerization and cationic
ruthenium complexes as catalysts for various organic trasformations. Synthesis of advanced functional materials for fuel cell application. Electrocatlap for oxygen reduction and methanol oxidation. Development integrated biosensing platform clinical and environmental applications. In the field of Bioinorganic chemistry, research is being pursued on electron transfer processes with emphasis in dioxygen chemistry. Active research is also underway in the areas of crystal engineering and electroanalytical chemistry. Notable research on various aspects of nanochemistry involve development of metal nanoparticles, nanocrystalline ferrites, ceramics and composites. Materials for high temperature and superconducting applications and solar energy conversion is also underway. Catalysis involving photoactivation techniques and micelle stabilized nanoparticles are currently being investigated to solve environmental pollution related problems. Colloidal systems, especially vesicles formed by chiral surfactants and their potential applications in i.v drug delivery are being studied. Active research is also being carried out on the development of hydrogels and organogels for applications in transdermal drug delivery. Investigation of solution properties of a number of polymers using a variety of tools is in progress. Studies are also being conducted on the aggregation behavior of polyelectrolytes and block copolymers in aqueous media. Capillary electrophoresis is being employed for the chiral separation of drugs. Photophysical studies of different organic molecules in pure solution and organized assemblies are being investigated using fluorescence spectroscopy. Theoretical physical chemistry in the department includes studies relating to density functional theory, chemical reactivity, ab initio calculations, quantum chaos; chemical reaction dynamics in liquids and biological macromolecules, molecular modeling and computer simulation studies of complex biological systems such as: membranes, proteins etc. Protein structure analysis on the loop regions in proteins is also underway.

**Thrust Areas**

1. Biomimics
2. Transition Metal Cluster Complexes
3. Structural Coordination Chemistry
4. Ferromagnetic Metal Complexes
5. Drug Design and Delivery
6. Chemical and Electrochemical Sensors
7. Molecular Modeling
8. Protein Folding & Enzymatic Catalysis
9. Spectroscopy of Assemblies
10. Green Chemistry
11. Nanochemistry
12. Catalysis

**New Acquisitions**

1. Fluorimeter
2. GC-MS
3. UV-visible with NIR
4. FLIM
5. CD
6. FESEM
7. High Performance Computing Platform

**Lectures by Visiting Experts**

1. Strategy Toward the Synthesis of Bioactive Natural Products and Related Compounds by Dr. Samaresh Jana (School of Applied Science, KIIT University, Bhubaneswar)
2. Designer Supported Metal Nanoparticles for Heterogeneous Catalysis Applications by Dr. Lokesh Kesavan (Aalto University (formerly known as Helsinki University of Technology), Finland)

3. FESEM - basics and its applications by Dr. Karthick Balasubramanian (ICON Analytic)

4. Advanced modeling of ions in solutions and biological environment by Dr. Arindam Bankura (Department of Chemistry (Institute for Computational Molecular Science) at Temple University, Philadelphia, U.S.A)

5. Application of Biocatalysis in organic synthesis by Dr. Anju Chadha (IIT-Madras)

6. Simple Molecules and Simple Chemistry Yield Complex Materials Through Self-Assembly by Prof. Richard G. Weiss (Georgetown University, Washington DC, USA)

7. Supramolecular Assemblies in Organo-catalysis by Ionic Liquids by Prof. Asit Chakraborti (Medicinal Chemistry, NIPER, Chandigarh)

8. Approaches toward activation of the C-H bond in methane by Prof. A. G. Samuelson (Department of IPC, IISC Bangalore)

9. Proteolytic Enzymes of PCSK Family in Health and Diseases: Implications and Disease Intervention Strategies by Prof. Ajoy Basak, (University of Ottawa, Canada)

10. Development of New Synthetic Methods en route to Some Glycosidase Inhibitors by Prof. Y. D. Vankar (Dept. of Chemistry, IIT-Kanpur)

11. Anharmonic Molecular Vibrations: A Journey from Small to Large Systems by Dr. Tapta Kanchan Roy (The Hebrew University of Jerusalem, Israel)

12. Li-ion battery materials–Syntheses and Electrochemistry by Dr. Sreeraj Puravankara (Technical University Munich, Germany)

13. NHC-Organocatalysis in Novel C-C and C-Heteroatom Bond-forming Reactions by Dr. G. Vijay Nair (NIIST-Trivandrum)

14. Mechanotransduction through force-modulated ligand binding affinity by Dr. Sudipta Samanta (MIT, Cambridge, Massachusetts, USA)

15. Stereoselective synthesis of bioactive aza-, carbo- and oxacyclic compounds via enolateamions and dianions by Prof. Manas Ghorai (Dept. of Chemistry, IIT-Kanpur)

16. Nanotechnology and Cancer by Prof. D. Bahadur (Institute Chair Professor, Metallurgical Engineering & Materials Science, IIT Bombay)

17. Transition Metal Complexes Encompassing Synthetic Bioinorganic Model Study and Water Splitting Chemistry by Dr. Sukanta Mandal (Department of Chemistry, Assam University, Silchar)

18. A new vista towards parasitic protozoan Leishmania and Trypanosoma spp. by Dr. Sridhara Gupta (Department of Chemistry,)

19. Understanding and Interfering with the Conformational Transitions of the Full-Length Amyloid-b Monomer: Insights from Computer Simulations by Dr. Neelanjana Sengupta (Physical Chemistry Divn, NCL Pune)

20. From Peptidomimetics to Proteins: Conformational Analysis of Peptoids and Profiling of Aldehyde Decarbonylase by Dr. Bishwajit Paul (University of Michigan, Department of Chemistry)

21. Functionalized Nanomaterials for Supramolecular Application by Dr. Mrinmoy De (Northwestern University)

22. Domino Reactions with Three-Membered Rings and Triple Bonds by Dr. Daniel Werz (Technical University Braunischweig, Institut für Organische Chemie)

23. Simulating at Multiple Scales: Application to Chemistry and Biophysics by Dr. Jagannath Mandal (Department of Chemistry, Columbia University, USA)

24. Understanding Mechanism in Organometallic Reactions Experimental and computational methods by Prof. A. G. Samuelson (Department of IPC, IISC Bangalore)

25. Soft tunable materials in a bottom-up approach with specific molecular recognition by Dr. Asish Pal (Stratingh Institute of Chemistry, University of Groningen, The Netherlands)

26. Preview of Semiconductor Manufacturing - A look Inside Intel by Dr. Suddhasattwa Nad (Intel, USA)
Computing the relative stabilities and the per-residue components in protein conformational changes by Dr. Arijit Roy (Laufer Center for Physical and Quantitative Biology, Stony Brook University)

Design and Photoreactivity of Coordination Polymers by Prof. J. J. Vittal (National University of Singapore)

RNA molecules as potential targets of alkaloids: Understanding the binding of alkaloids to different RNAs by Dr. G. Suresh Kumar (Indian Institute of Chemical Biology, Kolkata)

Understanding and Interfering with the Conformational Transitions of the Full-Length Amyloid-b Monomer: Insights from Computer Simulations by Dr. Neelanjana Sengupta (Physical Chemistry Divn, NCL Pune)

Mechanotransduction through force-modulated ligand binding affinity by Dr. Sudipta Samanta (MIT, Cambridge, Massachusetts, USA)

Energetics of charge transport processes in trans-membrane proteins: A molecular perspective by Dr. Suman Chakraborty (NCL, Pune)

Computational Investigations into Small Molecule Activation by Dr. Kumar Vanka (NCL, Pune)

From Peptidomimetics to Proteins: Conformational Analysis of Peptoids and Profiling of Aldehyde Decarboxylase by Dr. Bishwajit Paul (University of Michigan, Department of Chemistry)

Functionalized microporous and mesoporous materials for high CO2 uptake by Prof. Asim Bhowmick (IACS-Kolkata)

Contemporary developments in nonadiabatic chemical dynamics by Prof. Susanta Mahapatra (University of Hyderabad)

Synthetic Approaches to the Architecturally Interesting Indole Based Alkaloids via Intramolecular-Dehydrogenative-Coupling (IDC)” by Dr. Alakesh Bisai (IISER-Bhopal)

Cellular targets of Guanidino phthalocyanines by Dr. BYR Vummidi (University of Zurich, Switzerland)

Functionalized Nanomaterials for Supramolecular Application by Dr. Mrinmoy De (Northwestern University)

NHC-Organocatalysis in Novel C-C and C-Heteroatom Bond-forming Reactions by Dr. G. Vijay Nair (NIIST-Trivandrum)

Information Session on Opportunities to do PhD in Chemistry at the National University of Singapore by Prof. J. J. Vittal (National University of Singapore)

π-Conjugated Carbon Materials for Potential Electronic Applications” by Dr. Chandrani Pramanik (Department of Chemistry & Materials Science University of New Hampshire, Durham, USA)

Application of Biocatalysis in organic synthesis by Dr. Anju Chadha (IIT-Madras)

Synthetic Approaches to the Architecturally Interesting Indole Based Alkaloids via Intramolecular-Dehydrogenative-Coupling (IDC)” by Dr. Alakesh Bisai (IISER-Bhopal)

Contemporary developments in nonadiabatic chemical dynamics by Prof. Susanta Mahapatra (University of Hyderabad)

Functionalized microporous and mesoporous materials for high CO2 uptake by Prof. Asim Bhowmick (IACS-Kolkata)

Energetics of charge transport processes in trans-membrane proteins: A molecular perspective by Dr. Suman Chakraborty (NCL, Pune)

Computational Investigations into Small Molecule Activation by Dr. Kumar Vanka (NCL, Pune)

Microcapsules and Micropumps: A Chemical Approach for Designing Microscale Container/Devices by Dr. Debabrata Patra (Pennsylvania State University, USA)

Synthetic Studies of Macrolides and Their Analogues by Dr. P. Sripol (IICT-Hyderabad)

Study of C-X (X= H, O, F, S) Bond Activation by Ir and Pt Complexes and Related Chemistry by Dr. Sabuj Kundu (Dept. of Chemistry, University of North Carolina, USA)

Chemical Biology: applying chemistry to biological questions by Dr. Devraj Subramanian(
53. Development of fluorogenic bio-application based on supramolecular interactions by Dr. Kalyan K. Sadhu (Institut de Science et d’Ingénierie Supramoléculaires, Université de Strasbourg, France)

54. Application of Self-Assembly Strategies in Artificial Photosynthesis by Dr. Kingsuk Mahata (Institut für Organische Chemie, Universität Würzburg. Am Hubland, 97074 Würzburg, Germany)

55. From Peptidomimetics to Transition Metal Catalysis by Dr. Prantik Maity


57. Effect of Azobenzene Isomerisation on DNA Stability by Dr. Mithun Biswas (Institut für Physikalische u. Theoretische Chemie, Goethe-Universität, Max-von-Laue-Str.7)

58. Visible Light Photoredox Catalysis & Synthetic Studies on Natural Products by Dr. Soumitra Maity (Dept. of Chemistry, University of California-Berkeley)

59. Self-assembly of Functional Molecules: Supramolecular gels, Vesicular Chemosensors and pH-responsive Materials by Dr. Supratim Banerjee (Institut für Organische Chemie, Universität Duisburg-Essen, Germany)

60. Cellular targets of Guanidino phthalocyanines by Dr. BYR Vummidi (University of Zurich, Switzerland)

61. Programming Stereochemistry at all Carbons of Cyclohexane Rings: Total Synthesis of Structurally Complex Alkaloids by Prof. G. Pandey (NCL-Pune)

62. Stereoselective synthesis of bioactive aza-, carbo- and oxacyclic compounds via enolateanions and dianions by Prof. Manas Ghorai (Dept. of Chemistry, IIT-Kanpur)

63. Effect of Azobenzene Isomerisation on DNA Stability by Dr. Mithun Biswas (Institut für Physikalische u. Theoretische Chemie, Goethe-Universität, Max-von-Laue-Str.7)

64. New Approaches to Asymmetric Nucleophilic Catalysis and the Development of Redox-Neutral Reaction Cascades by Dr. Chandra Kanta De (Michigan Max-Planck-Institut für Kohlenforschung, Germany)

65. Enzyme Linked Immunoassay for Medical Diagnostics by Dr. Samar Kundu (USA)

66. Ring expansions and rearrangements on monosaccharides by Prof. N. Jayaraman (Department of Organic Chemistry, IISc Bangalore)

67. Transport, Magnetic and Optical Properties of Graphene Nanoribbons and Decorated Graphenes by Prof. Swapan K Pati, FASc, FNASc (Theoretical Sciences Unit, JNCASR, Bangalore)

68. Unraveling biomolecular interactions: Calorimetry and Spectroscopy by Prof. Nand Kishore (Department of Chemistry, IIT Bpmbay)

69. Alzheimer’s Disease and Human Dementia: What do we learn from research by Prof. Ajoy Basak, (University of Ottawa, Canada)

**Doctoral and MS Degrees Awarded**


2. Karmakar, Raju : Total synthesis of chlorocyclinone A, the first PPAR-gamma antagonist of natural origin; unfolding of a Prins reaction, and synthesis of pestacin methyl ethers(Ph.D.)

3. Nandan Jana : Synthetic Studies Towards Resorcylic Acid Lactones (RALs) and Stagonolides(Ph.D.)

4. Debjit Das : Heterometallic Catalysis within Palladium-Tin Domain: Carbon-Carbon and Carbon-Heteroatom Bond Formation(Ph.D)

5. Atanu Singha Roy : Interactions of dietary polyphenols and their copper complexes with serum albumins: Effects of glycation and binding with DNA(Ph.D)

6. Jana, Nandan : Synthetic Studies Towards Resorcylic Acid Lactones (RALs) and Stagonolides(Ph.D.)
8. Bratati Pradhan : 2D and 3D Nanofiller Reinforced Silicone Rubber Nanocomposites: Preparation, Characterization and Properties(Ph.D)
9. Rajib Bhuniya : Asymmetric Synthesis of Rasfonin, Loxoprofen, Venlafaxine and Small Ring Carboxycycles and Heterocycles(Ph.D)
14. Debasish Ghorai : Transition Metal Complexes of Pyrrole-Based NNN-Pincer and Polydentate Ligands(Ph.D)
15. Banalata Sahoo : Design and Synthesis of Multifunctional Nanoparticles for Biocatalysis and Targeted Delivery of Anticancer Drug(Ph.D)
17. Nagaprasad Puvvada : Design and Synthesis of Biocompatible Nanoparticles for Targeted Drug Delivery for Cancer Treatment(Ph.D)
18. Nitin Kumar Pandey : A study on the fibrillation of human serum albumin in the presence of external factors(Ph.D)
19. Sudeshna Ghosh : Studies on Hen egg white lysozyme aggregation in presence of additives: Binding of preformed fibrils with nucleic acids(Ph.D.)
20. Shanish Kumar : Group 10 and 11 Metal Complexes Bearing New Pyrrole-based Diphosphine Ligands and Chromium(III) Complexes Containing 3,5-Dimethylpyrazolate Ligand(Ph.D)
22. Ashish Kumar Sahoo : Elemental and Binary Semiconducting Nanomaterials of Diverse Morphology:Synthesis and Application(Ph.D)
23. Debasish Jana : PYRROLE-BASED MACROCYCLIC, AND MACROBICYCLIC ANION RECEPTORS BY THE MANNICH AND SCHIFF BASE CONDENSATION REACTIONS(Ph.D)

**Member - Professional Bodies**

1. Mahanty (Pathak), Amita, *Member* - Asian Nanoscience and Nanotechnology Association (ANNA) and Academy of Nanoscience and Nanotechnology (ANN)
2. Pathak, Tanmaya, *member* - The Association of Carbohydrate Chemists and Technologists
3. Pathak, Tanmaya, *Member* - Indian Chemical Society
4. Pathak, Tanmaya, *Member* - Chemical Research Society of India
5. Pathak, Tanmaya, *member* - Indian Association for the Cultivation of Science
6. Bandyopadhyay, Sanjoy, *Life Member* - Chemical Research Society of India
7. Raj, C Retna, *Life Member* - Chemical Research Society of India
8. Raj, C Retna, *Life Member* - Indian Society of Electroanalytical Chemistry
9. Raj, C Retna, *Member* - Electrochemical Society
10. Rajakumar Ananthakrishnan, *Life Member* - Society of Environmental Chemistry and Allied Sciences (SECAS)
11. Rajakumar Ananthakrishnan, Life Member - Materials Research Society of India (MRSI)
12. Dhara, Dibakar, Life Member - Society of Polymer Science, India
13. Dhara, Dibakar, Life Member - Materials Research Society of India
14. Ayyappan, Anoop, Member - WATOC - World Association of Theoretical and Computational Chemists
15. Patra, Sanjib Kumar, Member - Canadian Society of Chemistry
16. Patra, Sanjib Kumar, Member - American Chemical Society
17. Patra, Sanjib Kumar, Life member - Chemical Research Society of India
18. Mishra, Sabyashachi, Member - Indian Chemical Research Society
19. Srivastava, Suneel Kumar, Life member - Academy of Microscopic Science and Technology
20. Srivastava, Suneel Kumar, Life member - Society for Polymer Science, India
21. Srivastava, Suneel Kumar, Life member - Materials Research Society of India
22. Nag, Ahindra, Editorial Member - Biointerface Research in Applied Chemistry
23. Mal, Dipak Ranjan, Member - American Chemical Society
24. Mal, Dipak Ranjan, Life member - Chemical Research Society of India
25. Mal, Dipak Ranjan, Life member - Indian Chemical Society
26. Chattaraj, Pratim Kumar, Member - Nomination Council for the Russnano Prize
27. Chattaraj, Pratim Kumar, Member: Nomination Panel - Ahmed Zewail Prize, Chemical Physical Letters, Elsevier
28. Chattaraj, Pratim Kumar, Member - International Scientific committee of the 10th Congress of the World Association of Theoretical and Computational Chemists (WATOC 2014)
29. Chattaraj, Pratim Kumar, Member: Nomination Panel - Tetrahedron Young Investigator Award, Elsevier
30. Chattaraj, Pratim Kumar, Member - Key Opinion Leaders Panel, Nature Collections (Chemical Sciences, Nature Publishing Group), Macmillan Scientific Communications, UK
31. Ray, Debashis, Life Member - Chemical Research Society of India (CSRI), Bangalore
32. Ray, Debashis, Life Member - Indian Chemical Society, Kolkata.
33. Ray, Debashis, Life Member - Indian Association for the Cultivation of Science, Kolkata.
34. Dasgupta, Swagata, Member - National Academy of Sciences India (NASI)
35. Dasgupta, Swagata, Life Member - Chemical Research Society of India
36. Taraphder, Srabani, Life Member - Chemical Research Society of India
37. Dey, Joykrishna, Life Member - Society for Polymer Science, India
38. Dey, Joykrishna, Life Member - Chemical Research Society of India
39. Dey, Joykrishna, Life Member - Indian Society for Radiation and Photochemical Sciences
40. Sarkar, Nilmoni, life member - Chemical Research Society of India
41. Sarkar, Nilmoni, life member - Indian Association for the Cultivation of Science
42. Sarkar, Tarun Kumar, Life member - CRSI

**Member - Editorial Board**

1. Bandyopadhyay, Sanjoy (0) *Editorial Board member* - Mediterranean Journal of Chemistry
2. Bandyopadhyay, Sanjoy (0) *Editorial Board member* - Philisopic Nature
9. Chattaraj, Pratim Kumar (2010) *Member, Editorial Board* - Indian Journal of Chemistry - Section A
11. Dasgupta, Swagata (0) *Editorial Board Member* - Protein and Peptide Letters
17. Pathak, Tanmaya (2012) *Member* - Biochemical Compounds
21. Rajakumar Ananthakrishnan (2011) *Member of Editorial Advisory Board* - International Journal of Environmental Sciences
22. Srivastava, Suneel Kumar (0) *Editor* - Journal of Nano Energy and Power Research
23. Srivastava, Suneel Kumar (2013) *Associate Editor* - Journal of Nanoscience and Nanotechnology
24. Srivastava, Suneel Kumar (0) *Associate Editor* - Nanoscience and Nanotechnology Letters
25. Srivastava, Suneel Kumar (0) *Editorial Advisory Board Member* - Recent Patents on Nanotechnology

**Awards & Honours**

1. Biradha, Kumar (2013) 2013 *Associate Editor, Crystal Growth & Design, ACS*
2. Chattaraj, Pratim Kumar (2014) *Chemical Research Society of India Silver Medal*
3. Maji, Modhu Sudan (2013) *Cluster of Excellence UniCat Fellowship for Postdoctoral Research at Technical University Berlin, Germany.*
4. Raj, C Retna (2013) *CRSI Bronze Medal*
5. Dasgupta, Swagata (2013) *Darshan Ranganathan Memorial Lecture Award of Chemical Research Society of India*
7. Maji, Modhu Sudan (2014) *DST-INSPIRE Faculty Award from the Department of Science and Technology, New Delhi, India.*
8. Chattaraj, Pratim Kumar (2013) *Elected member, National Council for the Infosys Prize*
9. Chattaraj, Pratim Kumar (2013) *Highest Citation Award (on the papers published in one year) . IIT Kharagpur*
10. Chattaraj, Pratim Kumar (2013) *Member, FWO, Belgium*

**Sponsored Research Projects**

1. A Journey to the Centre of Ribonucleases: Designing of Nucleoside-based Inhibitors (DBT, Rs.72.00 Lakhs)
2. A step towards the utilization of D-fructose, L-sorbose and 1,5-anhydro-D-fructose as chiral pools in synthetic chemistry. (CSIR, New Delhi, Rs.23.00 Lakhs)
3. A Value Chain on Aloe Vera Processing (ICAR, NAIP, Rs.385.00 Lakhs)
4. Application of high resolution NMR spectroscopy in complex chemical and biochemical systems (DST, Rs.205.00 Lakhs)
5. Artificial Protein cleaving agents (CSIR, Rs.16.00 Lakhs)
6. Asymmetric Catalysis: TOS/DOS of Nitrogen-Heterocycles (Department of Science and Technology (DST), Rs.52.90 Lakhs)
7. Asymmetric Syntheses of γ-Butyrolactone Natural Products (CSIR, New Delhi, Rs.26.28 Lakhs)
8. CATALYTIC HYDROLYSIS BY A MICROBIAL ENZYME WITH POTENTIAL OF AN ANTIBIOTIC TARGET (DST India, Rs.73.00 Lakhs)
9. Characterization of Ionic Liquid containing microheterogeneous media and investigation of ultrafast processes in these confined media (CSIR, Rs.19.67 Lakhs)
10. Computational studies of gold catalyzed cycloaddition reactions (ISIRD, Rs.5.00 Lakhs)
11. COOPERATIVITY IN LIGAND MIGRATION IN A DIMERIC MICROBIAL HEMOGLOBIN (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
12. Crystal Engineering Studies on Derivatives Containing 2° Amide and Pyridine Functional Groups: Design and Applications (CSIR, Rs.11.00 Lakhs)
13. Design and Synthesis of Coordination Polymers and Coordination Induced Gelating Materials: Exploration of Gas Sorption and other Functional Properties (DST-SERB, Rs.54.00 Lakhs)
14. Design of Organic-Inorganic Hybrid Materials and Exploration of their Gas Adsorption and Disorption Properties (DST, Rs.49.00 Lakhs)
15. Design of Organic-Inorganic Hybrid Materials with Porous and/or Chiral Properties (DST, Rs.18.72 Lakhs)
16. Development and applications of polyolefin and polyolefinic rubber/hybrid filler nanocomposites (CSIR, Rs.17.92 Lakhs)
17. Development of Polypyrrole/Disinfectant Nanocomposites for Effective Purification of Water (DRDO, Rs.5.16 Lakhs)
18. Development of Silicon Carbide supported Graphene-Polymer Nanocomposites for EMI Shielding Applications (DRDO, Rs.47.79 Lakhs)
19. Droplet based screening of amyloid beta peptide aggregation (DBT, Rs.49.50 Lakhs)
20. Epoxy reinforced inorganic material filled organic polymer composites in tribological applications (DRDO, Rs.24.56 Lakhs)
21. Fatty Acid Biosynthesis Inhibitors (DBT, Rs.70.00 Lakhs)
22. Garratt Braverman Rearrangemnet (DST, Rs.37.00 Lakhs)
23. Generation and Application of Photoaddressed surfaces (DST, Rs.50.00 Lakhs)
24. Gold catalyzed organic transformations: Applications to the synthesis of bioactive natural products (DST, Rs.29.16 Lakhs)
25. Group 10 Metal Complexes Bearing New NNN-Pincer Ligands for C-C Coupling Reactions (CSIR, Rs.1926000.00 Lakhs)
26. Hydroxymethylated cycloalkenones privileged small molecular chiral templates for asymmetric synthesis of bio-active natural products (DST, Rs.35.00 Lakhs)
27. Hydroxynitrile lyase biocatalysis: production of active pharmaceutical intermediates by substrate engineering (DBT, New-Delhi, Rs.20.00 Lakhs)
28. HYPOMAP new materials for hydrogen powered mobile applications (DST, Indo-Eu, New Delhi, Rs. 47.12 Lakhs: IIT KGP Share, Rs. 47.12 Lakhs, Rs.47.12 Lakhs)
29. Investigation of the self association of proteins under varying conditions (DST, Rs.31.70 Lakhs)
30. Investigations on development and properties of poly-olefinic elastomer nanocomposites (CSIR, Rs.13.50 Lakhs)
31. Molecular analysis of efflux pump mediated antibiotic resistance in Gram negative bacilli (MGB) (DBT, Rs.32.40 Lakhs)
32. MULTIFUNCTIONAL MATERIALS FOR ELECTROCHEMICAL ENERGY CONVERSION AND STORAGE DEVICES (DST, Rs.46.75 Lakhs)
33. New Functional group photolithography methods to pattern self assembled monolayers (SAM’s) (DST, Rs.17.00 Lakhs)
34. New photoremoveable protecting groups for self assembled monolayers (SAM’s) (ISIRD, SRIC, Rs.5.00 Lakhs)
35. New Polymers and Polymer Composites : Design, Synthesis, and Advanced Applications (SRIC, Rs.250.00 Lakhs)
36. New Polymers and Polymer Composites: Design, Synthesis, and Advanced Applications (IIT Kharagpur: One-time Seed Grant for Research Infrastructure in an area of Emerging Thrust (SGDRI), Rs.0.00 Lakhs)
37. PHOTOELECTROCHEMICAL SENSORS BASED ON FUNCTIONAL MATERIALS (CSIR, Rs.22.28 Lakhs)
38. Pi-pi interactions in cyclization reactions (DST, Rs.21.00 Lakhs)
39. Role of water in predicting the protein folding-unfolding pathways: Computer simulation studies (Department of Science and Technology, Rs.26.65 Lakhs)
40. Seed Grant (ISIRD-SRIC, IITKGP, Rs.27.90 Lakhs)
41. Sesqui and Di Terpenoids by Palladacycles (DST, Rs.25.00 Lakhs)
42. Sir. J. C. Bose Fellowship (DST, New Delhi, Rs.68.00 Lakhs)
43. Spectroscopic and modeling investigations on specific weak molecular interaction... (DST-SERB, Rs.50.00 Lakhs)
44. Studies on Palladium Catalysed Heck Reactions (CSIR, Rs.15.00 Lakhs)
45. Studies on Protein-Metal Colloid Interactions by Raman Spectroscopy (DST (Co-PI), Rs.20.96 Lakhs)
46. Studies on Sonophotocatalytic Degradation of Persistent Organic Pollutants (POPs) in Aqueous System (DST, Rs.26.90 Lakhs)
47. Study of the behaviour of Oil Spill on Ocean surface through laboratory experiments, modeling and Satellite Images (MOES, Govt. of India, Rs.78.00 Lakhs)
48. Synthesis and Application of π-Conjugated Polymers for Bulk Heterojunction (BHJ) Solar Cells: Towards Cheap and Efficient Renewable Energy Sources (IIT KGP, Competitive Research Infrastructure Seed Grants, Rs.25.00 Lakhs)
49. Synthesis and Characterization of Functional Organometallic Polymers (ISIRD, SRIC, IIT-KGP, Rs.5.00 Lakhs)
50. Synthesis and Characterization of Main-Chain Metal-Containing Conjugated Functional Polymers for Application in Alternative Energy Source (DST, Rs.24.30 Lakhs)
51. Synthesis of Inorganic Fullerene-type MoS2 and WS2 Nanoparticles and Study of their Lubrication Properties (ISIRD, IIT Kharagpur, Rs.4.15 Lakhs)
52. Synthetic studies towards small ring macrolides (CSIR, Rs.16.00 Lakhs)
53. Theoretical Modelling of the Role of Hydration in Proton Transfer Processes in Proteins (CSIR, Rs.8.39 Lakhs)
54. Total synthesis of chlorocyclinones PPAR antagonists of natural origin (CSIR, New Delhi, Rs.18.00 Lakhs)
55. Total synthesis of mayamycin, an angucyline C-glycoside (DST, New Delhi, Rs.51.00 Lakhs)
56. Trivalent and divalent lanthanide complexes bearing macro-cyclic ligands for activation of CO2 and catalyse (DST, Rs.40.00 Lakhs)

Consultancy Projects

1. Asymmetric Synthesis of Novel Heterocarbocycles (TCG LifeSciences: Chembiotek, Saltlake, Kolkata, Rs.6.61 Lakhs)

Patents (filed / granted)

1. Cardiogreen based antibacterial agent
2. Controlled release of 2,4-D and real time monitoring of morphological changes induced by 2,4-D in plant system
3. Disposable cholesterol biosensor based on redox mediator functionalized graphene oxide nanoarchitecture and the preparation thereof
4. Fluorescent Organic Photoresponsive Nanocarriers for both Tracking and Regulated Release of Pesticide
5. Metal nanoparticle based sensors for hydrogen peroxide, uric acid and cholesterol and the preparation thereof
6. Novel 1, 4-triazole based polyphenol hybrids: First in vitro inhibition of Mycobacterium tuberculosis β-ketoacetyl CoA reductase FabG4 (Rv0242c) and growth inhibition of Mycobacterium smegmatis
7. Photoresponsive polymers based on coumarin moiety for the controlled release of pesticide 2,4-D
8. Polyunsaturated fatty acids from animal visera
9. Pyrrole-based Diphosphines and their Oxidized Products
10. Ultra-sensitive simultaneous electrochemical determination of arsenic, mercury and copper

Visits Abroad by Faculty Members

1. Chattaraj, Pratim Kumar - Invited speaker (Gyeongju, Korea, ) 11/07/2013 - 13/07/2013
2. Chattaraj, Pratim Kumar - Invited speaker (Les Diablerets, Switzerland, ) 02/06/2013 - 07/06/2013
3. Chattaraj, Pratim Kumar - Invited speaker (Duke University, Durham, North Carolina, United States, ) 05/09/2013 - 07/09/2013
4. Taraphder, Srabani - Invited speaker at conference (Telluride Science Center, Telluride, CO, USA, ) One week
5. Srivastava, Suneel Kumar - Visiting Scientist (Leibniz-Institut für Polymerforschung (IPF), Dresden, Germany, ) 14-05-2013 -16-07-2013

Invited Lectures by Faculty Members

1. Exploring biomolecular hydration from simulation studies by Bandyopadhyay, Sanjoy (Indian Institute of Technology, Kanpur, India)
2. Molecular simulations of hydrated biomolecules and their complexes by Bandyopadhyay, Sanjoy (S. N. Bose National Centre for Basic Sciences, Kolkata, India)
3. Effects of protein structural and energetic heterogeneities on hydration water by Bandyopadhyay, Sanjoy (Bhabha Atomic Research Center (BARC), Mumbai, India)
4. Garratt-Braverman Cyclization: a Reaction worth Revisiting by Basak, Amit (Viswa Bharati)
5. Asymmetric synthesis of naturally occurring seimatopolide A & B by Nanda, Samik (MS University, Vadodara)
6. Garratt-Braverman Cyclization Chemistry and Fluorescence/MALDI Based Study of Molecular Interactions by Basak, Amit (NIT Rourkela)
7. Chemistry of Diradicals: Recent Developments by Basak, Amit (NIT Durgapur)
8. Diradical Generating Reactions: How Different From the Monoradical Counterpart? by Basak, Amit (Women’s College, Burdwan Department of Chemistry)
9. Reactive Intermediates in Synthesis and Capture Research: Recent Developments by Basak, Amit (IICT Hyderabad)
10. Chiral Diversity Oriented Synthesis of Guaianolides by Hajra, Saumen (NOST, Agra)
11. Chiral Diversity in Asymmetric Synthesis of Sequiterpene Lactones by Hajra, Saumen (Centre for Bio-Medical Research (CBMR), Lucknow)
12. Alternative/Hybrid Materials for Visible Light Photocatalysis by Rajakumar Ananthakrishnan (North Orissa University, Baripada)
14. Investiagations on Funcationalized Activated Carbon-Fe2O3 NPs for Enhanced Photodegradation by Rajakumar Ananthakrishnan (Department of Inorganic and Analytical Chemistry, Andhra University)
15. Physical Chemistry and Applied Research by Dhara, Dibakar (Jadavpur University, Kolkata)
16. Chemical Dynamis in Ionic Liquid containing confined media by Sarkar, Nilmoni (NIT Durgapur)
17. Recent advances in material science by Pramanik, P (Veer Surendra Sai University of Technology, Burla, Sambalpur Odisha)
18. Synthetic Transition Metal Coordination Chemistry by Ray, Debashis (NIT Patna)
19. Synthetic Modifications of D-Fructose by Pathak, Tanmaya (Dehradun)
20. Enantiomerically Pure Carbocycles and Heterocycles from Vinyl Sulfone-Modified Carbohydrates by Pathak, Tanmaya (IISc, Bangalore)
21. Understanding the Dynamics of Human Carbonic Anhydrase II by Taraphder, Srabani (Dynamics of Complex Chemical and Biological Systems, IIT Kanpur)
23. Dynamics of Conformational Fluctuation and Proton Transfer in HCA II by Taraphder, Srabani (“Protein Dynamics Workshop in Telluride, CO, USA)
24. Thermal Unfolding and Proton Transfer in HCA II and its Mutant His-107-Tyr by Taraphder, Srabani (5th Indo-American Frontiers of Science Symposium, Agra)
25. Amyloid formation of human serum albumin and lysozyme: effect of Cu(II) and green tea polyphenols by Dasgupta, Swagata (Kolkata)
26. Darshan Ranganathan Memorial Lecture Award of Chemical Research Society of India, at CRSI Symposium by Dasgupta, Swagata (BHU, Varanasi)
27. Prevention of Cancer – A proven concept by Pramanik, P (NIT Rourkela)
28. Surfactants and amphiphilic polymers in nanotechnology - On the way to smarter formulations by Pramanik, P (Punjab University, Chandigarh)
29. Advances in Drug Delivery technologies by Pramanik, P (Ahmedabad, Gujarat)
30. Materials & Green Chemistry by Pramanik, P (NIT Agartala)
31. Nanomaterials and Their Future Promises by Pramanik, P (Jadavpur University, Kolkata)
32. Synthesis and Application of Nano sized Inorganic Oxides by Pramanik, P (JBNSTS Kolkata)
33. Sustainability impact of experiments in India by Pramanik, P (Jadavpur University, Kolkata)
34. Nanomedicine by Pramanik, P (Delhi)
35. Promises of Magnetic Nanoparticles in Medicine and Bioscience by Pramanik, P (Cuttack, Odisha)
Papers Published in Journals

1. coordination-assisted general approach to nickel-based nano metallogels *By* Santu Dey, Dhrubajyoti Datta, Kaustav Chakraborty, Surajit Nandi, Anakuthil Anoop and Tanmaya Pathak *RSC Advances* 3, 9163 (2013)


12. 1, 5-Disubstituted 1,2,3-triazolylolation at C1, C2, C3, C4 and C6 of pyranosides: A metal-free route to triazolylated monosaccharides and triazole-linked disaccharides By Kayet, A. Pathak. *J. Org. Chem.* 78, 9865-9875 (2013)


41. Asymmetric synthesis of naturally occurring nonenolide xyolide through cross metathesis and macrolactonization reaction By Rohan Kalyan Rej, Anuvab Jana, Samik Nanda Tetrahedron 70 2634-2642 (2014)

42. Asymmetric total synthesis of (-)-rasfonin By Rajib Bhuniya and samik Nanda Tetrahedron 69 1153-1165 (2013)


46. Benzox[a]carbonyl methyl esters as pH Sensitive Fluorescent Photoactive precursors: Synthesis, Photophysical, Photochemical and Biological Applications By Mohammed Ikbal, Biswajit Saha, Sharabani Barman, Sanghamitra sangha.chem@gmail.com Atta, Debajan Banerjee, Sudip Ghosh and Pradeep N.D. Singh Organic & Biomolecular Chemistry Accepted (2014)


52. Coordination Polymers Containing M2L2 and M4L4 metallacyl-ces of Bis(pyridylcarboxamido)alkanes with an Odd Number of -(CH2)- Groups as Spacers: Guest Inclusion and Networks Recognition via alpha-sheet. By G. Mukherjee and Kumar Biradha *Crystal Growth & Design* 13, 4100-4109. (2013)


70. Effectiveness of amine as demulsifier in crude oil emulsion treatment By M. Patowary, K. Pathak and A. Rajakumar Geominetech 123-124 (2013)


72. Exploration of Salts and Cocrystals of 2,2′,6,6′-Tetracarboxybiphenyl with Acetic Acid, Monobasic and Dibasic N-Heterocycles, and N-Oxides By S. Roy and Kumar Biradha Crystal Growth & Design 13, 3232-3241. (2013)


77. Facile reversible LSPR tuning through additive-induced self-aggregation and dissemination of Ag NPs: Role of cyclodextrins and surfactants By Niharendu Mahapatra and Mintu Halder RSC Advances #10.1039/C4RA01523A (2014)


82. Fluorescence Resonance Energy Transfer in Microemulsions Composed of Tripled-Chain Surface Active Ionic Liquids, RTILs, and Biological Solvent: An Excitation Wavelength


84. Free energies of proton transfer by polar amino acid sidechain analogues anchored to the outer wall of single walled carbon nanotubes By T. G. Abi and Srabani Taraphder Computational and Theoretical Chemistry 1027, 19-25 (2014)


104. Metal–organic gels and coordination networks of pyridine-3,5-bis(1-methyl-benzimidazole-2-yl) and metal halides: self sustainability, mechano, chemical responsiveness and gas and dye sorptions By A. Dey and Kumar biradha *CrystEngComm* 15, 9769-9778 (2013)


115. Photocontrolled Nuclear-Targeted Drug Delivery by Single Component Photoresponsive Fluorescent Organic Nanoparticles of Acridin-9-methanol By Avijit Jana,


140. Self-assembly of a pentanuclear {Cu5} complex resulting from the trapping of a Cu2+ ion by two {Cu2} building units By Ghosh, Alok Kumar Clerac, Rodolphe Mathoniere, Corine Ray, Debashis Polyhedron 54, 196-200 (2013)


147. Structure and Stability of (NG)nCN3Be3+ Clusters and Comparison with (NG)BeY0+/ (Ng=Noble Gas and Y=O, S, Se, Te) By S. Pan, S. Jalife, M. Kumar, V. Subramanian, G. Merino, and P. K. Chattaraj ChemPhysChem 14, 2511 (2013)
153. Synergistic effect of three dimensional multi-walled carbon nanotube/graphene nanofiller in enhancing the mechanical and thermal properties of high performance silicone rubber By Bratati Pradhan and Suneel Kumar Srivastava, Polymer International, DOI: 10.1002/pi.4627 (2013)


155. Synthesis of 5'-carboxymethylsulfonyl-5'-deoxy-ribonucleosides under mild hydrolytic conditions: a new class of acidic nucleosides as inhibitors of ribonuclease A. By Datta, D. Samanta, A. Dasgupta, S. Pathak, T RSC Advances 4, 2214-2218 (2014)


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Papers Presented in Conferences

1. A New One Component Organogelator Based on Amino Acridine: Effect of Sonication on the Gel Morphology, By R. Das Mahapatra and J. Dey, 5th Asian Conference on Colloid and Interface Science (ACCIS 2013), University of North Bengal, Darjeeling, (2013)


on Colloid and Interface Science (ACCIS 2013), University of North Bengal, Darjeeling, (2013)


12. Stable Vesicle Formation by Cysteine-Based Zwitterionic Surfactants Bearing mPEG Tail, By R. Ghosh and J. Dey, 5th Asian Conference on Colloid and Interface Science (ACCIS 2013), University of North Bengal, Darjeeling, (2013)


Department of Civil Engineering

Head
Prof. Subhasish Dey

Professors
Baidya, Dilip Kumar Ph.D. (IISc Bangalore), Reliability in Gotechnical Engg Pile foundations Soil Dynamics
Barai, Sudhir Kumar Ph.D. (IISc Bangalore), Soft Computing Applications, Structural Health Monitoring, Recycled Construction Materials, Fracture in Concrete
Bhattacharya, Baidurya Ph.D. (Johns Hopkins Univ), Computational materials science, Risk and reliability analysis of infrastructure systems
Bhattacharyya, Sriman Kumar Ph.D. (IIT Kharagpur),
Das Gupta, Shambhu Pada Ph.D. (IIT Kanpur), constitutive modelling Soil-Structure Interaction, Foundation Dynamics
Desai, Venkappayya R Ph.D. (Clemson Univ), Integrated watershed/ water management & rainwater harvesting/ best management practices (BMPs), Surface water/ Groundwater Hydrology & combating climate change through Green Infrastructure, Hydraulics & Hydropower Engineering
Dey, Subhasish Ph.D. (IIT Kharagpur), Turbulence, Fluvial Hydraulics, Applied Hydrodynamics
Dhang, Nirjhar Ph.D. (IIT Kharagpur), Concrete, Dynamics and Control of Railway Bridges, Biomechanics
Ghangrekar, Makarand Madhao Ph.D (IIT Bombay), Microbial Fuel Cells, UASB reactor for anaerobic wastewater treatment, Water and Wastewater Treatment, Bioenergy recovery during waste management, Wastewater reuse
Gupta, Ashok Kumar Ph.D. (IIT Bombay), Water and Wastewater Treatment, Environmental Impact Assessment, Air Quality Management, Environmental Planning
Maity, Damodar Ph.D. (IIT Kharagpur), Seismic Analysis of Dam, Health Monitoring of Structures, Cost Effective Housing
Ramachandra, Lingadahally Ph.D. (IIT Chennai), Stability of Structures, Nonlinear Vibrations, Shell analysis
Roy, Debasis Ph.D. (Univ. of British Colo), Geotechnical Earthquake Engineering, Ground Improvement, Insitu testing of Geomaterials
Sen, Dhrubajyoti Ph.D. (IIT Delhi), Water resources engineering, Numerical techniques
in civil engineering hydraulics

**Associate Professors**

Dash, Sujit Kumar  *Ph.D. (IIT Madras)*, Reinforced soil structures, Shallow foundation

Deb, Arghya  *Ph.D. (Princeton Univ)*, Failure and Debonding in concrete, Impact loading on concrete structures, Discrete Element Modelling

Deb, Kousik  *Ph.D. (IIT, Kanpur)*, Soil-Structure Interaction, Ground Improvement, Geosynthetic-Reinforced Earth, Numerical Modeling, Soil Arching, Foundation/Embankment on Soft Soil, Geotechnical Earthquake Engineering, Dynamic Analysis of Rigid Pavement

Goel, Sudha  *Ph.D. (Johns Hopkins Univ)*, Environmental Impact and Risk Assessment, Water Quality and Treatment, Solid and Hazardous Waste Management, Environmental Engineering

Pal, Anjali  *Ph.D (Calcutta Univ.)*, Nanoparticle mediated wastewater treatment, Photocatalytic degradation of organic pollutants, Arsenic remediation in groundwater, Adsorption / adsolubilization for wastewater management

Reddy, M Amaranatha  *Ph.D. (IIT Kharagpur)*, Transportation Engineering

**Assistant Professors**

Banerjee, Biswanath  *Ph.D. (IISc., Bangalore)*, Computational Mechanics, Inverse Problems

Bhattacharya, Paramita  *Ph.D. (IISc. Bangalore)*, Computational Geotechnical Engineering, Soil Stabilization, Seismic Analysis of Underground Structures


Chakraborty, Debarghya  *Ph.D. (IISc Bangalore)*, Soil Dynamics, Computational Geomechanics, Reinforced Soil Structures, Geotechnical Earthquake Engineering

Chakraborty, Sushanta  *Ph.D. (IIT Kharagpur)*, Vibration Serviceability of Building Floors using Experimental Modal Testing, Finite Element Model Updating and its application to FRP structures


Computing in Hydrology, Monsoon rainfall

Mitra, Nilanjan

Ph.D. (UW, SEATTLE), Earthquake loading of structures, Fluid Structure Interaction, Probabilistic modeling, Physics and Mechanics of solids and fluids, High strain rate loading (shock waves and impact loading), Reinforced concrete and composite structures, Molecular dynamic simulations of shock loading of materials, Continuum Mechanics of defects in materials

Mitra, Sudeshna

Ph.D. (ASU, Phoenix), Transportation Safety, Crash Data Analysis and Modelling, Statistical and Econometric Modelling of Transport data, Sustainable Transportation Planning, Traffic Engineering and Operations in heterogenous traffic

Reddy, Hanmaiahgari Prashanth

Ph.D. (IIT Madras), experimental and numerical modeling of steady and unsteady flows in pipelines and open channels, experimental studies on turbulence characteristics of flows in open channels and pipelines, sediment transport in rivers- river morphology- reservoir sedimentation, pipeline engineering - water distribution networks - leaks and blockages in liquid pipelines, unsteady flows in hydropower stations

Shaws, Amit

Ph.D. (IISc Bangalore), Computational Mechanics, Ballistic Response of Nano-Composite Armour, Impact Mechanics, Underwater blast

Verma, Shubha

Ph.D. (IIT Bombay), Environmental Engineering, Air Pollution, Aerosol Modelling and Climate Impacts

Faculty Re-employment

Prof. S. P. Dasgupta

Professor

New Academic Programmes

M.Tech. (Construction Technology and Management) in collaboration with L&T

Brief Description of on-going activities

EnvE: Microbial Fuel Cells: Application for wastewater treatment and energy recovery, Onsite treatment of domestic sewage from small community, Studies on granulation in UASB reactor treating low strength wastewater to enhance efficiency of the reactor, Water quality and health assessment, Biological treatment of solid waste, Factors affecting the use of chlorine in water supply systems; Nanoparticle synthesis, their characterization and application; Photodegradation of organic pollutants; Adsolubilization/adsorption; Monitoring and modelling of tropospheric solid state polydisperse aerosols and ozone and assessment of pulmonary deposition in Kolkata urban region; Monitoring and modelling of ambient air quality in residential, commercial and industrial regions of Kolkata; Removal of Fluoride from ground water using low cost adsorbents; Removal of Arsenic from ground water using low cost adsorbent; Photocatalytic degradation of dye containing effluents using Ag+ doped TiO2.

SE: Recycled construction materials, Stability of plates and shells, Biomechanics, Reliability of bridge structures, Low cost housing, Seismic analysis of dams, Fluid-structure Interactions, Structural Health Monitoring, Finite Element Model updating
TE: Cell filled low cost rural roads, Analysis and Evaluation of Concrete and flexible pavements, Specifications for bituminous mixes and Urban transportation planning.

HWRE: Investigations of effect of lateral flow on turbulent submerged jets, Study of coherant turbulent structure over gravel beds and bed-forms, development and comparative study of flood inundation models, drought characterization and forecasting, development and comparison of different models for flood forecasting.

GTE: Erosion control and mechanical stabilization of soils using natural fibers, ground improvement, soil-microbe interaction, insitu testing, geotechnical earthquake engineering, landslides and slope stabilisation

**Thrust Areas**

1. EnE: Water and Wastewater treatment, Solid Waste Engineering, Environmental Microbiology, Environmental Impact Assessment, Air Pollution Modeling, Bio-energy
2. SE: Reliability engineering, nonlinear mechanics, structural health monitoring, fluid-structure interaction.
5. GTE: Geotechnical earthquake engineering, slope stability, ground improvement, microbe-soil interaction, static and cyclic soil-structure interaction and foundation strengthening of monumental structures.

**New Acquisitions**

1. Seismic piezocone
2. In situ testing vehicle
3. MASW system for shear wave velocity profiling
4. Resonant column for small strain dynamic testing system for soil
5. Digital direct shear apparatus for soil testing
6. Carry Eclipse Fluorescence Spectrophotometer
7. GC, Autolab potentiostat/Galvanostat; Online water quality analyzer, etc.
8. Shaker table for earthquake simulation

**International Collaborations**

Dr. Rajib Maity: University of New South Wales, Australia; Purdue University, USA

Domenico Ferraro, a PhD student of University of Calabria, Italy visits Department of Civil Engineering for two months during Summer vacation.

**Lectures by Visiting Experts**

1. Modelling of Fluvial Processes by Prof. Takashi Hosoda (Kyoto University)

**Doctoral and MS Degrees Awarded**

3. Debjit Bhowmik: Vibration based structural damage assessment using unified particle swarm optimization (Ph.D.)

**Member - Professional Bodies**

1. Pal, Anjali, *Life Member* - Chemical Research Society of India
2. Pal, Anjali, *Member* - Materials Research Society of India
5. Maitra, Bhargab, *Chair* - Chair, SIG D3 (Econometric/Statistical Travel Demand Models), World Conference on Transportation Research Society (WCTRS), 2013–16
6. Maitra, Bhargab, *Member* - Member, Scientific Committee, World Conference on Transportation Research Society (WCTRS), 2013–16
7. Roy, Debasis, *Member* - Canadian Geotechnical Society
8. Roy, Debasis, *Associate Member* - American Society of Civil Engineers
9. Roy, Debasis, *Member* - India Geotechnical Society
10. Roy, Debasis, *Associate Member* - Earthquake Engineering Research Institute
12. Goel, Sudha, *Honorary Secretary, Kharagpur Local Centre* - Institution of Engineers (India)
13. Goel, Sudha, *Member* - Institution of Engineers (India)
14. Goel, Sudha, *Senior Member* - APCBEES
15. Goel, Sudha, *REGULAR MEMBER*, AMERICAN WATER WORKS ASSOCIATION
16. Ghangrekar, Makarand Madhao, *Life Member* - Indian Association for Environmental Management
17. Ghangrekar, Makarand Madhao, *Life Member* - Institution of Engineers (India)
18. Ghangrekar, Makarand Madhao, *Life Member* - Indian Society for Technical Education
19. Ghangrekar, Makarand Madhao, *Member* - International Water Association
20. Reddy, M Amaranatha, *Life Member* - Indian Roads Congress
22. Bhattacharya, Baidurya, *Member* - American Society of Civil Engineers
23. Bhattacharya, Baidurya, *Special Invitee* - National Disaster Management Authority, Steering Committee on Geophysical Hazard and Working Committee of Experts on Vulnerability Analysis and Risk Assessment
24. Bhattacharya, Baidurya, *Member* - International Association for Structural Safety and Reliability (IASSAR), Subcommittee on Structural Reliability and Optimization (SC3)
25. Maity, Damodar, *Member* - Indian Buildings Congress
26. Maity, Damodar, *Member* - Indian Society for Technical Education
27. Maity, Damodar, *Member* - Indian Association for Computational Mechanics
28. Verma, Shubha, *Organizational Committee India Working Group* - International Global Atmospheric Chemistry (IGAC)
29. Verma, Shubha, *Member* - American Geophysical Union
30. Verma, Shubha, *Member* - Indian Aerosol Science and Technology Association
31. Maity, Rajib, *Life Member* - Indian Society for Hydraulics (ISH), India
32. Maity, Rajib, *Member* - European Geosciences Union (EGU), Germany
33. Maity, Rajib, *Member* - American Geophysical Union (AGU), USA
34. Maity, Rajib, *Member* - International Water Resources Association (IWRA), France
35. Maity, Rajib, *Member* - International Association of Hydrological Sciences (IASH), UK
36. Maity, Rajib, *Life Member* - The Indian Science Congress Association (ISCA), India
37. Deb, Kousik, *Member* - International Society for Soil Mechanics and Foundation Engineering
38. Deb, Kousik, *Life Member* - Indian Geotechnical Society
39. Mitra, Sudeshna, *Associate Member* - Transportation Research Board
40. Mitra, Sudeshna, *Life Member* - Transportation Research Group of India
41. Mitra, Sudeshna, *Member* - SIG-15 Committee of World Conference on Transport Research Society
42. Mitra, Nilanjan, Associate - American Concrete Institute
43. Dhar, Anirban, Life Member - Indian Society for Hydraulics (ISH)
44. Dhar, Anirban, Life Member - Indian Association of Hydrologists
45. Dhar, Anirban, Life Member - The Indian Science Congress Association (ISCA)
46. Dhar, Anirban, Member - International Association of Hydrological Sciences (IAHS)
47. Dhar, Anirban, Member - International Association of Hydrogeologists (IAH)
48. Dhar, Anirban, Member - International Association for Hydro-Environment Engineering and Research (IAHR)
49. Reddy, Hanmaiahgari Prashanth, member - International Association of Hydraulic Research (IAHR)
50. Reddy, Hanmaiahgari Prashanth, member - American Society of Civil Engineers (ASCE)
51. Biligiri, Krishna Prapoorna, Member - American Society for Testing & Materials (ASTM) International
52. Biligiri, Krishna Prapoorna, Member Affiliate - Rubber Pavements Association, Arizona, United States of America
53. Biligiri, Krishna Prapoorna, Young Member - Transportation Research Board of the US National Academies of Engineering
54. Baidya, Dilip Kumar, Regular - Member, Int Soc for Soil Mechanics and Geotechnical Engineering
55. Baidya, Dilip Kumar, Life - Member, Indian Geotechnical Society
56. Baidya, Dilip Kumar, Life - Indian society for Rock Mechanics and Tunelling Technology
57. Barai, Sudhir Kumar, Member - International Association of Engineers (IAENG)
58. Barai, Sudhir Kumar, Life Member - Indian Society for Construction Material and Structures (ISCMs)
59. Barai, Sudhir Kumar, Life Member - Indian Roads Congress (IRC)
60. Barai, Sudhir Kumar, Member - International Association for Life-Cycle Civil Engineering (IALCCE)
61. Barai, Sudhir Kumar, Life Member - Institute of Smart Structures and Systems (ISSS)
62. Barai, Sudhir Kumar, Life Member - Indian Association for Structural Engineering (IASE)
63. Barai, Sudhir Kumar, Member - International Association for Bridge Maintenance and Safety (IABMS)
64. Barai, Sudhir Kumar, Senior Member - RILEM
65. Barai, Sudhir Kumar, Professional Member - Association for Computing Machinery (ACM)
66. Barai, Sudhir Kumar, Life Member - Indian Association for Computational Mechanics (IACM)
67. Barai, Sudhir Kumar, Member - Young Researchers Committee, World Federation for Soft Computing (WFSC)
68. Barai, Sudhir Kumar, Life Member - Indian Concrete Institute (ICI), Chennai
69. Barai, Sudhir Kumar, Life Member - The Indian Society for Technical Education (ISTE)
70. Barai, Sudhir Kumar, Life Member - The Indian Science Congress Association (ISCA)
71. Barai, Sudhir Kumar, Life Member - American Society for Civil Engineers India Section (ASCE IS)
72. Barai, Sudhir Kumar, Associate Member - The International Society of Structure and Multidisciplinary Optimization (ISSMO)
73. Sen, Dhrubajyoti, Regular - International Association of Hydraulic Research
74. Sen, Dhrubajyoti, Regular - Indian Society of Hydraulics
75. Sen Gupta, Aniruddha, Associate Member - American Society of Civil Engineers
76. Sen Gupta, Aniruddha, Member - Sigma Xi - The Scientific Research Society
77. Sen Gupta, Aniruddha, Member - Chi Epsilon - Civil Engineering Honor Society

**Member - Editorial Board**

1. Barai, Sudhir Kumar (2012) Member - Advances in Concrete Construction
4. Barai, Sudhir Kumar (2013) *Member* - IST Transactions of Civil Engineering and Construction Management (CECM)
7. Barai, Sudhir Kumar (2013) *Associate Editor* - Sadhana
8. Bhattacharya, Baidurya (2014) *Associate Editor* - Journal of Bridge Engineering
17. Dey, Subhasish (2011) *Associate Editor* - International Journal of Sediment Research
18. Dey, Subhasish (2013) *Associate Editor* - Journal of Hydraulic Research
20. Dey, Subhasish (2011) *Associate Editor* - Acta Geophysica
21. Dey, Subhasish (2011) *Member of Editorial Board* - International Review of Civil Engineering
22. Dey, Subhasish (2011) *Associate Editor* - Journal of Hydraulic Engineering
23. Dey, Subhasish (2011) *Member of Editorial Board* - Flow Measurement and Instrumentation
24. Dey, Subhasish (2011) *Associate Editor* - Sedimentology
25. Dey, Subhasish (2011) *Member of Editorial Board* - Engineering Applications of Computational Fluid Mechanics
26. Dey, Subhasish (2011) *Associate Editor* - Journal of Hydro-Environment Research
27. Ghangrekar, Makarand Madhao (2009) *Editorial Board member* - International Journal of Wastewater Treatment and Green Chemistry (IJWTGC)
28. Ghangrekar, Makarand Madhao (2009) *Associate Editor* - Renewable and Sustainable Energy (RSE)
31. Maity, Damodar (0) *Member of the Editorial Board* - Journal of Computational Engineering
32. Maity, Rajib (2009) *Associate Editor* - Journal of Civil, Environmental, and Architectural Engineering
36. Roy, Debasis (2010) *Associate Editor* - Geomechanics and Engineering
37. Roy, Debasis (2010) *Associate Editor* - IST Transaction of Civil Engineering and Construction Management
40. Sen Gupta, Aniruddha (2012) *Member of Editorial Board* - International J. of Applied Engineering & Technology

**Awards & Honours**

1. Ghangrekar, Makarand Madhao (2013) *Alexander von Humboldt Fellowship*
2. Gupta, Ashok Kumar (2012) *Awarded the Shiksha Rattan Puraskar, award by the IIFS, New Delhi*
4. Mitra, Sudeshna (2013) *DAAD-IIT Faculty Exchange Fellowship*
5. Maity, Rajib (2012) *Emerging Leaders Fellowship by Australia India Institute at the University of Melbourne, Australia*
6. Deb, Kousik (2012) *Fast Track Project Grant for Young Scientists - 2012 from Science and Engineering Research Council (SERC), Department of Science and Technology (DST), India*
7. Deb, Kousik (2012) *IIT Roorkee Shamsher Prakash Research Award 2012 for Outstanding Research Contribution in Geotechnical Engineering by Young Indian Researcher below 45 years age, IIT Roorkee Through SP Foundation, USA*
8. Shaws, Amit (2012) *Outstanding Young Faculty Award, IIT Kharagpur*
10. Maity, Rajib (2012) *Prof. R. J. Grade Research Award by the Executive Council of Indian Society for Hydraulics for the year 2012*
11. Mitra, Nilanjan (2013) *Raman Fellowship*
12. Mitra, Sudeshna (2013) *Raman Fellowship*
13. Maity, Rajib (2012) *Selected as ASCE 2011 Outstanding Reviewer by the Editor of Journal of Hydrologic Engineering, American Society of Civil Engineers (ACSE)*

**Sponsored Research Projects**

1. A creative economic & urban redesign based pilot project of Gariahat Area (In Association with Kolkata Museum of modern arts) (MHRD, Govt. of India, Rs.100.00 Lakhs)
2. Advanced Research Laboratory on Safety and Uncertainty Analyses of Infrastructure Systems (BARC, Mumbai, Rs.150.00 Lakhs)
3. Aerosol Chemical and Optical characteristics over an urban coastal city in the Ganges Delta (SRIC, Rs.3.00 Lakhs)
4. Application of geocell reinforcement for performance improvement of anchored foundations under uplift (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
5. Arresting delamination propagation of sandwich composite panels with initial face/core debond subjected to inplane compression load (SRIC-ISIRD, Rs.5.00 Lakhs)
6. Artificial intelligence for societal needs: knowledge discovery and intelligent decision making for solving problems in Indian context related to ener (MHRD, Govt. of India, Rs.500.00 Lakhs)
7. Assessing the current & future creative economic regeneration scope of traditional river-based heritage & eco-tourism networks in KMA, Bengal (MHRD, Govt. of India, Rs.50.00 Lakhs)
8. Assessment of Various Strategies of Seating Arrangements for Indian Rail Coaches from the view point of Occupant’s Safety (RDSO through Center for Railway Research, Rs.29.52 Lakhs)
9. Attribution of inter-seasonal aerosol radiative effects of climate to aerosol constituents and emission sources: Integration of Measurements and Model (DST, Rs.0.00 Lakhs)
10. Award of Fellowship under national renewable fellowships (Ministry of New and Renuable Energy, Govt. of India, Rs.61.76 Lakhs)
11. Bridge scour estimation, measurement and protection and use of various time systems like TDR, TTS and SA (RDSO, Rs.152.00 Lakhs)
12. Bridge scour measurement and protection and use of various real time monitoring systems like TDR, TTS, SMC & SA (RDSO Lucknow, Rs.165.00 Lakhs)
13. Characterization of Ballistic Performance of Ceramic-Metal Composite Armour against Armour Piercing (AP) Projectile (SRIC, Rs.5.00 Lakhs)
14. Creep and warping (including gauge widening) analysis of hot running loco wheels towards development of design guidelines against gauge widening (RDSO, Rs.49.79 Lakhs)
15. Damage assessment of aircraft structures from limited vibration data (Aeronautical Research & Development Board, Rs.8.45 Lakhs)
16. Damage assessment of composite structures using swarm based optimization technique from changes of vibration response (Vikram Sarabhai Space Centre, ISRO, Rs.27.56 Lakhs)
17. Determination of leishmanicidal potential of metal nanoparticles and their conjugates (Calcutta University, Rs.2.00 Lakhs)
18. Developing a Suitable Methodology for Identifying Accident Prone Sites in the Presence of Limited Data (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
19. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-Learning (MHRD, Rs.8.00 Lakhs)
20. Development & Dissemination of Appropriate Tech. for Small Scale Grain Storage for Value Addition, Improving Marketability & Income of Farm Families (Department of Agriculture MW & C Branch, Government of West Bengal Marketing, Rs.40.00 Lakhs)
21. Development of a web course on Probability methods for Civil Engineering (Ministry of Human Resource Development (MHRD), Government of India, Rs.5.00 Lakhs)
22. Development of Crack Propagation Criteria for Asphalt Mixtures (Institute Scheme for Innovative Research and Development (ISIRD), IIT Kharagpur, Rs.0.00 Lakhs)
23. Development of Design Methodology for Chemically Treated Bamboo Reinforced Concrete members for Low Cost Housing (BMTPC, GOI, Rs.16.80 Lakhs)
24. Development of durable water repellent jute geotextile (Jute Manufacturers Development Council, Rs.168.72 Lakhs)
25. Development of e-courses for B.Tech. (Agricultural Engineering) Degree Programme, Soil Mechanics (National Agricultural Innovation Project (NAIP), Rs.0.50 Lakhs)
26. Development of Microbial Fuel Cell for Direct Electricity Recovery During Wastewater Treatment (DST, New Delhi, Rs.61.10 Lakhs)
27. Development of Pervious Concrete Mix Designs and Specifications for Pavement Applications (Ministry of Human Resource Development, Government of India, Rs.0.00 Lakhs)
28. Development of Provisions for Design of Steel Concrete Railway Bridge for normal speed and special provision for high speed passenger traffic (RDSO, Rs.118.95 Lakhs)
29. Development of railway bridge health monitoring system with wireless sensor network (Ministry of Railways, RDSO, Lucknow, Rs.187.02 Lakhs)
30. Effects of Fines on Behavior of Geosynthetic-Reinforced Sands (Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
31. Efficiency Study of Damodar Left Bank Irrigation System and Strategies for Integrated Command Area Water Management (MoWR, INDIA, Rs.46.00 Lakhs)
32. Electrocoagulation in continuous-flow systems for removal of drinking water contaminants (DST-WTI, Rs.35.90 Lakhs)
33. Energy efficiency, community based water and waste water treatment systems for development in India (DST, New Delhi, Rs.17.50 Lakhs)
34. Experimental and Numerical Studies on Deep Excavation under Static and Seismic Conditions (Department of Science and Technology, SERB, India, Rs.73.00 Lakhs)
35. Experimental and Numerical Studies on Stone Column-Supported Embankments Resting on Soft Soil (Department of Science and Technology, SERB, India, Rs.18.90 Lakhs)
36. Experimental modelling of flow characteristics in and around emergent vegetation patches (SRIC, Rs.28.00 Lakhs)
37. Future of Cities (MHRD, Govt. of India, Rs.2500.00 Lakhs)
38. Ganga River Basin - Environment Management Plan (MoEF, Rs.10.00 Lakhs)
39. Ganga River Basin Environmental Management Plan (Ministry of Environment and Forest, New Delhi, Rs.30.00 Lakhs)
40. GANGA RIVER BASIN MANAGEMENT PLAN (MoEF, New Delhi, Rs.25.00 Lakhs)
41. Guidelines for Bicycle Infrastructure Design and Policy (HSMI, HUDCO, Rs.17.20 Lakhs)
42. HYDRODRIL (WP5) (European Union (Prof. Wei Wu, Coordinator), Rs.34.00 Lakhs)
43. Hydrologic sensitivity to Cryosphere-Aerosol interaction in Mountain Processes (DST, India; RCN, Norway, Rs.0.00 Lakhs)
44. Improving mechanical performance and delamination resistance in sandwich composite panels (Department of Science and Technology (DST/SERC), India, Rs.2.50 Lakhs)
46. Managing change in Soil Moisture and Agricultural Productivity under a Global Warming scenario using a Catchment Scale Climate Change Assessment Frame (Australia-India Strategic Research Funds (AISRF), Rs.33.00 Lakhs)
47. Mathematical and Physical Modeling of Arsenic Transport Through Porous Media (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
48. NPTEL Phase II, Video Course Development on Advanced Foundation Engineering (Ministry of Human Resource Development (MHRD), Govt. of India, Rs.2.50 Lakhs)
49. Optimization of rib pattern in steel rebars to achieve enhanced fatigue life and good bond strength (Tata Steel, Rs.10.65 Lakhs)
50. P K Sinha Centre Project (Dr. Prabhakant Sinha for enhancing research activities on Bioenergy., Rs.0.00 Lakhs)
51. Pilot Phase of the National Mission Project on Pedagogic Development for the course Hydraulics (National Mission Project on Education through ICT, Ministry of Human Resource Development, GOI, Rs.0.00 Lakhs)
52. Pilot Phase of the National Mission Project on Pedagogic Development for the course ‘Solid Mechanics’ (National Mission Project on Education through ICT, MHRD, Govt. of India, Rs.0.00 Lakhs)
53. Preparation of Ganga River Basin Management Plan (National River Conservation Directorate, MOEF, INDIA, Rs.0.00 Lakhs)
54. Probabilistic estimation of soil moisture from RISAT1 data along with uncertainty quantification (SAC, ISRO, Ahmedabad, Rs.19.92 Lakhs)
55. Probabilistic simulation and future estimation of soil moisture distribution over India using Hydroclimatic data (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
56. Production of Ligonocellulosic Fuels: from Lab to Pilot Scale (PLF) (DBT, Rs.345.84 Lakhs)
57. Seismic hazard assessment, microzonation, and evaluation of vulnerability, risk and socio-economic impacts for the city of Kolkata (Ministry of Earth Sciences, Government of India, Rs.432.71 Lakhs)
58. Sensor network and web-enablement for geospatial technology based tools development and disaster management: a pilot study (Department of Science and Technology, Rs.24.80 Lakhs)
59. Smarter water resources management, Disaster Mitigation & Diabetic Retinopathy (WDD) (IBM India Private Limited, Rs.24.00 Lakhs)
60. Strengthening the Research & Postgraduate Teaching in the Areas of Structural, Geotechnical, Environmental & Transportation Engg. (Department of Science and Technology, New Delhi, Rs.245.00 Lakhs)
61. Submicron aerosols in east India: sources, chemical characteristics, climate impacts (DST, Rs.14.00 Lakhs)
62. Supporting consolidation, replication and up-scaling of sustainable wastewater treatment and reuse technologies for India (SARASWATI). (DST, New Delhi, Rs.81.32 Lakhs)
63. Synthesis and characterization of mono and bimetallic nanoparticles on supported systems and their application for the degradation of organic pollutant (IIT Kharagpur (under ISIRD), Rs.5.00 Lakhs)
64. Theoretical and Experimental Investigations on the Stability and Chaotic Behavior of Non-Smooth Flexible, Curved and Twisted Pipe subjected to Followe (IIT- Kharagpur (ISIRD- SRIC Scheme), Rs.1.00 Lakhs)
65. Trip Makers’ Perception towards Hard and Soft Factors of Bus Service and the Impact of these Factors on Bus Ridership in Urban areas ( Human Settlement Management Institute, HUDCO, Govt. of India, Rs.22.05 Lakhs)
66. Underwater Ballistic Response of Marine Grade Sandwich Composite Panels (Naval Research Board, INDIA, Rs.0.00 Lakhs)
67. Underwater non-contact explosive response of marine grade sandwich composite panels (EMS) (NRB/DRDO, Rs.72.48 Lakhs)
68. Upgradation of laboratory and library facilities for renewable energy programme (ULR) (Ministry of New and Renuable Energy, Govt. of India, Rs.50.00 Lakhs)
69. Urban - design, planning & urban engineering exploration of Varanasi (MHRD, Govt. of India, Rs.150.00 Lakhs)
70. Virtual Lab - Soft Computing Tools in Engineering (MHRD, New Delhi, Rs.42.90 Lakhs)

Consultancy Projects

1. Advice on Pavement Design for SH-15 in West Bengal (ADSW) (BPC India, Jadavpur, Kolkata, India, Rs.0.50 Lakhs)
2. Advice- L&T ECC diviison Chennai (L&T ECC diviison Chennai, Rs.1.37 Lakhs)
3. Assessment of Structural Soundness of Magazine Building A1-18 at Balasore (DRDO, Rs.0.00 Lakhs)
4. Assesement of static design of Dobra-Chanti bridge (PWD Dehradoon, Rs.78.00 Lakhs)
5. Bituminous Mix Design for NH-54 in the state of Assm (M/s Punjlloyd Ltd, Assam, Rs.0.56 Lakhs)
6. Calibration of Bump Integrator (CBMP) (Hindustan Construction Company Limited, District Malda, West Bengal, India, Rs.0.67 Lakhs)
7. Characterisation of different normal, modified bitumen and emulsions of SHELL (M/s Shell India Markets Pvt Ltd, Guragon, Rs.5.51 Lakhs)
8. Consultancy by IIT-KGP for compliance of FC & EC Conditions of Manoharpur Iron Ore Mines, Chiria, Jharkhand (steel Authority of India Ltd. (SAIL), Rs.11.60 Lakhs)
9. Design of DBM with Reclaimed Asphalt (DDRA) (Chetak Enterprises Limited, Robertsganj, District Sonebhadra, Uttarpradesh, India, Rs.1.68 Lakhs)
10. Development of Effluent treatment plant for Rice mills (Qualicom solutions Pvt. Ltd. Bhubaneswar, Rs.2.00 Lakhs)
11. Development of provisions for design of steel concrete railway bridge for normal speed and special provision for high speed passenger traffic (RDSO, Rs.118.95 Lakhs)
12. Development plan preparation for Korba urban area, Chhattisgarh, (The Director,Directorate of Town & Country Planning, R.D.A., Rs.29.91 Lakhs)
13. Evaluation of normal, modified and bituminous emulsion (Various govt and private agencies, Rs.3.08 Lakhs)
14. Evaluation of elastic modulus and complex modulus of CRMB binder (M/s Gammon India Pvt Ltd, Muzzaffarpur, Rs.0.55 Lakhs)
15. Evaluation of Modulus of Elasticity of Rail Track Formation (HMBS Textiles Pvt Ltd. Delhi, Rs.7.00 Lakhs)
16. EVALUATION OF MODULUS OF SUBGRADE REACTION OF RAIL TRACK FORMATION (MRRT) (HMBS Textiles, Rs.0.00 Lakhs)
17. Evaluation of Subgrade soils using Stabilig soil modifier (M/s Satbilig Road Solutions Pvt Ltd, Gurgaon, Rs.1.69 Lakhs)
18. Health Assessment of New LD Gas Holder at Tata Steel, Jamshedpur (TATA STEEL Ltd., Jamshedpur, Rs.5.61 Lakhs)
19. Inspection of hollow box segmental cantilever pre-stressed bridge over river Kata Khali at Hasnabad (Gopvernment of West Bengal, Rs.0.00 Lakhs)
20. Inspection of Knatakali river bridge well and pier cap connection integrity and recommendation of rehabilitation plan (Public Works (Road) department, Government of West Bengal, Rs.5.60 Lakhs)
21. Checking design and drawing of UASB type sewage treatment plant (CDST) (Apporv Air Control, Jaipur, Rs.3.25 Lakhs)
22. Mathematical model study for Ghatal Master Plan (WAPCOS, Rs.22.00 Lakhs)
23. Mathematical model study for Kandi project (WAPCOS, Rs.14.00 Lakhs)
24. Mathematical model study for Lower Damodar (Jacobs - CES, Rs.20.22 Lakhs)
25. MIX DESIGN FOR RECYCLED ASPHALT PAVEMENT MATERIAL (DAPM) (Raebareilly-Allahabad Highway Pvt Ltd, Rs.0.00 Lakhs)
26. P K Sinha Centre Project (PKS) (Dr. Prabhakant Sinha, Rs.0.00 Lakhs)
27. Performance evaluation study in respect of work - Keliaghai-Kapaleswari-Baghai Drainage basin scheme - (Phase-II, 2012-2013) (Flood Management Programme, Govt. of INDIA and Govt. of West Bengal, Rs.0.00 Lakhs)
28. Performance Evaluation Study on Flood Control Scheme for Kapaleswari-Keliaghai-Baghai (KKB) Drainage Basin for Phase-I, 2010-2011 (Govt. of West Bengal, Rs.9.70 Lakhs)
29. Performance Evaluation Study on Flood Control Scheme for Kapaleswari-Keliaghai-Baghai (KKB) Drainage Basin for Phase-II, 2012-2013 (Govt. of West Bengal, Rs.20.00 Lakhs)
30. Preparation of city development plan for Burdwan planning area (BDAP) (BDA, Burdwan, Rs.11.23 Lakhs)
31. Preparation of detailed design for Chromium Effluent Treatment Plant (Saruabil Chromite Mines, M/s Misrilal Mines (P) Ltd., Jajpur Road, Rs.22.47 Lakhs)
32. Preparation of Zonal Developmental Plan for 14 Planning Zones of Bhubaneswar Development Plan Area (Bhubaneswar Development Authority, Rs.391.63 Lakhs)
33. Proof Checking of pavement design for NH-34 (HCC Ltd, Malda, W.B, Rs.2.00 Lakhs)
34. PROOF CHECKING OF PAVEMENT DESIGN FOR SH13 IN WEST BENGAL (BWBHDCl, Rs.0.00 Lakhs)
35. Proof Checking of Pavement Design Report (CPDR) (Simplex Infrastructures Limited, Kolkata, India, Rs.2.00 Lakhs)
36. PROOF CHECKING OF PAVEMENT DESIGN REPORT (CPDR) (Simplex Infrastructure Ltd, Rs.0.00 Lakhs)
37. Proof Checking of Structural design of bridges for Package-I (Government of West Bengal, Rs.0.00 Lakhs)
38. Review and scrutiny of seismic designs for earth structures (Sardar Sarovar Narmada Nigam Limited, Gandhinagar, Rs.7.20 Lakhs)
39. REVIEW OF MIX DESIGN FOR RECYCLED MIX FOR NH-5 PROJECT (RDRM) (BSCPL, Rs.0.00 Lakhs)
40. Review of Traffic Demand Projection and Transportation design for Dankuni Chandannagar-Kalyani More under WBHDCl (WBHDCl, Govt. of West Bengal, Rs.2.53 Lakhs)
41. Revision/Amendment of the Landuse and Development Control Planfor Old Haldia Planning Area (HDA, Haldia, Rs.55.15 Lakhs)
42. Roughness Measurement on Second Vivekananda Bridge (RMSB) (Second Vivekananda Tollway Bridge Company Private Limited, Kolkata, India, Rs.1.34 Lakhs)
43. Safety Consultancy Service for Six-Laning of Dankuni-Kharagpur Section of NH-6 (National Highway Authority of India, Rs.90.00 Lakhs)
44. Safety Consultancy Services for Six Laneing of Dankuni-Kharagpur Section of NH-6 from Km 17.6 to Km 129 in West Bengal (NHAI, Govt. of India, Rs.90.55 Lakhs)
45. Seismic hazard at bridge sites of Tupul-Jiribam railway line (Stup Consultants, Rs.2.80 Lakhs)
46. Seismic Vulnerability Assessment of Building Types in India (NDMA, Rs.25.20 Lakhs)
47. Storm water outflow drainage plan and subsurface drainage plan (Keventer Projects Ltd., Kolkata, Rs.6.18 Lakhs)
48. Strengthening of Weak Formation and Rehabilitation Work in Malda Division of Eastern Railway (WFAW) (Eastern Railway, Rs.8.65 Lakhs)
49. Structural Evaluation of NH-6 Section Reinforced with Geogrid (SNRG) (HMBS Textiles Pvt. Ltd, Delhi, India, Rs.1.50 Lakhs)
50. Subsurface investigation and design of ground improvement for Paradip Port stack yards (Paradip Port Trust, Rs.12.36 Lakhs)
51. Tank Wagon Unloading (IOCL, Rs.8.00 Lakhs)
52. Technical Assistance for Remediation of Hexavalent Chromium from Mine Effluent & Surface Runoff in South Kaliapani Mines of OMC Ltd. (The Odisha Mining Corporation Ltd., OMC House, Bhubaneswar, Rs.44.94 Lakhs)
53. TESTING OF ITERFIBRA AND SUPERPLAST AS ASPHALT ADDITIVES (ASAA) (Iterchimica, Italy, Rs.0.00 Lakhs)
54. Third Party Inspection of Construction of Pravasi Bharatiya Kendra (MOIA, Rs.88.24 Lakhs)
55. Tokisud flood protection embankment vetting (GVK Coal, Rs.7.08 Lakhs)
56. Travel Demand Forecasting for Selected State Highways in West Bengal (RITES, Govt. of India/ WBHDCL, Govt. of West Bengal, Rs.6.74 Lakhs)
57. Vertical turbine type cw pump suction problems due to pump-system interaction (WPIL Limited, Kolkata, Rs.5.70 Lakhs)
58. Vetting design of elevated canal structure (Scott Wilson Pvt. Ltd., Rs.25.00 Lakhs)
59. Vetting of structural drawings for New 4 MGD Water Supply Project (WAPCOS Ltd., Jalasampad Bhawan, 10th Floor, Salt Lake, Kolkata, Rs.6.74 Lakhs)
60. Vetting the Design of DNMC Canal and Associated Hydraulic Structures (Scott Wilson India Private Limited (SWIPL), Rs.24.00 Lakhs)
61. Vibration of Gate Complex G. C. Berth Main Gate at H.D.C., Haldia (Kolkata Port Trust, Haldia Dock Complex, Rs.0.00 Lakhs)

Technology Transferred

1. States of Uttar Pradesh and Mizoram - Cell-Filled Concrete Workshop : Rs. 0.00 Lakh

Patents (filed / granted)

1. 3. Development of cost effective membrane cathode assembly for a single chambered microbial fuel cell
2. Earthen material based cathode separator assembly for bioelectrochemical system

Visits Abroad by Faculty Members

1. Dey, Subhasish - Visiting Professor (Tsinghua University, Beijing, China, ) 17 to 21 June 2013
2. Dey, Subhasish - Visiting Professor (Università della Calabria, Italy, ) 7 to 12 July 2013
3. Dey, Subhasish - Chair of a Session, 35th IAHR World Congress (Chingdu, China, ) 8 to 13 September 2013
4. Ghangrekar, Makarand Madhao - Possibility of collaborative research work (University of Bremen and Augsburg, Germany, ) 3 to 18 July 2013
5. Ghangrekar, Makarand Madhao - Presentation of paper in MRE-2013 (Athens, Greece, ) 30 June to 3rd July
6. Dhang, Nirjhar - Academic Visit, JICA and UOT (Sendai and Tokyo, Japan, ) JUne 3-7, 2013
7. Mitra, Sudeshna - To avail Raman Fellowship and establish collaborative work on Road Traffic Safety Research for India (Johns Hopkins Internation Injury Research Center, ) January 2014 to June 2014
8. Mitra, Nilanjan - To avail Raman Fellowship and establish collaborative work on continuum modeling of material defects (Carnegie Mellon University, Pittsburgh, USA, ) January 2014 to June 2014

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Invited Lectures by Faculty Members

1. Structural Stability of Plates and Shell Panels Subjected to Non-uniform edge Loading by Ramachandra, Lingadahally (PDA College of Engineering, Gulbarga)
2. Dynamic Instability of Cylindrical Shells and Shell Panels subjected to Dynamic Partial Axial Loadin by Ramachandra, Lingadahally (NIT Rourkela)
4. fundamental experiments in sedimentation by Reddy, Hanmaiahgari Prashanth (SIT Bhubaneswar)
5. Unsteady flows in Pipelines by Reddy, Hanmaiahgari Prashanth (IIT Hyderabad)
6. Disinfection and Disinfection By-products in chlorinated drinking water: A review by Goel, Sudha (Gujarat Technological University, Chankheda)
7. Analysis of Compressive Strength of Sustainable Concrete incorporating Nano-Silica and Recycled Ag by Barai, Sudhir Kumar (IEI, Nagpur)
8. Career Planning by Barai, Sudhir Kumar (NIT Sikkim)
9. How to make good technical presentation by Barai, Sudhir Kumar (NIT Sikkim)
10. Neural Networks Applications in Structural Health Monitoring by Barai, Sudhir Kumar (NIT Silchar)
11. An Overview of Computational Intelligence Tools by Barai, Sudhir Kumar (NIT Silchar)
12. Neural Networks Applications in Earthquake Engineering by Barai, Sudhir Kumar (NIT Silchar)
13. Risk and reliability issues in infrastructure management, by Bhattacharya, Baidurya (New Delhi)
14. Treatment of uncertainty in structural engineering problems, by SERB & DST Brain Storming Workshop by Bhattacharya, Baidurya (IISc Bangalore)
15. Arsenic: an environmental menace by Pal, Anjali (Manipur University)
16. Treatment by Dye wastewater by Advanced Oxidation Processes via Nanopartic by Pal, Anjali (Burdwan University)
17. Dye Wastewater Treatment by Adsolubilization and Advanced Oxidation Processes Mediated by Nanopartic by Pal, Anjali (Pt. Ravishankar Shukla University, Raipur, Chhattisgarh)
18. Size Effect in Concrete by Deb, Arghya (IIT Kanpur)
19. Computational Methods in Structural Engineering by Deb, Arghya (IIT Kanpur)
20. Seismic Analysis of Dams by Maity, Damodar (NIT Durgapur)
21. Seismic Modeling of RC Bridges by Maity, Damodar (NIT Durgapur)
22. Hydroclimatic Analysis of Drought in a River Basin by Maity, Rajib (Government College of Engineering, Aurangabad)
23. Environmental Awareness by Goel, Sudha (IIT Kharagpur for NCC cadets)
24. Aerosols and their climate impacts: scenario over Indian subcontinent and ocean by Verma, Shubha (IIT Madras)
25. Factors affecting the roadways through the landslide prone areas in the eastern Himalayas by Sen Gupta, Aniruddha (University of Natural Resources and Life Sciences, Vienna)
26. Sustainable water and wastewater management- present Indian and global scenarios by Desai, Venkappayya R (Government College of Engineering, Aurangabad, Maharashtra)

Books Published


Short-Term Courses, Training Programmes and Workshops organised

1. Finite Element Analysis for RDSO Engineers (5 days)


Papers Published in Journals


4. A generalized Ritz-Based method for the nonlinear buckling of thin cylindrical shells By Probal Som, Arghya Deb Thin Walled Structures 76, 14-27 (2014)

5. A numerical and experimental study of hollow steel pile in layered soil subjected to lateral dynamic loading By Bhowmick D, baidya, D K and dasgupta S P Soil Dynamics and Earthquake Engineering 53, 119-129 (2013)


42. Field Test on Group Piles under Machine Induced Coupled Vibration By Biswas S, Choudhar SS, Manna, B and Baidya D K International Journal of Geoengineering Case Histories Vol 3(1), 10-23 (2013)
43. Galvanic replacement of As(0) nanoparticles by Au(III) for nanogold fabrication and SERS application By Anjali Pal, S. Saha, S. Maji, R. Sahoo, M. Kundu, A. Kundu New Journal of Chemistry 38(4), 1675-1683 (2014)
62. of fracture parameters of FRP composites: a combined experimental and numerical investigation By Dipak Rakshit and Sushanta Chakraborty International Journal of Composite Materials (0)
63. On core compressibility of sandwich composite panels subjected to intense underwater shock loads By Ghoshal, R., Mitra, N. Journal of Applied Physics 115(2) 024905 (2014)
64. On improving the solution by using lower bound finite elements limit analysis and linear programming. By Kumar, J. and Bhattacharya, P. Geotechnical and Geological Engineering 29(4), 619-626 (2011)


74. Prevalence of antibiotic resistant bacteria in three different aquatic environments over three seasons. By Mohanta, T and Goel, S. *Environmental Monitoring and Assessment* Accepted (2014)


82. Revisiting the energy-momentum method for rating vertical sluice gates under submerged flow conditions. By Castro-Orgaz O, Mateos L and Dey S. *ASCE Journal of Irrigation and Drainage Engineering* 139, 325-335 (2013)


95. Urbanization and Transport Diversity By Mitra, S, Pareekh, P and Majumdar, B.B. Shelter 1-7 (2013)

Papers Presented in Conferences

7. Analysis of Compressive Strength of Sustainable Concrete Incorporating Nano-Silica and Recycled Aggregates., By Mukharjee, BB and Barai, SV, All India Seminar on Innovations In Green Building Technology( IGBT 2014), Nagpur, (2014)


10. Arsenic Removal From Aqueous Samples In Batch Electrocoagulation Studies, By Anshul Sharma, Sri Malini Adapureddy, Sudha Goel, ICEE 2014, Pune, (2014)


34. Evaluating Seasonal Aerosol Loading and Its Attribution to Emissions from Indo-gangetic Plain at a Pollution Outflow Vent Into Bay of Bengal Using General Circulation Model Simulations and Multiple Me, By Shantanu Pani and Shubha Verma, AOGS - AGU (WPGM) Joint Assembly, Singapore, (2012)
38. Improvement of expansive soil by lime and reinforcement, By Baglari, D, Dash, S.K., Indian Geotechnical Conference, Roorkee, (2013)
41. Influence of Nano-Silica on the Compressive Strength of Recycled Aggregate Concrete., By Mukharjee, BB and Barai, SV, 1st International Conference on Sustainable Innovative Techniques in Civil and Environmental Engineering (SITCEE- 2013), New Delhi, (2013)


50. MODIFIED GHYBEN-HERZBERG THEORY BASED MODELLING AND CONTROL OF SALTWATER INTRUSION IN COASTAL AQUIFERS, By ANIRBAN DHAR, SELVA BALAJI M., 7th INTERNATIONAL SYMPOSIUM ON ENVIRONMENTAL HYDRAULICS ISEH 2014, Singapore, (2014)

51. NUMERICAL ANALYSIS OF SOIL-PILE SYSTEM SUBJECTED TO VERTICAL DYNAMIC LOADING, By Bhowmick D, Baidya, D K and Dasgupta S P, Indian Geotechnical Conference, Roorkee, India, (2013)


56. Quantification of the insulating properties of an air-straw layer on a concrete roof, By Goel, Sudha, National seminar on Green Building Technology in Urban Areas, Bhubaneswar, (2013)

57. Rate of Consolidation of Stone Column-Improved Ground under Axi-Symmetric Condition, By Amit Kumar Das and Kousik Deb, Indian Geotechnical Conference, Roorkee, India, (2013)


59. RELIABILITY BASED ANALYSIS OF CANTILEVER SHEET PILE WALLS IN COHESIONLESS SOIL USING FINITE ELEMENT METHOD, By GuhaRay A and Baidya D K, Indian Geotechnical Conference, Roorkee, India, (2013)

60. Risk Factor based Analysis of Cantilever Sheet Pile Walls, By GuhaRay A and Baidya D K, Geo-Congress 2014, Atlanta, Georgia, USA, (2014)


72. Validation of aerosol properties from Tiger-z measurements with GCM simulations, during pre-monsoon, *By* Dudam Bharath Kumar and Shubha Verma, (0)


Department of Computer Science & Engineering

Head
Prof. Rajib Mall

Professors
Basu, Anupam  Ph.D.(IIT Kharagpur),
Chakrabarti, Partha Pratim  Ph.D.(IIT Kharagpur), Artificial Intelligence, CAD for VLSI & Embedded Systems, Design of Algorithms, Reliable and Fault Tolerant Systems
Das, Partha Pratim  Ph.D.(IIT Kharagpur), Image Processing, Software Engineering, Language Translation, Object-Oriented Analysis & Design
Dasgupta, Pallab  Ph.D.(IIT Kharagpur), Artificial Intelligence, Formal Verification of Integrated Circuits and Dynamical Systems
Ganguly, Niloy  Ph.D.(BESU, Calcutta), Peer-to-peer Networks, Online Social networks, Network Theory, Wireless Internet, Delay Tolerant Networks
Ghose, Sujoy  Ph.D.(IIT Kharagpur), System Intelligence, Networking, Algorithms
Gupta, Arobinda  Ph.D.(Iowa), Distributed Systems, Mobile Computing
Kumar, Rajeev  Ph.D.(Sheffield), Programming Language & Software Engineering, Multiobjective Optimization & Evolutionary Computing, EDA & Embedded Systems, Multimedia Systems & Video Transcoding, Education Standards & Quality
Majumder, Arun Kumar  Ph.D.(Cal),Ph.D.(Florida), Database and Multimedia Systems, Information Security, Medical Informatics and Telemedicine
Mall, Rajib  Ph.D.(IISc Bangalore), program analysis and testing
Mandal, Chittaranjan  Ph.D.(IIT Kharagpur), VLSI CAD, Networking, Formal Verification
Mukhopadhyay, Jayanta  Ph.D.(IIT Kharagpur), Bio-Informatics, Medical Informatics, Image processing
Pal, Ajit  Ph.D.(Calcutta Univ), CAD for Low Power Embedded systems Computer Networks
Pal, Sudebkumar Prasant  Ph.D.(IISc Bangalore), Design and analysis of algorithms, Computational and combinatorial geometry, Graph theory and algorithms
Sarkar, Dipankar  Ph.D.(IIT Kharagpur), Formal Verification of circuits and systems, Logic and Automated theorem Proving
Sarkar, Sudeshna  Ph.D.(IIT Kharagpur), Machine learning, Natural Language Processing, Data Mining, Information Retrieval
Sengupta, Indranil  Ph.D.(Calcutta Univ), VLSI design and testing, Cryptography and network security, Reversible computing
**Associate Professors**

Bhowmick, Partha  

Das, Abhijit  
*Ph.D. (IISc Bangalore)*, Cryptography, Computational Number Theory, Parallel and Distributed Implementations

Mitra, Pabitra  
*Ph.D. (ISI Calcutta)*, Machine Learning, Data Mining, Information Retrieval

Mukhopadhyay, Debdeep  
*Ph.D. (IIT Kharagpur)*, Computer Architecture and Security, Cryptology, VLSI, Embedded systems for Cryptographic Systems, Side Channel Analysis

**Assistant Professors**

Bhattacharya, Sourangshu  
*Ph.D. (IISc. Bangalore)*, Big Data, Machine Learning, Optimization

Chakraborty, R S  
*Ph.D. (CWR Univ. USA)*, Hardware Design for Security, Digital Watermarking, VLSI Design and Methodologies

Dey, Soumyajit  

Goyal, Pawan  
*Ph.D. (University of Ulster, UK)*, Natural Language Processing, Information Retrieval and Extraction, Sanskrit Computational Linguistics

Mitra, Bivas  
*Ph.D. (IIT Kharagpur)*, Technological network modeling, Complex and dynamic networks, Interdependent networks, Mobile networks

Mitra, Pralay  
*Ph.D. (IISc. Bangalore)*, Computational Biology, Bioinformatics

Mukherjee, Animesh  
*Ph.D. (IIT Kharagpur)*, Complex systems, language dynamics, social computation, web social media

**Lecturer**

Dey, Partha Sarathi  
*M.Tech. (IIT Kharagpur)*, Multi Core Architecture, Operating System, VLSI, Embedded Systems

**Faculty Appointments**

Pralay Mitra  
Assistant Professor

Bivas Mitra  
Assistant Professor

Sourangshu Bhattacharya  
Assistant Professor

Pawan Goyal  
Assistant Professor

Soumyajit Dey  
Assistant Professor
Brief Description of on-going activities


Thrust Areas

1. Artificial Intelligence
2. VLSI Design and CAD tools
3. Cryptography
4. Hardware and Embedded Security
5. Natural Language Processing
6. Image Processing
7. Complex and Social Networks
8. Computational Biology and Bioinformatics
9. Algorithms Design and Analysis

International Collaborations

"Design and Implementation of Wireless Embedded Sensor Networks Based Old Age Home Monitoring" under India-Taiwan Programme of Cooperation in Science and Technology. Rajib Mall and Pabitra Mitra

New perspectives for computational social science, DST, India and Ministry of External Affairs, Italy, University of Rome, Italy, Animesh Mukherjee

Understanding, Leveraging and Deploying Online Social Networks, Joint project with MPI-SWS, Saarbrucken, Niloy Ganguly.

Joint Publication with TU Dresden, Germany, Duke University, USA, University of Nice, France, University of Bielefeld, Germany, UFOP, Ouro Preto, Brazil, ETH Zurich, MPI-SWS, Saarbrucken. Niloy Ganguly

Joint Publication with researchers from Georgia Tech, USA, Case Western Reserve, USA, NTU Singapore, Debdeep Mukhopadhyay.

Joint Publication with researchers in Georgia Tech., Stanford University and ISI Kolkata (Collaborators: Arindam Khan, Mridul Aanjaneya, Subhas Chandra Nandy and Arijit Bishnu), Sudebkumar P. Pal

Joint Publication with Yeditepe University, Turkey, Rajat Subhra Chakraborty and Debdeep Mukhopadhyay

Joint Publication with University of Nebraska, Omaha (Collaborators: Sanjukat Bhowmick, Tanmoy Chakraborty, Sriram Srinivasan), Niloy Ganguly and Animesh Mukherjee.

Joint organization of workshop Proofs 2013 along with CHES 2013, Santa Barbara USA.
Joint Publication with MPI-PKS, Germany (Collaborators: Naveen Sharma, Krishna Gummadi), Niloy Ganguly.

Joint Publication with UIUC (Collaborator: R. Roychoudhury), Niloy Ganguly.

Joint publication with INRIA Paris Rocquencourt (Collaborator: Gerard Huet), Pawan Goyal.

Joint Publication with ISI Foundation, Italy (Collaborators: Vittorio Loreto, Francesca Tria, Suman Kalyan Maity), Animesh Mukherjee.

Two Joint Publications with University of Wroclaw, Poland (Collaborator: Tyll Krueger, Saptarshi Ghosh, Ajitesh Srivastava), Niloy Ganguly and Animesh Mukherjee

Joint Publications with TU-Darmstadt, Germany (Collaborators: Chris Biemann, Martin Riedl, Ritwik Mitra, Sunny Mitra), Animesh Mukherjee and Pawan Goyal.

"Protein Interactor Discovery and Structure", Indo-US Science and Technology Forum (IUSSTF) Travel Grant. (Collaborators: David S. Eisenberg (UCLA), Debnath Pal (IISc), Thomas C. Terwilliger (LANL)), Pralay Mitra.


Joint publications with researchers from University of Michigan (Collaborators: David Shultis, Jeffrey R Brender, Jeff Czajka, David Marsh, Felicia Gray, Tomasz Cierpicki, Yang Zhang), Pralay Mitra.

"Evolving Communities and Information Spreading", Indo-French project with CNRS-UPMC, Paris, Niloy Ganguly and Bivas Mitra.

**Lectures by Visiting Experts**

1. Detection and Characterization of Intrinsic Symmetry over 3D Shapes by Anirban Mukhopadhyay (University of Georgia, USA)
2. Improved Approximation Algorithm for Two-Dimensional Bin Packing by Arindam Khan (ACO unit Georgia Institute of Technology USA)
3. Cellular automaton models for collective cell behaviour by Prof. Andreas Deutsch (TU Dresden, Germany)
4. From Cryptography to Hardware: Analyzing and Protecting Embedded Xilinx BRAM for Cryptographic Applications by Dr. Shivam Bhasin (Telecom ParisTech)
5. Applying Cognition in Complex Systems Engineering by Prof. Sandro Leuchter (Rhine-Waal University of Applied Sciences)
6. Challenges in Managing Complex Business Applications by Santonu Sarkar (Infosys)
7. Perspectives on Mobile Cloud Computing and its Applications by Dr. Pradipta De (University of Georgia, USA)
8. Health Data Analytics by Dr. Shaibal Roy (Applied Research Works)
9. Challenges in Graph Data Management by Jayanta Mondal (University of Maryland)
10. Trace Collection and Fault Localization for Data-centric Programs by Diptikalyan Saha (IBM Research)
11. Exploration and Multi-armed Bandits by Shivaram Kalyanakrishnan (Yahoo Labs, Bangalore)
12. Some graph theoretic and rank based approaches to understand the biology of microRNAs by Debarka Sengupta (Genome Institute of Singapore)
13. Quality and Energy-Sensitive Determination of Multiple Contexts in Pervasive Computing Environments by Nirmalya Roy (University of Maryland Baltimore)
14. CloudAdvisor: A Recommendation-as-a-Service Platform for Cloud Configuration and Pricing by Tridib Mukherjee (Xerox Research Centre)

**Doctoral and MS Degrees Awarded**

1. Chhabi Rani Panigrahi : Regression Test Selection and Prioritization for Object-oriented Programs(PhD)
2. Ritwika Ghose : An Enhanced Web Browser and Content Presentation Approach for the Blind People: Design and Implementation(MS)
3. Maunendra Sankar Desarkar : Algorithm for Recommendation Systems and Aggregation(PhD)
4. Priyankar Ghosh : Search Techniques for alternative solutions for and/or graphs and biobjective optimization problems(PhD)
5. Chandan Karfa : Formal Verification of Behavioural Transformations During Embedded System Design(PhD)
6. Debmalya Sinha : Design and Evaluation of a new interface for file browsing under Linux environment(MS)
7. Prasenjit Mondal : Processing of Brain MR Images(PhD)
8. Satrajit Ghosh : Improvements of Linearization-Based Algebraic Attacks on Block Ciphers(MS)
10. Suman Kalyan Maity : Aspects of Opinion formation in Social Networks(MS)
12. Sujoy Sinha Roy : Design and Analysis of Elliptic Curve Cryptosystems on FPGAs(MS)
13. Sumit Das : Computational Approach Improving Fluency in Bangla Sentence Generation(MS)
15. Joydeep Chandra : Topology and its Effects on the Performance of Peer-to-Peer Networks(PhD)
16. Biswajit Das : Automatic Speech Recognition of Aging Speech in Bengali(MS)
17. Subhankar Mukherjee : Assertions: From a Mixed-Signal Perspective(PhD)
18. Rebeiro Chester Dominic : Analysis of Time Driven Cache Attacks on Block Ciphers(PhD)
19. Pravanjan Choudhury : New Multiprocessor Scheduling Techniques for Dynamic Task Graphs(PhD)
20. Sandip Mandal : Automatic Speech Recognition in Bengali: Development, Application and optimizations for computer resource constrained devices(MS)
21. Soumen Bag : Processing and analysis of Bangla optical characters using geometric and topological features(PhD)
22. Saptarshi Ghosh : Online Social Networks: Evaluation and Search(PhD)
23. Rajdeep Mukherjee : Novel Approaches for Synthesis and Formal Verification of Low Power Circuits(MS)
27. Arnab Sarkar : New Approaches in Real-Time Proportional Fair Multi-Processor Scheduling(PhD)
28. Sourya Bhattacharyya : (MS)
29. Sirsendu Mohanta : Metrics-Based Early Reliability Prediction for Object-Oriented Programs(MS)
30. Debi Prosad Dogra : Algorithms for Video Assisted Analysis of Infant Neurological Examinations(PhD)
31. Sourasis Das : Formal Methods for Improving Test and Assertion Coverage(MS)
32. Prosenjit Dhole : Efficient Broadcasting in Delay Tolerant Networks(MS)
33. Tamal Sen : State Model Based Regression Test Selection for Component Based Software(MS)
34. Indrasish Saha : Attacks on FPGA Based System Implementation(MS)
35. Binanda Sengupta : SIMD based Implementations of Sieving in Integer-Factoring Algorithms(MS)

Member - Professional Bodies

1. Kumar, Rajeev, Senior Member - IEEE
2. Kumar, Rajeev, Senior Member - ACM
3. Ganguly, Niloy, Member - ACM
4. Ganguly, Niloy, Regular - IEEE Comsoc
5. Mukhopadhyay, Debdeep, Member - ACM-SIGDA
6. Das, Partha Pratim, Member and Representative of IIT Kharagpur - Indian Unit of International Association of Pattern Recognition (IUIAPR)
7. Das, Partha Pratim, Member - Association for Computing Machinery (ACM)
8. Das, Partha Pratim, Member - VLSI Society of India (VSI)
9. Chakraborty, R S, Member - ACM
10. Chakraborty, R S, Member - IEEE
11. Mitra, Pralay, Member - IEEE
12. Dey, Partha Sarathi, Regular - IEEE Computer Society
13. Chakrabarti, Partha Pratim, Senior Member - IEEE
14. Chakrabarti, Partha Pratim, Member - ACM
15. Sengupta, Indranil, Senior Member - IEEE
16. Mukhopadhyay, Jayanta, Senior - IEEE
17. Mukhopadhyay, Jayanta, Life Member - Indian Association for Medical Informatics (IAMl)
18. Mukhopadhyay, Jayanta, Life member - Telemedicine Society of India
19. Dasgupta, Pallab, Senior Member - IEEE
20. Dasgupta, Pallab, Member - ACM
21. Roychowdhury, Dipanwita, Life member - CRSI (Cryptography Research Society of India)
22. Roychowdhury, Dipanwita, Regular - IEEE
23. Sarkar, Sudeshna, Member - IEEE
24. Mandal, Chittaranjan, Regular - IEEE
25. Majumder, Arun Kumar, Senior Life Member - Institution of Electrical and Electronic Engineers USA

Member - Editorial Board

1. Chakrabarti, Partha Pratim (0) Member - Journal of IETE
2. Chakrabarti, Partha Pratim (0) Member - Journal of the Computer Society of India

Awards & Honours

1. Mukherjee, Animesh (2013) NSF/TCPP CDER Center Early Adopter Award for Fall-13 from the National Science Foundation, USA
2. Mitra, Bivas (2014) Best Poster Award at XRCI Open 2014, Soumajit Pramanik, Bivas Mitra, Influence of Interactions on the Evolving Citation Network, Bangalore, India.
3. Mukherjee, Animesh (2013) DAAD IIT Faculty Exchange programme
4. Mitra, Bivas (2014) DAAD-IIT Faculty Exchange Fellowship
5. Mukherjee, Animesh (2014) INSA Medal for Young Scientist
7. Mitra, Bivas (2013) NSF TCPP Early-Adopter Award
8. Mukherjee, Animesh (2013) Simons Associate, ICTP, Trieste, Italy

Sponsored Research Projects

1. 3-D Image Sensor for Capturing Minute Surface Details and Visualization by Geometric Modeling (DST, Rs.33.00 Lakhs)
2. A DEEP VALIDATION STUDY OF INDIAN LANGUAGE SYSTEM BASED ON PATTERNS OF A) COMPARATIVE PHILOLOGY, PHONOLOGY & PHONETICS & B) PSYCHO-PHYSICS OF VARNAMAL (MHRD, Rs.75.00 Lakhs)
3. Aakash development laboratory at IIT Kharagpur (MHRD, Rs.0.00 Lakhs)
4. An Open Source Web Browser for Blind People (DIT, Govt. of India, Rs.29.94 Lakhs)
5. Anwesan: A Search engine for Bengali literary works (SNLTR, Rs.10.00 Lakhs)
6. Artificial Intelligence for Societal Needs (IIT, MHRD, Rs.0.00 Lakhs)
7. AUTOSAFE -- Architecture Aware Timing Analysis and Optimization of safety Critical Automotive Software (IGSTC, Rs.291.12 Lakhs)
8. Building Collaborative Download Framework for Wired and Wireless Networks (DST, Rs.42.00 Lakhs)
9. Building Reliable Embedded Real-Time Systems (DST-Indo Brazil Project, Rs.33.66 Lakhs)
10. Centre of Excellence in robotics (CEE) (SRIC, IIT Kharagpur,Sponsored Research & Industrial Consultancy, IIT Kharagpur, Rs.531.75 Lakhs)
11. Creating Accessible Study Materials for Print Impaired Students (MHRD, Rs.53.00 Lakhs)
12. Cross language information accessl Phase II (Ministry of Communications and Information Technology, Rs.138.73 Lakhs)
13. Decoding and exploring ancient classification of Indian music through machine learning method and audience response (MHRD,DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.150.00 Lakhs)
14. Deployment of telemedicine project (II) - DOTP (WEBEL Electronic Communications Systems Ltd., Rs.0.00 Lakhs)
15. Design and Analysis of a Light Weight Cryptographic System on FPGAs (ISRO India, Rs.9.12 Lakhs)
16. Design and Analysis of Side Channel Attack Resistant Symmetric Key Cryptosystems (DIT, Govt of India, Rs.48.00 Lakhs)
17. Design and development of integrated security risk management for an enterprise network (Department of Information Technology, Govt of India, Rs.48.00 Lakhs)
18. Design and Efficient Implementation of Advanced Encryption and Decryption Techniques for Use in Spacecraft Communications (SAC Ahmedabad, ISRO KCSTC, Rs.19.80 Lakhs)
19. Design and Implementation of Scalable Parameterized Stream Cipher Well-suited for both software and Hardware (SAC Ahmedabad, (KCSTC IIT Kharagpur), Rs.18.60 Lakhs)
20. Design of an Integrated Scheme for Error Correction and Message Authentication, (SAC Ahmedabad, KCSTC IIT Kharagpur, Rs.12.00 Lakhs)
21. Design of Controller for Finite Field Arithmetic on FPGAs (completed) (Centre for Artificial Intelligence and Robotics (CAIR), Defence Research and Development Organisation, Rs.8.34 Lakhs)
22. Design of Finite Field Controller (CAIR DRDO, Rs.0.00 Lakhs)
23. Design of Side Channel Attack Resistant Programmable Block Ciphers on FPGAs (DIT India, Rs.73.20 Lakhs)
24. Development of Bangla Linux and Standardized Bangla Keyboard (Society for Natural Language Technology Research, Rs.7.50 Lakhs)
25. Development of Elliptic Curve Hardware Engine on Reconfigurable Platform (CAIR, DRDO, Bangalore, Rs.6.96 Lakhs)
26. Development of Web enabled e-Healthcare System for Neonatal Patient Care Services (eNPCS) (Department of Information Technology, Government of India, Rs.39.70 Lakhs)
27. Enhancing Cloud Efficiency through P2P Based Architecture (CSIR, Rs.24.00 Lakhs)
28. Evolving Communities and Information Spreading (Indo-French Center for the Promotion of Advanced Research, Rs.30.00 Lakhs)
29.Extending the Scope of Equivalence Checking in Complex Embedded System Design Verification (DST, Rs.840000.00 Lakhs)
30. Fault diagnosis in digital systems (under Synopsys CAD Lab) (Synopsys India, Rs.40.00 Lakhs)
31. GM Collaborative Research Laboratory on ECS for Education (General Motors, Rs.184.00 Lakhs)
32. GPU Based Multi-Temporal Implementation of Image Change Detection Algorithms and their Verification (ISRO, Rs.20.90 Lakhs)
33. Hardware Security: Ensuring TRUST in Integrated Circuits (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
34. ICT for computational social science (DST, Rs.1380000.00 Lakhs)
35. Image analysis for preservation and archiving of Indian Cultural Heritage (DST, Rs.23.00 Lakhs)
36. Indian Language Machine Translation Phase II (Ministry of Communications and Information Technology, Rs.40.00 Lakhs)
37. Integrated High-Level Synthesis to satisfy protocol and data processing specifications (DST, Rs.35.00 Lakhs)
38. Integrated Vehicle Health Management for Automotive Engine Applications (NPMMASS, Rs.259.60 Lakhs)
39. Intel Embedded Innovation Lablet (Intel, Rs.12.00 Lakhs)
40. Investigation of Cryptanalytic Techniques (Headquarters, Integrated Defence Staff, Ministry of Defence, Govt of India, Rs.44.30 Lakhs)
41. J C Bose Fellowship (DST, Rs.0.00 Lakhs)
42. Leveraging Bipartite network to investigate the dynamical properties of sociotechnical systems (Samsung, Rs.40.00 Lakhs)
43. Leveraging Simulation Dumps and Failure Traces for Formal Property Verfication (INTEL Technology India Pvt. Ltd, Bangalore, Rs.10.00 Lakhs)
44. Linux kernel development and support (Nucleodyne Systems Inc., USA, Rs.12.00 Lakhs)
45. MACHINE LEARNING BASED MODEL BUILDING ATTACKS ON PUFS (DRDO CAIR Bangalore, Rs.9.60 Lakhs)
46. Machine Learning based Model-building Attack on PUFs (Centre for Artificial Intelligence and Robotics (CAIR), Defence Research and Development Orgnisation, Rs.9.60 Lakhs)
47. Modelling and validation of interlocking for railway signalling systems (RDSO (Indian Railways), Rs.34.61 Lakhs)
48. Modelling and validation of interlocking for railway signalling systems (RDSO, Rs.34.61 Lakhs)
49. NAHIR: Not so Ad-Hoc Information Retrieval (ISIRD, Rs.5.00 Lakhs)
50. New perspectives for computational social science (DST, India and Ministry of External Affairs, Italy, Rs.2.00 Lakhs)
51. NSF TCPP Early-Adopter Award (NSF, US, Rs.1.30 Lakhs)
52. Pattern Recognition Algoruithms for Bioinformatics (DST, Rs.24.50 Lakhs)
53. Post-disaster situation analysis and resource management using delay-tolerant peer-to-peer wireless networks (ITRA, DIT, Rs.89.00 Lakhs)
54. POWER ATTACKS ON STREAM CIPHERS AND CACHE MEMORY ATTACKS (DRDO New Delhi, Rs.45.00 Lakhs)
55. Power Attacks on Stream Ciphers and Cache Memory Attacks (Scientific Analysis Group, New Delhi, India, Rs.45.00 Lakhs)
56. Predicting cancer treatment outcomes of lung and colorectal cancer by modeling and analysis of anatomic and metabolic images (MHRD Granted Project under "Signals and Systems for Life Science (SSLS)", Rs.18.00 Lakhs)
57. Predictive Docking: Improving the Performance by Refining Protein Structures (Institute Scheme for Innovative R & D (IIT, Kharagpur), Rs.28.00 Lakhs)
58. Preprocessing and Analysis of Degraded Documents (MCT, GOI, Rs.34.00 Lakhs)
59. Programming and Data Structures Virtual Lab (MHRD, Rs.20.00 Lakhs)
60. Protein Interactor Discovery and Structure (Indo-US Science and Technology Forum (IUSSTF), Rs.0.00 Lakhs)
61. Regression Testing of Object-Oriented Programs (DST, New Delhi, Rs.10.54 Lakhs)
62. Safety messaging in vehicular networks (General Motors India, Rs.0.00 Lakhs)
63. SocioWeb: Social computation to enhance Web and network applications (ISIRD, SRIC IIT Kharagpur, Rs.5.00 Lakhs)
64. Software Tools for Cryptanalysis of Stream Cipher (SAG, DRDO, New Delhi, Rs.19.85 Lakhs)
65. Special Manpower Development Project (DIT, Rs.90.00 Lakhs)
66. Speech Based Computer Interface (Intel, Rs.10.00 Lakhs)
67. Static Analysis Based Partitioning Techniques for GPGPU Programs (ISIRD Grant, SRIC IIT Kharagpur, Rs.5.00 Lakhs)
68. Strategies for power reduction during VLSI circuit testing (DIT, Government of India, Rs.31.00 Lakhs)
69. Study of Hardware Malware Vulnerabilities and Mitigation Techniques for FPGAs (CAIR DRDO, Rs.9.00 Lakhs)
70. Theoretical and Experimental Analysis of the Dynamics on Interdependent Networks (ISIRD grant, IIT Kharagpur, Rs.5.00 Lakhs)
71. TO DEVELOP A SCIENTIFIC RATIONALE OF IELS (INDO-EUROPEAN LANGUAGE SYSTEMS) APPLYING A) COMPUTATIONAL LINGUISTICS & B) COGNITIVE GEO-SPATIAL MAPPING AP (MHRD, Rs.100.00 Lakhs)
72. Understanding, Leveraging and Deploying Online Social Networks (DST-IMPECS, Rs.60.00 Lakhs)
73. Unraveling Cancer transformation and progression through biological, electro-mechanical and computational techniques (Rs.38.00 Lakhs)
74. Virtual Lab (VLS) on Computer Organization (MHRD, Rs.30.00 Lakhs)
75. Virtual Lab for Computer Organisation & Architecture (MHRD, Rs.56.00 Lakhs)
76. VLSI Design of Elliptic Curve Cryptosystem tolerant Against Power Attacks (SRIC, IIT Kharagpur, Rs.4.40 Lakhs)
77. Whole Cell Modeling and Simulation in Bacterium Escherichia Coli (Open Competitive Grand Challenge Seed Grants (SGIGC) of IIT, Kharagpur, Rs.250.00 Lakhs)

Consultancy Projects

1. Analytics of Group Dynamics of Mobile Users (Xerox Corporation, Rs.79.20 Lakhs)
3. Architecture and Algorithmic Optimizations for Speech based Communication Interfaces on Mobile Devices (57.00 Lakhs) (Intel Corporation, Rs.57.00 Lakhs)
4. Core Banking Systems Implementation (Orissa State Cooperative Bank Ltd., Bhubaneswar, Rs.56.25 Lakhs)
5. Drafting Revised Guidelines for UG Engineering Program Accreditation (NBA, Rs.0.00 Lakhs)
6. Formal Equivalence and Simulation Relations for AMS Behavioral Models (Semiconductor Research Corporation, USA, Rs.45.00 Lakhs)
7. Formal methods for power intent verification (MPIV) (Synopsys (India) Pvt. Limited, RMZ Infinity, Tower A, Old Madras Road, Bangalore-560016, Rs.25.00 Lakhs)
8. Formal Verification of Post Silicon Bug Fixes (INTEL Technology India Pvt. Ltd, Bangalore, Rs.22.06 Lakhs)
9. GM Collaborative Research Laboratory on Electronics, Controls and Software: Projects (General Motors, Rs.425.00 Lakhs)
10. HARDWARE TROJAN ATTACK TEST BED ON FPGA BASED SYSTEMS (Reconnoiter Technology & Research Pvt. Ltd, Rs.20.00 Lakhs)
11. Hardware Trojan Attack Testbed on FPGA based Systems (Reconnoiter Technology and Research, Pune, India, Rs.20.00 Lakhs)
12. IT Consultancy (CITM) (UCO Bank, Rs.15.00 Lakhs)
13. IT Consultant at NIC (National Insurance Company Limited, Rs.3.12 Lakhs)
14. Platform Architecture Modeling for Exploring Power Management Strategies (Intel, Rs.16.00 Lakhs)
15. Roadmap for ERP Solutions at Kolkata Port Trust (Kolkata Port Trust, Rs.4.50 Lakhs)
16. Sanyog Phase II: A portable communication Tool for the Speech & Neuro Motor Impaired People (Media Lab Asia, New Delhi, Rs.71.12 Lakhs)
17. SIDE-CHANNEL ATTACK (SCA) EVALUATION OF PSEC-KEM (NTT Labs Japan, Rs.14.20 Lakhs)
18. Synopsys CAD Laboratory (Synopsys, Rs.172.72 Lakhs)
19. Technical Consultancy Services on IT Matters (UCO Bank, Kolkata, Rs.6.00 Lakhs)

Patents (filed / granted)

1. A cache Timing Attack resistant Prefetching Architecture
2. A Two-Pulse Synthesis (TPS) Based Method and System for DVP Signal Analysis
3. Architecture specific high-speed block cipher implementation
4. Feature point based brain atlas generation and diagnosis of Alzheimer disease
5. Method and Apparatus for Extracting Assume Properties
6. Method and Apparatus for Operational-Level Functional and Degradation Fault Analysis
7. MULTI-LEVEL INLINE DATA DEDUPLICATION
8. PROTECTION OF INTELLECTUAL PROPERTY (IP) CORES THROUGH A DESIGN FLOW
9. Shruti: Vernacular Speech Recognition System in Bengali
10. T. Acharya, B. B. Bhattacharya, P. Bhowmick, A. Bishnu, A. Biswas, M. K. Kundu, Method and Apparatus for Providing a Binary Fingerprint Image
11. T. Acharya, B. B. Bhattacharya, P. Bhowmick, A. Bishnu, J. Dey, M. K. Kundu and C. A. Murthy, Method and apparatus to reduce false minutiae from a binary fingerprint image
13. VENUCANE: An Electronic Travel Aid for Visually Impaired and Blind People,

Visits Abroad by Faculty Members

2. Mitra, Bivas - Organizer, Dynamics on and of Complex Networks VI (DOOCN 2013), A satellite workshop of ECCS 2013 (Barcelona, Spain, ) September 2013
3. Mitra, Bivas - Invited Speaker, Dynamic Information and Communication Networks 2013, Workshop of NetSci 2013 (Copenhagen, Denmark, ) June 2013
4. Sarkar, Sudeshna - Present paper at ICDM 2013 (Dallas, Texas USA, ) Dec 7-10, 2013
5. Sarkar, Sudeshna - Collaboration with Northeastern University, USA (Boston, USA, ) 14-16 December, 2013

Invited Lectures by Faculty Members

1. Corpus based suggestion for query expansion and reformulation by Sarkar, Sudeshna (TCS, Delhi)
3. Climate Mining at IIT Kharagpur by Sarkar, Sudeshna (Northeastern University)
4. Introduction to Hybrid Systems by Dey, Soumyajit (ISI Kolkata)
5. Formal Methods for Embedded System Design by Dey, Soumyajit (Jadavpur University)
6. Communities in Time Varying Networks by Mitra, Bivas (IIT Kanpur)
7. Dynamics in Complex Networks: From Interdependence to Community Evolution by Mitra, Bivas (IIT Jodhpur)
8. Optimizing the Usage of Mobile Device and Networking by Mitra, Bivas (NIT Durgapur)
9. Dynamic Community Detection and Analysis by Mitra, Bivas (Bengal Engineering & Science University, Shibpur)
10. Opensource Software by Mandal, Chittaranjan (IIT Library, workshop on opensource software)
11. Understanding the Emergence of Superpeer Networks: A Complex Network Approach by Mitra, Bivas (Copenhagen, Denmark)
12. Equivalence checking of programs by Mandal, Chittaranjan (Sir C R Reddy College of Engineering)
13. Computational Perspectives of Protein Interactions by Mitra, Pralay (Indo-Brazil Workshop on Biomedical Informatics, Indian Institute of Technology, Kharagpur, India)
14. Algorithmic Techniques for Modeling by Mitra, Pralay (Emerging Research Trends in Data Mining For Bioinformatics, AU College of Engineering, Andhra University, India)
15. Extraction of Contextual Information from Echo-Cardiogram Video by Mukhopadhyay, Jayanta (Govt. Engg. College, Kalyani)
16. Information processing for Neonatal Health Care by Mukhopadhyay, Jayanta (ICACCI, Mysore)
17. Science, Rationality and an Individual by Mukhopadhyay, Jayanta (Bengal Engineering and Science University, Shibpur)
18. Digital repainting of heritage murals by Mukhopadhyay, Jayanta (Indian Statistical Institute)
19. Use of semi-definite programming in the design of approximation algorithms by Pal, Sudebkumar Prasant (NIT Durgapur, Department of Mathematics)
20. Applications of Lovasz local lemma by Pal, Sudebkumar Prasant (Department of Mathematics, IIT Delhi)
29. Difference of Practical and Theoretical Cryptanalysis by Roychowdhury, Dipanwita (NTRO, New Delhi)

Books Published

1. Abhijit Das: Computational Number Theory published by Taylor and Francis / CRC (2013)

Short-Term Courses, Training Programmes and Workshops organised

2. Computational Systems Biology (March 31, 2014 - April 04, 2014)
3. Data Mining and Image Analytics for Medical Informatics (8th April 2013 to 12th April 2013)

Papers Published in Journals

3. A Dependency Annotation Scheme for Bangla Treebank By Sanjay Chatterji, Tanaya Mukherjee Sarkar, Pragati Dhang, Samhita Deb, Sudeshan Sarkar, Jayshree Chakraborty, Anupam Basu Language Resources and Evaluation (2013)
31. Linear combination of weighted t-cost and chamfering weighted distances By J. Mukherjee Pattern Recognition Letters 40, 72-79 (2014)
32. Lower bounds for Ramsey numbers for complete bipartite and 3-uniform tripartite subgraphs By Tapas Kumar Mishra and Sudebkumar Prasant Pal Journal of Graph Algorithms and Applications 17, 671-688 (2013)
46. Verification of Code Motion Techniques using Value Propagation By Kunal Banerjee, Chandan Karfa, Dipankar Sarkar, Chittaranjan Mandal IEEE Transactions on CAD Accepted (2014)

Papers Presented in Conferences

4. (Stable) Virtual Landmarks: Spatial Dropbox to enhance Retail Experience, By Swadhin Pradhan, Ananth Balashankar, Niloy Ganguly, Bivas Mitra. IEEE COMSNETS, Bangalore, (2014)
10. An approach to solve tracking and message blocking problems in RFID, By Subhasish Dhal, Ajay Kant Singh and Indranil Sen Gupta. 4th International Conference on Communications Security and Information Assurance (CSIA), New Delhi, India, (2013)
11. An ATE assisted DFD technique for volume diagnosis of scan chains, By Subhadip Kundu, Santanu Chattopadhyay, Indranil Sen Gupta and Rohit Kapur. 50th Design Automation Conference, Austin, TX, USA, (2013)


21. Design and implementation of rotation symmetric S-boxes with high nonlinearity and high DPA resilience, By Bodhisatwa Mazumdar, Debdeep Mukhopadhyay and Indranil Sen Gupta, 6th International Symposium on Hardware-Oriented Security and Trust (HOST), Austin, TX, USA, (2013)

22. Design of a lean interface for Sanskrit corpus annotation, By Gérard Huet and Pawan Goyal, ICON, New Delhi, INDIA, (2013)


24. Determining the User Intent Behind Web Search Queries by Learning from Past User Interactions with Search Results, By Ariyam Das, Chittaranjan Mandal, Chris Reade, 19th International Conference on Management of Data (COMAD 2013), Ahmedabad, (2013)


30. Experimentation with SMT Solvers and Theorem Provers for Verification of Loop and Arithmetic Transformations, By Chandan Karfa, Kunal Banerjee, Dipankar Sarkar, Chittaranjan Mandal, I-CARE 2013, IIT Delhi, (2013)


32. Gait Recognition from Front and Back View Sequences Captured Using Kinect, By P. Chattopadhyay,, S. Sural, and J. Mukherjee,, 5th Int. Conf. on Pattern Recognition and Machine Intelligence (PREMI-2014), Kolkata, India, (2013)


34. GPU-based Implementation of 128-bit Secure Eta Pairing Over a Binary Field, By Utsab Bose, Anup Kumar Bhattacharya and Abhijit Das, AfricaCrypt 2013, Cairo, Egypt, (2013)


42. Multimode Sampling Period Selection for Embedded Real Time Control, By Rajorshee raha, Soumyajit Dey, Pallab Dasgupta, P. P. Chakraborty, Design Automation Conference (accepted as a work in progress), Sanfrancisco, CA, USA, (2014)


44. Ordered Solution Generation for Implicit AND/OR Search Spaces, By Priyankar Ghosh, P P Chakrabarti, Pallab Dasgupta, 5th International Conference on Pattern Recognition and Machine Intelligence (PReMI), Kolkata, (2013)


49. Re-using Refresh for Self-testing DRAMs, By Bibhas Ghoshal, Chittaranjan Mandal, Indranil Sengupta, ISED 2013, NTU, Singapore, (2013)


52. Rising Popularity of Interdisciplinary Research -- an Analysis of Citation Networks, By Chakraborty, T., Ganguly, N. and Mukherjee, A., Social Networking Workshop of COMSNETS, Bangalore, India, (2014)

55. Software Effort Estimation Using Functional Link Neural Networks Optimized by Improved Particle Swarm Optimization, By Tirimula Rao Benala, Rajib Mall, Satchidananda Dehuri, SEMCCO, Chennai, (2013)
56. STAIRoute: Global Routing using Monotone Staircase Channels, By Bapi Kar, Susmita Sur-Kolay, Chittaranjan Mandal, IEEE Computer Society Annual Symposium on VLSI (ISVLSI) 2013, Natal, Brazil, (2013)
60. Verification of KPN level transformation, By Chandan Karfa, Dipankar Sarkar, Chittaranjan Mandal, 26th IEEE International Conference on VLSI Design, Pune, India, (2013)
Department of Electrical Engineering

Head
Prof. Siddhartha Sen

Professors
Barua, Alok  Ph.D. (IIT Kharagpur), Fault Diagnosis of Analog and Mixed Signal Circuit In-Situ Measurement in Bio reactor

Bhattacharya, Tapas Kumar  Ph.D. (IIT Kharagpur),


Das, Sarit Kumar  Ph.D. (IIT Kharagpur), Control Systems

Dutta, Pranab Kumar  Ph.D. (IIT Kharagpur), Biomedical Image Processing, Signal processing, Optoelectronics, Pattern analysis and machine vision

Kastha, Debaprasad  Ph.D. (Tennessee), Wind Electrical Systems, Switched Mode Power Supplies, Machine Drives

Kishore, N K  Ph.D. (IISc Bangalore), Power and Energy Systems

Maka, Srinivasu  Ph.D. (IIT Kharagpur), Biomedical System Engineering, Control Systems & Instrumentation Engineering

Mohan, Bosukonda Murali  Ph.D. (IIT Kharagpur), Computational Intelligence in Control Systems, Orthogonal Functions Applications in Control Systems, Control Systems


Pradhan, Ashok Kumar  Ph.D (Sambalpur Univ.), Power System Protection - Wide Area Measurement System- Smart Grid- Applied Signal Processing

Ray, Goshaidas  Ph.D. (IIT Delhi), Robust Stabilization, Time-Delay System, Decentralized Control and State Estimation, Intelligent Control, Network Control Systems
Routray, Aurobinda  
*Ph.D. (Sambalpur Univ)*, Cognitive Modelling and Human Monitoring, Embedded Systems Design for Real Time Signal and Image Processing, Data Driven Diagnostics and Prognostics

Sen Gupta, Sabyasachi  
*Ph.D. (IIT Kharagpur)*,

Sen, Siddhartha  
*Ph.D. (IIT Kharagpur)*, Fractional Order Circuits and Systems, Capacitive Sensors and MEMS, Control Allocation, Robust Control

Sinha, Avinash Kumar  
*Ph.D. (Pilani)*, Smart Grid, Electrical Energy Systems

**Associate Professor**

Poddar, Gautam  
*Ph.D. (IISc Bangalore)*, Medium voltage converter with high frequency isolation

**Assistant Professors**

Bajpai, Prabodh  

Bhattacharya, Tanmoy  
*Ph.D. (IISc. Bangalore)*, Power Converters and Machine Drives, Power converter topology and control for HVDC and FACTS

Biswas, Karabi  
*Ph.D. (IIT Kharagpur)*, Sensor Design, Development of Instrumentation System, Study of Fractional Order Systems

Chatterjee, Dheeman  
*Ph.D. (IIT Kanpur)*, Power System Dynamics, Grid Integration of Wind Power, HVDC Transmission and FACTS controllers

Chattopadhyay, Souvik  
*Ph.D (IISc. Bangalore)*, Digital Control of Power Converters, Soft-switched dc dc converters

Deb, Alok Kanti  
*Ph.D. (IIT Delhi)*, Control Systems, Computational Intelligence, Fault Diagnosis

Fulwani, Deepak  
*Ph.D. (IIT Bombay)*,

Kapat, Santanu  
*Ph.D. (IIT Kharagpur)*, Nonlinear Analysis of Digitally Controlled DC-DC Converters, High Performance Digital Control in Power Converter Circuits

Mukherjee, Anirban  
*Ph.D. (IIT Kharagpur)*, Machine learning for Healthcare applications, Medical Signal/Image Processing

Patra, Sourav  
*Ph.D. (IIT Kharagpur)*, Robust control, Nonlinear control

**Faculty Appointments**

Deepak Fulwani  
Assistant Professor

**Faculty Resignation**

B Saritha  
Assistant Professor

Deepak Fulwani  
Assistant Professor
**Brief Description of on-going activities**

From classical to modern, from milli watts to tens of kilo watts, from conventional to non-conventional, the electrical engineering department investigates these all. The range of investigation for this department is one of the broadest in this institute. The major on going activities are categorized as follows: Machine Drives and Power Electronics: * Magnetic Levitation * Superconducting magnetic energy storage * Variable frequency AC-Drives * Simulation of power electronic circuits * Resonant Converters * Design of integrated circuits for Power Management * Nonlinear phenomena in Power Electronics * Automotive Electronics * Diagnostic of drives * Drive fatigue analysis Control and Dynamic Systems: * Neuro-fuzzy controllers * Control of chaotic systems * Discrete event and hybrid systems * Fault-tolerant control of aero-space systems * Attitude control of satellites and launch vehicles * Robust stabilization using periodic controllers * Reduced order modeling * Control of Variable Air-Volume Air-Conditioning Systems * Bifurcation theory of hybrid dynamical systems * Delta domain digital control analysis and design * Neural networks applications in control * Genetic algorithm applications in control * Decentralized control of large scale systems * Nonlinear dynamics * Fractional order system and their applications Power and Energy Systems: * Wind turbines * Power system dynamics * Real-time digital simulation of power systems * Power system protection * Intelligent relaying * State estimation of power systems * Condition and Diagnostic Monitoring of Power Apparatus * Energy audit and management * Power system planning and optimisation * Wavelet Application to Power system Transients * Neural Net Application to Partial Discharge Phenomenon * Electric Field Computations, Lightning Protection, Material Characterization * FACTs Instrumentation and Signal Processing: * Laser based profile measurement * Image based measurement systems * Motion estimation using MRI and colour Doppler imaging * Non-Linear and Statistical Signal Processing * Real Time Algorithms for Detection and Diagnostics * Condition monitoring of machines and power apparatus * Testing of analog and digital VLSI circuits * Fault detection and diagnosis of analog circuits * Control and instrumentation of bio-reactors * Fibre-optic components and sensors * Biomedical signal processing * Analysis of ECG signals * Sensors fusion * Multimedia Security * Convex Optimization and LMI applications to Signal Processing * Design and development of MEMS accelerometer * Seismic signal processing, active noise control * Fast algorithms for real time signal processing

**Thrust Areas**

1. This department has identified the following topics as the thrust areas of investigations: Efficient Power Converters & Drives, Micro-grid & Renewable Energy, Embedded Sensors & Systems, Integrated Power Management, Automotive Engineering, Cyber Physical Systems, Signal & Image Processing, Machine Learning, Advanced Control Theory & its Application, Estimation & Control of Industrial & Aerospace Systems

**International Collaborations**

Collaboration is going on through DST, India, and Research Council UK (RCUK) supporting a project on Stability and Performance of Photovoltaics. This is a joint collaboration involving IIT Bombay, IIT Kanpur, IIT Kharagpur and Solar Energy Centre, New Delhi from India, and Imperial College, London, Loughborough University, Northumbria Photovoltaics Application Centre (NPAC), Northumbria University, Strathclyde University from UK.

**Lectures by Visiting Experts**

1. Application of magnetic levitation and linear drive technologies to public rail-guided transports by Prof. Takafumi Koseki (The University of Tokyo, Japan)

2. Continuous Integral Sliding Mode Control: A Second Order Sliding Mode approach by Prof. Bigyan Bandyopadhyay (Professor, Interdisciplinary Programme in Systems and Control Engineering, Indian Institute of Technology Bombay)
3. Designing an ASIP for Hindi Text to Speech Synthesis by Dr. Atanendu Sekhar Mandal (Senior Scientist (IC Design Group), CEERI, Pilani)
4. Power engineering research at the University of Queensland by Prof Tapan Saha (Professor, School of Information Technology and Electrical Engineering, The University of Queensland, Australia)
5. From Embedded Systems to Cyber-Physical Systems by Dr. Dip Goswami
6. Terahertz Technology: What Can We Do with It? by Dr. Goutam Chattopadhyay (Principal Member of the Engineering Staff, California Institute of Technology, Pasadena, CA, USA.)
7. Wide area control of power system using PMU by Prof. Anjan Bose (Distinguished Professorship in Power Engineering, Washington State University, School of Electrical Engg & Computer science)
8. Transformer-System Interactions and Modeling by Prof. S. V. Kulkarni (Professor, Department Of Electrical Engineering, Indian Institute of Technology Bombay)
9. Energy R&D in GE by Dr. Vinay Jammu (Technology Leader for Aero Thermal and Mechanical Technologies-Asia, GE Global Research, Bangalore)

**Doctoral and MS Degrees Awarded**

1. Pratim Kundu : Wide Area Measurement based Power System Protection(MS)
2. Susovon Samanta : New Models and Methods for Simulation and Compensator Design for Buck Converters under Peak Current Mode Control(Ph.D)
3. Monalisa Pattnaik : Speed Sensorless Control of a Stand-Alone Variable Speed Constant Frequency Double Output Induction Generator with Nonlinear and Unbalanced Loads(Ph.D)
4. Biswajit Kar : Online Signature Verification and Classification(Ph.D)
5. Supratim Gupta : Eye Image-based Algorithms to Estimate Percentage Closure of Eye and Saccadic Tatio for Alertness Detection(Ph.D)
7. Kuntal Mandal : Dynamical Analysis of Resonant DC-DC Converters(Ph.D)
11. Debasmita Mondal : Fabrication and Performance Studies of PMMA-Coated Fractional Order Elements(MS)

**Member - Professional Bodies**

1. Chakraborty, Chandan, *Member-at-large* - IEEE Industrial Electronics Society
2. Chakraborty, Chandan, *Senior Member* - IEEE
3. Pradhan, Ashok Kumar, *Senior Member* - IEEE, USA
4. Pradhan, Ashok Kumar, *Life member* - Indian Society Of Tecnical Education (ISTE)
5. Mukherjee, Anirban, *Member* - IEEE
6. Mukherjee, Anirban, *Life Member* - System Society of India
7. Chatterjee, Dheeman, *Member* - IEEE
11. Bajpai, Prabodh, *Member* - IEEE, USA
12. Bajpai, Prabodh, *Associate Member* - The Institution of Engineers (India)
13. Bhattacharya, Tanmoy, *Member* - IEEE

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15. Sinha, Avinash Kumar, *Member* - IEEE, USA
17. Barua, Alok, *Senior Member* - IEEE
18. Barua, Alo, *Life Member* - System Society of India
20. Mohan, Bosukonda Murali, *Member* - Automatic Control and Dynamic Optimization Society
21. Mohan, Bosukonda Murali, *Senior Member* - IEEE (USA)
22. Mohan, Bosukonda Murali, *Member* - IFAC (International Federation of Automatic Control) Technical Committee on Computational Intelligence in Control
23. Mohan, Bosukonda Murali, *Member* - Asian Control Association
24. Mohan, Bosukonda Murali, *Life Member* - Systems Society of India
25. Mukhopadhyay, Siddhartha, *Member* - IEEE
26. Mukhopadhyay, Siddhartha, *Life member* - System Society of India
27. Mukhopadhyay, Siddhartha, *Member* - National Committee on IVHM
28. Dutta, Pranab Kumar, *Member* - IEEE
29. Kastha, Debaprasad, *Regular* - IEEE
30. Routray, Aurobinda, *Member* - IEEE, USA
31. Routray, Aurobinda, *Member* - SIAM, USA
32. Pal, Jayanta, *Life Member* - Systems Society of India

*Member - Editorial Board*

10. Das, Sarit Kumar (2013) *Editor* - IETE J Education
13. Mohan, Bosukonda Murali (2013) *Associate Editor-in-Chief* - J. Control Engineering & Technology
15. Mohan, Bosukonda Murali (2013) *Associate Editor* - Control & Intelligent Systems
18. Mohan, Bosukonda Murali (2013) *Associate Editor* - WSEAS Trans. Systems & Control
21. Mohan, Bosukonda Murali (2007) *Associate Editor* - Int. J. Automation & Control
22. Patra, Amit (0) *Member, Editorial Board* - International Journal of Electrical Engineering Education
23. Sinha, Avinash Kumar (2007) *Member, Board of Advisors* - The ICFAI Journal of Science and Technology

**Awards & Honours**

1. Routray, Aurobinda (2013) *Samsung GRO Award 2012-2013 completed in July 2013*

**Sponsored Research Projects**

1. A Study of Hybrid FACTS Controllers for Transmission and High Voltage Distribution Application (Department of Science and Technology, India, Rs.51.00 Lakhs)
2. A Study of the Impacts of Increased Penetration of Wind Power on Power System Stability (DST, India, Rs.19.00 Lakhs)
3. A Study of the Operation and Control of a Proposed Coastal HVDC Highway for Offshore Wind Power Integration (Department of Science and Technology, India, Rs.52.00 Lakhs)
4. Artificial Heart Development Programme- Phase II (HDP) (DST, New Delhi, Rs.25.24 Lakhs)
5. AVLSI Consortium (Multiple Organisations in India and Abroad, Rs.200.00 Lakhs)
6. Centre of Excellence for training and research in Microfluidics (IIT Kharagpur, Rs.251.90 Lakhs)
7. DC-AC conversion and grid side paralleling (DST, Rs.60.00 Lakhs)
8. DC-DC conversion for solar PV including MPPT & battery charge controller (DST, Rs.80.00 Lakhs)
9. Design & Feasibility Study of Versatile Low-cost Functional Electrical Stimulator (FES) for Hemiplegics (National Institute for the Orthopaedically Handicapped (NIOH)(Min. of Social Justice & Empowerment,, Rs.20.00 Lakhs)
10. Design and Development of an On-board Intelligent Embedded Platform for detection of weak failure modes and prognosis of severe faults in locomotives (Research Design and Standards Organisation (RDSO), Lucknow, Rs.177.33 Lakhs)
11. Design and Fabrication of of SOI based MEMS Accelerometer (DFS) (DST, Rs.39.00 Lakhs)
12. Design of an Embedded System for On-board Assessment of the Level of Alertness in Human Driver (DIT, Rs.39.00 Lakhs)
13. Design of Robust Biochemical Network (CSIR, HRDG, New-Delhi, Rs.11.48 Lakhs)
14. Design, Development and Fabrication of Power Management Integrated Circuits (Tagore Technologies, USA, Rs.5.00 Lakhs)
15. **DETECTION AND DIRECTION OF HIGH IMPEDENCE FAULT (DEPARTMENT OF SCIENCE AND TECHNOLOGY, NEW DELHI, Rs.13.00 Lakhs)**
16. Developing Fractional Order Circuit Element (Fractance) (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
17. **DEVELOPMENT OF A PORTABLE EMBEDDED SYSTEM FOR HUMAN MONITORING/SIGNALS & SYSTEMS FOR LIFE SCIENCES** (HLS) (MHRD, Rs.40.00 Lakhs)
18. Development of Electrowetting based Microfluidic device with Controller for Clinical Diagnoses (DBT, Rs.41.45 Lakhs)
19. Development of Low Cost, Ultra-fast, Energy Efficient Power Management Solutions for Dynamic Voltage Scaling in Multicore Parallel Embedded Processors (Proposal accepted in SERB Fast Track, DST, Rs.0.00 Lakhs)
21. **DEVELOPMENT OF SMART HOME ENERGY MANAGEMENT SYSTEM (SHE)** (Power Grid Corporation of India Ltd, Rs.4.92 Lakhs)
22. Development of the fourth circuit element , :Fractance (IIT Kharagpur, Rs.94.50 Lakhs)
23. Educational Component of GM Collaborative Research Laboratory (General Motors, Rs.125.00 Lakhs)

24. Fast Fixed Point Algorithms for Identifying Alertness and Emotions (Samsung Advanced Institute of Technology(SAIT) South Korea, Rs.0.00 Lakhs)

25. HE EFFECT OF MEDITATION, PRANAYAM AND MEDITATIVE SOUNDS ON THE COGNITIVE AND EMOTIONAL PERFORMANCE OF HUMAN BRAIN: A STUDY USING AN INTEGRATED SIGNAL (MHRD, Rs.15000000.00 Lakhs)

26. High Frequency, High Efficiency Hybrid DC-DC Converter (Maxim Corporation, Rs.15.00 Lakhs)

27. HISTORICAL EVIDENCE, MYTH AND GEOPHYSICAL MODELING TO ASSESS THE TECTONIL MOVEMENT AND RISKS ASSOCIATED WITH ODISHA COASTAL "HERITAGE" BELT (HPM) (MHRD, Rs.135.00 Lakhs)

28. IBM Open Collaborative Faculty Award (IBM, Almaden Research centre, USA, Rs.7.00 Lakhs)

29. Identification of Motifs in Integrated Cellular Networks (CSIR, Rs.14.00 Lakhs)

30. Identifying the role of positive feedback in biological systems - A control theoretic perspective (CSIR, India, Rs.0.00 Lakhs)

31. Improving End-of-Life Care by Integrating Indic Perspectives on Ageing and Dying (MHRD, Rs.75.00 Lakhs)

32. Integrated Vehicle Health Management (IVHM) for Automotive Engine Applications under National Programme on Micro and Smart Systems (NPMASS) (On-going) (ADA, Bangalore, Rs.277.30 Lakhs)

33. INTELLIGENT TOOLS FOR SMART ELECTRICAL GRIDS (SEG) (MHRD, Rs.55.92 Lakhs)

34. Modelling and design of polymer coated ion selective constant phase element (CPE) sensor (DST, Rs.14.40 Lakhs)

35. National Programme on Micro and Smart Systems (ADA, Bangalore, Rs.259.60 Lakhs)

36. ON-Chip DC-DC converter for PoL application (MAXIM India, Rs.15.00 Lakhs)

37. Online monitoring system for OHE traction parameters (RDSO, Ministry of Railways, Rs.254.02 Lakhs)

38. Protecting Power Systems using Wide area measurements (DEPARTMENT OF SCIENCE AND TECHNOLOGY, NEW DELHI, Rs.18.00 Lakhs)

39. Real Time Digital Simulator (TDS) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.5.47 Lakhs)

40. Reconfigurable Augmentation and Digital Control of DC-DC Converters for Fast Transient Recovery (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)

41. Renewable Hybrid Energy Power Plant for Telecom station in Isolated Sites (Vodafone Essar-East Limited, Kolkata, Rs.95.00 Lakhs)

42. RESERVOIR CHARACTERIZATION USING ARTIFICIAL INTELLIGENT TECHNIQUES (SOFT COMPUTING) (RCI) (GEOPIC, Rs.48.00 Lakhs)

43. Robust anti-windup compensator design considering plant uncertainty and limitations (DST, India, Rs.0.00 Lakhs)

44. Speed Sensorless Control of Induction Motor Drive with Limited Switching Frequency and Operation into the Field Weakening Region for Traction Applicat (IIT Kharagpur (ISIRD Project), Rs.5.00 Lakhs)

45. STABILITY AND PERFORMANCE OF PHOTOVOLTAIC (SAP) (DST, Rs.218.50 Lakhs)

46. STATCOM with neutral compensation (TCO) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.4.00 Lakhs)

47. Testing & characterization of In-House Development of MEMS Capacitive Accelerometer (TCA) (ISRO-IIT Kharagpur Cell, Rs.5.00 Lakhs)

48. The Reconfiguring D.¿na (Generosity) as a new Institutional Financial Mechanism for Social Enterprises (MHRD, Rs.75.00 Lakhs)

49. Virtual Lab on Embedded Systems (MHRD, Rs.55.00 Lakhs)

50. Virtual Laboratory on Analog Signals, Networks and Measurement Laboratory (MHRD, Govt. of India, Rs.67.00 Lakhs)
Consultancy Projects

1. 2x500kVA AC source with VVVF Drive (KAUD) (KELTRON, Trivandrum, Kerala - 695 564, Rs.7.50 Lakhs)
2. A New Application of AMS CAD: Smart Grid, (Synopsys CAD Lab) (On-going) (. Rs.0.00 Lakhs)
3. Behavioral Modeling and Top-Down Design of Switching Converter ICs (On-going) (National Semiconductor Corporation, USA, Rs.40.00 Lakhs)
4. Bus Paralleling Controller with CAN Interface (CAND) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.1.50 Lakhs)
5. CONSULTANCY SERVICES FOR GRID SECURITY ASSESSMENT AND GRID MODERNIZATION AND CYBER SECURITY FOR CONTROL CENTERS (CSCC) (POSOCO, Rs.25.41 Lakhs)
6. Data-Driven Methods for Fault Diagnosis and Prognosis using Operating Parameters (General Motors India Science Lab, Rs.0.00 Lakhs)
7. DEVELOPMENT OF AN INTEGRATED ALERTNESS ASSESSMENT SYSTEM FOR AIRCRAFT PILOTS FOR A GO/NO-GO ASSESSMENT (APN) (DIPAS, DRDO, Rs.10.00 Lakhs)
8. Development of communication link based high frequency converter (CLFC) (C-DAC, Trivandrum and TaTa Power, Rs.4.00 Lakhs)
9. Development of Digital Hardware for M2M Applications (Fountainhead Software Solutions, Rs.2.00 Lakhs)
10. DISTRIBUTION SYSTEM LOSS CALCULATION AND POSSIBLE IMPROVEMENT (NESCO, BALASORE, ODISHA, Rs.5.00 Lakhs)
11. Feasibility study of IGBT based 4MW, 6.6KV Medium Voltage VFD (FIMV) (BHEL, Bangalore-560 026, Rs.9.55 Lakhs)
12. Formal Design Intend Modelling and Verification of Mixed Signal Behaviors (On-going) (Semiconductor Research Council (SRC), USA, Rs.0.00 Lakhs)
13. High Voltage Power Supply (HVPS) (Veerai Control Pvt. Ltd. Gandhinagar, Rs.4.00 Lakhs)
14. Natural Harmonic Compensation of Medium Voltage Converters (NHCM) (C-DAC, Trivandrum, Rs.8.60 Lakhs)
15. Resonant Frequency Converter II (Mesotherm Electronics Pvt. Ltd., Rs.2.00 Lakhs)
16. Sensorless high voltage single phase front-end converter (SHVC) (Signotron India pvt. Ltd., Kolkata, Rs.2.00 Lakhs)
17. Sensorless PMSM Controller (SRPC) (Veerai Control Pvt. Ltd. Gandhinagar, Rs.3.00 Lakhs)
18. Solar inverter for grid connected and standalone mode with MPPT (MPPT) (Signotron India pvt. Ltd., Kolkata, Rs.2.50 Lakhs)
19. Technology Development for Solar Inverter (TDSI) (KELTRON, Trivandrum, Kerala - 695 564, Rs.4.50 Lakhs)
20. Universal auxiliary converter for railways rolling stock (UACR) (Indian Railways and C-DAC, Trivandrum, Rs.5.00 Lakhs)

Technology Transferred

1. Freescale Semiconductor, Austin, USA - A verification software tool delivered : Rs. 0.00 Lakhan
2. GEOPIC, Dehradun, ONGC - An information-theoretic methodology to predict lithological properties using seismic attributes and well log data : Rs. 50.00 Lakhan
3. Texas Instruments - Technology transfer continuously takes place : Rs. 0.00 Lakhan

Patents (filed / granted)

1. A Bi-Directional Multiple-Input Single Inductor Multiple Output Switcher with Buck-Boost Inverted Output (with Ashis Maity, Pradipta Patra, Asif Iqbal)
3. A DC Nanogrid Power Delivering System (with S Kapat, P B Kamesh and Bipin Mandi)
4. A DC-DC Converter Architecture for Low Voltage High Current Applications (with Sutej Reddy and D Kastha)
5. A Fast Response Energy Efficient Current Control Scheme in a DC-DC Converter with a Freewheeling Switch
6. A HYBRID ENERGY POWER PLANT ADAPTED TO UTILIZE MULTIPLE ENERGY SOURCE
7. A METHOD FOR DETECTING AND CLASSIFYING POWER QUALITY ANOMALIES IN POWER SYSTEMS
8. A Method of Maintaining the Zone Temperature in a Variable Air Volume Air Conditioning System and a System Thereof
9. A Minimised Cross-Regulation Control Scheme for Single-Inductor Multiple-Output DC-DC Converter Topologies (with Pradipta Patra and Jyotirmoy Ghosh)
10. A New DC-DC Converter Architecture for Low Voltage and High Current Applications
11. A Single Input Single Inductor Multiple Output DC-DC Switcher Converter (with P. Patra and A. Eqbal)
12. A System for Improving Load Efficiency of a Switching Power Converter (with S. Kapat)
13. An Adaptively Biased, Self-Compensated, Unconditionally Stable, Area-Efficient LDO Topology (with Ashis Maity)
14. An information-theoretic methodology to predict lithological properties using seismic attributes and well log data
15. B. C. Mandi, S. Kapat, P. B. Kameshwar, and A. Patra, “A DC Nanogrid Power Delivering System,” provisionally filed Indian Patent
16. Dynamically Biased Amplifier Circuit and Methods for Improving its Dynamic Range (with Ashis Maity)
17. Event-driven data mining method for improving fault code settings and isolating faults
18. Method for Improvement of Light Load Efficiency of a DC-DC Converter by Skipping Pulses through a Voltage Mode Control Loop
21. SEE SAW Bioreactor
22. Switching Power Converter Adapted for Improved Output Impedance and Load Regulation through Inductor Current Filtering

Visits Abroad by Faculty Members

1. Sen, Siddhartha - To present a paper in European Control Conference 2013 (Zurich, Switzerland, ) July 16-19, 2013
2. Das, Sarit Kumar - To present paper in conference (Kuala Lumpur, Malaysia, ) 13-15 Dec. 2013
3. Chakraborty, Chandan - To present paper in ISIE2013 and to attend the ADCOM meeting of IEEE Industrial Electronics Society (Taipei, Taiwan, ) 29th May 2013 to 3rd June 2013
4. Chakraborty, Chandan - To present papers in IECON2013 and to attend ADCOM Meeting of IEEE Industrial Electronics Society (Vienna, Austria, ) 9th Nov-17th Nov., 2013
5. Pradhan, Ashok Kumar - Conference (VANCOUVER Canada, ) one week July 2013
6. Barua, Alok - To attend an International Conference (University of California, Berkeley, ) 22nd to 26 October, 2013
7. Biswas, Karabi - For discussion on collaborative project (California, USA, ) 27th October to 2nd November, 2013
8. Biswas, Karabi - To attend and present paper in IEEE sensor conference (Baltimore, USA, )
9. Biswas, Karabi - To attend and present paper in ICIIS conference (Kandy, Srilanka, ) 18th-20th December, 2013
10. Mukhopadhyay, Siddhartha - Foster academic and R&D collaborations, particularly focusing on the High Speed Rail Technology (Japan External Trade Organization and University of Tokyo, Japan, ) June 1-8, 2013
12. Mukhopadhyay, Siddhartha - Participating in IIT 2013 Global Conference at Houston and handover the DAA and meet the alumni (IIT 2013 Global Conference at Hilton Americans, Houston, Texas and visit John Hopkins University, USA, ) December 6-14, 2013
13. Sinha, Avinash Kumar - Academic collaboration (KSTU, Kazakhstan, ) 17th to 28th June 2013

Invited Lectures by Faculty Members

1. Fractance based sensor by Biswas, Karabi (National Seminar on Taste Sensor, IIT Kharagpur)
2. Coal Mill Modeling by Deb, Alok Kanti (BUIE, Bankura)
3. Robosoccer by Deb, Alok Kanti (BUIE, Bankura)
4. Robosoccer by Deb, Alok Kanti (Mallabhum Institute of Technology, bankura)
5. Particle Swarm Optimization - Convergence and Applications by Deb, Alok Kanti (BUIE, Bankura)
6. MATLAB & Simulink by Deb, Alok Kanti (RDSO Lucknow)
7. Fuzzy Regulators for Nonlinear Systems using LMI based Design by Deb, Alok Kanti (Dept of Mathematics, NIT Rourkela)
8. Neural Networks and SVMs by Deb, Alok Kanti (IEEE Workshop on Computational Intelligence on July 14, 2013 at IIT Kanpur)
9. Flexible AC Transmission System by Chatterjee, Dheeman (EEE department, BIT Meshra (short term course on Power converter and applications))
10. Evolving New Generation of Intelligent Protection by Pradhan, Ashok Kumar (Silicon Institute of Technology, Bhubaneswar)
11. Synchrophasor Assisted Network Protection by Pradhan, Ashok Kumar (IIT Roorkee)
12. Review of Modern control strategies and some practical applications. by Ray, Goshaidas (Bhubaneswar Rajdhani Engg. College)
14. Robust control and some practical applications. by Ray, Goshaidas (NIT Durgapur)
15. Power Management Solutions by Patra, Amit (Infineon Technologies, Bangalore, India)
16. Periodic compensation of continuous and discrete-time plants by Das, Sarit Kumar (NIT Durgapur)
17. Robust stabilization of uncertain dynamical systems by Patra, Sourav (National Institute of Technology, Durgapur)
18. Control of Fractional Order Systems by Sen, Siddhartha (ACODS-2014, IIT Kanpur)
19. Analog integrated circuits for MEMS sensors by Sen, Siddhartha (NIT Arunachal)
20. Fractional Calulus by Sen, Siddhartha (NIT Rourkela)
21. Some recent developments on fractional order devices and circuits by Sen, Siddhartha (NIT Nagpur)
22. Recent Trends in Power Management Units for digital devices by Kastha, Debaprasad (NIT Rourkela)
23. Embedded Systems: Future Trends by Mukherjee, Anirban (Heritage Institute of Technology)
24. Beyond Critical Bandwidth of Linear Control by Kapat, Santanu (NIT Durgapur)
25. Signals & Systems via Orthogonal Functions by Mohan, Bosukonda Murali (Gayatri Vidya Parishad College of Engineering)
26. National Seminar on ESIC-2013 by Mukhopadhyay, Siddhartha (Bengal Engineering and Science University, Shibpur, Howrah)
27. Faculty Development Programme by Mukhopadhyay, Siddhartha (KIIT University, Bhubaneswar, Odisha)
28. Third International Conference on Advances in Control and Optimization of Dynamical Systems by Mukhopadhyay, Siddhartha (IIT Kanpur)
29. Technology Day by Mukhopadhyay, Siddhartha (Central Mechanical Engineering Research Institute (CMERI), Durgapur)
30. by Mukhopadhyay, Siddhartha (National Institute of Technology, Rourkela)
31. Detection of Fatigue and Drowsiness in Human Drivers by Routray, Aurobinda (DRDO Head Quarters Life Science Division)
32. Overview of Power Plant Technology and Direction of Policy by Sinha, Avinash Kumar (IIM Kolkata)
33. ‘Overview of power sector and developments in renewable energy’ by Sinha, Avinash Kumar (IIM Lucknow)
34. Synchronization measures on time series matching: a case. Study on Brain and Seismic signals by Routray, Aurobinda (National Seminar on Nonlinearity, Complex Dynamics & Chaos in Economics and Finance)

Books Published


Short-Term Courses, Training Programmes and Workshops organised

1. Distribution System Technology for CESC (Nov. 18-22, 2013)
2. Distribution System Technology for WBSEDCL (May 17-21, 2013)
3. Distribution System Technology for WBSEDCL (Sept. 23-27, 2013)
4. Distribution System Technology for WBSEDCL (Feb. 21-25, 2014)
5. Embedded & Reconfigurable Computing for Control & Signal Processing & Xilinx Embedded Design flow us (Jan 6-10, 2014)
7. Xilinx Embedded Design Flow using ZYNQ & Vivado Design Suite (5 days)

Papers Published in Journals

4. A microfluidic device for continuous manipulation of biological cells using dielectrophoresis
   By Debanjan Das, Karabi Biswas and Soumen Das Medical Engineering & Physics
   http://dx.doi.org/10 (2013)
5. A New Algorithm for Small-Signal Analysis of DC–DC Converters By K. Mandal, S. Banerjee and C. Chakraborty
   IEEE Transactions on Industrial Informatics 10, 628 - 636 (2014)
6. A new analysis of reciprocated beam bending in electrostatic comb drives using a semi-analytical approach.
   By Mukherjee B., Swamy K.B.M. and Sen S. Communications in Nonlinear Science and Numerical Simulation
   vol. 19, pp. 2115-30 (2014)
7. A New Multilevel Inverter Topology With Self-Balancing Level Doubling Network By S. K. Chattopadhyay and C. Chakraborty
   IEEE Transactions on Industrial Electronics 61, 4622-4631 (2014)
8. A sensitivity based approach to assess the impacts of integration of variable speed wind farms
   on the transient stability of power systems By Arghya Mitra, Dheeman Chatterjee
9. A Vision-Based System for Monitoring the Loss of Attention in Automotive Drivers By George, A. Happy, S.L. Routray, A.
10. Adaptive distance relay setting for series compensated line, By M. Biswal, B. B. Pati, and A. K. Pradhan
11. An on-board vision based system for drowsiness detection in automotive drivers By Anirban Dasgupta, Anjith George, S. L. Happy, Aurobinda Routray, Tara Shanker
12. “Performance of an Off-Board Test Rig for an Automotive Air Conditioning System? By Santanu P. Datta, Prasanta K. Das and Siddhartha Mukhopadhyay
13. Comparative Evaluation of Symmetric SVD Algorithms for Real-Time Face and Eye Tracking By Tapan Pradhan, Aurobinda Routray, Bibek Kabi
14. Control allocation for an over-actuated satellite launch vehicle By Arun Kishore W.C, Santanu Dasgupta, Gosaidas Ray and Siddhartha Sen
15. Control Scheme for Reduced Cross Regulation in Single-Inductor Multiple-Output DC-DC
    Converters By P Patra, J Ghosh, A Patra Industrial Electronics, IEEE Transactions on 60 (11), 5095-5104 (2014)
16. Decentralized Operation of Residential Energy Resources in the Smart Grid By Ashish R.
17. Design and performance study of phase-locked loop (PLL) using fractional-order loop filter
    By Tripathy M.C., Mondal D., Biswas K. and Sen S. International Journal of Circuit Theory
18. Directional relaying during single-pole tripping using phase change in negative-sequence current,
19. Directional relaying in the presence of a thyristor-controlled series capacitor By P. Jena and
20. Estimation of Within Cycle Dynamics of an SI Gasoline Engine Using Equivalent Cycle
    Reconstruction By Sengupta, S., Mukhopadhyay, S., Deb, A.K., Pattada, K. IEEE Trans. on
    Instrumentation and Measurement (accepted) (0)
21. Evaluation of Single cell electrical parameters from bioimpedance of cells suspension By D
22. Free final time fractional optimal control problems By Biswas R.K. and Sen S. Journal of
    Franklin Institute vol. 351, pp. 941-51 (2014)


34. Reduced Order Approximation of MIMO Fractional Order Systems By Munmun Khanra, Jayanta Pal and Karrabi Biswas IEEE Journal on Emerging and Selected Topics in Circuits and Systems 1-8 (99)


40. Use of squared magnitude function in approximation and hardware implementation of SISO fractional order system By Munmun Khanra, Jayanta Pal and Karrabi Biswas Journal of the Franklin Institute 350, 1753-1767 (2013)

Papers Presented in Conferences


21. Control of a self-excited squirrel cage induction machine based wind energy conversion system operating in both stand alone and grid connected modes, By V. Roy Chowdhury, D. Kastha, 4th Int. Conf. on Advances in Energy Research, ICAER-2013, Mumbai, India, (2013)


Department of Electronics & Electrical Communication Engineering

Head
Prof. Swapna Banerjee

Professors
Bandyopadhyay, Kalyan Kumar  Ph.D.(Jadavpur University), satellite communication

Banerjee, Swapna  Ph.D.(IIT Kharagpur), VLSI based embedded system design for signal/image processing, Biomedical Instrumentation, Device modeling, Low power circuits, Mixed-signal design

Bhattacharyya, Tarun Kanti  Ph.D.(Jadavpur Univ), MEMS and Microsystems, RF and Analog VLSI, Thinfilms, Nano- electronics, Nano-scale Biosystems Engineering

Biswas, Dhrubes  Ph.D. (Illinois USA), Gallium Nitride based high power RF switches for advanced multi-band front end applications, Integrated product design and development for low cost healthcare delivery system, Business architecture and product development strategies through effective technology interventions, Education enterprise model for developmental entrepreneurship for higher education institution, Social media based reduction of information asymmetry for health care service delivery, Nitride based MOS power devices with insulating heterostructures, Novel InAlN/GaN & AlGaN/GaN heterostructures for resonant tunneling applications, Metamorphic buffer for monolithic integration of compound semiconductor RF devices on Silicon, Nonvolatile memory devices based on metal/insulator/compound semiconductor heterostructures, Graded barrier AlGaN/GaN heterostructures for high power front end application.


Chakraborty, Ajoy  Ph.D.(IIT Kharagpur), EMI/EMC, Electromagnetics, Antennas

Chakraborty, Mrityunjoy  Ph.D.(IIT Delhi), Digital Signal Processing, Adaptive Signal Processing, VLSI Signal Processing, Compressive Sensing

Chattopadhyay, Santanu  Ph.D.(IIT Kharagpur), Network-on-Chip Design and Test, Low Power Digital Testing, Thermal Aware Testing, Fault Diagnosis

Dhar, Anindya Sundar  Ph.D.(IIT Kharagpur), VLSI Architecture Design

Dutta, Debasish  Ph.D.(IIT Kharagpur), Optical Networks, Wireless Networks

Garg, Ramesh  Ph.D.(IIT Kanpur), Electromagnetics

Maiti, Chinmay Kumar  Ph.D.(IIT Kharagpur), Microelectronics, Silicon Heterostructures, Online Laboratories, High-k Gate dielectrics, Memristors, Protein Electronics, Technology CAD, Graphene Electronics

Pathak, Sant Sharan  Ph.D.(IIT Delhi),

Rajakumar, Ratnam Varada  Ph.D.(IIT Kharagpur),
Ray, Ajoy Kumar  
*Ph.D. (IIT Kharagpur)*, Biomedical Signal Processing, Speech Processing, Audio based Surveillance, Biometric Authentication

Saha, Goutam  
*Ph.D. (IIT Kharagpur)*, Computer Vision, Video Coding, Image and Video Processing, Multimedia Communication and Coding, VLSI for Video Coding

Sanyal, Subrata  
*Ph.D. (IIT Kharagpur)*

Sen Gupta, Somnath  
*Ph.D. (IIT Bombay)*, Computer Vision, Video Coding, Image and Video Processing, Multimedia Communication and Coding, VLSI for Video Coding

Associate Professors

Bhattacharya, Amitabha  
*Ph.D. (IIT Kharagpur)*, RF & Microwave Communication

Chakrabarti, Indrajit  
*Ph.D. (IIT Kharagpur)*, VLSI Design for Image and Video Processing and Communication

Datta, Raja  

Ghosh, Bratin  
*Ph.D. (Univ. of Manitoba)*, Applied Electromagnetics

Mahapatra, Sudipta  
*Ph.D. (IIT Kharagpur)*, Parallel and Distributed Systems, Video Coding/Video Streaming, Optical and Wireless Networks

Mandal, Pradip  
*Ph.D. (IISc Bangalore)*, Design Automation of CMOS Analog circuits and Systems, On-chip power management system, Analog Interface circuits for high speed data link, Analog circuits for signal acquisition system

Mukhopadhyay, Sudipta  
*Ph.D. (IIT Kanpur)*, Medical Image and Signal Processing, Content based Medical Image Retrieval, Video Processing, Continuous Authentication

Roy, Rajarshi  
*Ph.D (Brooklyn Univ.)*, Communication Networks, Cooperative Communication, Queueing Theory and Stochastic Processes, Optimization and network control, Performance Evaluation and optimal resource allocation problems, Learning and Self-organization and Emergent Phenomena in random environment, Social Networks, Network Coding, Cognitive Radio, Wireless communication and Geometry

Assistant Professors

Chakraborty, Paritosh Kumar  

Dan, Surya Shankar  
*Ph.D. (IISc., Bangalore)*, Computational nanoelectronics, Nano-scale electronic device physics, Simulation study of VLSI devices, Compact analytical modeling of nanoelectronic device operation, TCAD simulator development

De, Arijit  
*Ph.D. (Syracuse Univ)*, Electromagnetics, EMI/EMC, RF/Microwave, Digital Signal Processing, Array Processing, Computational Methods

Guha, Prasanta Kumar  
, Sensor, MEMS, Interface Electronics, Integration with CMOS
Halder, Achintya  
*Ph.D. (Georgia Tech., Atlanta)*,

Layek, Ritwik Kumar  
*Ph.D., Texas A&M Univ., College Station*, Bacterial Motility, Whole Cell Modeling and Simulation, Wide-Field Imaging and Cellular Dynamics, Inter-Cellular Interaction, Control in Gene-Protein Regulatory System

Mandal, Mrinal Kanti  
*Ph.D. (IIT Kharagpur)*, Microwave circuits

Mohan, Akhilesh  
*Ph.D. (IIT Kanpur)*, Microwave Filters, Ultra Wideband Antenna, Metamaterials

Roy, Rajat  
*Ph.D. (Univ. of Mumbai)*, Numerical computation of wave functions

Varshney, Shailendra Kumar  
*Ph.D. (University of Delhi)*, Quantum optical communication, Speciality fibers-Photonic crystal fibers, Fiber optic sensors, Photonic devices for next generation communication, Plasmonics, Nanophotonics

**Faculty Re-employment**

Sudipta Mukhopadhyay  
Associate Professor

**Brief Description of on-going activities**

The following research activities are currently carried out in the department:  

a) Biomedical Instrumentation: Main thrust is towards the design and development of an embedded system-on-chip solution for an adaptive intelligent biomedical system.  

b) Analog/Mixed Signal Design: Currently the research group is engaged in designing of an ADC 0.18\(\mu\)m BiCMOS technology with enhanced performance.  

c) Computational Electromagnetics and Modelling of Antennas above multilayered ground plane and Microwave Circuits and study of EMI/EMC effects.  

d) Development of block floating point based schemes for implementing adaptive filters in digital hardware  

e) Architectural optimization of algorithms for signal processing and wireless communication.  


g) Fault tolerant design of Network on Chip systems.  

h) Radar Signal Processing and advanced array processing for subsurface target detection.

**Thrust Areas**

1. MEMS & Semiconductor Technology
2. Broadband Communication Networks
3. VLSI Circuits and Systems
5. Computational modelling of forward and inverse electromagnetic problems and advanced antenna array processing

**New Acquisitions**

1. Deep Reactive ion-etching system (DRIE) has been acquired and is being installed in the Dept.
International Collaborations

Prof. Sébastien Lambot, faculty of Université catholique de Louvain (UCL) Belgium

Prof. Joydeep Bhattacharya, Professor of Psychology at the University of London

Prof. R.M. Rangayyan, Professor, Department of Electrical and Computer Engineering, University of Calgary

Prof. T. K. Sarkar, Syracuse University, NY

Lectures by Visiting Experts

1. Situation Awareness from Wide - Area Vision Networks by Prof. Amit K. Roy - Chowdhury (University of California Riverside, CA 92521)
2. Scratch Pad Memory Managing Local Memory in Software by Prof. Preeti Ranjan Panda (Professor, Dept. of Computer Science & Engineering, IIT Delhi)
3. Boolean and Non - Boolean Torque Devices: Prospects and Perspectives by Dr. Kaushik Roy (School of Electrical and Computer Engineering, Purdue university)
4. The Problem in Signal Processing by Prof. B. Yegnanarayana (IIIT Hyderabad)
5. What are the Challenges in Designing a Robust and Dependable Digital System? by Prof. Bhargab B. Bhattacharya (Indian Statistical Institute, Kolkata)
7. Application of Space for the benefit of Society by Dr. B. N. Suresh (Vikram Sarabhai distinguished Professor at ISRO HQ)

Doctoral and MS Degrees Awarded

1. Rohan Mukherjee : High Performance FPGA based VLSI Architecture for H.264 Encoder(MS)
2. Sangita Dhara : Development of transport layer protocol for inter-planetary networks(MS)
5. Ayan Kumar Ghosh : Electrical Characterization of High-k Dielecctrics on InGaAs Substrates for MOSFET Applications(MS)
6. Debashis Mandal : Prediction and Reduction of Reference Spur in a Frequency Synthesizer(Ph.D.)
8. Abhishek Midya : Scene Content Driven Video Error Resilience and Concealment(Ph.D.)
9. Chhandak Mukherjee : Low frequency noise characterization and modeling of strain-engineered MOSFETs’(Ph.D.)
10. Pradip Kumar Sahu : Application Mapping Strategies for Network-on-Chip Topologies(Ph.D.)
11. Uttam Ghosh : SECURE PROTOCOLS FOR MOBILE AD HOC NETWORKS(Ph.D.)
13. Sajal Sarkar : SECURE AND EFFICIENT ROUTING PROTOCOLS FOR MOBILE AD HOC NETWORKS(Ph.D.)
14. Okade Manish : Camera Motion Estimation, Characterization and Its Applications(Ph.D.)
15. Sanjaykumar C. Gowre : Design of All-Glass Photonic Crystal Geometry for Telecommunication and Sensor Applications(Ph.D.)

**Member - Professional Bodies**

1. Bhattacharyya, Tarun Kanti, *Member* - IEEE
2. Saha, Goutam, *Regular* - IEEE, USA
3. Roy, Rajarshi, *Member* - IEEE
4. Mahapatra, Sudipta, *Life member* - CSI, India
5. Mahapatra, Sudipta, *Member* - IEEE, USA
6. Mandal, Pradip, *Member* - IEEE
7. Chattopadhyay, Santanu, *Member* - IEEE Communications Society
8. Chattopadhyay, Santanu, *Member* - IEEE
10. Mukhopadhyay, Sudipta, *Member* - SPIE
11. Mukhopadhyay, Sudipta, *Senior Member* - IEEE
13. Mukhopadhyay, Sudipta, *Corresponding Member* - RSNA
14. Ghosh, Bratin, *Senior Member* - Institute of Eletronics and Electrical Engineers (IEEE)
15. Datta, Raja, *Senior Member* - IEEE
16. Datta, Raja, *Regular Fellow* - OSI
19. Varshney, Shailendra Kumar, *Member* - Optical Society of America
20. Varshney, Shailendra Kumar, *Member* - Optical Society of India
21. Varshney, Shailendra Kumar, *Member* - IEEE
23. De, Arijit, *Member* - IEEE
24. Mandal, Mrinal Kanti, *Senior member* - IEEE
25. Mohan, Akhilesh, *Member* - IEEE
26. Chakraborty, Ajoy, *Senior* - SEMCE(I)
27. Chakraborty, Ajoy, *Fellow* - Institute of Engineers
28. Chakraborty, Ajoy, *Senior* - IEEE
29. Banerjee, Swapna, *Senior Member* - IEEE
30. Banerjee, Swapna, *Presidents nominee* - NIT Council
31. Dutta, Debasis, *Senior Member* - IEEE
32. Dutta, Debasis, *Senior Member* - IEEE
33. Maiti, Chinmay Kumar, *Senior Member* - IEEE USA
34. Sanyal, Subhrata, *Member* - IEEE
35. Biswas, Prabir Kumar, *Senior Member* - Institute of Electrical and Electronics Engineers, USA
36. Chakraborty, Mrityunjoy, *Member* - IET (formerly IEE, UK)
37. Chakraborty, Mrityunjoy, *Senior Member* - IEEE
38. Garg, Ramesh, *Fellow* - IEEE
40. Bandyopadhyay, Kalyan Kumar, *Fellow* - The Institution of Electronics and Telecommunication Engineers

**Member - Editorial Board**

5. Dutta, Debasish (2013) *Editor* - IEEE Communications Surveys and Tutorials

**Awards & Honours**

2. Bhattacharyya, Tarun Kanti (2012) *IBM Faculty Award*
3. Saha, Goutam (2013) *In Top 100 of DST Lockheed Martin India Innovation Growth Program 2013*
4. Layek, Ritwik Kumar (2014) *Open Competitive Grand Challenge Seed Grants (SGIGC), IIT Kharagpur*
5. Varshney, Shailendra Kumar (2014) *OSI best paper award at ICOL, Dehradun*

**Sponsored Research Projects**

1. 3-D Image Sensor for Capturing Minute Surface Details and Visualization by Geometric Modelling (DST, Govt. of India, Rs.30.00 Lakhs)
2. Advanced Adaptive Filtering for Sensor Networks and Sparse System Applications (Indo-Spanish Collaborative Project, Sponsor : DST and MICIN, Govt. of Spain, Rs.21.00 Lakhs)
3. An embedded low cost portable CW Doppler Ultrasonography System (DST, New Delhi., Rs.24.79 Lakhs)
4. AVLSI Consortium (Multiple Industrial Organisation, Rs.0.00 Lakhs)
5. Bridge Health Monitoring with Wireless Sensor Network (Indian Railways, Rs.193.00 Lakhs)
6. Clinical decision support system and self-learning tool for radiologists for Lung CT using Content Based Image Retrieval (DIT, Rs.99.70 Lakhs)
7. Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur (DIT, Rs.115.00 Lakhs)
8. Design & development of non-invasive blood glucose measuring system (Department of Information Technology, Rs.27.00 Lakhs)
9. Design & Fabrication of high sensitivity micro machined Silicon tunneling accelerometer with micro-g resolution (ISRO, IIT Kharagpur Cell 721302, Rs.37.00 Lakhs)
10. Design and Development of high speed miniaturized RF MEMS switched capacitor (ISRO, Rs.19.70 Lakhs)
11. Design and development of specialised antenna for remote communication with submerged devices (ARDE, Pune, Rs.9.76 Lakhs)
12. Design and full-wave Greens Function analysis of the ultrawideband multilayer dielectric resonator antenna (Department of Science and Technology, Rs.54.80 Lakhs)
13. Design of fault-tolerant VLSI systems for applications in satellite communication (ISRO, IIT Kharagpur cell, Space Technology Cell, Rs.37.00 Lakhs)
14. Design of Planar Compact High Performance RF/Microwave Filters for Satellite Applications (ISRO- IIT Kharagpur Cell, Rs.8.94 Lakhs)
15. Design of radiation hardened data converters (ISRO, STC, I.I.T Kharagpur Cell., Rs.31.00 Lakhs)
16. Development and Realization of Silicon Tunneling Accelerometer (ISRO Inertial Systems Unit (IISU), Rs.35.00 Lakhs)
17. Development of a Lung Sound Analyzer (Institute of Pulmocare & Research, Rs.7.00 Lakhs)
18. Development of Interference Mitigation methods through Base Station Cooperation in Next Generation Wireless Broadband Mobile Communication Networks (MCIT, DIT, new Delhi, Rs.90.60 Lakhs)
19. Development of MBE cluster tool based epitaxial nano-semiconductor infrastructure and process integration facility for high performance RF/microwave c (Department of Information Technology, GOI and ATDC, IIT Kharagpur, Rs.4979.92 Lakhs)
20. Development of MEMS based Accelerometers for Aerospace Application (NPMASS) (NPMASS, ADA, Bangalore, Rs.449.00 Lakhs)
21. Development of readout system for Muon system in CBM experiment at FAIR (NSC) (VECC, Kolkata/Govt. of India, Rs.50.00 Lakhs)
22. Development of Remote Centers in Eastern India (MHRD, Rs.106.80 Lakhs)
23. Developmet of MEMS based components for RF applications (NPMASS, Rs.166.00 Lakhs)
24. Digital Electronic Circuits Virtual Laboratory (MHRD, Rs.50.00 Lakhs)
25. Dual-band reconfigurable antenna tunable over a wide range (DEAL, Dehradun, Rs.9.71 Lakhs)
26. Energy Efficient Communication (ISRO, Rs.1.00 Lakhs)
27. Energy Efficient Radio for next generation cellular (VEICET, Rs.185.00 Lakhs)
28. Energy Efficient Routing (ISRO, Rs.0.00 Lakhs)
29. Enhancement of Transport Layer Performance for Inter Planetary Network (Indian Space Research Organization and KCSTC, Rs.11.00 Lakhs)
30. Enhancement of Transport Layer Performance for Inter Planetary Network (ETP) (SAC, ISRO, Rs.5.00 Lakhs)
31. Error Resilient scheme for satellite TV system ( ERS) (ISRO-KCSTC, Rs.5.00 Lakhs)
32. Establishment of Photonics Innovation Lab (Institute (IITKGP), Rs.40.00 Lakhs)
33. Fault Diagnosis Techniques for Yield Enhancement (Synopsys, USA, Rs.25.00 Lakhs)
34. GaN/InGaN based light emitting diodes, solar cells and photoelectrochemical (PEC) devices by MOCVD epitaxial process (Department of Science & Technology, Govt. of India, Rs.657.00 Lakhs)
35. Green Cellular Network (VEICET, Rs.20.00 Lakhs)
36. Implementing a scalable video transcoder based on motion compensated temporal filtering (ISRO, IIT Kharagpur cell, Space Technology Cell, Rs.21.00 Lakhs)
37. INTELLECTUAL PROPERTY EDUCATION, RESEARCH AND PUBLIC OUTREACH (MHRD, Rs.76.70 Lakhs)
38. INTELLECTUAL PROPERTY MAINTENANCE GRANT FOR SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY (MHRD, Rs.50.00 Lakhs)
39. Iron Disilicide Heterojunction Solar Cells (DST, Rs.15.00 Lakhs)
40. Ka band propagation Experiment over Indian tropical region for improvement of Ka band satellite communication (KPE) (ISRO, Rs.5.00 Lakhs)
41. Ka Band Propagation Experiments over Indian tropical Region for Improvement of Ka Band Satellite Communication (ISRO, IIT Kharagpur Cell, Rs.26.73 Lakhs)
42. MEMS based micropropulsion devices for micro satellite program (ISRO, Rs.123.00 Lakhs)
43. Microelectronics and VLSI Engineering Online Laboratory (MHRD, Rs.100.00 Lakhs)
44. Model Based Error Concealment (ISRO, Rs.0.00 Lakhs)
45. Modulation in Bacterial Chemotaxis: A Systems Biology Approach (SRIC, IIT Kharagpur, Rs.28.00 Lakhs)
46. Multimodal and Multi-scale Imaging for early diagnosis and interventional management of oral pre-cancers and cancer (IIT Kharagpur, Rs.27.00 Lakhs)
47. Multiple Access Array Antenna system at S band using Digital Beam Forming Techniques (DBT) (SAC, ISRO, Rs.5.00 Lakhs)
48. NMEICT-EIT (MHRD, Rs.0.00 Lakhs)
49. Non-invasive blood glucose measurement system: Prototype development, Evaluation & Testing (ICMR, New Delhi, Rs.21.78 Lakhs)
50. Optimal Solutions and Applications for the Next Generation Wireless Internet (VICET-Vodafone, Rs.46.00 Lakhs)
51. Protocol Development for Interplanetary Delay Tolerant Networks (Indian Space Research Organization, Rs.27.98 Lakhs)
52. Railway Bridge Health Monitoring System with Wireless Sensor Networks (Indian Railways, Govt. of India, Rs.187.02 Lakhs)
53. REDUCTION OF FALSE ACCEPTANCE/REJECTION FOR NON-COOPERATIVE SPEAKERS IN AUTOMATIC SPEAKER RECOGNITION SYSTEM (ISRO, Rs.17.40 Lakhs)
54. Remote Triggered Laboratories (MHRD, Rs.48.00 Lakhs)
55. RF MEMS Components (ADA, Bangalore, Rs.187.00 Lakhs)
56. Scalable Video Coder using MCTF (ISRO, Rs.21.00 Lakhs)
57. SIGNALS & SYSTEMS FOR LIFE SCIENCE (MHRD, Rs.2000.00 Lakhs)
58. Smart low power thermal accelerometer for CMOS MEMS platform (DST, Rs.15.25 Lakhs)
59. Special Manpower Development Programme for VLSI Design & related Software (Ministry of Communication and Information Technology, New Delhi, Rs.145.27 Lakhs)
60. Specialized antenna for communication through metallic enclosure (ARDE, Pune, Rs.25.32 Lakhs)
61. Strategies for Thermal-Aware Network-on-Chip Design (Dept. of Science & Technology, Govt. of India, Rs.25.03 Lakhs)
62. Studies on construction & performance evaluation of MBOS modulation for improved satellite navigation radio signal and system design (CPE) (ISRO-LCSTC, Rs.5.00 Lakhs)
63. Studies on GPR Wave Propagation through Soil (LRDE, Bangalore, DRDO, Rs.9.95 Lakhs)
64. Studies on New Modulation Techniques for Satellite Navigation (ISRO, Rs.0.00 Lakhs)
65. Studies on Retro-Directive Array for Space Applications (ISRO, Bangalore, Rs.33.47 Lakhs)
66. Study of CDMA codes for satellite navigation (ISRO-KCSTC, Rs.5.00 Lakhs)
67. Study on Different Aspects of Secured Quantum Communication (SAC, ISRO, Rs.1.20 Lakhs)
68. Suitability of Free Space Optical Communication link for On Board Data Handling (OBDH) in Satellite (SAC, ISRO, Rs.31.00 Lakhs)
69. Synthesis of functional groups for immobilization of functional proteins on MEMS based micro-sensor surfaces (Indo-Trento Program for Advanced Research, Rs.164.00 Lakhs)
70. Synthesis of satellite footprints patterns from planar array antennas by combination of particles swarm optimization and FFT (ISRO, Rs.16.80 Lakhs)
71. Teachers Empowerment, Student Empowerment and Integration of Tools for Improvement - Synchronous Delivery (Train 10K Teachers) (MHRD, Rs.6600.00 Lakhs)
72. Teachers Empowerment, Student Empowerment and Integration of Tools for Improvement - Synchronous Delivery (MHRD, Rs.0.00 Lakhs)
73. Technology Business Incubation (TBI) (Department of Science and Technology, GOI and SRIC, IIT Kharagpur, Rs.20.00 Lakhs)
74. Technology CAD (TCAD) Online Laboratory (MHRD, Rs.50.00 Lakhs)
75. Test Simulator for Satellite Based AIS (TSS) (SAC, ISRO, Rs.7.00 Lakhs)
76. Thermal Aware Testing of VLSI Circuits and Systems (Dept. of Information Technology, Govt. of India, Rs.49.91 Lakhs)
77. TRACKING OF ULTRASONOGRAPHY MACHINES TOWARDS PREVENTION OF ITS MISUSE (Ministry of Health and Family Welfare, Rs.50.00 Lakhs)
78. Upgrading Facilities for MEMS design activities at National resource centre (NPMASS, ADA, Bangalore, Rs.36.00 Lakhs)
79. Virtual Lab Simulation - Digital Electronic Circuits (MHRD, Rs.50.00 Lakhs)
80. Virtual Lab Simulation - Digital Signal Processing Lab. (MHRD, Rs.50.00 Lakhs)
81. Whole Cell Modeling and Simulation in Bacterium Escherichia Coli (SRIC, IIT Kharagpur, Rs.250.00 Lakhs)
Consultancy Projects

1. CHECKING BORDER VIOLATION BY CIVILIANS THROUGH TECHNOLOGICAL SOLUTIONS: Phase I (BSF, Rs.3.06 Lakhs)
2. Design of monopulse Ka-band antenna and waveguide system (VEM Technologies Ltd., Hyderabad, Rs.10.25 Lakhs)
3. Design of switch capacitor based embedded DC-DC buck converter (Maxim India Integrated Circuit Pvt. Ltd., Rs.10.32 Lakhs)
4. Developing Pedagogical Methods (Subject: Network Theory) (MHRD, Govt. of India, Rs.2.00 Lakhs)
5. Hardware/Software Integrated Approach to Next Generation Video Conferencing System (Intellisys Technologies and Research Limited, Rs.0.00 Lakhs)
6. Physics formulation of a liquid dielectric characterization setup (GE India Technology Centre Pvt. Ltd., Bangalore, Rs.10.00 Lakhs)
7. Real Time Image Processing for Conveyor Belt Health Monitoring (PHOENIX Conveyor Systems, Rs.22.00 Lakhs)
8. Studies on GPR wave Propagation through Soil (LRDE, DRDO, Rs.1.72 Lakhs)

Patents (filed / granted)

1. A CALLER AUTHENTICATION SYSTEM FOR COMPUTER BASED VOIP CALLS
2. A LOW-COST BIOMETRIC AUTHENTICATION SYSTEM FOR ONLINE CERTIFICATION COURSE
3. An Energy and QoS Aware Method for Vertical Handover among Heterogeneous Wireless Networks
4. An Improved Molecular Beam Epitaxy Multi Chamber Cluster Tool And Processes For Integration Of Multiple Growth Combination Of Group III-V Semiconductor Heterostructures
5. An integrated automated system for assessing and monitoring the cardiac status and pulse rate
6. DISTRIBUTED BINARY CELL REALIZING HYBRID CURRENT STEERING ARCHITECTURE BASED DIGITAL TO ANALOG CONVERTER
7. Fiber optic corrosion sensor
8. Heart Sound Analyzer
9. Lung Sound Analyzer
10. Method of video coding the movement of a human face from a sequence of images
11. Methods of loop bandwidth calibration and phase noise cancellation circuits in a fractional –N PLL with a special switching charge pump circuit to reduce the leakage current, o/p noise and spur
12. Stripline fed printed sandwich monopole antenna
13. System and method for frequency calibration of oscillators involving fraction phase
14. SYSTEM AND METHOD FOR NON-INVASIVE MEASUREMENT OF CONCENTRATION OF ANALYTES IN A BIOLOGICAL SAMPLE
15. System and method for non-invasive measurement of concentration of analytes in a biological sample
16. Uniaxial MEMS piezoresistive accelerometer with enhanced cross axis signal rejection

Visits Abroad by Faculty Members

1. Mukhopadhyay, Sudipta - To present posters in conference (San Diego, USA, ) 15-20 th February 2014
2. Datta, Raja - To present a research paper in IEEE Wireless Communications and Networking Conference (WCNC) (Sanghai, China, ) April 7 to April 10, 2013
3. Mukhopadhyay, Sudipta - Biotechnology Industry Research Council delegation in Indo-TEKES workshop (Helsinki, Finland, ) 10-12th September 2013
4. Bhattacharyya, Tarun Kanti - Invited Speaker (City College of New York (CCNY), ) November 2013
5. Bhattacharyya, Tarun Kanti - Session Chair and Paper Presentation (Baltimore, MD, USA, ) November 2013
8. Roy, Rajarshi - SNOW, 2013 workshop (Akashoteli, Akasolombo, Yllas (Near Kolari), Lapland, Finland., ) 2-6 April, 2013

Invited Lectures by Faculty Members

1. Mechatronics, Robotics and Automation by Banerjee, Swapna (NCMRA-2014, Bankura Unnayani Institute of Engineering, Bankura, West Bengal.)
2. Advances in Microelectronics, VLSI Design and Optoelectronic Devices with Mixed Signal Processing by Banerjee, Swapna (Narula Institute of Technology, Kolkata.)
3. Embedded Bio-medical System by Banerjee, Swapna (Kalyani Govt. Engineering College, Kalyani, Nadia, West Bengal)
4. Are We Listening Enough? by Saha, Goutam (Symposium on Science and Society Organized by INSA Local Chapter, Kharagpur)
5. Are We Listening Enough? by Saha, Goutam (International Conference on Electronics Engineering & Computer Science, Kolkata)
6. Listening to Heart and Lung Sound by Saha, Goutam (Workshop on Advances in Healthcare Engineering, Kolaghat)
7. Nano-enabled Microsensors and Actuators by Bhattacharyya, Tarun Kanti (Indian Statistical Institute, Kolkata)
8. Nanoengineered Microsensors (Keynote Address) by Bhattacharyya, Tarun Kanti (Jadavpur University)
9. Nanostructures, Sensors and Actuators by Bhattacharyya, Tarun Kanti (City College of New York (CCNY))
10. Signal Processing For Appreciation of Heart and Lung Sound by Saha, Goutam (National Conference on Applied Electronics, Kolkata)
11. QoS Aware Fuzzy Rule Based Vertical Handoff Decision Algorithm for Heterogeneous Wireless Networks by Mahapatra, Sudipta (IGIT Sarang)
13. Efficient Antennas for Microwave Communication by Ghosh, Bratin (Shri Sant Gajanan Maharaj College of Engineering, Shegaon, Buldhana)
14. Control and Management of Optical Networks by Datta, Raja (Kolaghat Engineering and Management Institute, Kolaghat)
15. Real-time system design by Chattopadhyay, Santanu (Kalyani Govt. Engineering College)
16. Advanced Communication Technologies by Bhattacharya, Amitabha (Department of Electronics, Vidyasagar University, Midnapur)
17. Antennas for UWB Communication by Bhattacharya, Amitabha (NIT, Durgapur)
18. Mammogram CAD by Mukhopadhyay, Sudipta (Department of Information Technology, National Institute of Technology, Durgapur)
19. Mammogram CAD by Mukhopadhyay, Sudipta (Department of Information Technology, Kalyani Govt Engg College)
20. Video rain removal by Mukhopadhyay, Sudipta (Computer Science Department, NITTR Chandigarh)
21. Modeling and Control in Gene-Protein Regulatory System by Layek, Ritwik Kumar (Short term course on Computational Biology, Bioinformatics Their Application to Healthcare, IIT Kharagpur, India)
22. Pathways, Networks and Therapy: A Boolean Approach to Cancer by Layek, Ritwik Kumar (IEEE Indo-Brazil Workshop on Biomedical Informatics, IIT Kharagpur, India)
23. Decoding the Dynamics of Gene-Protein Regulatory Systems by Layek, Ritwik Kumar (College of Engineering and Management, Kolaghat, WB, India)
24. Panelist in IT for Rural Health by Datta, Raja (SRM University,)
25. Advances in Networking Technologies by Datta, Raja (NERIST, TEQIP,)
26. Communication Networks for Smart Grid by Datta, Raja (CESC, Kolkata)
27. Recent Trends in Networking by Datta, Raja (NSTL, Visakhapatnam)
28. Ad Hoc Networks by Datta, Raja (ECIL, Hyderabad)
29. Recent trends in wireless communication research. by Roy, Rajarshi (BESU, Shibpur, Howrah)

Books Published


Short-Term Courses, Training Programmes and Workshops organised

1. Advanced DSP Design Techniques (June 27 - July 1, 2013)
2. Electromagnetic Environmental Effects Management (E3) (Feb 17 - Feb 27, 2014)
3. One week Coordinator workshop on Fluid Mechanics (March 11 to March 15, 2014)
4. One week Coordinator workshop on Signals and Systems (September 30 to October 4, 2013)
5. One week Coordinators Workshop on Analog Electronics (April 1-5, 2013)
6. Short term course on computation systems biology (31 March - 4 April, 2014)
7. Short Term Course on Telecom Networks with State-of-the-art Hands-on Experiments (8th July to 13th July 2013)
8. Two Week ISTE Main workshop on Analog Electronics (June 4-14, 2013)
9. Two Week ISTE Main workshop on Signals and Systems (January 2 to January 12, 2014)
10. VLSI Signal Processing (Dec. 3-7, 2013)
Papers Published in Journals

7. An 8 bit Low Power DAC with Re-Used Distributed Binary Cells Architecture for Reconfigurable Transmitters (Accepted for publication) By Santanu Sarkar and Swapna Banerjee Microelectronics Ref.MEJ-D-13-00378R1 (2014)
8. An automated tool for localization of heart sound components S1, S2, S3 and S4 in pulmonary sounds using Hilbert transform and Heron’s formula By Ashok Mondal, Parthasarathi Bhattacharya, Goutam Saha SpringerPlus 2(1), 1-14 (2013)


27. Effect of different metallic nano-inclusions (Ag,Al,Au and Cu) and gain assistance for isotropic left-handed photonic material in blue light region By M. Rajput, R.K. Sinha and S.K. Varshney Optics and Laser Technology 49, 256-263 (2013)


39. Growth and Characterization of Self Assembled InAs Quantum Dots on Si (100) for Monolithic Integration by MBE By S. Jana and D. Biswas IEEE Transactions on Nanotechnology (2014)

40. Health Care Social Media: Expectations of Users in a Developing Country By Amrita and Dhrubes Biswas Medicine 2.0 (2013)


47. ISGP: Iterative Sequential Geometric Programming for Precise and Robust Analog Circuit Sizing By Sudip Kundu and Pradip Mandal Integration, the VLSI Journal, accepted (2014)


51. Modeling and Design of CMOS Analog Circuits through Hierarchical Abstraction By Samiran Dam and Pradip Mandal Integration, the VLSI Journal 45, pp. 449-462 (2013)


54. Multi-Application Network-on-Chip Design using Global Mapping and Local Reconfiguration By Soumya J, A. Sharma, S. Chattopadhyay ACM Transactions on Reconfigurable Technology and Systems Accepted (0)


58. RCS of a Curved Plate and Novel UTD Type Diffraction Coefficients for a Straight Edge in a Cylindrically Curved Screen By Divyabramham Kandimalla, Arijit De, and Subrata Sanyal IEEE Transactions on Antennas and Propagation (0)


63. Simplified 2DEG Carrier Concentration Model For Composite Barrier AlGaN/GaN HEMT By Palash Das and Dhrubes Biswas Proceedings of American Institute of Physics (2013)


67. Surface passivation and interface properties of bulk GaAs and p-type GaAs/Ge using atomic layer deposited TiAlO alloy dielectric By Dalapati, G.K., Chia, C.K.,Tan, C.C., Maiti, C.K.,Chi, D.Z ACS Applied Materials and Interfaces 5, 949-957 (2013)


Papers Presented in Conferences


14. A power efficient and constant gm 1.8 Volt CMOS operational transconductance amplifier with rail to rail input and output range for charge pump phase lock loop, By Manas Kumar Hati and Tarun K Bhattacharyya, *IEEE International conference on devices, circuits and systems (ICDCS)*, (2012)
21. Analytical Model of AlGaN/GaN RTD on Silicon Substrate designed for negligible Scattering and Polarization effects, By S. Chowdhury, A. Santara, D. Biswas, WOCSDICE 2013, Warnemünde, Germany, (2013)
29. Channel thermal noise modeling and high frequency noise parameters of tri-gate FinFETs, By Mukherjee, C., Maiti, C.K., SPIE Medical Imaging, San Diego, USA, (2014)
32. CRLH-TL Based Zeroth Order Resonance Antenna, By Ankit Kumar Ghosh, Mohit Kumar Joshi, and Akhilesh Mohan, 34th PIERS in Stockholm, SWEDEN, (2013)
34. Design and implementation of micro-machined cantilever structures for MEMS- based digital inverter and electron tunneling sensor ( Plenary talk), By T K Bhattacharyya, International symposium on Physics and Technology of sensors ( ISPTS), Pune, (2012)
35. Design of 1 Volt Band Gap reference without native MOS transisstor in 0.18 um CMOS technology, By P Arivazhagan and T K Bhattacharyya, Third International Conference on Computing Communication and Networking Technology (ICCCNT), , (2012)
40. Digital video broadcast services to hand held devices and a simplified DVB-H receiver subsystem, By Manas Kumar Hati, Tarun K Bhattacharyya, National Conference on Communication(NCC), (2012)
42. Dynamic Resource Allocation in SINR constrained cognitive radio network with imperfect channel states, By S. Maulik, A. De, A. Bhattacharya, R. Roy, 4th Nordic workshop on system and network optimization in wireless, Yllas, Lapland, Finland., (2013)
43. Effect of Multiples in Resolution with Linear Sampling Method, By E. Mallikarjun, Abhishek Roy and A. Bhattacharya, National Conference on Communications, (NCC), IIT Kanpur, India, (2014)
44. Effect of vertical and longitudinal electric field on 2DEG of AlGaN/GaN HEMT on silicon, By A. Bag, P. Mukhopadhyay, S. Kabi, D. Biswas, IWPSD 2013, Noida, India, (2013)
47. Growth and characterization of band gap engineered InGaAs/InAlAs/GaAs high electron-mobility quantum well structure towards low leakage VLSI applications, By U. P. Gomes, Y. Chen, Y.K. Yadav, S. Ghosh, S. Chowdhury, P. Mukhopadhyay, P. Chow and D.Biswas, CSMANTECH 2013, New Orleans, Louisiana, USA, (2013)
60. Low frequency noise in polycrystalline p-ß-FeSi2/Geheterojunction solar cells, By Bag, A., Mukherjee, C.,Mallik, S., Mali, C.K., IPFA, Singapore, (2013)
64. Noise-enhanced Contrast Stretching of Dark Images in SVD-DWT domain, By Rajlaxmi Chouhan, Rajib Kumar Jha, Prabir Kumar Biswas, IEEE India Conference (INDICON), Mumbai, India, (2013)
73. Shape Recognition based on Shape-Signature Identification and Condensibility: Application to Underwater Imagery, By Jeet Banerjee, Ranjit Ray, Sivarama Krishna Vadali, Ritwik Layek and Sankar Nath Shome, NCVPRI PG, Jodhpur, India, (2013)
75. Sparse Adaptive Filtering by Iterative Hard Thresholding, By Rajib Lochan Das and M. Chakraborty, APSIPA ASC 2013, Kaohsiung, Taiwan, (2013)
76. Spectral compatibility of BOC(5,2) modulation with existing GNSS signal, By S. B. Sekar, S. Sengupta, K. Bandyopadhyay, Position Navigation and Location Symposium (PLANs), Myrtle Beach, South Carolina, (2012)
77. Spurs Suppression in frequency Synthesizer using switched capacitor array, By Debashis Mandal, Pradip Mandal and T K Bhattacharyya, IEEE International SoC Design Conference, , (2012)
80. The Charge Trapping Effect in Amorphous SiliconNitride (Si3N4) Thin Film Based MIS Device, By Syed MukulikaDinara, Ankush Bag, Nripendra N. Halder, Sekhar Bhattacharya, P. Banerji and D. Biswas, Joint Physics Symposium(ISJPS-2013), IIT Kharagpur, (2013)
82. Thermal Aware Dont Care Filling to Reduce Peak Temperature and Thermal Variance during Testing, By Arpita Dutta, Subhadip Kundu, Santanu Chattopadhyay, Asian Test Symposium, Taiwan, (2013)
84. Unconventional growth of silver nano-particle assisted InP nano-wires on Si (100) by vapor-solid-solid process, By Nripendra N. Halder, Sisir Chowdhury, P. Banerji, Mainak Palit, S. Chottopadhyay and D. Biswas, 17th International Conference on Metalorganic Vapor Phase Epitaxy, Lausanne, Switzerland, (2014)
Department of Geology & Geophysics

Head
Prof. Debashish Sen Gupta

Professors
Bhattacharya, Abhijit  
Ph.D. (IIT Kharagpur),

Bhattacharya, Amit Kumar  
Ph.D. (IIT Kharagpur),

Bhowmik, Santanu Kumar  
Ph.D. (Jadavpur Univ), Metamorphic Petrology, Geochronology

Das, Subhasish  
Ph.D. (IIT Kharagpur), Sedimentology, Basin Tectonics

Gupta, Anil Kumar  
Ph.D. (IIT Kharagpur),

Gupta, Saibal  
Ph.D. (Cantab), Structural Geology, Metamorphic Petrology, Tectonics

Mamtani, Manish A  
Ph.D. (MSU, Baroda), Structural Geology, Microtectonics

Mishra, Biswajit  
Ph.D. (IIT Kharagpur), Ore Geology Experimental Sulfide Mineralogy

Mohanty, William Kumar  
Ph.D. (Delhi Univ.), Seismology, Seismic Hazard Assessment, Gravity & Magnetic Methods of Prospecting, Reservoir Characterization

Nath, Sankar Kumar  
Ph.D. (IIT Kharagpur), Earthquake and Engineering
Seismology, Seismic Hazard Vulnerability & Risk Assessment and Microzonation, Seismic Prospecting, Geophysical Signal Processing, Geophysical Tomography, Computational Geophysics, Sequence Stratigraphy, Hydrocarbon Exploration

Panigrahi, Mruganka Kumar  
Ph.D. (IIT Kharagpur), Economic Geology, Crustal Fluids, Computer Applications

Sarkar, Anindya  
Ph.D. (Gujrat Univ.), Stable Isotope Geochemistry, Sedimentology, Palaeoclimatology

Sen Gupta, Debashish  
Ph.D. (PRL, Ahmedabad), Resource Evaluation of Unconventional Hydrocarbons and Modeling for TENORM & NORM evaluation

Sharma, Shashi Prakash  
Ph.D. (BHU, Varanasi), Electrical and EM Geophysics, Integrated Geophysical Research, Modeling and Inversion, Groundwater Geophysics

Tripathy, Subhasish  
Ph.D. (IIT Bombay), Environmental Geochemistry, Waste Utilization

Associate Professors
Basu, Arindam  
Ph.D. (The Univ. of Hong Kong), Rock Mechanics, Engineering Geology

Ray, Sanghamitra  
Ph.D. (Calcutta Univ), Vertebrate paleobiology, Gondwana stratigraphy and sedimentation

Assistant Professors
Bera, Melinda Kumar  
Ph.D. (IIT Kharagpur), Sedimentology, Sequence Stratigraphy, Stable Isotope Geochemistry, Paleoclimate
Kumari, Sudha  
Ph.D., Application of electrical and electromagnetic methods to environmental problems, Modeling and Inversion, Helicopter-borne electromagnetics (for imaging shallow earth structures), Joint inversion of electrical and electromagnetic methods

Maiti, Sabyasachi  
Ph.D.(IIT Kharagpur), Remote Sensing, Geographic Information System, Quantitative Geomorphology

Mukherjee, Abhijit  
Ph.D.(Univ. of Kentucky, USA), Surface water-sea water-groundwater interaction, Mine-site hydrology, Physical Chemical and Isotope Hydrogeology, Contaminant Fate and Transport, Environmental Geochemistry, Effect of Climate Change, Modeling (groundwater flow and transport geochemical hydrostratigraphy and geosystems)

Pruseth, Kamal Lochan  
Ph.D.(IIT Kharagpur), Sulfide Phase Equilibria, Experimental Petrology, Ore Geology

Sengupta, Probal  
Ph.D.(IIT Kharagpur), Seismology, Geoexploration, Seismic prospecting, Near surface geophysics

Singh, Arun  
Ph.D.(NGRI), Seismic anisotropy: Mantle deformation Patterns, Lithospheric Structure and geodynamics, Teleseismic tomography

Singh, Chandrani  
Ph.D.(NGRI), Reservoir Triggered Seismicity, Attenuation characteristics of seismic waves, Seismotectonics

Upadhyay, Dewashish  
Ph.D.(Univ. of Bonn, Germany), Geochemistry, Igneous Petrology, Cosmochemistry

Faculty Appointments

Sudha  Assistant Professor
Dr. Melinda Bera  Assistant Professor
Dr. Sabyasach Maiti  Assistant Professor
Dr. Ravikant Vadlamani  Associate Professor

Brief Description of on-going activities

Tectonic evolution of craton – mobile belt ensembles in parts of the Indian shield; Gold mineralization in greenstone belts of Dharwar Craton; Metamorphic remobilization of massive sulphide deposits; Studies on Indian microvertebrates, Lithospheric structure across Himalaya, Deformation at Collisional boundaries, Stable isotopes in Himalayan foreland sediments; Paleogene climate of Kutch, Rajasthan, Environment in ancient sedimentary basins in India; Seismic Hazard assessment and microzonation in the NE India and metropolitan cities, Improvement of rock index test methods and mechanical characterization of rock materials, Groundwater potential assessment and pollution by natural and anthropogenic causes; Waste utilizations, wasteland development and acid marine drainage; Natural radiation hazard estimation. Studies on Indian monsoon (both modern and ancient) and paleoclimate studies of the Indian subcontinent and paleoceanography of the Indian Ocean.

Thrust Areas

1. Seismology
2. Paleoclimatology (Paleontology, Geochemistry)
3. Crustal Evolution and Metallogeny
4. Environmental Hazards and Mitigation

**New Acquisitions**

1. Two Stable Isotope Ratio Mass Spectrometers (IRMS) from the Institute Diamond Jubilee Fund. The Thermo-Finnigan MAT-253 equipped with dual inlet port and eight collectors are capable of measuring carbon isotopes. In addition the Laser Fluorination system would enhance the capability of the instrument for measuring oxygen isotopic composition in silicates. The newly supplied conFlo IV attached with the Delta V can be used for measuring C, H, N, O, S isotopic composition in solid and liquid samples.
2. State of Art MC-ICPMS Laboratory
3. Ground Penetration Radar System (GSSI SIR-3000) with multi-low frequency (16-80 MHz) and 2000 MHz Bistatic antennas for geo-exploration.
4. Low level Portable Gamma NaI(Tl) based gamma ray scintillation equipment.

**International Collaborations**

NASA, Caltech and University of California-Irvine: Satellite-based ground water estimation of India subcontinent

Royal Institute of Technology (KTH), Sweden: Global ground water Arsenic


**Lectures by Visiting Experts**

1. Application of multifractals in Structural Geology by Prof. Alison Ord (University of Western Australia)
2. Critical mineralising plumbing systems by Prof. Alison Ord (University of Western Australia)
3. Origin of platinum group of element mineralization in Ural-Alaskan type mafic-ultramafic complexes, southeastern Alaska by Dr. Joyashish Thakurta (Department of Geosciences, Western Michigan University, USA)
4. Gravimetry-advances and perspectives for geodetic reference frames and earth system monitoring by Prof. Jakob Flury (Leibniz Universitat Hannover, Germany)
5. Volatiles in magma-from laboratory studies towards understanding of volcanic eruptions by Prof. Harald Behrens (Leibniz Universitat Hannover, Germany)
6. Environmental Service: Need for more Near Surface Geoscience by Prof. R.N. Singh (Emeritus Professor, National Geophysical Research Institute, Hyderabad)
7. Mars for earthlings: Using earth analogs to decode the sedimentary history of Mars by Prof. Marjorie Chan (Department of Geology & Geophysics, University of Utah, USA)

**Doctoral and MS Degrees Awarded**

1. Suraji Misra : Structural analysis of the Rengali Province and implications for tectonic evolution of the eastern Indian shield(Ph.D.)
2. Prabhakar Narega : Archean and Neoprirotorozoic sturcture, metamorphic phase equilibria and monazite geochronology in and across the Sighbhum Craton, Eastern India(Ph.D.)
3. S. Rekha : Tectonics of paleoprirotorozoic to mesoarchean crystalline rocks along the western (Konkan) coast, India: relevance to Gondwana Land and Columbia aupercontinent(Ph.D.)
4. Deshraj Trivedi : Estimation of effective elastic thickness in Indian Shield and southwest Indian Ocean Ridge(Ph.D.)
5. Animesh Mandal : Integrated geophysical studies for delineation of subsurface structures and mineral deposits in the eastern Indian shield(Ph.D.)
6. Saurabh Mittal : Very low frequency electromagnetic and radiometric studies around south Purulia shear zone for the investigation of possible uranium minerals(Ph.D.)
7. Samita Biswal : Radiogenic heat production, geochemistry and fluid inclusion studies on granulites around Angul, Eastern Ghat Belt, India(Ph.D.)
8. Arindam Dutta : Tectonic evolution of the Bastar Craton-Eastern ghats mobile belt-Rengali province tr-junction, India(Ph.D.)
9. Arkoprovo Biswas : Identification and resolution of ambiguities in interpretation of self-potential data: analysis and integrated studies around south Purulia shear zone, India
10. Deepak Amban Mishra : Evaluation of the uniaxial compressive and indirect tensile strengths of granite, schist and sandstone by index tests and microstructural analysis(Ph.D.)

Member - Professional Bodies

2. Sarkar, Anindya, *Member* - Research Advisory Council, Birbal Sahni Institute, Lucknow, 2008-09
3. Sarkar, Anindya, *Member* - Search and selection committee, Presidency University, 2011-12
4. Sarkar, Anindya, - Member, PAMC, Ocean Science and Resources, MOES, 2012
5. Sarkar, Anindya, *Member* - International Geological Correlation Program (IGCP) Project
7. Sarkar, Anindya, *Member* - Indian Society of Mass Spectrometry
8. Mohanty, William Kumar, *Life Member o* - Society of Petroleum Geophysicists
9. Ray, Sanghamitra, *Member* - Society of Vertebrate Paleontology, USA
10. Ray, Sanghamitra, *Member* - The Palaeontological Association, UK
11. Basu, Arindam, *Member* - International Society for Rock Mechanics (through the National Group of India)
13. Upadhyay, Dewashish, *Life member* - Geological Society of India
14. Upadhyay, Dewashish, *Member* - European Association of Geochemistry
15. Pruseth, Kamal Lochan, *Member* - European Association of Geochemistry
16. Mukherjee, Abhijit, - Geological Society of America
17. Mukherjee, Abhijit, - International Association of Hydrogeologists
18. Mukherjee, Abhijit, *Life Member* - Indian Science Congress Association
19. Maiti, Sabyasachi, *Member* - Indian Society of Geomatics
20. Mishra, Biswajit, *Life Fellow* - Geological Society of India
22. Nath, Sankar Kumar, *Senior Life Fellow* - Life Fellow (No.236): The Geological, Mining and Metallurgical Society of India (GMMSI)
24. Nath, Sankar Kumar, *Regular Member* - Member Registration No. 8810 : The Mining Geological & Metallurgical Institute of India (MGMI)
26. Nath, Sankar Kumar, *Senior Member* - Member (No. 16472): The Seismological Society of America (SSA).
27. Nath, Sankar Kumar, *Senior Life Member* - Life Member (L/141): The Indian Society of Theoretical and Applied Mechanics
28. Das, Subhasish, *Life Member* - Indian Association of Sedimentologists, Aligarh
29. Das, Subhasish, *Member* - Wadia Institute of Himalayan Geology, Dehradun
30. Das, Subhasish, *Member* - Research Board of Advisors, American Biographical Institute, USA
31. Panigrahi, Mruganka Kumar, *Member* - Society for Geology Applied to Mineral Deposits
32. Panigrahi, Mruganka Kumar, *Member* - Society of Resource Geology
33. Panigrahi, Mruganka Kumar, *Member* - Association of Applied Geochemists
35. Sharma, Shashi Prakash, *Regular* - Association of Exploration Geophysicist, Hyderabad, India

**Member - Editorial Board**

5. Gupta, Saibal (0) *Member, Editorial Board* - Indian Journal of Geology
6. Gupta, Saibal (0) *Member, Editorial Board* - Himalayan Geology
11. Mukherjee, Abhijit (2011) *Guest Editor* - Applied Geochemistry
12. Mukherjee, Abhijit (2011) *Associate Editor* - Applied Geochemistry
13. Mukherjee, Abhijit (2013) *Associate Editor* - Frontiers in Environmental Sciences: Groundwater Resources and Management

**Awards & Honours**

2. Basu, Arindam (2013) "GSI Sesquicentennial Commemorative Award for the year 2013 in the field of Engineering Geology"

**Sponsored Research Projects**

1. Anatomy of the Himalayan orogeny using direct S waves (ISIRD, Rs.4.50 Lakhs)
2. Application of artificial intelligence in groundwater storage of Indian Subcontinent (MHRD, Rs.33.00 Lakhs)
3. Architectural-Archeological-Iconographic & Epigraphic exploration of Lalitagiri-Vajragiri-Pushpagiri, Odisha (MHRD, Rs.70.00 Lakhs)
4. Architectural-archeological-iconographic and epigraphic exploration of Chandraketugarh (MHRD, Rs.70.00 Lakhs)
5. Characterization of Seismicity in the Kumaun Himalaya for Hazard Assessment (MOES(Ministry of Earth Sciences Govt. of India), Rs.0.00 Lakhs)
6. Characterization of Seismicity in the Kumaun Himalaya for Hazard Assessment (MOES(Ministry of Earth Sciences Govt. of India), Rs.7.00 Lakhs)
7. Crust formation and terrane amalgamation in eastern India—constraints from enclaves in the Chhotanagpur Gneissic Complex (Indian Institute of Technology, Kharagpur, Rs.5.00 Lakhs)
8. Crustal seismic attenuation characteristics in Nepal Himalaya and southern Tibet from Lg Q inversion (ISIRD, Rs.4.00 Lakhs)
9. Deciphering the history of hydrothermal activity and controls on uranium mineralization at Koppunuru: constraints from mineral chemistry, stable isoto (BRNS, Rs.29.83 Lakhs)
10. Delineating physico-chemical dynamics of discharging groundwater to sea in coastal areas of the Bay of Bengal (Ministry of Earth Sciences, Rs.76.00 Lakhs)
11. Establishment of Electron Probe Micro Analyzer (EPMA) National Facility IIT, Kharagpur (DST, Rs.573.18 Lakhs)
12. Evaluating the potential of Malani Igneous Suite rocks, Rajasthan for Uranium mineralization using petrological and geochemical proxies (BRNS, Rs.35.00 Lakhs)
13. Geo-quest of Chandraketugarh (MHRD, Rs.105.00 Lakhs)
14. Geo-quest of Chandraketugarh (MHRD, Rs.105.00 Lakhs)
15. Geo-quest of Lalitgiri-Pushpagiri (Vajragiri (MHRD, Rs.105.00 Lakhs)
16. Geo-quest of Lalitgiri-Pushpagiri (Vajragiri), Odisha (MHRD, Rs.105.00 Lakhs)
17. Geo-quest of Varanasi (MHRD, Rs.250.00 Lakhs)
18. Geo-quest of Varanasi (MHRD, Rs.250.00 Lakhs)
19. Geomicrobiology of the deep subsurface in Koyana-Warna region: Diversity, distribution and function of microbial communities within granitic-basaltic (Ministry of Earth Sciences, Rs.25.00 Lakhs)
20. Geophysical Survey using Gravity and Magnetic methods in South Purulia Shear Zone (BRNS, Department of Atomic Energy, Rs.19.63 Lakhs)
21. Groundwater-Sea water interaction at a coastal aquifer adjoining the Bay of Bengal: implications on flux and solute exchange (ISIRD, SRIC IIT Kharagpur, Rs.5.00 Lakhs)
22. Historical Evidence, Myth and Geophysical Modeling to Assess the Tectonic Movement and Risks Associated with the Odisha Coastal ‘Heritage’ Belt (Ministry of Human Resource Development, Government of India, Rs.0.00 Lakhs)
23. Indian Geoid low: A feasibility study (MOES(Ministry of Earth Sciences Govt. of India), Rs.22.80 Lakhs)
25. Investigation of the basement structure of the Bengal Basin using Gravity and Seismic data (ISIRD IIT Kharagpur, Rs.3.00 Lakhs)
26. Isostatic coherence anisotropy using wavelet method (ISIRD, Rs.3.00 Lakhs)
27. Isotopes of water in India (2008-2013; on-going) (DST, Rs.12.00 Lakhs)
28. Microzonation and Evaluation of Vulnerability and Socio-Economic Impacts for the City of Kolkata including Greater Kolkata (MOES, Rs.432.71 Lakhs)
29. Mineral prospecting along SPSZ using field and satellite hyperspectral imaging (ISIRD submitted), Rs.27.00 Lakhs)
30. National stable Isotope facility project at IIT, Kharagpur, sponsored by DST (outlay ~Rs. 200 lacs, 2004-2010; on-going). (DST, Rs.230.00 Lakhs)
31. Near Surface Geophysical and Geotechnical Investigation for Site-specific Seismic Hazard and Slope Stability studies in Gangtok (New Project revised)) (Ministry of Earth Sciences, Govt. of India, Rs.66.00 Lakhs)
32. Predicting crack initiation stress by porosity and evaluating microstructural control on crack initiation: a study on granite (DST, New Delhi (Research Completed), Rs.0.00 Lakhs)
33. Quantitative assessment of weathering grades of rock materials (ISIRD, IIT Kharagpur (Completed), Rs.0.00 Lakhs)
34. Reservoir Characterization using Artificial Intelligent Techniques (Soft Computing) (Oil & Natural Gas Corporation Ltd. (ONGC), Dehradun, Rs.45.72 Lakhs)
35. Rock strength investigations of the metabasalts of Gadag region – implications for vein emplacement and mineralization (DST, New Delhi, Rs.21.00 Lakhs)
36. SANDHI, Science -Technology & Culture - Heritage Interface (MHRD, DEPARTMENT OF HIGHER EDUCATION, NEW DELHI, Rs.2150.00 Lakhs)
37. Seismic Hazard and Risk Assessment of Darjeeling-Sikkim Himalaya (Just completed) (Ministry of Earth Sciences, Govt. of India, Rs.40.00 Lakhs)
38. Seismic Hazard Assessment, Microzonation, and Evaluation of Vulnerability & Risk of the Urban Kolkata (Ongoing) (Ministry of Earth Sciences, Govt. of India, Rs.432.71 Lakhs)
39. Seismic Vulnerability Assessment of Building types in India. (Ongoing) (NDMA, Ministry of Home Affairs, Govt. of India, Rs.25.20 Lakhs)
40. Seismicity monitoring, Maintenance of the Existing 16 Station Sikkim Strong Motion Array and Probabilistic Seismic Hazard Assessment of Darjeeling-Si (MOES, Rs.62.50 Lakhs)
41. Strong Motion Seismometry, Probabilistic Seismic Hazard, Vulnerability and Risk Microzonation of Darjeeling-Sikkim Himalaya (New Project to commence) (MoES, Rs.75.00 Lakhs)
42. Structural, mineralogical and geochemical appraisals of the Pur-Banera basin, Rajasthan for assessing its uranium potential (BRNS, Rs.34.10 Lakhs)
43. Testing models for mountain building in the northeastern Himalaya (Royal Society, Rs.0.00 Lakhs)
44. The exhumation factor in the genesis of inverted metamorphic sequences – an evaluation from structure, metamorphism, fluid inclusions and earthquake (DST, Rs.14.22 Lakhs)
45. The Indian Continental Shelf as a potential source of Phosphate (Ministry of Earth Sciences, Rs.93.00 Lakhs)
46. The relationship between anisotropy of magnetic susceptibility, strength anisotropy and microstructure in rocks devoid of mesoscopic foliations (DST, New Delhi (Completed), Rs.21.02 Lakhs)
47. The Thermal Evolution of Peninsula India: Past behaviors and Future Potential. (Australia – India Strategic Research Fund (AISRF) and Department of Science and Technology (DST), Rs.13.59 Lakhs)
48. Thermal History of the Inverted Metamorphic Sequence from the Northwestern Arunachal Pradesh: Constraints from Microstructure, Thermobarometry and P-T (CSIR, Rs.18.72 Lakhs)
49. Understanding the extent and natural/anthropogenic controls on groundwater recharge in water scarce areas of western districts of West Bengal (Govt. of West Bengal, PHED, Rs.28.32 Lakhs)
50. Urban-design, planning and urban engineering exploration of Varanasi (MHRD, Rs.150.00 Lakhs)
51. Vertebrate microfossils from the Tiki Formation of the Rewa Gondwana basin: an integrated study on Upper Triassic biodiversity (SERB, DST India, Rs.20.00 Lakhs)

Consultancy Projects

1. GEOPHYSICAL AND HYDROGEOLOGICAL STUDY AT PROPOSED PROJECT SITE AT DURMUT, BLOCK : RAGHUNATHPUR-I, PURULIA. (Reliance Industries, Rs.18.25 Lakhs)
2. Geophysical and Hydrogeological study at Proposed Site at Durmut Block: Raghunathpur-I, Purulia (Reliance Cement Ltd, Rs.18.25 Lakhs)
3. Ground Vibration study on Inganijharan Iron and Manganese Mines in District Keonjhar, Orissa (Bhanja Minerals Pvt. Ltd., Rs.2.48 Lakhs)
4. Groundwater investigation aroun Hijli railway station (Private firm, Rs.1.50 Lakhs)
5. Hydrogeological Studies at Bangur Chromite Mines of OMC Ltd. (PI), Orissa Mining Corporation Ltd. (Orissa Mining Corporation Ltd., Rs.11.53 Lakhs)
6. HYDROLOGICAL STUDIES AT BANGUR CHROMITE MINES (Govt of Orissa, Rs.11.30 Lakhs)
7. Integrated Beach Front Development, Digha-Shankarpur (IWIN Advisory Services Ltd, Rs.3.60 Lakhs)
8. Integrated geological and geophysical study around Tangarapada area, Orissa (The Industrial Development Corporation of Orissa Ltd. (IDCOL) Government of Orissa, Rs.10.68 Lakhs)
9. LA-ICPMS Analytical facility (Various users, Rs.3.00 Lakhs)
10. LA-ICPMS Analytical Facility (Various users, Rs.3.00 Lakhs)
11. Probabilistic Assessment of Tsunamigenic Earthquake Originating from Burmese-Andaman Arc System (BAAS) and West Sunda Arc (WSA) (Nuclear Power Corporation of India, Limited, Government of India, Rs.0.00 Lakhs)
12. Probabilistic seismic hazard analysis for Kakarapara Atomic Power Plant (KAPS-1,2) (Nuclear Power Corporation of India Limited, Government of India, Rs.10.75 Lakhs)
13. Seismic Hazard Analysis (SHA) and preparation of seismic hazard curves (SHC) for smelter and CPP area of Aditya Aluminium at Lapanga, Sambalpur, Orissa (Aditya Aluminium, Rs.4.30 Lakhs)
14. Site Specific seismic hazard study of west Sikkim region for the Rangit II Hydro-Electric project (M/S Gammon India Limited, Mumbai, India, Rs.4.16 Lakhs)

Visits Abroad by Faculty Members

1. Nath, Sankar Kumar - International Workshop for Regional Cooperation in Seismology and Earthquake Engineering in Asia (Kathmandu, Nepal) 15-20, Sept., 2013
2. Mamanti, Manish A - Oral Presentation:19th International Conference on Deformation Mechanisms, Rheology & Tectonics(DRT) (Leuven, Belgium) 16-18 September 2013
3. Bhowmik, Santanu Kumar - To attend Goldschmidt Conference, 2013 (Florence, Italy) 22-30 August, 2013
4. Mohanty, William Kumar - Collaborative Research (Lettis Consultants International Inc. California, USA) July 7 to July 14, 2013
5. Upadhyay, Dewashish - Collaborative research (University of Muenster) May-June 2013

Invited Lectures by Faculty Members

1. Evolution of the Indian Lithosphere and the Appearance and Diversification of Life by Bhowmik, Santanu Kumar (Department of Geology, Jadavpur University, Kolkata)
2. Metamorphic Phase Relations in a Partially Hydrated Metanorite as Monitors for Multiple Thermal Pulses by Bhowmik, Santanu Kumar (University of Florence, Italy)
3. Multi-criteria Decision making for mineral prospecting: with special reference to SPSZ by Maiti, Sabyasachi (Brainstorming session for 36th IGC, Kolkata)
4. by Sen Gupta, Debashish (National Institute of Technology, Durgapur, West Bengal)
5. Developments in VLF electromagnetics by Sharma, Shashi Prakash (NGRI Hyderabad)
6. Early basin tectonic style, mechanism and conversion histories during the Archean and Proterozoic... by Das, Subhasish (Fergusson College, Pune)
7. Crustal deformation in stable Continental Regions by Nath, Sankar Kumar (2nd Indo-Norwegian Workshop on Geohazards organized by the Ministry of Earth Sciences, Govt. of India at Prithvi Bhawan, Lodhi Road, New Delhi)
8. Time Dependent and Time Independent Probabilistic Seismic Hazard of Northeast India with emphasis on by Nath, Sankar Kumar (2nd Indo-Norwegian Workshop on Geohazards organized by the Ministry of Earth Sciences, Govt. of India at Prithvi Bhawan, Lodhi Road, New Delhi.)
9. Seismic Microzonation: Principles, Potocol on Indian Scenario by Nath, Sankar Kumar (Institute of Seismological Research after the 3rd Annual Convention on “Advances in Earthquake Science” followed by the Workshop on “Seismic Microzonation” held at the Institute of Seismological Research in collaboration with GSDMA, GIDM and DST)
10. Recent Earthquakes in South & Central Asia with special emphasis to Seismic Scenario in India by Nath, Sankar Kumar (Recent Earthquake Session of the “International Workshop for Regional Cooperation in Seismology and Earthquake Engineering in South and Central Asia—II held at Club Himalaya, Nagarkot, Kathmandu, Nepal, on invitation from UNESCO, USGS, NSET)

11. Seismic Microzonation towards Earthquake Disaster Mitigation by Nath, Sankar Kumar (National Platform for Disaster Risk Reduction (NPDRR) organized by the Ministry of Home Affairs, Govt. of India, at Vigyan Bhawan, New Delhi.)

Papers Published in Journals

1. 3-D Mohr circle construction using vein orientation data from Gadag (southern India) – implications to recognize fluid pressure fluctuation By Mondal, T.K., and Mamtani, M.A. Journal of Structural Geology 56, 45-56 (2013)

2. 3D compact inverse modeling of gravity data for chromite exploration A case study from Tangarpahra, Odisha, India By Animesh Mandal, William K. Mohanty, S. P. Sharma SEG Technical Program Expanded Abstracts 32, 1171-1174 (2013)


15. Earthquake Scenario in West Bengal with emphasis on Seismic Hazard, Vulnerability & Risk Microzonation of Kolkata City, West Bengal, India By Nath, S. K., Adhikari, M. D., Maiti, S. K., Devaraj, N., Srivastava, N.and Mohapatra, L. D. Natural Hazards and Earth System Sciences Revised (2014)


Papers Presented in Conferences

1. 3D bathymetric mapping using Indian remote sensing data: a case study from Sundarban delta, West Bengal, By Manas K Das, S.Das and D.J.Sen, International Seminar on Geosciences for Mineral Development and Environment, Utkal University,Bhubaneswar,Orissa, (2014)


3. AMS, vein orientation, and 3-D Mohr circle analyses from Gadag (southern India) – recognizing fluid pressure fluctuation and its significance in Gold mineralization., By Mamtani, M.A. and Mondal, T.K., 19th Deformation Mechanisms, Rheology and Tectonics (DRT), Leuven, Belgium, (2013)


9. Cross-section of the reaction $^{34}\text{Se}_{74}(n,2n)^{34}\text{Se}_{73m}$ through activation analysis by 14 Mev neutrons, By R. Mamdal, V.N. Bhoraskar and D. Sengupta, National Workshop on Radiation, Ranchi, Jharkhand, (2013)

10. Determination of fluid pressure conditions from vein orientation data in metabasalt and metasedimentary rocks of Gadag region (southern India) – a study based on 3-D Mohr circle construction., By Mondal, T.K., and Mamtani, M.A., National Seminar on Recent Advances in Earth Sciences, Sambalpur University, (2014)


21. Integrated geophysical survey for the delineation of subsurface structure associated with uranium mineralization, South Purulia Shear Zone, India, By Arkoprovo Biswas, Animesh Mandal, and S.P. Sharma, Indian Geophysical Union, Hyderabad, (2014)
34. Seismic Hazard, Vulnerability & Risk Assessment of Darjeeling-Sikkim Himalaya, By Nath, S. K., Indo-Taiwan Workshop, New Delhi, (2013)
Department of Humanities & Social Sciences

**Head**
Prof. Vijai Nath Giri

**Professors**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualification</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basu, Partha</td>
<td>Ph.D. (Calcutta Univ)</td>
<td>Quantitative Economics with special ref. to Efficiency and Growth</td>
</tr>
<tr>
<td>Chakraborti, Chhanda</td>
<td>Ph.D. (Univ of Utah)</td>
<td>Business ethics, Philosophy of Mind, Logic and Philosophy of logic</td>
</tr>
<tr>
<td>Chatterjee, Suhita Chopra</td>
<td>Ph.D. (Bombay)</td>
<td>Sociology of Health /Medical Sociology</td>
</tr>
<tr>
<td>Chatterjee, Bani</td>
<td>Ph.D. (BHU, Varanasi)</td>
<td>Development Planning, Manpower Management, International Finance</td>
</tr>
<tr>
<td>Giri, Vijai Nath</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td>Conflict Resolution and Negotiation, Organizational Communication, Intercultural Communication, Interpersonal Communication</td>
</tr>
<tr>
<td>Nayak, Narayan Chandra</td>
<td>Ph.D. (Utkal Univ)</td>
<td>Development and Macro Economics</td>
</tr>
<tr>
<td>Patnaik, Priyadarshī</td>
<td>Ph.D. (Utkal Univ)</td>
<td>Indian aesthetics, Visual Culture and Communication, Cultural Translation theory and practice, Media and Multimedia Studies, Emotions and nonverbal communication</td>
</tr>
<tr>
<td>Roy, Anjali</td>
<td>Ph.D. (Bombay)</td>
<td>Postmodern and Post-colonial literature and Theory, Cultural Studies, Diaspora Studies, Partition and Punjab Studies</td>
</tr>
<tr>
<td>Suar, Damodar</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td>Social and organizational psychology, Neuropsychology</td>
</tr>
<tr>
<td>Tewari, Hare Ram</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td></td>
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**Associate Professors**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualification</th>
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<tbody>
<tr>
<td>Behera, Bhagirath</td>
<td>Ph.D. (Univ. of Bonn, Germany)</td>
<td>Human Transformation and Well-Being, Environmental and Natural Resource Economics, Development Economics, New Institutional Economics, Economics of Religion, Green Economics</td>
</tr>
<tr>
<td>Chakraborty, Jayshree</td>
<td>Ph.D. (IIT Kanpur)</td>
<td>Semantics and Pragmatics, Discourse Analysis, Sociolinguistics, Indian English, Communication</td>
</tr>
<tr>
<td>Das, Saswat Samay</td>
<td>Ph.D. (Utkal Univ.)</td>
<td>Postmodern/postcolonial studies Critical theory Continental Philosophy, Culture Studies</td>
</tr>
<tr>
<td>Goswami, Kishor</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td>Development Economics (Globalization - Gender and Trade - Poverty - Food Security), Agricultural Economics, Economics of Biofuels</td>
</tr>
<tr>
<td>Husain, Zakir</td>
<td>Ph.D. (Univ. of Calcutta)</td>
<td>Health Economics, Education, Ageing, Gender studies</td>
</tr>
</tbody>
</table>

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Komalesha, H. S.  
Ph.D. (IIT Kharagpur), Translation Studies, Indian Literatures in English, Poetry, Postcolonial Literatures, Cultural Studies

Mahakud, Jitendra  

Mishra, Pulak  
Ph.D (Vidyasagar University), Industrial Economics, Public Economics and Policy, Economics of Rural Development

Pradhan, Rabindra Kumar  

Singh, Seema  
Ph.D. (BHU), English Language Teaching, Managerial Communication Styles, Communication Skills, Feminist Narratology, Indian Women Writing in English, Subaltern Writing

**Assistant Professors**

Aditya, Anwesha  
Ph.D. (Jadavpur Univ., Kolkata), Development Economics, International Trade

Chattopadhyay, Siddhartha  
Ph.D. (Univ. at Albany, SUNY), Econometrics, Macroeconomics, Dynamic Programing

Hiremath, Gourishankar S.  

Sahoo, Bimal Kishore  

**Faculty Appointments**

Dr. Anwesha Aditya  
Assistant Professor

Dr. Siddhartha  
Assistant Professor

Chattopadhyay  
Assistant Professor

Dr. Gourishankar S. Hiremath  
Assistant Professor

Dr. Zakir Husain  
Associate Professor

Dr. Bimal Kishore Sahoo  
Assistant Professor

Mr. B. N. Sarangi  
Adjunct Professor

**Faculty Re-employment**

Hare Ram Tewari  
Professor
Brief Description of on-going activities

Research and Development on:


Thrust Areas

1. Development studies
2. Human resource management and ethics
3. Cultural and communication studies

Lectures by Visiting Experts

1. Performance Appraisal and Compensation Management by Dr. Dewakar Goel (Director (HR), Airport Authority of India (AAI))
2. Indian Capitalists and Planned Economic Development by Prof. Raghavendra Chattopadhyay (Indian Institute of Management, Kolkata)
3. Guest lecture on HR by Mr. Sujitesh Das (Head HR, Microland Ltd., Bangalore)
4. Guest lecture on HR by Ms. Neha Gupta (Manager (HR), Nomura Services India Pvt. Ltd. Mumbai)
5. Guest lecture on HR by Mr. Arijit Pal Choudhury (Executive Director (HR), Nomura Services India Pvt. Ltd., Mumbai)
6. Guest lecture on English by Prof. Subhendu Mund (IIT Bhubaneswar)
7. Guest lecture on HR by Mr. Manish Gour (Director (HR), Alstom Projects India Limited, Noida)
8. Guest lecture on Economics by Prof. Rajat Acharaya (Jadavpur University)
9. Guest lecture on Psychology by Prof. G. Misra (University of Delhi)

Doctoral and MS Degrees Awarded

1. Deepti Sahoo : Structure, Conduct and Performance Relationships in Indian Banking Sector(Ph. D.)
2. Babita Mahapatra : Impact of Displacement on Women(Ph. D.)
3. Sharmita Dhar : Trends and Determinants of Transition Rate of Education in India(Ph. D.)
4. Papri Nath : Dynamics of Positive Affect: Examining the Immediate and Long Term Functions(Ph. D.)
5. Papiya Chakraborty : Institutionalizing Participation for Sustainable Watershed Management(Ph. D.)
7. Sharmistha De : Interrogating Borders and Re-placing the Displaced: Narratives of East Bengal Partition Refugees in Talbagicha(Ph. D.)
9. Madhu Malti Srivastava : Socio-Economic Life and Health Practices of the Lodha People(Ph. D.)
10. Debabrata Samanta : People’s Participation and Public Service Delivery in East Midnapore District of West Bengal(Ph. D.)
11. Vishnu Kant Rajesh : Impact of Human Resource Development Climate on Workers’ Attitudes and Behaviours in Indian Automotive Industries(Ph. D.)
12. Amar Kumar Mohanty : Impact of Infrastructure of Human Development in Odisha: A District Level Study(Ph. D.)

**Member - Professional Bodies**

1. Nayak, Narayan Chandra, *Life Member* - Regional Science Association, India
2. Nayak, Narayan Chandra, *Life Member* - Indian Economic Association
3. Nayak, Narayan Chandra, *Life Member* - The Indian Econometric Society
6. Singh, Seema, *Member* - Association for Business Communication (ABC), NY, USA
7. Singh, Seema, *Member* - Multi - Ethnic Literatures of the World, MELOW – India
8. Singh, Seema, *Life Member* - Indian Association for English Studies (IAES)
9. Singh, Seema, *Member* - International Association for the Teachers of English as a Foreign Language (IATEFL), University of Kent, UK
10. Singh, Seema, *Life Member* - All India English Teachers’ Conference (AIETC)
11. Singh, Seema, *Member* - English Language Teachers Association of India (ELTAI), Chennai
12. Singh, Seema, *Life Member* - Vidyasagar University English Teachers’ Consortium (VUETC), Midnapore
13. Singh, Seema, *Member* - Indian Society for Technical Education (ISTE), New Delhi
14. Singh, Seema, *Member* - University Grants Commission (UGC), New Delhi
15. Singh, Seema, *Member* - International Association of Business Communicators (IABC), San Francisco, California, USA
16. Singh, Seema, *Member* - Indian Association for Commonwealth Literature and Language Studies (IACLALS), New Delhi
17. Singh, Seema, *Life Member* - Indo - American Center for International Studies (IACIS), Hyderabad, formerly the American Studies Research Center (ASRC)
18. Singh, Seema, *Member* - Multi - Ethnic Literatures of the US, MELUS – India
21. Goswami, Kishor, *Regular* - International Society on Multiple Criteria Decision Making (MCDM), USA
22. Goswami, Kishor, *Life Member* - Agricultural Economics Research Association, New Delhi, India
23. Goswami, Kishor, *Life Member* - Indian Red Cross Society, India
24. Goswami, Kishor, *Life Member* - Circle for Child and Youth Research Cooperation in India – CCYRCI, Lucknow, India
25. Komalesha, H. S., *Member* - American Literary Translators Association
26. Komalesha, H. S., *Member* - ASLE-India
27. Komalesha, H. S., *Life Member* - Centre for Contemporary Theory
29. Mishra, Pulak, *Life Member* - Indian Political Economy Association
30. Chakraborty, Jayshree, *Life Member* - Dravidian Linguistics Association
31. Chakraborty, Jayshree, *Life Member* - Linguistic Society of India
32. Pradhan, Rabindra Kumar, *Life Membership* - Indian Academy of Applied Psychology
33. Pradhan, Rabindra Kumar, *Annual* - International Association of Cross-Cultural Psychology
34. Pradhan, Rabindra Kumar, *Annual* - International Association of Applied Psychology
35. Pradhan, Rabindra Kumar, *Life Membership* - INDIAN Society for Training and Development
36. Pradhan, Rabindra Kumar, *Life Member* - National HRD Network
37. Pradhan, Rabindra Kumar, *Annual* - International Association of Cross-Cultural Psychology
38. Pradhan, Rabindra Kumar, *Annual* - International Association of Applied Psychology
39. Pradhan, Rabindra Kumar, *Life Membership* - INDIAN Society for Training and Development
40. Pradhan, Rabindra Kumar, *Life Member* - National HRD Network
41. Hiremath, Gourishankar S., *Indian Political Economy Association*
42. Hiremath, Gourishankar S., *The Indian Economic Association*
43. Hiremath, Gourishankar S., *The Indian Econometric Society*
44. Husain, Zakir, *Member* - Asian Population Association
45. Husain, Zakir, *Life* - Indian Ecological Society
46. Husain, Zakir, *Member* - European Population Association
47. Husain, Zakir, *Member* - International Union for the Scientific Study of Population
48. Husain, Zakir, *Life Member* - The Indian Econometric Society
49. Giri, Vijai Nath, *Member* - National Academy of Psychology (NAOP) India
50. Giri, Vijai Nath, *Member* - International Communication Association, USA
51. Roy, Anjali, *Senior Member* - Indian Association for Commonwealth Literature and Language
52. Roy, Anjali, *President* - Association for the Study of Australasia in Asia
53. Suar, Damodar, *Member* - Association for Psychological Sciences
54. Suar, Damodar, *Life Member* - National Academy of Psychology
55. Suar, Damodar, *Member* - Indian Society of Training and Development
56. Suar, Damodar, *Life Member* - The Indian Science Congress Association
57. Suar, Damodar, *Member* - Asian Association of Social Psychology
59. Srivastava, Kailash Bihari Lal, *Member of the Executive Committee* - Academy of International Business, India Chapter
60. Srivastava, Kailash Bihari Lal, *Member* - Indian Academy of Management
61. Patnaik, Priyadarshi, *Regular* - Word and Music Association
63. Chakraborti, Chhanda, *Nominated Program Advisor 2010-2011* - International Program Committee, 14th Congress of Logic, Methodology and Philosophy of Science (LMPS)
64. Chakraborti, Chhanda, *Member* - Forum of Medical Ethics Society
65. Chakraborti, Chhanda, *Member* - American Philosophical Association (APA)
66. Chakraborti, Chhanda, *Member 2010-till date* - International Association of Bioethics
67. Chakraborti, Chhanda, *Senior member 2000-till date* - Indian Philosophical Congress
68. Basu, Partha, *Life Member* - Indian Academy of Social Sciences
69. Chatterjee, Bani, *Life Member* - International Society of Adult Education
70. Chatterjee, Bani, *Life Member* - Indian Academy of Social Sciences
71. Chatterjee, Bani, *Life Member* - Regional Science Association
**Member - Editorial Board**

2. Goswami, Kishor (2013) *Advisory Board Member* - The International Journal of Economics and Business Modeling
4. Goswami, Kishor (2011) *Associate Editor* - Journal of Business Excellence
7. Goswami, Kishor (2011) *Associate Editor* - SAGE Open (Social Science Journals)
11. Pradhan, Rabindra Kumar (0) *Reviewer* - Indore Management Journal
14. Pradhan, Rabindra Kumar (0) *Reviewer* - International Journal of Entrepreneurial Behaviour & Research (IJEBR)
16. Roy, Anjali (2013) *Editorial Committee Member* - Media Watch
20. Srivastava, Kailash Bihari Lal (0) *Reviewer* - ICFAI Journal of Mergers and Acquisitions
22. Srivastava, Kailash Bihari Lal (0) *Member Editorial board* - Journal of Technology & Management
25. Srivastava, Kailash Bihari Lal (0) *Reviewer* - ICFAI Journal of Knowledge Management
26. Srivastava, Kailash Bihari Lal (0) *Reviewer* - Psychological Studies
27. Suar, Damodar (2002) *Associate Editor* - Psychological Studies

**Awards & Honours**

2. Pradhan, Rabindra Kumar (2013) *ISTD Best Teacher Award -2013 for Outstanding contribution in HR Training and Development*
Sponsored Research Projects

1. A Creative Economic & Urban Design based Pilot Project of Kumartuli Area, Kolkata (in Association with Kolkata Museum of Modern Arts) under SANDHI (MHRD, New Delhi, Rs.110.00 Lakhs)
2. A Creative Economic and Urban Design Based Pilot Project of Gariahat Area, Kolkata (Department of Higher Education, Ministry of Human Resource Development, Government of India, Rs.100.00 Lakhs)
3. A Creative Economic Regeneration and Urban Design Revival Project: Boipara-College Street, Kolkata (in association with KMMA, Kolkata) (RAK) (MHRD, Department of Higher Education, New Delhi, Rs.10500000.00 Lakhs)
4. Architectural - Archaeological - Iconographic & Epigraphic exploration of : Lalitagiri - Vajragiri - Puspagiri, Odhisha (AEE) (MHRD, Rs.70.00 Lakhs)
5. Assessing the Current and Future Creative Economic Regeneration Scope of Traditional River -Based Heritage and Eco-Tourism Networks in KMA (Department of Higher Education, Ministry of Human Resource Development, Government of India, Rs.50.00 Lakhs)
6. COMMUNITY DEVELOPMENT THROUGH CORPORATE SOCIAL RESPONSIBILITY (CSR): A BENCHMARK STUDY FOR INDUSTRIAL UNITS IN PASCHIM MEDINIPUR (ACC Limited, Rs.4.56 Lakhs)
7. Coping with Changing Climate: The Role of Sustainable Use and Management of Traditional Water Harvesting Systems in Odisha and West Bengal (Indian Council of Social Science Reserach (ICSSR), New Delhi, Rs.1000000.00 Lakhs)
8. Decoding and Exploring Ancient Classification of Indian Classical Music through Machine Learning Methods and Audience Response (MHRD, Rs.150.00 Lakhs)
9. Economic Impact Assessment of National Food Security Act under the project Sustainable Food Security through Technological Intervention for Production (MHRD, New Delhi, Rs.30.00 Lakhs)
10. Economic Value Addition of Jatropha Based Products in Northeast India (National Oilseeds and Vegetable Oils Development (NOVOD) Board, Ministry of Agriculture, Govt. of In, Rs.17.54 Lakhs)
11. Ethnographic Profiling of Anglo-Indians in Small Town of India (New Zealand India Research Institute and Education New Zealand, Rs.18.00 Lakhs)
12. Evaluation of Long Term Impact of Completed Watershed Projects supported by NABARD in West Bengal (National Bank for Agriculture and Rural Development, Rs.4.00 Lakhs)
13. Expansion of Trade and Development of Women Entrepreneurs in Handloom Industry in Assam (Indian Council of Social Science Research, Rs.5.52 Lakhs)
14. Functional Explanations in Language : an Inquiry in the Context of Indian Languages (IIT, Kharagpur (ISIRD), Rs.1.60 Lakhs)
16. Historical Evidence, Myth and Geophysical Modeling to Assess the Tectonic Movement and Risks Associated with Odisha Coastal "Heritage" Belt under SAND (MHRD, New Delhi, Rs.0.00 Lakhs)
17. Impact of Workplace Spirituality on Job Outcomes (ICSSR, Ministry of HRD, Govt of India, New Delhi, Rs.5.00 Lakhs)
18. Impact Assessment of Mahatma Gandhi NREGS in Orissa: A Study of Mayurbhanj and Ganjam District (Indian Council of Social Science Research, New Delhi, Rs.5.65 Lakhs)
19. Impact of Emotional Labour on Psychological Health and Job Outcomes: A Study on Indian Service Industry (ICSSR, Ministry of HRD, Govt of India, New Delhi, Rs.5.00 Lakhs)
20. Improving End of Life Care for the Elderly by Integrating Indic perspectives on Ageing and Dying (MHRD, Rs.75.00 Lakhs)
21. Making of Web-Portals and allied outreach activity for Varanasi project and allied projects under SANDHI (PVS) (MHRD, Rs.0.00 Lakhs)
22. Measuring Attitude towards Financial Risk among Handloom Micro-entrepreneurs in North East India (Indian Council of Social Science Research, India, Rs.15.00 Lakhs)
23. Reconfiguring DANA (generosity) as a New Institutional Financial Mechanism for Social Enterprises (DGE) (MHRD, Department of Higher Education, New Delhi, Rs.75.00 Lakhs)
24. Remembering the Komagata Maru: Historicizing Indian Migration to Canada (Shastri Indo-Canadian Institute Calgary, Rs.3.00 Lakhs)
25. Renovation, Extension and Modernization of Nehru Museum of Science and Technology (Ministry of Culture, Rs.27443768.00 Lakhs)
26. Setting up Community Radio at IIT Kharagpur (SRIC, Rs.3.00 Lakhs)
27. SOCIAL COST BENEFIT ANALYSIS OF THE PROPOSED COAL MINE AT CHHENDIPADA TEHSIL OF ANGUL DISTRICT, ODISHA (-Radhikapur(West) Coal Mining Private Ltd, Rs.4.49 Lakhs)
28. Social impact Analysis (ACC Limited, Rs.3.50 Lakhs)
29. Social Impact Assessment of National Food Security Act under the project Sustainable Food Security through Technological Intervention for Production, (MHRD, New Delhi, Rs.30.00 Lakhs)
30. Sustainability of Biodiesel Industry in North East India (South Asian Network for Development and Environmental Economics, Rs.9.15 Lakhs)
31. Sustainable food security through technological intervention for production, processing, and logistics (MHRD, Department of Higher Education, New Delhi, Rs.2600.00 Lakhs)
32. The Effect of Meditation, Pranayam and Meditative Sounds on the Cognitive and Emotional Performance of Human Brain: a study using an integrated signal (MHRD, Rs.150.00 Lakhs)
33. To develop a scientific rationale of IELS applying (a ) Computational Linguistics & (b) Cognitive Geo-spatial mapping approaches (AIP) (MHRD, Department of Higher Education, New Delhi, Rs.10000000.00 Lakhs)
34. Urban-design, Planning & Urban Engineering Exploration of Varanasi (UDE) (MHRD, Department of Higher Education, New Delhi, Rs.15000000.00 Lakhs)

Consultancy Projects

1. Community Development through Corporate Social Responsibility (CSR): A Benchmark Study for Industrial Units in Paschim Medinipur (ACC Ltd, Rs.4.56 Lakhs)
2. Payments for environmental services: A review of experiences across countries (Jamsetji Tata Trust through RULNR, Hyderabad, Rs.1.40 Lakhs)
3. Preparation of Fire Safety Manual for NDMA, New Delhi (National Disaster Managemnet Authority, New Delhi, Rs.-0.00 Lakhs)
4. Socio-Economic and Ecological Impact Evaluation Study of Forestry Projects Supported under RIDF in West Bengal (National Bank for Agriculture and Rural Development (NABARD), Rs.18.00 Lakhs)

Visits Abroad by Faculty Members

1. Roy, Anjali - Conference (Sweden, ) 18-19 June 2013
2. Roy, Anjali - Conference (Singapore, ) 7-8 May 2013
3. Chakraborti, Chhanda - Presenting an invited paper (School of Philosophy, National and Kapodistrian University of Athens, Athens, Greece, ) August 3-10, 2013
5. Goswami, Kishor - For participating in a Cost Benefit Analyses Course sponsored by SANDEE (Kathmandu, Nepal, ) December 6-8, 2013
8. Srivastava, Kailash Bihari Lal - To deliver a lecture in a programme (United Nations University Tokyo, Japan, ) 19-20 October 2013
9. Srivastava, Kailash Bihari Lal - To attend a UN sponsored workshop on leadership in sustainability (Beijing China, ) 15-18 June 2013

Invited Lectures by Faculty Members

1. Inflation Target at the Zero Lower Bound by Chattopadhyay, Siddhartha (Vidyasagar University)
2. Leadership in Sustainability by Srivastava, Kailash Bihari Lal (Institute of Sustainable Development and Peace, United Nations University Tokyo)
3. FDI in Retail: Issues, Challenges and Implications by Mishra, Pulak (Vyasanaor (Auto.) College, Jaipur Road, Odisha)
4. Economic Reforms and Indian Firms by Mishra, Pulak (B. P. College of Business Administration, Gandhinagar)
5. Emotional Intelligence by Pradhan, Rabindra Kumar (VGSOM, IIT Kharagpur)
6. Time Management by Pradhan, Rabindra Kumar (VGSOM, IIT Kharagpur)
7. Leadership for Disaster Management by Pradhan, Rabindra Kumar (Tehri Garhwar Block, Uttarakhand in Association with LABSNAA)
8. Emotional Competence and Stress Management by Pradhan, Rabindra Kumar (NIIS Institute of Business Administration, Bhubaneswar)
9. Teamwork and Leadership Development by Pradhan, Rabindra Kumar (UIT, Burdwan University, West Bengal)
11. Understanding Corporate Social Responsibility and Sustainability by Chakraborti, Chhanda (Asian Institute of Technology and Management Kathmandu Nepal)
12. CSR and Business Ethics by Chakraborti, Chhanda (Asian Institute of Technology and Management Kathmandu Nepal)
13. Emotional and Moral Intelligence for Leadership Effectiveness by Pradhan, Rabindra Kumar (Science City, Kolkata, India during Easter Regional Conference of ISTD.)
14. Punjabiyat and Siraiki Movement by Roy, Anjali (Dept of Sociology University of Delhi)
15. Hybridization of Punjab Music with African-Caribbean Music in the Diaspora Space by Roy, Anjali (Indira Gandhi National Centre for the Arts Delhi)
16. Research in Economics by Nayak, Narayan Chandra (KIIT University, Bhubaneswar)
17. Developing Interpersonal Communication Strategies by Giri, Vijai Nath (NIT Durgapur)
18. Interpersonal Communication Skills by Giri, Vijai Nath (NIT Uttarakhand)
19. Promoting good governance-- Positive contribution of vigilance by Suar, Damodar (Bharatiya Reserve Bank Note Mudran (P) Limited, Salboni, PM, WB)

Books Published


Short-Term Courses, Training Programmes and Workshops organised

1. Emotional Intelligence and Organizational Excellence (5-7 June 2013)
2. Training for Trainers (18-20 September 2013)

Papers Published in Journals

24. Examining the relationship of personality and work values across career stages By Sinha Nupur & Kailash B L Srivastava. Psychological Studies 59(1) 44-51 (2014)
37. Is health wealth? Results of panel data analysis  By Zakir Husain, Mousumi Dutta & Nidhi Chowdhury  *Social Indicators Research* (2013)
47. Re-contextualizing Postcolonial Objectives: A Critico-Epistemic Re-evaluation of Indian Sahitya Akademi Award Winning Texts  By Saswat Samay Das  *Post-Colonial Cultures and Societies, Wright State University, USA* (2013)
49. Re-radicalised Interventions into Constituent Media-scapes  By Saswat S. Das  *Media and Utopia, Routledge, USA, UK* accepted (2014)


Papers Presented in Conferences

1. Achieving Sustainable Wellbeing (Happiness) and Ecosystem: the Role Human Psyche and Mindfulness, By Bhagirath Behera, 3rd Creative University Conference on Creative Economy, Creative University and Creative Development, Royal University of Bhutan Convention Ce, (2014)


13. Gesture-Based Affective and Cognitive States Recognition Using Kinect for Effective Feedback during e-Learning, By Kartik Vermun, Mohit Senapaty, Anindhya Sankhla,


34. The Folktale in Achebes Fiction(invited paper), By Anjali Gera Roy, *Remembering Chinua Achebe*, University of Mysore, (2014)
40. Who will play with me when my mother works: Impact of grandparental presence on labour market outcomes of mothers, By Zakir Husain & Mousumi Dutta, *Growth and Development*, Indian Statistical Institute, Delhi, (2013)
Department of Industrial & Systems Engineering

Head
Prof. Manoj Kumar Tiwari

Professors
Acharya, Damodar \textit{Ph.D.(IIT Kharagpur)},
Banerjee, Rabindra Nath \textit{PGDM (Edinburgh UK)},
Maiti, Jhareswar \textit{Ph.D.(IIT Kharagpur), Quality management, Ergonomics & human factors engineering, Safety & risk management, Data analytics}
Mohapatra, Pratap Kumar Jagadev \textit{Ph.D.(IIT Kharagpur), System Dynamics and Systems Thinking, E-Business and E-Governance, Production and Operations Management, Quality Engineering and Control, Quantitative Methods}
Tiwari, Manoj Kumar \textit{Manufacturing Planning and Scheduling, Logistics and Supply Chain Analysis, Computational Intelligence in Manufacturing and Logistics, Optimisation and Simulation}

Associate Professors
Jenamani, Mamata \textit{Ph.D.(IIT Kharagpur), Information System, E-Business}
Sarmah, Sarada Prasad \textit{Ph.D.(IIT Kharagpur), Reverse logistics, Supply chain management, Inventory and Operations Management}

Assistant Professors
Jha, Jitendra Kumar \textit{Ph.D.(IIT Kanpur), Supply Chain Management, Inventory Control, Facility Location}
Kumar, Sri Krishna \textit{Ph.D.(Loughborough, UK), Non Linear Programming, Supply Chain and Logistics, Operations Research, Game Theory}
Thakkar, Jitesh J \textit{Ph.D.(IIT Delhi), Supply Chain Management, Lean Manufacturing, Project Management, Service Operations Management, Quality Control and Management}

Faculty Appointments
Sri Krishna Kumar Assistant Professor
Gopinath Chattopadhyay Visiting Professor

Faculty Re-employment
Professor P.K.J. Mohapatra Professor
New Academic Programmes

Dual Degree - Quality Engineering Design and Manufacturing

Brief Description of on-going activities

Since its inception the department has been known across the nation for its excellent research potential and capability in the field of industrial engineering and related areas. As a matter of fact, pioneering research in the following areas of industrial engineering and management are being carried out: Operations Management: Production Planning and Inventory Control, Logistics and Supply Chain Management, E-Business, Quality Engineering and Control, Facility Layout and Design, Total Quality Management and Six Sigma. Simulation and Soft Computing: Genetic Algorithms and its variants, Heuristics, System Dynamics, Discrete Event Simulation. Work System Design: Ergonomics/Human Factors Engineering, Occupational Safety and Health Management, and Probabilistic Risk Assessment. Data Analytics and different domains of Industrial Engineering.

Thrust Areas

1. Manufacturing and Supply Chain Management
2. Industrial Analytics
3. Production, Planning and Control
4. Human Factor and Safety Engineering
5. Optimization and Simulation
6. Quality, Safety and Reliability Engineering
7. Logistics & Supply Chain
8. Decision Support System
9. Big Data
10. Early Warning System
11. E-Business
12. Process Excellence
13. Manufacturing Systems
14. Disaster management
15. Healthcare System
16. Financial Engineering

New Acquisitions

1. Design for Manufacturing and Assembly Laboratory
2. Quality Design and Control Lab
3. Design for Manufacturing and Assembly Lab
4. Product Development Lab

International Collaborations

1. The Hong Kong Polytechnic University
2. Yaun Ze University, Taiwan
3. Aix-Marseille Universite, France
4. Management School University of York
5. University of Saskatchewan, Canada
6. Loughborough University, UK
7. EPFL, Switzerland
8. Northeastern University, USA
9. Universidad de Castilla-La Mancha, Spain
10. University of Skovde, Sweden
11. Warwick Manufacturing Group, UK
12. DCU, Ireland
13. Polytechnic University of Milan, Italy

Lectures by Visiting Experts

1. Robotics Assembly by Prof. S.G. Ponnambalam (Monash University)
2. Digital Manufacturing, life cycle modelling by Prof. Darek Ceglarek (Warwick Manufacturing Group, UK)
3. Inventory Control in Steel Industry by Dr. PVN Nambiar (TATA Steel)
4. Food Supply Chain by Prof. Surya Pandey (Institute for Business Research: University of Waikato, New Zealand)
5. Additive Manufacturing by Prof. K.P. Karunakaran (IIT Bombay)
6. Proposed Collaborative Research between University of Missouri Science and Technogy and IITKGP by Prof. Venkat Allada (University of Missouri Science and Technogy and IITKGP)
7. Machine Vision and Product development by Dr. Pinnamaneni Bhanu (Professor, Computer Science & Engineering chez Rajalakshmi Engineering College, Thandalam, Chennai)

**Doctoral and MS Degrees Awarded**

2. Lalit Mohan Jha : Adoption of Enterprise Resource Planning Systm in Indian Army(Ph.D.)
4. Purushottam Lal Meena : Sourcing Decisions under the Risks of Supply Disruption and Supplier Satisfaction(Ph.D.)
5. Ajay Pathak : Basel-II risks model development and implementation issues for a Public Sector Bank of India(Ph.D.)
8. Supriya Kumar Ghatak : Modelling the Growth of Ph.D Numbers of an Academic Institute(MS)
10. Priyabrata Mohapatra : Integration of Process Planning and Scheduling through setup planning in a Reconfigurable Manufacturing Environment(Ph.D)

**Member - Professional Bodies**

1. Maiti, Jhareswar, *Senior life member* - Indian Society for Technical Education
2. Maiti, Jhareswar, *Senior life member* - Mining, Geological and Metallurgical Institute of India
4. Maiti, Jhareswar, *Senior Life Member* - Indian Institution of Industrial Engineering
5. Maiti, Jhareswar, *Regular life member* - Operational Research Society of India
6. Sarmah, Sarada Prasad, *Regular* - AIMS International; The Association of Indian Management Scholar, Houston, USA
7. Sarmah, Sarada Prasad, *Life member* - ISTE
8. Jenamani, Mamata, *Regular* - IEEE
9. Jenamani, Mamata, *Member* - Association for information systems research
10. Tiwari, Manoj Kumar, *Member* - Fellow of National Academy of Engineering, India
11. Tiwari, Manoj Kumar, *Member* - Member of IEEE, US
12. Tiwari, Manoj Kumar, *member* - Member of INFORMS, US
13. Tiwari, Manoj Kumar, *Member* - Institute of Industrial Engineers, USA
14. Thakkar, Jitesh J, *Member* - Indian Institute of Industrial Engineering
15. Thakkar, Jitesh J, *Member* - The Institution of Engineers (India)
16. Jha, Jitendra Kumar, *Member* (MIEE 9520) - Indian Institution of Industrial Engineering Navi Mumbai
17. Jha, Jitendra Kumar, *Life Member* - Indian Society for Technical Education
18. Ray, Pradip Kumar, *Member* - Indian Institute of Materials Management (IIMM), Calcutta, India
19. Ray, Pradip Kumar, Regular - INFORMS, USA
20. Ray, Pradip Kumar, Fellow - World Academy of Productivity Sciences(WAPS)
21. Mahanty, Biswajit, Life member - System Dynamics Society of India

**Member - Editorial Board**

1. Maiti, Jhareswar (0) Reviewer - Accident Analysis and Prevention
2. Maiti, Jhareswar (0) Reviewer - Safety Science
3. Maiti, Jhareswar (0) Reviewer - Computer and Industrial Engineering
4. Maiti, Jhareswar (0) Reviewer - Journal of Production Research
6. Ray, Pradip Kumar (2013) (xii) Member, Peer Review Board - PIRJSET
7. Sarmah, Sarada Prasad (0) Editorial Board member - Int. Journal of Remanufacturing
15. Tiwari, Manoj Kumar (2007) Associate Editor - Journal of Intelligent Manufacturing
17. Tiwari, Manoj Kumar (2013) Associate Editor - SADHANA
18. Tiwari, Manoj Kumar (2012) Associate Editor - Neurocomputing
20. Tiwari, Manoj Kumar (2014) Editorial Board member - Production Planning and Control

**Awards & Honours**

1. Sarmah, Sarada Prasad (2013). Rated among top 10 researchers working in Logistics and Supply Chain Management in India (Source: Analysis of the logistics Research in India-White paper published in TU Dortmund University, Germany
3. Tiwari, Manoj Kumar (2014) Awarded as First Rank in IJPR (Taylor & Francis) as Researcher
7. Tiwari, Manoj Kumar (2013) Fellow of National Academy of Engineering, India
8. Tiwari, Manoj Kumar (2012) *Rated 2nd among many researchers working in Logistics and Supply Chain Management in India*(Analysis of the logistics Research in India-White paper published in TU Dortmund University, Dortmund Germany)

**Sponsored Research Projects**

1. A Strategic Capacity Management Framework for Remanufacturing in the Indian Automotive Industry (SRIC, IIT KGP, Rs.4.98 Lakhs)
2. Bid Evaluation, Contract Finalization and Overview of Implementation of SAP-IS Utilities (Central Electricity Supply Utility of Orissa, Bhubaneswar, Rs.0.00 Lakhs)
3. Climate Change Issues and Environmental Performance of Small and Medium Sized Enterprises in India and the UK (UKIERI, Rs.35.00 Lakhs)
4. Data driven sustainable and resilient safety management system for Tata Steel Jamshedpur (Tata Steel, Jamshedpur, Rs.25.68 Lakhs)
5. Designing a Responsive and Efficient Supply Chain for Perishable Items (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
6. Developing comprehensive supply chain performance indices and benchmarks for Indian industry (SRIC, IIT Kharagpur, Rs.4.00 Lakhs)
7. ERP System for the Institute (IER) (IIT Kharagpur, Rs.51.00 Lakhs)
8. Future of Cities (FOC) (MHRD, Rs.2500.00 Lakhs)
9. Hazard Identification and Risk Assessment of Industrial Activities in the ITR, Chandipur (DRDO, Chandipur, Rs.10.00 Lakhs)
10. Information and communication technology and waste control in logistics (MHRD, Govt. of India, Rs.55.00 Lakhs)
11. Information and Communication Technology and Waste Control in Logistics (MHRD, Rs.55.00 Lakhs)
12. Integrated decision support system for food supply chain (, Rs.38.00 Lakhs)
13. Intelligent Decision Support in Online Auction (CSIR, Rs.11.84 Lakhs)
14. Intelligent decision Support in online auction (CSIR, Rs.11.80 Lakhs)
15. Organizational Asset Maturity Model (Tata Consultancy Services, Mumbai, Rs.0.00 Lakhs)
16. Process Audit of Design and Manufacturing of 130-mm-diameter Shell at Ambajhari Plant of Ordnance Factory (Indian Ordnance Factories, Ministry of Defence, Government of India, Rs.29.00 Lakhs)
17. Requirement analysis and stock replenishment decisions for efficient distribution of food grain (MHRD, Govt of India, Rs.50.74 Lakhs)
18. Strategic Options Study for Rural Roads under R. D. Department (Government of Orissa, Rs.0.00 Lakhs)
19. Study on Ancillary Industry of POSCO India (POSCO Research Institute, Seoul, Korea, Rs.0.00 Lakhs)
20. Sustainable food security through technological intervention for production processing and logistics (MHRD, Rs.38.00 Lakhs)
21. Sustainable Food Security Through Technological Interventions for Production Processing and Logistics (MHRD, Rs.2600.00 Lakhs)
22. Sustainable Food Security Through Technological Interventions for Production, Processing & Logistics (MHRD, Rs.2600.00 Lakhs)
23. Technical Audit of Center for Jute Machinery Development (National Jute Board, Kolkata, Rs.0.00 Lakhs)
24. Virtual Lab for Simulation and Gaming (MHRD, Rs.52.00 Lakhs)
25. Vision 2030 of State Pollution control Board, Orissa (State Pollution Control Board, Bhubaneswar, Orissa (2011), Rs.0.00 Lakhs)
26. VLS/21 Gaming and Simulation Lab (MHRD, Rs.52.00 Lakhs)
Consultancy Projects

1. Computerization Corporate contract Management System for NLC (NLC, Rs.2.62 Lakhs)
2. Computerization of Corporate Contracts Management System for NLC (Neyveli Lignite Corporation, Rs.260.00 Lakhs)
3. Construction of Cyclone Shelters in Coastal Orissa (Prime Ministers Office, New Delhi, Rs.0.00 Lakhs)
4. Data Analytics Based Axiomatic Design of Interventions for Job Stress Management (Tata Steel, Jamshedpur, Rs.4.92 Lakhs)
5. Decision Support Model for Optimizing Bulk Material Handling Operations (Dhamra Port Corporation Ltd. Orissa, Rs.11.00 Lakhs)
6. Decision Support Model to Optimize Bulk Material Handling Operations (The Dhamra Port Company Ltd., Rs.10.73 Lakhs)
7. Design and Supervision of Central SLIVER Plant, Chowdar, Orissa (Khadi and Village Industries Commission, Mumbai, Rs.0.00 Lakhs)
8. Development of diesel price escalation formula for HEMM control (CMPDI, Coal India Ltd., Rs.44.00 Lakhs)
9. Development of Diesel Price Escalation Formulae For HEMM Contract (CMPDI, Rs.43.26 Lakhs)
10. Development of Diesel Price Escalation Formulae for HEMM Contract (CMPD Ranchi, Rs.43.26 Lakhs)
11. Development of Educational Complex (Tirupati Assets, Kolkata, Rs.50.00 Lakhs)
12. Dynamic Scheduling and chartering of oil tankers and their solution by simulation based Optimization (Prof L S Thakur, University of Connecticut, Gali, Zaicek, Rs.1.31 Lakhs)
13. Hazard Identification and Risk Assessment of Industrial Activities in the Integrated Test Range, Chandipur (DRDO, Rs.9.00 Lakhs)
14. Hazard Identification and Risk Assessment of Industrial Activities in the ITR, Chandipur (ITR, Chandipur (DRDO), Rs.9.49 Lakhs)
15. Implementation of Reverse Auction Software in NLC (Completed) (Neyveli Lignite Corporation Limited, Rs.29.34 Lakhs)
16. Logistics Solver for Route Optimization and Truck Load Capacity Planning for Proctor & Gamble India Limited (Proctor & Gamble India Limited, Rs.3.00 Lakhs)
18. Process Audit of Design and Manufacturing of 130-mm-diameter Shell at Ambajhari Plant of Ordnance Factory (Indian Ordnance Factories, Ministry of Defence, Government of India, Rs.29.00 Lakhs)
19. Reservoir Characterization using Artificial Intelligent Techniques (Soft Computing) (ONGC, Rs.45.00 Lakhs)
20. Safety consultancy services for six laning of Dankuni-Kharagpur section of NH-6 from Km 17.6 to Km 129 in West Bengal (SLNB) (National Highway Authority of India, New Delhi, Rs.90.56 Lakhs)
22. Studying and analyzing carbon trading regime for Global Collaborative Supply Chain (ACTR) (The University of Sheffield, UK, Rs.1.18 Lakhs)
23. To Study, design, develop, install, test, commission, implement the Web based Reverse Auction Software in NLC Ltd for Neyveli Lignite Corporation (Neyveli Lignite Corporation Limited, Rs.27.00 Lakhs)
Technology Transferred

1. Dhamara Port - Developed a decision support model for berthing, allocation and rake scheduling : Rs. 10.50 Lakh
2. Proctor and Gambles - Developed an optimal truck loading models for FMCG Items : Rs. 3.00 Lakh

Visits Abroad by Faculty Members

1. Tiwari, Manoj Kumar - Key note speaker (Department of Industrial Engineering, University of Wisconsin-Madison, Wisconsin, USA, ) (July-September, 2006)
2. Tiwari, Manoj Kumar - Speaker (Department of Engineering Management and Systems Engineering, Engineering Management, University of Missouri-Rolla, USA, ) September, 2006
3. Tiwari, Manoj Kumar - Speaker (Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, UK, ) July, 2006
4. Tiwari, Manoj Kumar - Speaker (Invited Talk on Self Healing architecture of Supply chain, Invited by TU Dortmund University, Dortmund Germany, ) 2013
5. Tiwari, Manoj Kumar - Speaker (WMG (Warwick Manufacturing Group) UK, ) 2009
6. Tiwari, Manoj Kumar - Speaker (School of Business and Economics, University of Exeter, Exeter, UK, ) July, 2006
9. Ray, Pradip Kumar - Interaction Meet and Discussion on UKIERI project as CI (Aston Business School, Aston University, Birmingham, UK, ) March 9-16, 2014

Invited Lectures by Faculty Members

1. Operational excellence, Kaizen by Thakkar, Jitesh J (Lakshmi Machine Works Ltd., Coimbatore)
2. Lean Manufacturing by Thakkar, Jitesh J (Bengal Chamber of Commerce)
3. Self Healing in Supply Chain Management by Tiwari, Manoj Kumar (IIT Delhi)
4. Swarm Evolutionary and Memetic Computing Conference by Tiwari, Manoj Kumar (SOA University, Bhubaneswar, Odisha)
5. Best Practices in Supply Chain Management (BPSCM) by Tiwari, Manoj Kumar (SOA University, Bhubaneswar, Odisha)
6. Management-NCRSM by Tiwari, Manoj Kumar (ABV- IIIT Gwalior)
7. Evolutionary computations in Solving the Manufacturing Planning Problems by Tiwari, Manoj Kumar (Jadavpur University)
8. Emerging Trends in Nano-Technology and Innovations in Design and Manufacturing-ETNDM-2006 by Tiwari, Manoj Kumar (Rourkela, India)
9. Quality and Reliability by Tiwari, Manoj Kumar (Rourkela)
10. Building self healing traits in SCM Network by Tiwari, Manoj Kumar (Berlin)
11. Keynote Speaker on ‘Performance Improvement of Asian Industries: Emerging Issues and Challenges by Ray, Pradip Kumar (James Cook University, Singapore)
14. Lecture on ‘Workplace Stress and Safety: From MSME Perspectives’ at SYNERGY MSME2013 by Ray, Pradip Kumar (Department of Micro & Small Scale Enterprises & Textiles, Government of West Bengal in Calcutta)
16. Lecture on ‘Sustainability Assurance in Organizational Performance: What an Industrial Engineer Can’ by Ray, Pradip Kumar (55th National Convention of IIIE and International Conference on October 25, 2013 in Nagpur, India.)
18. Speaker on ‘Workplace Stress Management’ at Workshop on Industrial Safety, by Ray, Pradip Kumar (Confederation of Indian Industry (CII), Haldia Zonal Office at Haldia, West Bengal.)

Books Published

1. Lyes Benyocef, Jean-Claude Hennet and Manoj Kumar Tiwari: Multi-criteria and Game theory Application in Manufacturing and Logistics published by Springer (2013)

Short-Term Courses, Training Programmes and Workshops organised

1. Executive Training Programme on Project Management (11-14 May 2013)
2. One-Day Interaction Meet on ‘UKIERI-sponsored Project on Environmental Performance of Industries’ (August 2, 2013.)
3. Project Management (11-14 May 2013)
4. Service Science (5 Days)
5. Short-term course on Service Science (July 08-12, 2013)
6. Three-Day Duration Short-Term Course on ‘Continuous Improvement and Process Excellence (LMW Executives at LMW Limited, Coimbatore)
7. Workshop on ‘Current Industrial Problems and Workplace Stress Management (November 1, 2013)

Papers Published in Journals

15. Application of cube model for biomechanical exposure assessment of combined MMH tasks in a manufacturing plant in India By R Rajesh, J Maiti and B Samanta IIE Transactions on Occupational Ergonomics and Human Factors Accepted (2014)
30. Mining Safety Rules for Derailments in a Steel Plant using Correspondence Analysis By J Maiti, Abhijit K Singh, Saptarshi Mandal and Abhishek Verma Safety Science Accepted (2014)
43. Sourcing decisions under stochastic demand and risk of supply disruptions.  By Meena, P L, Sarmah, S.P  International journal of Management Science and Engineering Management Accepted  (2014)
46. SWOT of Central Public Works Department India: a case study  By Bharti, B.K. and Thakkar, J.J.  Journal of Advances in Management Research 10 (1), 100-121  (2013)

Papers Presented in Conferences

5. Coordination and competition in a closed loop supply chain,.  By Jena, Sarat, Sarmah, S P,  Int conference in supply chain and logistics management (ICSCLM 2013),,. Held at BMITECH, N Delhi,  (2013)
7. Optima spare parts kit in data mining approach,  By Moharana, U, Sarmah, S P,  Int. conference in business analytics and Intelligence, Held at IIM Bangalore,  (2013)


Department of Mathematics

**Head**
Prof. Umesh Chandra Gupta

**Professors**

Bhattacharyya, Somnath  
*Ph.D. (IISc Bangalore)*, Computational Fluid Dynamics, Micro-/nanofluidics Modeling

BiswaL, Mahendra Prasad  

Goswami, Adrijit  
*Ph.D. (Jadavpur Uni)*, Operations Research and Theoretical Computer Science

Gupta, Dharmendra Kumar  
*Ph.D. (IIT Kharagpur)*, Numerical Analysis and Computer Science, Constraint Satisfaction Problems

Gupta, Umesh Chandra  
*Ph.D. (IIT Delhi)*, Statistics, Stochastic Modelling, Queueing Theory

Jain, Vinay Kumar  
*Ph.D. (IIT Delhi)*, Zeros of polynomials and analytic functions & Extremal problems of polynomials

Kumar, Somesh  

Murthy, P V S N  
*Ph.D., Bio-fluid Mechanics, Convective Heat and Mass Transfer in nanofluid*

Pandey, Rajnikant  
*Ph.D. Differential Equations (Ordinary), Theoretical Numerical Analysis, Singular Boundary Value Problems*

Raja Sekhar, G P  
*Ph.D. (Hyderabad Univ)*, Boundary integral methods for viscous flows, Hydrodynamic and thermocapillary study of viscous drops, Applications of binary mixture theory to biological tissues

Roy, Akhil Ranjan  
*Ph.D. (IIT Kharagpur)*, Theoretical Cosmology, Algebra and Application of Soft Set theory, Dynamics of Nonlinear Systems, inventory management

Sarkar, Anjan  

Srivastava, Parmeshwary Dayal  
*Ph.D. (IIT Kanpur)*, Functional Analysis & Cryptography, Fuzzy Sequence Space

**Associate Professors**

Chakraborty, Debjani  
*Ph.D. (IIT Kharagpur)*, Fuzzy Optimization, Fuzzy logic and its applications

Kumar, Pawan  
*Ph.D. (IIT Kanpur)*, Graph Theory

Nahak, Chandal  
*Ph.D. Applied Functional Analysis and Optimization, Frame Theory*
in Semi Inner Product Spaces, Fractional Calculus, Numerical Optimization, Set Valued optimization

Nelakanti, Gnaneshwar  

Panda, Geetanjali  
*Ph.D.*, Optimization with uncertainty, Convex Optimization, Numerical Optimization

Panigrahi, Pratima  
*Ph.D. (Bangalore)*, Combinatorics, Graph Theory

**Assistant Professors**

Allu, Vasudeva Rao  
*Ph.D. (IIT Madras)*, Univalent Function Theory, Harmonic Mappings (in the Plane), Complex Analysis

Bhowmik, Bappaditya  
*Ph.D. (IIT Madras)*, Geometric function theory (Complex Analysis), Harmonic and Quasiconformal Mappings, Several Complex Variables

Biswas, Debapriya  
*Ph.D. (Leeds Univ)*, Functional Analysis, Lie Groups Lie Algebras and their Representation theory, Complex Analysis, Harmonic Analysis

Dutta, Ratna  
*Ph.D. (ISI, Kolkata)*, Attribute Based Cryptosystems and Broadcast Encryption, Key Pre-Distribution in WSN and Self-Healing, Elliptic Curves and Pairing based Cryptography, Oblivious Transfer and Private Set Intersection Protocols, Lattice-Based Cryptography, Signature and Commitment Schemes

Ganguly, Asish  
*Ph.D. (Calcutta Univ.)*, Mathematical & Theoretical Physics, Quantum Mechanics, Soliton Theory and Inverse Scattering Transformation, Non-linear Evolution Equation in Real & Complex Domain

Gayen, Rupanwita  
*Ph.D. (Univ of Calcutta)*, Linear water waves, Integral equations

Ghoshal, Koeli  
*Ph.D. (Jadavpur Univ.)*, Mathematical Modelling on turbulent flow with sediment, Grain-size distribution in suspension over erodible sediment bed, Study on secondary current

Gupta, Nitin  

Kumar, Jitendra  
*Ph.D. (Univ. of Magdeburg, Germany)*, Numerical mathematics, Numerical solutions of integro-partial differential equations, Particle technology

Mukhopadhyay, Sourav  
*Ph.D. (ISI, Kolkata)*, Digital rights management, Cryptanalysis on symmetric cipher, Key management in wireless adhoc network, Algebraic attack on stream ciphers, Key Pre-Distribution (KPS) in sensor network, Time/Memory Trade-off Cryptanalysis, Cloud Computing

Sekhar, T.Raja  
Faculty Appointments
Prof. B. Bhowmik Assistant Professor
Prof. Nitin Gupta Assistant Professor
Prof. T. Raja Sekhar Assistant Professor

Faculty Re-employment
Prof. A.R. Roy Professor
Prof. Anjan Sarkar Professor

New Academic Programmes
Department is assisting for "Financial Engineering" course in the Institute.

Brief Description of on-going activities
Besides extensive research in the thrust areas viz. Functional Analysis and Fluid Mechanics, significant contribution has also been made by the members of the faculty in the area of Clifford Analysis, Fuzzy Mathematics, Soft Algebra, Bio-Mechanics, Dynamics of Nonlinear systems, Inventory Management, Graph Theory, Integral Equations, Cryptography, Queueing Theory, Statistical Decision Theory, Statistical Data Analysis, Compiler Design, Combinatorics, Fractional Calculus, Optimization Theoretical Computer Science; Information and coding Theory and Cryptology. Faculty members of this department have published number of research papers in reputed international journals on those topics. Number of sponsored research projects are under taken by the faculty members.

Prof. Sourav Mukhopadhyay organizing a "A short term course on Cryptography" during 18-24 May, 2014 at Indian Institute of Technology Kharagpur. "The course is aimed for the students as well as for the professionals working either in industry or in academics who are interested to build a career in the cryptography and related areas. This summer school will bring together the experts in cryptography to give exposure to the latest developments and background of Cryptography. Adequate background material will be provided such that the participant can cope up with the diversity."

Prof U C Gupta and Prof. Geetanjali Panda are organizing an international summer course on PORTFOLIO OPTIMIZATION at Department of Mathematics, Indian Institute of Technology, Kharagpur, from 19th May 2014 to 30th May 2014 under institute funded ISWT-2014 program. The purpose of this course is to describe the process of portfolio optimization techniques employed for investment in financial markets. This course is organized in two modules: Module-A Optimization Techniques used in Financial markets, Module-Bortfolio Optimization Models for Investment. The course is planned and offered as per the norms set by IIT Kharagpur for ISWT subject. Internationally acclaimed academics, researchers and practitioners with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of financial mathematics and optimization techniques will deliver lectures and discuss cases in the course. Resource persons include professors from Department of Mathematics, IIT Kharagpur, Vinod Gupta School of Management, IIT Kharagpur and international faculties: Prof Duan Li, Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong and Prof. Xiangyu Cui, School of Statistics and Management, Shanghai University of Finance and Economics, China.

Thrust Areas
1. Fluid Mechanics and Functional Analysis
New Acquisitions

1. Dell Desktop computers - 60 units
2. Online UPS 30 KVA - 1 Unit
3. HP Heavy duty Xerox Machine -1 unit
4. Hp Laserjet P3015 Printer -1 unit

International Collaborations

Prof. G. P. Raja Sekher has collaborations with (1) Prof. Wolfgang L Wendland, Institute of Applied Analysis and Numerical Simulation, University of Stuttgart, Germany; (2). Prof. Mirela Kohr, Faculty of Mathematics and Computer Science, Babeş-Bolyai University, Cluj-Napoca, Romania, and (3). Prof. Michael Boehm, Centre for Industrial Mathematics, University of Bremen, Germany

Prof. Bappaditya Bhownik has collaborations with Prof. K-J. Wirths, TU Braunschwey, Germany.

Prof. Vasudeva Rao Allu has collaboration with 1) Prof. D. Bshouty, Dept. Of Mathematics, Technion-Israel Institute of Technology, Israel, (2) Prof. Hiroshi Yanagihara, Yamaguchi University, Japan, and (3) Prof. Matti Vuorinen, University Of Turku, Finland.

Prof. U. C. Gupta has collaborations with 1. Dr. Srinivas R. Chakravarthy, Department of Industrial and Manufacturing Engineering Kettering University, 1700 West Third Avenue, Flint, MI 48504-4898, USA, and 2. Dr. M. L. Chaudhry, Department of Mathematics and Computer Science, Royal Military College of Canada Kingston, Ontario CANADA

Prof D. Biswas has collaborations with Prof. Vladimir V Kisil, University of Leeds, United Kingdom.

Prof. Somesh Kumar has collaboration with Professor C. Petropoulos, Department of Mathematics, University of Patras, Greece.

Prof. Gnaneshwar Nelakanti has collaborations with Prof. Guangqing Long, Department of Mathematics, GuangXi Teachers Education University, P. R. China

Prof. S. Bhattacharyya has collaborations with (1) Prof. S. Hardt, TU-Darmstadt, Germany, and (2). Prof. W. Doerfler, Karlsruher Institut fuer Technologie (KIT), Karlsruhe, Germany.

Prof. Jitendra Kumar has collaborations with (1). Professor Dr.-Ing Stefan Heinrich, Institut für Feststoffverfahrenstechnik und Partikeltechnologie, Technische Universität , Germany, (2). Professor Dr. Gerald Warnecke, Professor Dr.-Ing Mirko Peglow and Professor Dr.-Ing Evangelos Tsotsas, Institute of Analysis and Numerical Mathematics Otto-von-Guericke University Magdeburg, Germany, and (3)Professor Doraiswami Ramkrishna, School of Chemical Engineering Purdue University, USA.


Lectures by Visiting Experts

1. On the Construction and the Cardinality of Finite Sigma-fields by Prof. P. Vellaisamy (Department of Mathematics, IIT Bombay)
2. Approximate Gcd’s and Applications by Dr. Swanand Khara (UoFA, Canada)
4. The Formation of a Stable Bubble Ring in a Couette Device with Taylor Vertices by Jai Prakash (Technion, Haifa, Israel)
5. On Ideal Exterior Flows by Professor Wolfgang L Wendland (Institute of Applied Analysis and Numerical Simulation, University of Stuttgart, Germany)
6. On a Class of Statistical Convergence Sequences by Prof. Rifat Colak (Firat University, Elazig, Turkey)
7. Castelnuovo-Mumford Regularity and Gorensteinness of Fiber Cone by Dr. Ramakrishna Nanduri (Universita degli Studi di Genova)
8. A Mathematical study of the Dynamics of Two Retroviruses, HIV and HTLV-1 by Prof. Ram N. Mahapatra (University of Central Florida, USA)
10. Orthogonal Arrays and Their Construction Procedure by Prof. Kashinath Chatterjee (Department of Statistics, Visva-Bharati University, Santiniketan)
11. Surface Potentials and Elliptic Boundary Value Problems by Professor Wolfgang L Wendland (Institute of Applied Analysis and Numerical Simulation, University of Stuttgart, Germany)
12. Mathematical and Computational Approaches for the Solution of Differential Equations by Prof. Maithili Sharan (Centre for Atmospheric Sciences, IIT Delhi)
13. Issues on Harmonic Univalent Mappings by Prof. S. Ponnusamy (Indian Statistical Institute, Chennai Centre.)
14. Research on Quadratic 0-1 Programming by Prof. Duan Li (Dept. of Systems Engineering and Engineering Management, The Chinese University of Hong Kong)
15. Integer/Global Optimization by Prof. Duan Li (Dept. of Systems Engineering and Engineering Management, The Chinese University of Hong Kong)

**Doctoral and MS Degrees Awarded**

1. Mr. Nihar Kumar Mahato : Variational Inequality and Equilibrium Problems with Generalized Monotonicity(Ph.D)
3. Mr. Nabin Kumar Sahoo : Frames, Numerical range and variational inclusion problems in semi-inner product spaces.(Ph.D)
4. Mr. Subrata Bera : Numerical Study of Electrokinetic Flows and Species Mixing in Microchannels(Ph.D)
5. Mr. Prashanth Maroju : Semilocal Convergence of Continuation Methods for Nonlinear Equations in Banach Spaces(Ph.D)
6. Mr. Amit Kumar Barnwal : On a Class of Nonlocal Doubly Singular Boundary Value Problems(Ph.D)
7. Mr. Prakash Goswami : ElectroKinetically Modulated Interfacial Transport in Narrow Confinements(Ph.D)

**Member - Professional Bodies**

1. Raja Sekhar, G P, *Member* - National Academy of Sciences, India
2. Raja Sekhar, G P, *Life Member* - Indian Society of Theoretical and Applied Mechanics
3. Panigrahi, Pratima, *member* - A member of Orissa Mathematical Society
4. Panigrahi, Pratima, *member* - A member of Academy of Discrete Mathematics and Application, India
5. Panda, Geetanjali, *Life member* - Operations Research Society of India

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6. Panda, Geetanjali, *Life member* - Orissa Mathematical Society
7. Nahak, Chandal, *Life Member* - Orissa Mathematical Society
8. Nahak, Chandal, *Life member* - Indian Science Congress Association
9. Nahak, Chandal, *Life Member* - Operational Research Society of India
10. Nahak, Chandal, *Member* - Virgia Academy of Science (USA)
11. Gayen, Rupanwita, *Member* - Indian Society for Theoretical and Applied Mathematics
12. Ghoshal, Koeli, *Life member* - The Indian Society for Hydraulics (ISH)
13. Biswas, Debapriya, *Life Member* - The International Society for Analysis, its Applications and Computation (ISAAC)
17. Ganguly, Asish, *Life Member* - Calcutta Mathematical Society Saltlake
18. Ganguly, Asish, *Category 5 Member* - American Mathematical Society USA
19. Ganguly, Asish, *Life Member* - Indian Association for Cultivation of Science, Jadavpur
20. Allu, Vasudeva Rao, *Life member in Indian Mathematical Society, India*
22. Allu, Vasudeva Rao, *Life member in Forum de Analystes, India*
26. Gupta, Nitin, *Life Member* - The Indian Science Congress association
27. Gupta, Nitin, *Life member* - Indian Statistical Association
28. Sekhar, T.Raja, *Life Member in The Indian Society of Theoretical and Applied Mechanics (ISTAM), India*
29. Sekhar, T.Raja, *Life Member in Ramanujam Mathematical Society, India*
30. Srivastava, Parmeshwary Dayal, *Member* - National Academy of Science ,India
31. Gupta, Dharmendra Kumar, *Life member of ISTAM*
32. Gupta, Dharmendra Kumar, *Member* - National Academy of Sciences
33. Biswal, Mahendra Prasad, *Life Member* - Operational Research Society of India
34. Biswal, Mahendra Prasad, *Life Member* - Indian Society of Theoretical and Applied Mathematics
35. Kumar, Somesh, *Life Member* - Forum for Interdisciplinary Mathematics
36. Kumar, Somesh, *Elected Life Member* - National Academy of Sciences
37. Kumar, Somesh, *Life Member* - Indian Society for Probability and Statistics
38. Kumar, Somesh, *Life Member* - Indian Statistical Association
39. Chakraborty, Debjani, *Member* - Indian National Academy of Science, Allahabad

**Member - Editorial Board**

1. Biswal, Mahendra Prasad (2012) *Member* - OPSEARCH
2. Biswal, Mahendra Prasad (2008) *Member of Editorial Board* - Mathematical Reviews

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Awards & Honours


Sponsored Research Projects

1. A Study on Quantum System with Position-dependent mass in the context of Hermitian/Non-Hermitian Interaction (ISIRD, SRIC, IIT KGP, Rs.3.10 Lakhs)
3. Classifcation of the actions of semi-simple Lie groups on homogeneous spaces. (SRIC, IIT Kharagur (ISIRD) (duration 3 years), Rs.1.65 Lakhs)
4. Coefficient bounds, distortion condition for subclasses of univalent functions and Nitsche type conjectures for harmonic univalent functions ( ISIRD, SRIC, IIT Kharagpur, Rs.3.70 Lakhs)
5. Construction of Boolean Functions to Design Cryptographically Secure Stream Cipher (ISIRD, SRIC, IIT-KGP, Rs.5.00 Lakhs)
6. Continuous and periodic review inventory model in Fuzzy and/or Stochastic Environment (Department of Science & Technology, Rs.13.00 Lakhs)
7. Cryptographic support for Digital Rights Management (CSIR, New Delhi, Govt. Of India, October 2012 – October 2015, Rs.30.00 Lakhs)
8. Cryptographic support for Digital Rights Management (CSIR, New Delhi, Govt. Of India, Rs.30.00 Lakhs)
9. Decision Theoretic Inference in Probability Models for Directional Data (Indian Statistical Institute, Kolkata, Rs.5.00 Lakhs)
10. Designing ABE Schemes for Fine-Grained Access Control in DTNs (ISIRD, SRIC, IIT-KGP, July 2011 – July 2014, Rs.5.00 Lakhs)
11. Development of prototype of digital infrared thermal and optical imaging based system for early detection of oral cancer (MHRD,DEPARTMENT OF HIGHER EDUCATION, NEW Delhi, Rs.79.00 Lakhs)
12. Elliptic curves and pairing based cryptography for wireless communication. (Department of Science & Technology(DST), Government of India, July 2012 – July 2015, Rs.10.92 Lakhs)
13. Investigation on residual lifetimes and inactivity times of coherent systems (NBHM, DAE (Dec 2012-Dec 2015), Rs.9.62 Lakhs)
14. Localization and Navigation Using Semantics(thematic), Probabilistic Robotics ,Fourth year (European Aeronautics Defence Space Company, Rs.49.00 Lakhs)
15. Modeling Electrokinetic Flows in Microfluidics (CSIR, Rs.15.00 Lakhs)
16. MODELLING OF AGGREGATION KERNELS OF POPULATION BALANCE EQUATION FOR FLUIDIZED BED GRANULATION ON THE BASIS OF MONTE CARLO SIMULATIONS (ISIRD, SRIC, IIT KARAGPUR, Rs.4.40 Lakhs)
17. Numerical Study on Electro-Hydrodynamics of Immiscible or Miscible Fluids with Conductivity Gradient (DST, Rs.20.00 Lakhs)
18. On a class of doubly singular boundary value problems arising in Physiology (DST, New Delhi, Rs.8.24 Lakhs)
19. On Some Problems of Concave and Meromorphically Starlike Univalent Functions (NBHM, DAE, Rs.8.63 Lakhs)
20. Redundancy allocations in system (DST (2014-2017), Rs.10.41 Lakhs)
22. Studies on the Analytic and Numerical Aspects of Queueing Models (DST, Rs.13.80 Lakhs)
23. WAVE INTERACTION WITH BARRIERS AND FLOATING ELASTIC PLATES (DST, Rs.11.00 Lakhs)

Consultancy Projects

1. NIL (, Rs.0.00 Lakhs)

Patents (filed / granted)

1. NIL
2. Procedure for Navigation with relations

Visits Abroad by Faculty Members

1. Bhowmik, Bappaditya - Delivered an invited talk at The 2nd GSIS-RCPAM international symposium on Geometric function theory (Tohoku University, Sendai, Japan, ) September 10--13, 2013.
2. Kumar, Jitendra - Research (Department of Chemical and Process Engineering, University of Magdeburg, Germany, ) 1 year
3. Allu, Vasudeva Rao - To deliver a talk at the conference (Isik University, Istanbul, Turkey, ) August 26--30, 2013
4. Biswal, Mahendra Prasad - Joint Research with Prof Duan Li (The Chinese University of Hong Kong, ) one month ( 6th May, 2013 to 5th June 2013 )

Invited Lectures by Faculty Members

1. An Overview on Introduction to Cryptography by Mukhopadhyay, Sourav (NIT Durgapur)
2. Fuzzy Programming with Single and Multiple Objective by Biswal, Mahendra Prasad (OMS (KIIT Bhubaneswar ))
3. Higher Order Newton Type Methods in Optimization Theory: A Review by Panda, Geetanjali (Bhubaneswar)
4. Vector Optimization Problems by Nahak, Chandal (UGC Refresher course at Utkal Universit)
5. Mathematical Programming Problems and its Applications by Nahak, Chandal (Jadavpur University)
6. Mathematical Programming Problems and its Applications by Nahak, Chandal (NIT Durgapur)
7. Regularized gap function as penalty term for constrained optimization problems by Nahak, Chandal (OMS Annual Conference, KIIT University Bhubaneswar) 
8. Fractional Calculus and its applications by Nahak, Chandal (Hindol College, Utkal University)
9. Some open problems on distance regular graphs by Panigrahi, Pratima (Jadavpur University, Kolkata)
10. Introduction to mixture theory and applications by Raja Sekhar, G P (Andhra University, Visakhapatnam)
11. Boundary Integral Methods and applications to Fluid Mechanics by Raja Sekhar, G P (XXII Congress of AP Society for Mathematical Sciences, Anurag Group of Institutions, Hyderabad)

12. Keynote Address on ‘on the sequence space- an overview of its developments’ by Srivastava, Parmeshwary Dayal (Vidyasagar University, Midnapore)

13. Operator Ideals using the concept of s-numbers by Srivastava, Parmeshwary Dayal (Orissa Mathematical Society, Hubballi)

14. Recent developments on gradient based numerical optimization algorithms by Panda, Geetanjali (Balami, Jalgaon SSBT College of Engineering and Technology)

15. Analysis of MAP/R/1 type Queues Using Roots – a Computational Endeavour by Gupta, Umesh Chandra (Calicut)


17. Inequalities for the coefficients of meromorphic starlike functions with non-zero pole by Bhowmik, Bappaditya (IIT Indore)

18. Unbounded convex polygons, Blaschke product and concave univalent functions by Bhowmik, Bappaditya (Tohoku University, Japan)

19. Integral Transform and their Applns. by Roy, Akhil Ranjan (Karim City College, Jamshedpur)

20. Fuzzy OPTIMIZATION by Roy, Akhil Ranjan (College of ENGG. and Management, Kolaghat)

**Papers Published in Journals**

1. A bi-level multi-choice programming problem By Avik Pradhan and M P Biswal Journal of Mathematics in Operational Research Accepted for Publica (2014)


5. A fuzzy random continuous review inventory model with a mixture of backorders and lost sales under imprecise chance constraint By Oshmita Dey, Bibhas Giri and Debjani Chakraborty International Journal of Operational Research in Press (2014)


12. A Secure and efficient Uniqueness and Anonymity Preserving remote user authentication scheme for connected health care  
   By Ashok Kumar Das, Adrijit Goswami  
   *Journal of Medical Systems* 37 (3), 1 - 16 (2013)

13. A study on parametric form of fuzzy line  
   By Debdas Ghosh and Debjani Chakraborty  

14. A third order iterative method for Adag  
   By S. Srivastava and D.K.Gupta  

15. An analytical model for bedload layer thickness  
   By Koeli Ghoshal and Debasish Pal  

16. An efficient numerical technique for the solution of nonlinear singular boundary value problems  
   By Singh, R., Kumar J.  
   *Computer Physics Communications* 185 (2014)

17. An explicit model for concentration distribution using biquadratic-log-wake-law in a sediment-laden open channel flow  
   By Snehasis Kundu and Koeli Ghoshal 

18. An interpolating by pass to Pareto Optimality in intuitionistic fuzzy technique for a EOQ model with time sensitive backlogging  
   By Sujit Kumar De, Adrijit Goswami, Shib Sankar Sana  
   *Applied Mathematics and Computation* 230, 664-674 (2014)

19. An inventory model for deteriorating items with fuzzy random planning horizon. pp. 185-197  
   By Soumen Bag and Debjani chakraborty 
   *Advanced Modeling and Optimization* Volume 16, Number 1 (2014)

20. Analysis of a discrete-time queue with load dependent service under discrete-time Markovian arrival process  
   By U. C. Gupta, S. K. Samanta and V. Goswami  
   *Journal of the Korean Statistical Society* Accepted (2014)

21. Analysis of queueing-time distributions for MAP/DN/1 queue  
   By Gagandeep Singh, U. C. Gupta and M. L. Chaudhry  

22. Analytically fuzzy plane geometry II  
   By Debjani Chakraborty and Debdas Ghosh  
   *Fuzzy Sets and Systems* in Press (2014)

23. Application of uncertain programming to an Inventory model for imperfect quality under time varying demand  
   By Arindum Mukhopadhyay , A. Goswami  
   *Advanced Modeling and Optimization* 15 (3) , 565 - 582 (2013)

   By Singh, R., Kumar, J., Nelakanti, G.  

   By Randhir Singh, Jitendra Kumar, Gnaneshwar Nelakanti  
   *Computational and Applied Mathematics* (2013)

26. Approximate solution of Urysohn integral equations using the Adomian decomposition method,( Article ID 150483)  
   By Randhir Singh, Gnaneshwar Nelakanti, Jitendra Kumar,  

27. Central functions for classes of concave univalent functions  
   By B. Bhowmik and K-J. Wirths  
   *Mathematica Slovaca* To Appear. (0)

28. Certain Interesting implications of Arestovs integral inequalities for polynomials  
   By V.K.Jain  
   *Journal Of Indian Mathematical Society* 81(nos.1-2)79-86 (2014)

   By Debapriya Biswas and Vladimir V Kisil  
   (In preparation) (0)

30. Combined electroosmosis-pressure driven flow in a micro-channel with nonhomogeneous surface potential  
   By S. Bera and S. Bhattacharyya  

31. Concentration distribution in an open channel flow by observational approach  
   By Snehasis Kundu and Koeli Ghoshal  

32. Connectivity and Planarity of Power Graphs of Finite Cyclic , Diacyclic, and Dihedral Groups  
   By Sriparna Chattopadhyay and Pratima Panigrahi  
   *Algebra and Discrete Mathematics* 17 (2014)
42. Fuzzy ideal cone: A method to obtain complete fuzzy nondominated set of fuzzy multi-criteria optimization problems with fuzzy parameters By Debdas Ghosh and Debjani Chakraborty IEEE Xplore 1-8 (2013)
43. Fuzzy stochastic EOQ inventory model for items with imperfect quality and shortages are backlogged By Ravi Shankar Kumar, A. Goswami Advanced Modeling and Optimization 15 (2), 261 - 279 (2013)
47. Geometry of the Parabolic Space. By Debapriya Biswas (In preparation).


57. Improved estimators for parameters of a Pareto distribution with a restricted scale By Y. M. Tripathi, Somesh Kumar & C. Petropoulos *Statistical Methodology* V. 18, pp. 1-13 (2014)

58. Improved estimators for the reliability of a series system By A.K. Mahapatra, Somesh Kumar and P. Vellaisamy *International Journal of Reliability, Quality and Safety Engineering* V. 20, No.6 (2013)


64. λ-statistical convergence of fuzzy numbers and fuzzy functions of order θ By P.D.Srivastava & Sarita Ojha *Soft Computing* 18 (5), 1027-1032 (2014)


72. Modeling of aggregation kernel using Monte-Carlo simulations of spray fluidized bed agglomeration By Hussain, M., Kumar, J., Tsotsas, E. *American Institute of Chemical Engineers Journal* 60 (2014)
73. Multi-level linear programming problem involving some multi-choice parameters By Avik Pradhan and M P Biswal International Journal of Mathematics in Operational Research Accepted (2014)

74. Multi-objective Optimization based on Fuzzy If-Then Rules By Debjani Chakraborty and Debashree Guha IEEE Xplore (2013)


83. On the growth of analytic functions in the class $mathcal{U}(lambda)$ By A. Vasudevarao and H. Yanagihara, Computational Methods in Function Theory 13(4), 613---634 (2013)


92. Some difference sequence space defined by using De La Vallee-Poussin Mean By P.D.Srivastava & Atanu Manna Asian-European Journal of Mathematics Vol. 6, No. 2 (2013)

94. Some mth-order Difference Sequence Spaces of Generalized Means and Compact Operators

95. Soret effect on mixed convection flow in a nanofluid under convective boundary condition

96. Statistical convergence of generalized difference sequence space of fuzzy numbers

97. Stochastic Manufacturing System with Process Deterioration and Machine Breakdown

98. The Adomian decomposition method with Green’s function for solving nonlinear singular boundary value problems

99. The extended F-implicit complementarity and variational inequality problems in semi-inner product spaces

100. The Invariance of Cycles in Upper half plane under Mobius Transformation in EPH cases.
By Debarpriya Biswas (Communicated), (0)

101. Thermocapillary drift on a spherical drop in a viscous fluid

102. Thermophoretic and Nonlinear Convection in Non-Darcy Porous Medium

103. Turbulence, suspension and downstream fining over a sand-gravel mixture bed

104. Unconditionally-Secure Key Pre-Distribution for Triangular Grid Based Wireless Sensor Network

105. Vector equilibrium problems with new types of generalized monotonicity mappings

106. Viscous dissipation and magnetic field effects in a non-Darcy porous medium saturated with a nonfluid under convective boundary condition

**Papers Presented in Conferences**

1. Decentralized Ciphertext-Policy Attribute-Based Encryption Scheme with Fast Decryption,

2. On Algebra and Applications of Soft Set Theory,

3. A Certificateless Authenticated Key Agreement Protocol for Digital Rights Management System,

4. A Modified Newton Method for Optimization Problem in Higher Dimension,

5. A new classical method to obtain complete Pareto set of multi-criteria optimization problems,
By Debdas Ghosh and Debjani Chakraborty, *International conference on optimization modelling and applications, OPTIMA-2012*, University of Delhi, Delhi, (0)


10. Applications of the Hausdroff Measure of noncompactness on the space space lp(r,s, t B^\{m\}), lp infinity, By P.D. Srivastava & Amit Majhi, ICMC, Haldiya Institute of Technology, Haldiya, (2013)


25. Fuzzy Mellin transform to generate fuzzy moments, By Sandip Ghosh and Debjani Chakraborty, International conference on Mathematical Sciences for Advancement of Science and Technology, IMBIC Kokata, (0)
26. Fuzzy Two Stage Stochastic Geometric Programming with Fuzzy Random Variable Coefficients, By Sandip Ghosh and Debjani Chakraborty, Indian science congress Kolkata, Calcutta University, Kolkata, (0)
27. Fuzzy Two-stage Stochastic Nonlinear Programming, By Sandip Ghosh and Debjani Chakraborty, International Conference on Optimization Modelling and Applications (OPTIMA-2012), University of Delhi, Delhi, (0)
29. Inference in directional distributions, By Somesh Kumar, 41st Annual Conference of OMS & International Conference on Industrial Mathematics and Scientific Computing, KIIT University, Bhubaneswar, (2014)
34. Multi-objective Optimization based on Fuzzy If-Then Rules, By Debjani Chakraborty and Debashree Guha, 2013 IEEE International Conference on Fuzzy Systems, Hyderabad, (0)
40. On solving fuzzy multi-criteria quadratic, Programming Problems, By Debdas Ghosh and Debjani Chakraborty, 6th International Conference MSAST 2012, IMBIC Kokata, (0)
47. Some geometric properties of Generalized Cesaro -MusielakOrlicz spaces equipped with Amemiya Norm, By P. D. Srivastava & Atanu Manna, ICMC, Haldiya Institute of Technology, Haldiya, (2013)
48. Some properties of fuzzy trigonometric functions, By Debdas Ghosh and Debjani Chakraborty, 100th Indian Science Congress, Calcutta University, Kolkata, (0)
49. The Double diffusive free convection flow past an inclined plate in non-Darcy porous medium saturated with nanofluid, By Abhijit Sutradhar and P V S N Murthy, 58th Congress of ISTAM, BESU, Kolkata, (2013)
Department of Mechanical Engineering

**Head**
Prof. Prasanta Kumar Das

**Professors**

Bhattacharyya, Ranjan  
*Ph.D. (Kentucky)*, Nonlinear Elasticity, Vibration, Dynamical Systems

Bhattacharyya, Sati Nath  
*Ph.D. (IIT Kharagpur)*, Fluid Mechanics

Bhattacharyya, Souvik  
*Ph.D. (Texas A & M)*, Thermal science, Natural refrigerant based transcritical heating cooling systems, Thermodynamic modelling and optimization, Natural circulation loops (NCLs), Energy Engineering and Planning

Chakraborty, Suman  
*Ph.D.*, Microfluidics and Nanofluidics, Interfacial Phenomena and Phase Change, Computational Fluid Dynamics (CFD)

Chattopadhyay, Ajay Kumar  
*Ph.D. (Jadavpur Univ).*, Metal-Ceramic Joining, Machining, Grinding, Surface Coating

Das Gupta, Anirvan  
*Ph.D. (Kanpur)*, Wave propagation, Dynamics of discrete and continuous systems, Mechanics of membranes, Vibration induced particle transport

Das, Manab Kumar  
*Ph.D. (IIT Kanpur)*, Fluid Mechanics Heat Transfer

Das, Prasanta Kumar  
*Ph.D. (IIT Kharagpur)*, Thermal Engineering, Gas-liquid two phase flow, instrumentation and hydrodynamics, CFD for multiphase flow, Nano fluids, Thermo hydraulics of nuclear reactors, Liquid-liquid two phase flow, Experimental thermo-fluid science

Dash, Sukanta Kumar  
*Ph.D. (IIT Kharagpur)*, pressure drop in gas solid flow, free surface flow

Guha, Abhijit  
*Ph.D. (Cambridge)*

Kumar, Cheruvu Siva  
*Ph.D. (IIT Kharagpur)*, Robotics, Control Systems, Computer and Telecommunication Networks

Maiti, Biswajit  
*Ph.D. (IIT Delhi)*

Maiti, Rathindranath  
*Ph.D. (IIT Kharagpur)*, Mechanical and Fluid Power Transmission and Gear Engineering, Mechanical and Fluid Power Transmission and Gear Engineering

Mohanty, Amiya Ranjan  

Mukherjee, Amalendu  
*Ph.D. (IIT Kharagpur)*, System Dynamics and Controls

Nath, Ashish Kumar  
*Ph.D. (Bombay University)*, Laser material interaction and processing, Underwater laser processing, Nontraditional manufacturing processes

Pal, Surjya Kanta  
*Ph.D (IIT Kharagpur)*, Manufacturing Process Modelling and Simulation
Paul, Soumitra  
Ph.D. (IIT Kharagpur), Machining and Grinding, Cutting Tool Coating

Pratihar, Dilip Kumar  
Ph.D. (IIT Kanpur), Soft Computing, Robotics, Manufacturing Science

Ramgopal, Maddali  
Ph.D. (IIT Madras), Refrigeration & air conditioning, Carbon dioxide based natural circulation loops, Solid sorption systems

Ray, Manas Chandra  
Ph.D. (IIT Kharagpur), Fuzzy Fiber Reinforced Composites, Smart Structures, Composite Structures, Nanocomposites, Fluid-structure interaction, Active constrained layer damping

Roy Chowdhury, Asimava  
Ph.D. (IIT Kharagpur), cutter design and manufacture for CTC machine (tea leaf cutting), Rapid prototyping with curved layers - CLFDM (Curved layer fused deposition modeling), CNC machining of free form (curved) surfaces, Direct slicing (without tessellation) for Rapid prototyping, Modification of bicycle to add body thrust

Roy Chowdhury, Samar Kumar  
Ph.D. (Birmingham), Tribology Bio-Tribology Nano-Tribology

Roy, Subhransu  
Ph.D. (Penn State), Heat Transfer, Laser Processing of Materials, Optical diagnostics for flow and heat transfer

Samantaray, Arun Kumar  
Ph.D (IIT Kharagpur), Systems and Control, Vehicle system dynamics, Rotor dynamics, Nonlinear Mechanics

Satyamurty, V V  

Som, Sankar Kumar  
Ph.D. (IIT Kharagpur),

**Associate Professors**

Bandyopadhyay, Partha Pratim  
Ph.D. (IIT Kharagpur), Thermally Sprayed coatings, Laser processing of materials

Bhattacharyya, Kingshook  
Ph.D (IIT Kharagpur), Dynamics

Biswas, Kajal  
Ph.D. (IIT Kharagpur), Welding Fracture Mechanics

Chakraborty, Goutam  
Ph.D (IIT Kanpur), Applied Mechanics

Gupta, Sanjay  
Ph.D. (Delft), Biomechanics, Finite Element Analysis, Machine Design

Moulic, Sandipan Ghosh  
Ph.D. (Arizona), Theoretical and computational fluid dynamics and heat transfer, Hydrodynamic and thermal instability, Spectral methods in fluid dynamics, Perturbation methods in fluid dynamics, Mixed convection

Ray, Kumar  
Ph.D. (IIT Kharagpur),

Saha, Partha  
Ph.D. (IIT Kharagpur), Laser processing of materials, Micro manufacturing, Nonconventional manufacturing, Rapid prototyping

**Assistant Professors**

Das, Arup Kumar  
Ph.D. (IIT Kharagpur), Two phase flow, Microfluidics, Bubble and drop dynamics, Heat transfer, Numerical methods, Fire engineering

Deb, Sankha  
Ph.D. (Univ. of Montreal, Canada), Computer Integrated Manufacturing, Computer-Aided Process Planning for Manufacturing

Jayaprakash, K R  
*Ph.D.(Univ. of ILLINOIS)*, Nonlinear Dynamics and Vibrations, Wave Propagation, Nonlinear Waves in Granular Chains

Kalelkar, Chirag Deepak  
*Ph.D. (IISc., Bangalore)*, Rheology, Fluid Dynamics

Panda, Sushanta Kumar  
*Ph.D.(IIT, Delhi)*, Sheet metal forming, Hydroforming, Bulk forming, Formability test design and development, Theory of plasticity for metal forming, Laser and resistance spot welding of sheet metal

Paul, Jinu  

Racherla, Vikranth  
*Ph.D.(Univ. of Pennsylvania)*, Failure mechanics, Composite mechanics, Metal plasticity, Numerical modeling of thermo-mechanical processes

Ramanujam, S  
*Ph.D.(IIT Kharagpur)*, IC Engines

Sarangi, Mihir  
*Ph.D.(IIT Kharagpur)*

Sidpara, Ajay Muljibhai  
*Ph.D.(IIT Kanpur)*, For more information: https://sites.google.com/site/sidajay80/, Development of nanofinishing processes for complex surfaces, Magnetorheolocal fluid based finishing, Micro machining, Unconventional machining processes

**Faculty Appointments**

Jayaprakash K R  
Assistant Professor

A.K. Das  
Assistant Professor

A.M. Sidpara  
Assistant Professor

**Faculty Resignation**

Jayaprakash K R  
Assistant Professor

**Brief Description of on-going activities**

Expert systems in robotics, manufacturing science, medical diagnosis etc. using soft computing

Bio-micro-fluidics and microscale transport processes, Transport Phenomena in Phase Change Problems

Laser materials Processing

CFD/Lattice Bolzmann Method in Complex Flows

High Efficiency Deep Grinding: Modelling & Experimentation

High Pressure Cooling in Machining of Super Alloys
TiN hard coating by unbalanced magnetron using Physical Vapour Deposition Technique

Multi Layer TiN-MoS2 coating on cutting tools by unbalanced magnetron technique

Machinability study of Inconel 718

Development of control strategies for autonomous underwater vehicles

Softcomputing techniques used in conventional and nonconventional machining

Simulation of liquid sloshing in a tank using numerical grid generation techniques

Prediction of fluid flow and heat transfer from wavy surfaces

Design and development of carbon di-oxide based heat pump systems

3-D printing

Noise and vibration engineering

Lab-on-a-chip based devices

Smart composite materials and structures

Micromechanics of novel radially aligned carbon nanotube reinforced composites

**Thrust Areas**

1. High Speed Machining, Grinding and Development of Cutting Tools / Grinding Wheel
4. Microfluidics, lab-on-a-chip
5. Smart composite materials, micromechanics, radially aligned carbon nanotube reinforced composites

**New Acquisitions**

1. Micro Bath (Synchro Electronics, Kolkata) 7.22 Lakhs
2. Server Mounted Rack (Wire Tech, Kolkata) 20.53 Lakhs
3. PHD Ultra I/W Programmable Syringe Pump (Harvard Apparatus, USA) 5.49 Lakhs
4. ANSYS Academic Research Software 5.28 Lakhs
5. Experimental Module Optical Elasto-hydro-dynamics (M/s GUNT, Germany) 5.9 Lakhs
6. CVC 10MR (M/S Ador FonTech, Bangalore) 7.31 Lakhs
7. Motorized Pendulum Impact Test M/C (M/S Instron) 34.96 Lakhs
8. Plasma Hand-held Gun (M/S Ador FonTech) 9.96 Lakhs
9. Zeiss Stereo Microscope (M/S Carl Zeiss, Germany) 10.45 Lakhs
10. Micro Hardness Tester (M/S OMNITECH, Pune) 26.30 Lakhs
11. Fibre Coupled Laser Diode System (M/S New Age Instruments) 128.5 Lakhs
12. Friction Stir Welding Machine (M/S Bangalore Integrated Systems) 196.9 Lakhs
13. Portable TIG Welding Machine (M/S Associate India) 7.05 Lakhs
14. Upgrade of Rapid Prototyping System (DMLS Additive Manufacturing System) 112.7 Lakhs
15. Micrometer (M/S ACIN Instruments) 7.49 Lakhs
16. Climatic Chamber (M/S Kaleidoscope Solution) 41.9 Lakhs
International Collaborations

Student exchange program with University of South California (USA)

Student exchange program with University of Erlangen (Germany)


Research collaboration with Universite des Sciences et Technologies de Lille (France)

UK-India Education and Research Initiative (UKIERI) Project in collaboration with Univ. Southampton (UK)

Research collaboration with Växjö University, Sweden

Indo-US Project/ DST-NSF Project with UIUC and UCI (USA)

DST-JSPS Project with University of Tokyo and Tokai University (Japan)

Lectures by Visiting Experts

1. Cheif Guest Lecture on Research Scholars Day by Dr. Guru Prakash (Intel India)
2. You can invent by Praveen Vettiyattil (Sharada solutions, Coimbatore, Tamil Nadu)
3. Shape Feature Taxonomy Development for Toolpath Optimization in Incremental Sheet Forming by Dr. Amar Kumar Behera (Faculty candidate)
4. Design and prediction of thermodynamic and kinetic behavior of energy storage materials through atomic and bulk scale computation by Dr. Jishnu Bhattacharya (Post-doctoral fellow at Northwestern University)
5. Outline And Recent Research Topics Of Railway Technologies by Prof Kimihiko Nakano (Institute of Industrial Science, University of Tokyo, Japan)
6. An experimental and numerical investigation on two wire tandem submerged arc welding process by Dr. D. V. Kiran (Department of mechanical engineering, KAIST, Daejeon, South Korea)
7. From Macromolecular Structure to Polymer Processing: Bridging length and time scales by Dr. Ashish Lele (National Chemical Laboratory, Pune)
8. Computational methods for pre-clinical analysis of orthopaedic implants by Dr. Mamadou Bah and Prof. Martin Browne (Southampton University)
9. Advanced Combustion Modeling of Turbulent Sprays by Dr. Santanu De (Michigan Technological University)
10. Challenges and Recent Advances in Joint Replacement by Dr. Debasis Chakvarty (Fortis Hospital, Kolkata)
11. Micro and nano-fluidics enabled frontiers for bioenergy and biomedical engineering by Dr. Alok Kumar (University of Alberta, Canada)
12. Impact of Capillarity and Wetting in Micro-scale Transport by Prof. Sushanta Mitra (University of Alberta, Canada)

Doctoral and MS Degrees Awarded

1. Mr. Satbhai Ojas Shriniwas : Heat Transfer Model For Laser Surface Remelting: Towards A Multi-Scale Solidificaion Model(MS)
2. Mr. Arindam Bhattacharjee : The Bouc-Wen Hysteresis Model : Analysis, Extension, and New Experimental Application(MS)
3. Mr. Rama Kanta Nayak : Vibration Induced Particle Transport (MS)
4. Mr. Ganesh Tamadapu : Inflation Mechanics and Dynamics of a Hyperelastic Toroidal Membrane (Ph.D.)
5. Mr. Prasanta Kumar Pradhan : Condition monitoring of submersible pump using Motor Current Signature Analysis (Ph.D.)
6. Mr. Sukumar Pati : Some aspects of evaporation and condensation over small scales (Ph.D.)
7. Mr. Shantanu Pramanik : Numerical Simulation of Turbulent Jet Flow Over Oblique Wall (Ph.D.)
9. Mr. Shailesh I. Kundalwal : Micromechanical Analysis of Novel Continuous And Short Fuzzy Fiber Reinforced Composites (Ph.D.)
10. Mr. Mohan Jagadeesh Kumar : Laminar Forced Convection with Viscous Dissipation in the Entrance Region of Annuli Subjected to Constant Temperature (Ph.D.)
12. Mr. Chippa Shriniwas Pandurang : On the Dynamics of Lubricated Roller Bearings (Ph.D.)
15. Rajesh Ghosh : Biomechanical Analyses of the Pelvic Bone And Optimal Design Considerations for Uncemented Acetabular Prosthesis (Ph.D.)

Member - Professional Bodies

1. Ray, Manas Chandra, *Life Member* - ISTAM
2. Ramgopal, Maddali, *Member* (MIE) - Institute of Engineers (IE) India
3. Saha, Partha, *Life Member* - Indian Laser Association
4. Chakraborty, Suman, *Member* - ASME
5. Chakraborty, Suman, *Life Member* - ISHMT
6. Chakraborty, Suman, *Member* - APS
7. Pratihar, Dilip Kumar, *Member* - Association for Machines and Mechanisms
8. Pratihar, Dilip Kumar, *Member* - IEEE
10. Gupta, Sanjay, *Member* - European Society of Biomechanics
11. Sarangi, Mihir, *Regular* - Society for Experimental Mechanics, Inc., USA
12. Nath, Ashish Kumar, *Life member* - Indian Laser Association
13. Deb, Sankha, *Member* - American Society of Mechanical Engineers (ASME)
15. Das, Prasanta Kumar, *Life member* - Indian Society of heat and mass transfer
17. Kumar, Cheruvu Siva, *Editor* - Editorial Board IEEE Access
18. Kumar, Cheruvu Siva, *Member* - American Society of Mechanical Engineers
20. Mohanty, Amiya Ranjan, - *Member*, National Committee on Noise Pollution Control, CPCB, Government of India
Member - Editorial Board

4. Chakraborty, Suman (0) Editorial Board Member - Scientific Reports (Nature)
5. Chakraborty, Suman (0) Editorial Board Member - International Journal of Micro-Nano Scale Transport
6. Chakraborty, Suman (0) Editorial Board Member - Journal of The Institution of Engineers (India) Series C
7. Chakraborty, Suman (0) Guest Editor - Biomicrofluidics
8. Chakraborty, Suman (0) Editorial Board Member - International Journal of Micro and Nano Systems
9. Chakraborty, Suman (0) Editorial Board Member - ISST Journal of Mechanical Engineering
10. Chakraborty, Suman (0) Editorial Board Member - Open Journal of Thermodynamics
11. Deb, Sankha (0) Editorial Board Member - Journal of Modern Manufacturing Technology
13. Kumar, Cheruvu Siva (2013) Associate Editor - Sadhana
15. Mohanty, Amiya Ranjan (0) Technical Acoustics-Editor - Journal of the Acoustical Society of India
17. Paul, Soumitra (2013) Associate Editor - Sadhana - Academy Proceedings in Engineering Sciences
19. Pratihar, Dilip Kumar (2012) Member of Editorial Board - Advances in Robotics Research, an International Journal
22. Pratihar, Dilip Kumar (2014) Associate Editor - International Journal of Computer Information Systems and Industrial Management Applications
25. Pratihar, Dilip Kumar (2009) Member of Editorial Board - Technology and Investment
27. Pratihar, Dilip Kumar (2009) Member of Editorial Board - Intelligent Information Management
29. Pratihar, Dilip Kumar (2013) Member of Editorial Board - Statistics, Optimization and Information Computing
30. Pratihar, Dilip Kumar (2011) Member of Editorial Board - Journal of Control Engineering and Technology
32. Pratihar, Dilip Kumar (2008) Member of Editorial Board - International Journal of Advanced Intelligence Paradigms
33. Pratihar, Dilip Kumar (2011) Member of Editorial Board - Intelligent Control and Automation
34. Ramgopal, Maddali (2009) Member - Editorial Advisory Board, Buildings & Environment
35. Ray, Manas Chandra (2010) Editorial Board Member - Smart Materials Research

Awards & Honours

1. Chakraborty, Suman (2014) INAE Chair Professorship
2. Bhattacharyya, Souvik (2013) INAE Outstanding Teacher Award, First Recipient
4. Sidpara, Ajay Muljibhai (2013) SRISTI Technological edge/Strategic Innovation Award in “Gandhian Young Technological Innovation Award 2013” at Indian Institute of Management Ahmedabad.

Sponsored Research Projects

1. A comprehensive study of drop dynamics and its manipulation due to electrowetting (DST, Rs.16.00 Lakhs)
2. Active structural-acoustic control of smart structure using 1-3 piezoelectric composite (DST, Rs.16.00 Lakhs)
3. Advanced research in Mechanical Engineering System (DST FIST program) (DST, Rs.694.00 Lakhs)
4. Aerodynamic design of traction rolling stock with speed potentials of 250 KM/H upgradeable to 350 KM/H (Indian Railways, Rs.734.24 Lakhs)
5. Algae mediated bio-sequestration and storage of carbon dioxide from coal based flue gas and assessment of Algal biomass for animal feed application (WB - DST, Rs.28.00 Lakhs)
6. Biomechanical Assessment of Current and Novel Total Knee Replacement (UKIERI British Council, Rs.10.41 Lakhs)
7. Carbon dioxide based natural circulation loops (CSIR, Rs.13.50 Lakhs)
8. Centre of Excellence for Training and Research in Microfluidics (IIT Kharagpur, Rs.0.00 Lakhs)
9. Creep and warping analysis of hot running loco wheels towards development of design guidelines against gauge widening (Indian Railways, Rs.49.79 Lakhs)
10. Deep drawing of laser welded advanced high strength steels (Department of Science and Technology, Rs.19.02 Lakhs)
11. Demonstration prototype development of transcritical CO2 based cooling system (DST, Rs.48.00 Lakhs)
12. Design and development of automobile for SAE Formula 1 international competition for students (SRIC, Rs.10.00 Lakhs)
13. Design and development of CO2 based refrigeration systems (SERB (DST), Rs.40.00 Lakhs)
14. Design and Development of Multi-material deposition system (DST, Rs.1331400.00 Lakhs)
15. DEVELOPMENT & DEMONSTRATION OF 500 W SOFC STACK WITH HYDROGEN AS FUEL & TESTING OF SHORT STACK WITH SYNTHETIC GAS (CSIR, Rs.9.06 Lakhs)
16. Development and performance evaluation of thermally sprayed ball milled diamond-metal composite powder for bearing surface application (DST, Rs.43.00 Lakhs)
17. Development and processing of polymer based nanocomposite materials (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
18. Development of a Schlieren imaging system to study natural convection of heated vertical plate (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
19. Development of Autonomous Underwater Vehicle (completed 2011) (Ministry of Earth Sciences, Rs.693.00 Lakhs)
20. Development of Cage for Mariculture through Numerical and Physical Modeling (Ministry of Earth Science, Government of India., Rs.45.00 Lakhs)
21. DEVELOPMENT OF HIGH TEMPERATURE PULSATING HEAT PIPE BASED PASSIVE COOLING ELEMENT (BARC, Rs.40.47 Lakhs)
22. Development of Remote Laboratory for Computer Integrated Manufacturing System (MHRD, Rs.91.50 Lakhs)
23. Development of Robust Signal Processing Techniques for Detection of Underwater Impact and Burst Noise (UIB) (Ministry of Earth Sciences, Rs.60.00 Lakhs)
24. Development of Sound Proofing Composite Materials using Jute Products (SPC) (JMDC, Kolkata, Rs.32.26 Lakhs)
25. Droplet-based Cooling of Electronic Hot Spots (ISRO, Rs.0.00 Lakhs)
26. Dynamics of Shrouded and Part-span Shrouded Blade Assembly with Floating Mass Damper (GTRE, DRDO, Bangalore, Rs.35.50 Lakhs)
27. Empirical Mode Decomposition of Vibration signals for Fault Detection in Mechanical Systems on Board Naval Platforms (VFM) (NRB, DRDO, Rs.24.90 Lakhs)
28. Establishing a nanofinishing research facility for complex surfaces (SRIC, IIT Kharagpur, Rs.27.25 Lakhs)
29. Establishment of an advanced research facility for EB welding and process development related to programs of interest to DAE (BRNS, DAE, Mumbai, Rs.42.53 Lakhs)
30. Establishment of Nationwide QoS TestBed (completed 2009) (Ministry of Communications and Information Technology, Rs.136.00 Lakhs)
31. Experimental evaluation of forming limit diagram and forming behavior of differently heat treated Inconel-718 material (ISRO, India, Rs.25.56 Lakhs)
32. EXPERIMENTAL INVESTIGATIONS AND THEORETICAL ANALYSIS OF INTERNAL HYDRAULIC JUMP IN CLOSED CONDUITS (DST, Rs.45.11 Lakhs)
33. Extensional Rheometer for Microscale Samples (SERB, Rs.44.41 Lakhs)
34. Finite element analysis of weld location on formability of tailor welded blanks (SRIC, IIT Kharagpur, Rs.4.90 Lakhs)
35. HVOF sprayed ultrahard nanocomposites (DST SERB, Rs.43.00 Lakhs)
36. Integrated green process for biological carbon sequestration coupled with domestic sewage remediation by alage in closed photo bio-reactor (DST, Rs.27.00 Lakhs)
37. Materials for Underwater Vehicles (Ministry of Earth Sciences, Rs.48.00 Lakhs)
38. MIXING OF STRATIFIED LAYERS: EXPERIMENTAL AND NUMERICAL INVESTIGATIONS (ISIRD, IIT Kharagpur, Rs.27.55 Lakhs)
39. Modelling Fish Locomotion in Turbulent Vortices (CSIR, Rs.0.00 Lakhs)
40. Modular Engineering of Vascular Tissue: A Bottom-up Approach (DBT, Rs.0.00 Lakhs)
41. MVL (MHRD, Rs.200.00 Lakhs)
42. National Mission Project on Education through ICT, Developing suitable pedagogical methods (Thermodynamics) (MHRD, Rs.0.00 Lakhs)
43. Numerical simulation of turbulent plane offset jet flow and conjugate heat transfer (Department of Science and Technology, Rs.9.60 Lakhs)
44. On the dynamics of artificial joints (SRIC, IIT Kharagpur, Rs.4.90 Lakhs)
45. Optimal design of human muscle like electro active polymer actuators (DST, Rs.8.14 Lakhs)
46. Optimal design of tough wear resistant nanostructured coatings (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
47. Participation in AUVSI - student coordination (NIOT Chennai, Rs.11.00 Lakhs)
48. Pedagogy (Mechanics of materials) (MHRD, Rs.0.00 Lakhs)
49. Pedagogy Project on Refrigeration and Air Conditioning (National Mission Project on Education through ICT, Rs.0.00 Lakhs)
50. Plant on a Chip (SRIC, IIT Kharagpur, Rs.250.00 Lakhs)
51. Pre-clinical analysis of failure mechanisms and design optimization of acetabular prosthesis (DBT, New Delhi, Rs.23.38 Lakhs)
52. Real Time Virtual Labs (Ministry of Human Resources Development, Rs.743.00 Lakhs)
53. Realtime Virtual Lab on Automotive Systems (RTV-2) (MHRD, Rs.65.00 Lakhs)
54. Remote sensing network for water quality management (ISTP and DBT, Rs.0.00 Lakhs)
55. Research on underwater robotics (SRIC, IIT Kharagpur, Rs.18.00 Lakhs)
56. Robotics for advanced manufacturing applications (Centre for Robotics, IIT Kharagpur, Rs.48.50 Lakhs)
57. Setting up a research and development centre for Damodar Valley Corporation at Kolkata (DVC, Kolkata, Rs.10600.00 Lakhs)
58. Studies on process optimisation and visualisation of laser cladding process (Board for Research in Nuclear Sciences (BRNS), DAE, GOL, Rs.18.86 Lakhs)
59. Study of flow and thermal characteristics in the near field of two parallel plane jets. (COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, Rs.9.56 Lakhs)
60. Suspension and Bogie Technology for High Speed Train (RDSO, Rs.86.00 Lakhs)
61. SYNTHESIS, CHARACTERIZATION, WETTING EFFECTS AND DROP MANIPULATION OF NANOPARTICLE BASED FERROFLUIDS OVER SUBSTRATES UNDER STATIC AND SLIDING MAGNETIC (CSIR, Rs.33.83 Lakhs)
62. Thermomechanically processed high strength bainitic steel rails for Indian Railways (RD & SO, Ministry of Railways, Rs.199.65 Lakhs)
63. Turbulent Flow Computation of Two-Dimensional Incompressible Viscous Flow through a Cascade (ARDB Aerodynamics Panel, Rs.12.61 Lakhs)
64. UKIERI travel grant under thematic partnership in low carbon materials technologies, innovations, and applications (UKIERI, Rs.0.00 Lakhs)
65. Underwater Acoustic Sensors for AUVs (Ministry of Earth Sciences, Rs.48.00 Lakhs)
66. VIRTUAL LAB FOR MULTIPHASE FLOW (MHRD, Rs.0.00 Lakhs)
67. Virtual Laboratory on Mechanical Systems and Signal Processing (VLS/16) (MHRD, Rs.54.00 Lakhs)
68. Virtual Labs (Mechanisms) (MHRD, Rs.17.00 Lakhs)
69. Virtual Labs - Main Phase (Simulation) (MHRD - NMEICT, Rs.823.00 Lakhs)
70. Virtual Labs - Pilot Phase (MHRD - NMEICT, Rs.200.00 Lakhs)
71. VLS-4 (MHRD, Rs.58.00 Lakhs)
72. Wireless Internet (Vodafone Centre of Excellence in Telecommunications / Telecom Centre of Excellence, Rs.48.00 Lakhs)

Consultancy Projects

1. Application of finite element and other analytical methods for failure analyses of roller bearings (ABC Bearings Limited, Bharuch, Gujarat, Rs.6.00 Lakhs)
2. CAD Modeling and CNC Machining of Engineering components (Rs.0.50 Lakhs)
3. Demonstration of and advice on finite element analyses of elastic-plastic structures (Usha Martin Limited, Kolkata, Rs.2.00 Lakhs)
4. Design and analyses of roller entry guides (Tata Steel, Rs.2.50 Lakhs)
5. Design of cooling system for Plant Growth Chamber (SciGenics Biotech Private Limited, Rs.1.25 Lakhs)
6. Design of silencers for blowers (DDSB) (M/s. Everest Blowers Pvt. Ltd. Haryana, Rs.0.00 Lakhs)
7. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (Pedagogy) (MHRD, Rs.0.00 Lakhs)
8. Development of System for monitoring of slow speed running equipment (SAIL, RDCIS, Ranchi - Completed, Rs.8.50 Lakhs)
9. Experimental sample preparation by Wire Cut EDM (Various institutes, Rs.0.75 Lakhs)
10. Free surface fluctuation in the mold with different types of SEN (IFGL Refractories Ltd, Rs.2.35 Lakhs)
11. Free surface fluctuation in thin slab casting (IFGL Refractories Ltd, Rs.2.35 Lakhs)
12. Inspection and Opinion on Engine and Transmission Sub-Assemblies (ITSA) (BMW India Pvt. Limited, Gurgoan, Rs.0.00 Lakhs)
13. Interpolation of Modern CAD Data and Development of a Homogenization Based Model for Vapour Cloud Explosion of Congested Plants (Shell, Rs.0.00 Lakhs)
14. Laser Processing of Materials (LAPM) (Various Departments / Centres of IIT Kharagpur and Outside Institutions, Rs.0.00 Lakhs)
15. Mathematical model for argon injection into a water mold (IFGL Refractories Ltd, Rs.2.35 Lakhs)
16. Modelling and Simulation of Hydro-pneumatic Shock Isolation System, through Bond Graph on SOMBOLS Shakti (DRDO, R&D(E) Engineers, Through High Tech Consultance, STEP iit Kharagpur, Rs.15.00 Lakhs)
17. Optimal Design of Leaf Springs (Soni Auto and Allied Industries Ltd., Jamshedpur, Rs.1.11 Lakhs)
18. Refrigerator Noise Control Implementation (RNCI) (Whirlpool of India Ltd., Pune, Rs.0.00 Lakhs)
19. Simulation studies of P15A with modified hanger top (Mazagon Dock Ltd, Rs.28.50 Lakhs)
20. Support and training on trommel design (Tega Industries Limited, Kolkata, Rs.2.50 Lakhs)
21. Training on rolling mill simulation (Tata Steel, Rs.1.00 Lakhs)
22. Vetting of analysis and design of a vibration isolation system (VAVS) (Airef Engineers (P) Ltd., Delhi, Rs.0.00 Lakhs)
23. Wear analysis in laying head pipe (TISCO Jamshedpur, Rs.2.50 Lakhs)

Technology Transferred

1. Tega Industries Ltd., Kolkata - Trommels with increased screening efficiency : Rs. 15.00 Lakh

Patents (filed / granted)

1. A BICYCLE DRIVEN BY SIMULTANEOUS/SEPARATE PEDALING AND BODY THRUST
2. A method for inactivity timer configuration based on network signalling reduction
3. A method of maintaining the zone temperature in a variable air volume air conditioning system and a system thereof
4. A spindle assembly for micro-ECM/micro-EDM
5. Active Steer Assisting Differential(ASAD) for Rear Wheel Independent Drive Electric Vehicle(RID EV)using In-Wheel Motors
6. An on line measurement of tool diameter in micro-ECM/micro-EDM
7. An optical fiber-based force transducer for microscale samples
8. Design and development of structured surface for the enhancement of boiling heat transfer
9. Spacer for use in taper roller or angular contact bearings
10. System and method for nanofinishing of a workpiece
11. Trommels for increased screening efficiency

Visits Abroad by Faculty Members

2. Chakraborty, Suman - Summer School on Nanofabrication and Characterization (Alberta, Canada, ) May 9-17
4. Mohanty, Amiya Ranjan - B&K Meeting (Singapore, ) July 2013
5. Gupta, Sanjay - Ongoing UKIERI collaborative research project (University of Southampton, ) June 16 - July 12, 2013.
7. Das, Arup Kumar - Research Collaboration (Trinity College Dublin, ) 2 weeks
Invited Lectures by Faculty Members

1. Surface coating for micromanufacturing by Chattopadhyay, Ajay Kumar (National workshop on Micromanufacturing, Jadavpur University)
2. Automation and Robotics by Deb, Sankha (Ordnance Factory Dumdum, Kolkata)
3. Seminar on governance in higher education system by Bhattacharyya, Souvik (Kolkata, Univ of Calcutta)
4. Steel: the lane that lies ahead by Bhattacharyya, Souvik (International Conference on Automation and information technology in iron & steel making (AITISM 14) at SAIL RDCIS, Ranchi)
6. Current Trends in Coating Technology by Bandyopadhyay, Partha Pratim (College of Engineering and Management, Kolaghat)
7. Biomicrofluidics for Medical Applications by Chakraborty, Suman (First National Conference on Mapping the “Materials Genome (MGI)”, Noida)
8. Effect of a Microconfined Fluidic Environment: Droplets/ Cells and Beyond by Chakraborty, Suman (Summer School on Nanofabrication and Characterization, Alberta, Canada)
9. Biomicrofluidics by Chakraborty, Suman (Microfluidics and Lab on a chip meeting, Bangalore)
11. Biomicrofluidics by Chakraborty, Suman (International Symposium on NanoSciences under the aegis of INSA-Leopoldina (German Academy of Sciences), Halle, Germany)
12. Hydro-electric Energy Conversion in Nanofluidic Channels by Chakraborty, Suman (Indo-US Workshop on Recent Advances in Micro/Nano-scale Heat Transfer and Applications in Clean Energy Technologies)
13. Cells: Complex Droplets or More? by Chakraborty, Suman (International conference on Advances in Mechanical Sciences)
14. Nanofinishing: An art of fabrication of high precision components by Sidpara, Ajay Muljibhai (Gujarat Technical University)
15. Micro-Extensional Rheometer by Kalelkar, Chirag Deepak (SN Bose Center, Kolkata)
17. Micro-Extensional Rheometer by Kalelkar, Chirag Deepak (Soft-Matter Young Investigators Meeting, Pondicherry)
18. Design and Development of Intelligent Robots by Pratihar, Dilip Kumar (BUE, Bankura, WB)
20. Design Optimization by Pratihar, Dilip Kumar (NIT Durgapur)
21. Introduction to Optimization, a Few Tools and Some Applications by Pratihar, Dilip Kumar (CMERI, Durgapur)
22. Introduction to Soft Computing and its Applications by Pratihar, Dilip Kumar (NIT Durgapur)
23. Modeling and Simulations of Robotic Systems Using Soft Computing by Pratihar, Dilip Kumar (CEMK Kolaghat)
24. Use of Soft Computing in Engineering Solutions by Pratihar, Dilip Kumar (NIT Durgapur)
25. Nanofinishing of complex surface using magnetorheological fluid by Sidpara, Ajay Muljibhai (IIT Kanpur)
26. Application of MRF in finishing of prosthesis implants by Sidpara, Ajay Muljibhai (IIT Kanpur)
27. Surface quality requirements for synchrotron mirrors by Sidpara, Ajay Muljibhai (Raja Ramanna Centre for Advanced Technology, Indore)
28. Non-associated flow models and effects on macroscopic failure mechanisms by Racherla, Vikranth (IIT Kanpur)
29. Role of finite element analyses in modeling manufacturing processes: Challenges and Opportunities by Racherla, Vikranth (Prasad V.Potluri Siddhartha Institute of Technology)
30. Water Assisted Laser Material Processing by Nath, Ashish Kumar (Photonics- Mumbai, India)
31. Micro- and Nano- machining with Ultrafast Lasers by Nath, Ashish Kumar (NIT Rourkela)
32. Lasers and their Scientific and Industrial Applications by Nath, Ashish Kumar (NIT Durgapur)

Books Published


Short-Term Courses, Training Programmes and Workshops organised

1. Power Plant Engineering for CESC Engineers (one week)

Papers Published in Journals


29. Development and parametric study of a water-jet assisted underwater laser cutting process By Suvraddip Mullick, Yuvraj K. Madhukar, Subhransu Roy, Shailesh Kumar, Dinesh K


34. Droplet Transport through Dielectrophoretic Actuation using Line Electrode. By S. K. Bhaumik, S. Chakraborty, S. DasGupta. *Microfluidics and Nanofluidics* (accepted for publication) (0)


65. Fuzzy logic-based techniques for modeling the correlation between the ewld bead dimension and the process parameters in MIG welding By Y. Surender, D.K. Pratihar International Journal of Manufacturing Engineering http://dx.doi.org/10 (2013)


In-situ multi-component MMC coating developed on Ti-6Al-4V substrate By Barun Haldar, Sudipto Karmakar, Partha Saha, A B Chattopadhyay Surface Engineering 30(4) 256-262 (2014)


Investigations into the influence of weld zone on formability of fiber laser welded advanced high strength steel By K. Bandyopadhyay, S. K. Panda, P. Saha Journal of Materials Engineering and Performance (DOI: 10.1007/s11665-014-0881-3) Published online (2014)

Ionic Size dependent electroosmosis in ion-selective microchannels and nanochannels By A. Bandopadhyay, S. Chakraborty Electrophoresis (accepted for publication) (0)


86. Machining of circular micro holes by electrochemical micro-machining process By Alok Kumar Das, Partha Saha Advances in Manufacturing 1(4), 314-319 (2013)
87. Magnetohydrodynamic free convection flow over a horizontal isothermal flat plate By S Samanta and A Guha Communications in Nonlinear Science and Numerical Simulation 18, 3407-3422 16page (2013)
88. Magneto rheological finishing: A perfect solution to nanofinishing requirements By Ajay Sidpara Optical Engineering (2014)
89. Maxwell stress induced flow control of a free surface electro-osmotic flow in a rectangular microchannel By M. Mayur, S. Amiroundine, D. Lasseux, S. Chakraborty Microfluidics and Nanofluidics 16, 721-728 (2014)
90. Microstructural and tribological characterization of air plasma sprayed nanostructured alumina-titania coatings deposited with nitrogen and argon as primary plasma gases By Bolleddu V, Racherla V, and Bandyopadhyay P P Materials and Design 59 (2014)
104. On use of weld zone temperatures for online monitoring of weld quality in friction stir welding of naturally aged aluminium alloys By Murshid Imam, Kajal Biswas, Vikranth Racherla *Materials and Design* 52 730-739 (2013)


107. Paper based self-pumping and self-breathing fuel cell using pencil stroked graphite electrodes By R. K. Arun, S. Halder, N. Chanda, S. Chakraborty *Lab on a Chip (accepted for publication)* 0


114. Rheological properties and their correlation with surface finish quality in MR fluid based finishing process By Ajay Sidpara and V. K. Jain *Machining Science and Technology* (2014)


The fluid dynamics of work transfer in the non-uniform viscous rotating flow within a Tesla disc turbomachine By A Guha and S Sengupta Physics of Fluids 26,033601-1:27 (27p) (2014)


Thermodynamics of Premixed combustion in a heat recirculating Micro combustor By U. Rana, S. Chakraborty, S. K. Som Energy (accepted for publication) (0)


Tunable hydrodynamic characteristics in microchannels with biomimetic superhydrophobic (lotus leaf replica) wall By R. Dey, K. Raj, N. Bhandaru, R. Mukherjee, S. Chakraborty Soft Matter (accepted for publication) (0)


Papers Presented in Conferences


25. Effective time domain features for distinguishing coupling effects on misaligned shaft, By S. Fatima, A. R. Mohanty and V.N.A. Naikan, Proceedings of the Acoustics 2013 New Delhi, New Delhi, (2013)
31. Improved designs for conical tractrix die forming using finite element analysis, By Manikanta R K and Racherla V, International congress on computational mechanics and simulations, IIT Hyderabad, (2013)
34. Mass flow rate control in a cylindrical capillary by an ac electric field at high zeta potential, By P. Goswami, S. Chakraborty, 22nd National and 11th ISHMT-ASME Heat and Mass Transfer Conference, IIT Kharagpur, (2013)


60. Weld zone modeling in friction stir welds in AA 6063-T4, By Imam M, Biswas K and Racherla V, International congress on computational mechanics and simulations, IIT Hyderabad, (2013)
Department of Metallurgical & Materials Engineering

**Head**
Prof. Siddhartha Das

**Professors**
Chakraborti, Nirupam  
*Ph.D. (Univ. of Washington, USA)*, Computational Materials Science  
Genetic Algorithms, Extractive Metallurgy

Chakraborty, Madhusudan  
*Ph.D. (IIT Kharagpur)*,

Das, Karabi  
*Ph.D. (Wisconsin, USA)*, Metal Matrix  
Composites, Nanocomposites, Wear of Materials, Physical  
Metallurgy, Powder Metallurgy, Electron Microscopy

Das, Siddhartha  
*Ph.D. (Illinois, USA)*, Nano Materials, Composite Materials, Physical  
Metallurgy, Electron Microscopy, Surface Engineering, Failure  
Analysis, Characterization of Materials, Lead Free Solder Materials

Dutta Majumdar, Jyotsna  
*Ph.D. (IIT Kharagpur)*, Surface Engineering, Corrosion and  
Environmental Degradation, Laser Materials  
Processing, Biomaterials, Advanced Processing of Materials, shape  
memory alloy, Advanced Welding of Materials

Godkhindi, Mahadev Malhar  
*Ph.D. (IIT Bombay)*, powder metallurgy  
Ceramics

Manna, Indranil  
*Ph.D. (IIT Kharagpur)*,

Mitra, Rahul  
*Ph.D. (Northwestern Univ., USA)*, Mechanical Behaviour of  
Materials, Scanning and transmission electron microscopy, Materials  
for high temperature applications, Composite  
Materials, Nanocrystalline materials, Thin Film Processing and  
Characterization, Oxidation behavior of materials

Pabi, Shyamal Kumar  
*Ph.D. (IIT Kharagpur)*, Nanostructured materials  
Phase transformations, Composites Modelling and simulation

Ray, Kalyan Kumar  
*Ph.D. (IIT Bombay)*, Mechanical Metallurgy, Physical  
Metallurgy, Fracture Mechanics, Nondestructive Evaluation, Structural  
Integrity, Failure Analysis, Advanced Structural  
Materials, Stereology, Modelling and Simulation, Metal Matrix and  
Ceramic Matrix Composites

Roy, Gour Gopal  
*Ph.D. (IIT Kanpur)*, Alternative Routes of Iron & Steel  
making, Modelling of Heat & Mass Transfer in Materials  
Processing, Electron Beam Welding

Roy, Sanat Kumar  
*Ph.D. (IIT Kharagpur)*, Mineral Processing, Extractive  
Metallurgy, Environmental Degradation of Materials, Laser Processing  
of Materials, Electronic and magnetic nanomaterials

Singh, Shiv Brat  
*Ph.D. (Cambridge Univ., UK)*, Physical metallurgy of steel

**Associate Professors**
Acharya, Narendra Nath  
*Ph.D. (IIT Kharagpur)*, Artificial Intelligence, Powder Metallurgical  
Applications, Multi-Media, Educational Technology, Photography

Biswas, Koushik  
*Ph.D. (Univ. of Stuttgart, Germany)*, Energy materials (Hydrogen  
storage - Solid Oxide Fuel Cell - Lithium Ion Battery), Abinitio (DFT)
and MD Modeling, Electroceramics (Ferroelectric - Pyroelectric - Relaxor - Multiferroics), Structural Ceramics (ZrO2 - Al2O3 - TBC - SiC), Ceramic Reinforced Metal Matrix Composites (steel and Al-based MMC with SiC - TiC-other Carbide), Sintering (Conventional - Microwave - SPS)

Chakrabarti, D  
*Ph.D. (Univ. of Birmingham, UK)*, Microstructure property correlation in metals, Development of microstructure and texture in thermo-mechanical processing, Fracture toughness and fracture transition behaviour in metals, Development and effect of mixed grain structures in metals, Segregation during solidification and its effect on properties, Modelling based on dislocation theory, Defect initiation and its control in metals

Ghosh, Sudipto  

Sant, Sudhindra B  
*Ph.D. (Queen's Univ., Canada)*, Thin Film Electronic Materials and Nanostructures, Spintronic Thin Films, Defects in Thin Film Semiconductors, Wide band-Gap Semiconductors, MEMS devices, Photovoltaic Thin Films, Biomaterials and Biomimetics, Nanomaterials and Nanocrystalline Plasticity

**Assistant Professors**

Aich, Shampa  
*Ph.D.(Univ. of Nabraska, USA)*, Rapid Solidification, Magnetic Materials, Shape Memory Alloys, Surface Modifications, Biomaterials

Bandyopadhyay, Tapas Kumar  

Bhaduri, Amit  
*M.Tech. (IIT Kanpur)*, STRUCTURE-PROPERTY RELATIONSHIP.

Das, Jayanta  
*Ph.D.(TU Dresden, Germany)*, Solidification and Non-equilibrium Processing, Metastable and Nanostructured Alloys, High Temperature Oxidation, Structure-Property Relationship, Phase Transformation

Kar, Sujoy Kumar  
*Ph.D.(The Ohio State Univ.)*, Physical and Mechanical Metallurgy, Processing-Microstructure-Microtexture-Property Relationship, Materials and property modeling, Materials systems: Ti alloys and Ni based superalloys and steels for power plant applications

Kundu, Tarun Kumar  
*Ph.D(Lulea univ of Tech,Sweden)*, Atomistic Simulations of Materials, Extractive Metallurgy, Computational Fluid Dynamics, Mineral processing

Laha, Tapas  

Roy, Mangal  
*Ph.D.(Washington State Univ.)*, Biomaterials, Ceramics, surface modification

Sen, Indrani  
*Ph.D.(IIS)*,
Faculty Appointments

Dr. Mangal Roy  Assistant Professor
Dr. Indrani Sen  Assistant Professor

Chair Professor
Ghosh, R.N.  Ph.D. (IIT Kharagpur)  Physical Metallurgy

Chair Professor
Sen, P.K.  Ph.D. (Jadavpur University)  Process Metallurgy

Brief Description of on-going activities

The Research and Development Program of the Department encompasses various areas like Corrosion Science and Technology, Extractive Metallurgy, Mechanical Metallurgy, Melting, Casting and Solidification Processing, Modeling, Simulation and Multimedia in Metallurgical Engineering, Physical Metallurgy, Powder Metallurgy, Surface Engineering etc. In the field of Extractive Metallurgy significant contributions for metal value extraction, particularly Cu, Ni and Co from sea nodules has been made. Direct reduction of iron ore using mine generated ore and coal fines is another major research area. In the domain of Mechanical Metallurgy, a pioneering achievement has been the design and development of fatigue testing using rotating bending machine to study short, long and non-propagating crack behaviour in several steels. Investigations related to structure-property relationship of various ceramic and metal-matrix composites, high temperature materials and advanced alloys are thrust areas of activity. Development of newer grades of dual phase and micro alloyed steels through fracture based studies, correlation between fracture and wear characteristics of materials, development of thin sheet steel components are some important fronts in this direction. In addition, research is progressing in the area of mechanical behaviour of small volume materials. The major areas in the field of Melting, Casting and Solidification Processing include: development of cast micro-alloyed steels, studies on the hot tearing of long freezing range Al alloys, austempered ductile iron through non-conventional route, grain refinement of Al alloys and the development of cast metal matrix composites. Success has been achieved in improving the mechanical properties of some hypo-eutectic and eutectic Al-Si alloys by combined grain refinement and modification treatment using indigenously developed Al-B and B rich Al-Ti-B master alloys and Sr, respectively. In addition to mathematical modeling works in the areas of surface engineering, phase transformation, solidification processing, fracture & fatigue, some more new areas have surfaced and these are: application of genetic algorithm for the optimization of metallurgical systems, mathematical simulation of welding, iron and steel making, and other high temperature metallurgical systems by application of computational fluid dynamics, and heat and mass transfer, atomistic simulation of gas hydrates, molecular dynamic simulation of nanostructured materials etc. Several Al-Cu-TM and Al-TM-Si (TM = transition metal) Al-Ni-Ti ternary alloys, and Al-alloys containing rare earth metals have been synthesized and characterized to explore the possibility of developing bulk amorphous Al-alloy by mechanical alloying and identifying the criteria of selection of such amorphous alloy compositions. The present activities of the Powder Metallurgy group include synthesis of particulate reinforced Mullite and their property evaluation, production of Al2O3 reinforced Ni3Al thorough reaction sintering route, reaction sintering of silicon carbide, recovery of copper from printed circuit etchant sludge and production of silicon carbide from fly ash silica. Research has been initiated in the area of semi-solid processing for casting and forming operations of Al-alloy matrix composites. In addition, significant progress has been achieved in the synthesis of Fe-TiC, Fe-ZrC and Fe-TiB2 composites from cheaper raw materials by aluminothermic reduction method. Development of low temperature copper based composites, steel matrix composites are also prominent areas in the area of composite materials. Activities related to surface engineering involves laser assisted surface modification, ion implantation and plasma spray deposition, development of nano-structured coating by electro-deposition. The research activities in the area of Environmental Degradation embraces
fundamental studies relating to film/scale growth processes on different metal-oxygen and metal-halogen systems with emphasis on kinetics and growth mechanisms, defect structures of compounds, transport properties of different species, adhesion and protective properties of the scales etc. Studies on high temperature oxidation behaviour of multi-phase refractory metal-silicides like Molybdenum and Niobium Silicides are in progress. In the area of aqueous corrosion, the current activities are concentrated on the studies relating to corrosion behaviour of amorphous and nanocrystalline Zr-based binary alloys, corrosion and stress corrosion performance of aluminum based composites and Al-Ni alloys and stress corrosion cracking of nickel alloys in hydrogen fluoride environment. Development of lead free Sn based solder material, and solid oxide fuel cell are also some areas of active research. In the area of joining research on joining of similar and dissimilar materials using electron beam welding is getting prominence. Development of Lithium Ion Battery (LIB) Technology for applications in Electric Vehicles in India has taken the role of a prominent research area in the Department.

**Thrust Areas**

1. **CLASSICAL METALLURGY AND MATERIALS SCIENCE** i. Extractive metallurgy; ii. Solidification and nonequilibrium processing; iii. Metastable alloys and Phase transformation; iv. Deformation and fracture behavior; v. Joining of metals; vi. Corrosion behavior and high temperature oxidation; vii. Powder Metallurgy
2. **COMPUTATIONAL MATERIAL SCIENCE** i. Modeling and simulation in process metallurgy; ii. Modeling of phase transformation kinetics; iii. Molecular dynamics; iv. Design & scale-up of metallurgical processes; v. Modeling and simulation of iron making processes
3. **IRON AND STEEL** i. Raw material processing and mineral beneficiation; ii. Advanced autograde steel; iii. Improvement in mechanical properties like creep, fatigue, fracture and non-destructive testing
4. **ADVANCED MATERIALS** i. Composites & functionally graded materials; ii. Nanomaterials and nanocomposites; iii. Surface engineering & Interfacial phenomena; iv. Thin film coatings; v. Biomaterials; vi. Lithium ion battery; vii. Solid oxide fuel cells (SOFCs)

**New Acquisitions**

1. Fully Automated Sequential WD X Ray Fluorescence Spectrometer
2. Vibratory Polishing Vibromet 2 Set-up
3. ECOMET 250 Grinder Polisher Set-up
4. 12 kW-80kV Electron Beam Welding Setup

**Lectures by Visiting Experts**

1. Magnesium from structural materials to next-generation energy storage devices by Dr. Partha Saha (Swanson School of Engineering, University of Pittsburgh 819 Benedum Hall, 3700 O'Hara Street, Pittsburgh USA 15261)
2. Structural stability, properties and processing of high performance materials by Dr. Soumyadipta Maiti (Swiss Federal Institute of Technology (ETH) Zurich, Bergacker 74, Zurich, CH -8046, Switzerland)
3. Modeling the mechanical behavior and deformed microstructure of irradiated bcc materials using continuum crystal plasticity by Dr. Anirban Patra (School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA)

**Doctoral and MS Degrees Awarded**

1. Suparna Roy : Effect of microalloy precipitates on austenite grain growth during reheating treatment of HSLA steel (Ph.D.)
4. Snehanshu Pal : Atomistic Simulations of Methane Hydrates and Inhibitor Design(Ph.D.)
5. Anway Maiti : Synthesis of MWCNT Reinforced Al-Si Nanocomposites by Microwave Sintering and Spark Plasma Sintering(Ph.D.)
6. Suresh Telu : High Temperature Oxidation behavior of Tungsten based Materials Processed by Powder Metallurgical Route(Ph.D.)
7. Mukesh Kumar Sharma : Study of reduction behaviour of Prefabricated Iron Ore Graphite/Coal Composite pellets in Rotary Hearth Furnace(MS)
8. Siddhartha Tiwari : Effect of Cu and Ni on the Fracture Toughness of As-Cast Ductile Iron(MS)

**Member - Professional Bodies**

1. Dutta Majumdar, Jyotsna, *Life Member* - National Academy of Science, Allahabad
2. Mitra, Rahul, *Life Member* - Indian Institute of Metals
3. Mitra, Rahul, *Life Member* - Indian Ceramic Society
5. Mitra, Rahul, *Member* - Programme Advisory Committee on Minerals, Metals and Materials, Department of Science and Technology
7. Kundu, Tarun Kumar, *regular* - Indian Institute of Metal
8. Biswas, Koushik, *Life Member* - The India Science Congress Association
10. Biswas, Koushik, *Life Member* - The Indian Institute of Metals
12. Biswas, Koushik, *Life Member* - The Indian Ceramic Society
13. Aich, Shampa, *Life Member* - Indian Institute of Metals
14. Aich, Shampa, *Regular* - Institute of Biological Engineers (IBE)
17. Sant, Sudhindra B, *Member* - American Society of Metals
18. Sant, Sudhindra B, *Member* - The Materials Society
19. Chakrabarti, D, *Life Member* - Indian Institute of Metals
20. Chakrabarti, D, *Member* - Institute of Minerals, Materials and Mining (IOM3)
22. Laha, Tapas, *Life Membership* - The Indian Science Congress Association (ISCA)
25. Kar, Sujoy Kumar, *Member* - Indian Institute of Metals
26. Kar, Sujoy Kumar, *Committee member of two different technical groups of* - The Minerals, Metals & Materials Society (TMS)
27. Kar, Sujoy Kumar, *Member* - Alpha Sigma Mu (the International Professional Honour Society for Materials Science & Engineering)
28. Kar, Sujoy Kumar, *Member* - ASM International
29. Das, Jayanta, *Member* - Deutsche Gesellschaft fur Materialkunde e.V. (German Society for Materials Research)
30. Das, Jayanta, *Life Member* - The Indian Institute of Metals
31. Chakraborty, Madhusudan, *Life Member* - Materials Research Society of India
32. Chakraborty, Madhusudan, *Member* - Institute of Indian Foundrymen
33. Chakraborty, Madhusudan, *Life Member* - Indian Institute of Metals
34. Roy, Gour Gopal, *Life Member* - Indian Institute of Metals
35. Das, Siddhartha, *Life Member* - Indian Institute of Metals
36. Das, Siddhartha, *Life Member* - Materials Research Society of India
37. Das, Siddhartha, *Life Member* - Powder Metallurgy Association of India
38. Das, Siddhartha, *Life Member* - Tau Beta Pi, a national engineering honour society, USA
39. Das, Siddhartha, *Life Member* - Sigma Xi, a national scientific research society, USA
40. Das, Karabi, *Member* - Indian Institute of Metals
41. Das, Karabi, *Life Member* - Materials research society, India
42. Ghosh, R N, *Life Member* - Indian Institute of Metals
43. Ghosh, R N, *Life Member* - Indian Society for Non Destructive Testing (ISNT)
44. Ghosh, R N, *Life Member* - Indian Institute of Welding
45. Roy, Sanat Kumar, *Regular Member* - The Mining, Geological and Metallurgical Institute of India
46. Roy, Sanat Kumar, *Regular Member* - Corrosion Society of India
47. Roy, Sanat Kumar, *Life Member* - Materials Research Society of India
48. Roy, Sanat Kumar, *Life Member* - The Indian Institute of Mineral Engineers
49. Ray, Kalyan Kumar, *Life member* - Indian group of International Stereological Society
50. Ray, Kalyan Kumar, *Fellow* - Indian Institute of Metals
51. Ray, Kalyan Kumar, *Life Member* - Material Research Society of India
52. Ray, Kalyan Kumar, *Life Member* - Powder Metallurgical Association of India
53. Pabi, Shyamal Kumar, *Life member* - Indian Institute of Metals
54. Pabi, Shyamal Kumar, *Life member* - Materials Research Society of India
55. Pabi, Shyamal Kumar, *Member and former Sectional President of Metal Science Section* - Indian Science Congress Association
56. Sen, Prodip Kumar, *Life Member* - Indian Institute of Metals

**Member - Editorial Board**

1. Chakraborti, Nirupam (0) *Member Editorial Board* - Journal of Advanced Research in Evolutionary Algorithms
2. Chakraborti, Nirupam (0) *Member Editorial Board* - Materials & Manufacturing Processes
3. Chakraborti, Nirupam (0) *Member Editorial Board* - International Journal of Machining and Machinability of Materials
8. Ghosh, Sudipto (2012) *Associate Editor* - Journal of Surfaces and Interfaces in Materials

**Awards & Honours**

1. Mitra, Rahul (2013) *2nd prize in oral presentation in Metal Science Group of 67th Annual Technical Meeting of Indian Institute of Metals*
2. Das, Siddhartha (2014) “SANKARSAN JENA MEMORIAL AWARD received from The Institute of Engineers (India) for the paper entitled Innovative Processing of ODS Ferritic Steel For Nuclear Reactor Applications
3. Dutta Majumdar, Jyotsna (2013) Friedrich Wilhelm Bessel Research Award
4. Das, Jayanta (2012) IEI Young Engineers Award 2011-2012, Institution of Engineers (India)

**Sponsored Research Projects**

1. Atomistic Simulation of Gas Hydrates and Stabilizer/Inhibitor Design (MINISTRY OF EARTH SCIENCES, Rs.31.92 Lakhs)
2. Carbon Abatement In Ironmaking Blast Furnace (Ministry of Steel, Rs.0.00 Lakhs)
3. CO2 abatement in iron and steel productionby process optimization (Ministry of Steel, Govt. of India, Rs.84.36 Lakhs)
4. Comparative Study of the Isothermal/Cyclic Oxidation Behavior of Molybdenum Silicide Based Alloys and Composites in Wet and Dry Air and Effect of prio (DRDO, Rs.33.89 Lakhs)
5. Correlation between Processing, Microstructure, Microtexture & Property in a beta Titanium alloy Ti-5553 (IIT Kharagpur (ISIRD Project), Rs.5.00 Lakhs)
6. Development of Aluminium Censosphere Syntactic Foam Through Spray Forming Technique for Aerospace Application (Aeronautics Research and Development Board (ARDB), N. Delhi, Rs.0.00 Lakhs)
7. Development of Bulk Aluminum Nitride (SSPL-DRDO CARS project, Rs.24.33 Lakhs)
8. Development of Compositionally Modulated Thermal Barrier Coating by Hybrid Technologies (Project Code: DTH) (Kalpana Chawla Space Technology Centre, Rs.15.00 Lakhs)
9. Development of ductile cast iron for spent fuel sub-assembly cask for PFBR (IGCAR, Kalpakkam, Rs.32.68 Lakhs)
10. Development of Duplex Stainless Steel, (Shyam Ferro Alloys Limited, Rs.0.00 Lakhs)
11. Development of Expert System for Indian Blast furnace (Ministry of Steel, Rs.84.46 Lakhs)
12. Development of Functionally Graded Metallic Components by Laser Materials Processing for Bio-implant Application (Department of Science and Technology, N. Delhi-National Science Foundation, South Africa, Rs.9.00 Lakhs)
13. Development of High Strength to Weight Ratio Materials for the Body of Under Water Vehicle (National Institute of Ocean Technology, Rs.76.02 Lakhs)
14. Development of low carbon steels for hot forged automotives components, (I-DESIGN Engineering Solutions Ltd. (a Subsidiary of RSB Transmissions (I) Ltd.), Rs.0.00 Lakhs)
15. Development of Molybdenum and Niobium silicide based alloys and composites for elevated temperature applications (Defence Research and Development Organization, Rs.32.41 Lakhs)
16. Development of piezoelectric thin films as high-frequency resonators and filters (ISRO-KCSC, Rs.5.00 Lakhs)
17. Development of Porous Bio-active Ti-based Composite for Bio-implant Application (Department of Biotechnology, Rs.30.00 Lakhs)
18. Development of shape memory magnetocaloric alloysfor magnetic cooling and other applications: A nonconventional source of energy (SGBSI Grant, SRIC, IIT Kharagpur, Rs.100.00 Lakhs)
19. Effect of ferrite grain structure on the mechanical propeties of low-carbon steel (CSIR, New Delhi, Rs.20.00 Lakhs)
20. Essar Steel Research Wing (Essar Steel Limited, Rs.25.00 Lakhs)
21. Establishment of an advanced research facility for EB welding and process development related to programs of interest to DAE (EBW) (BRNS, DAE, Mumbai, Rs.132.00 Lakhs)
22. Evaluation of Manganese nodules Extraction Processes: A new Approach,Phase II (Ministry of Earth Sciences, through IMMT,Bhubaneswar, Rs.15.12 Lakhs)
23. Experimental Evaluation on FLD and forming behavior of differently heat treated IN718 material (ISRO, Rs.28.00 Lakhs)
25. FIST Program - 2012 [129] (FHH) (Department of Science and Technology (DST), Government of India, Rs.245.00 Lakhs)
26. Life estimation and microstructural damage of irradiated and unirradiated Cu-Cr-Zr alloy (NFP-BRFST, Ahmedabad, Rs.30.38 Lakhs)
27. Mathematical Model Development for Induration Cycle of Different Ore Sources (Ministry of Steel, GoI, Rs.89.42 Lakhs)
28. Mathematical modeling of reduction kinetics of iron ore coal composite pellets (Ministry of Steel, Rs.55.00 Lakhs)
29. MD-Stochastic Model-based Design, Synthesis and Thermo-Physical Characterization of Nanofluids for Advanced Heat Transfer Applications (Naval Research Board, DRDO, Rs.48.40 Lakhs)
30. Microstructural Characterization and its Optimization for Improved Weld Strength, Fatigue Behavior and Corrosion Resistance of Electron Beam Welded Ma (Board of Research on Nuclear Science, Rs.22.00 Lakhs)
31. Microstructural evaluation and structure-property correlations for nickel, titanium, and iron based alloy systems (GE India Technology Centre Pvt. Ltd., Rs.9.00 Lakhs)
32. Microstructure-Texture-Toughness relations in High Strength Automotive Steel. ( Funded by: DST, New Delhi. (HAS), Rs.28.00 Lakhs)
33. MICROWAVE ASSISTED SYNTHESIS OF NANOCRYSTALLINE ELECTRO-CERAMICS FOR FERRO-ELECTRIC RELAXORS AND SOFCs (CSIR, New Delhi, Rs.21.98 Lakhs)
34. Multiwalled Carbon Nanotube Reinforced Al Alloy Based Bulk Nanocomposites via Spark Plasma Sintering (DST, India, Rs.25.00 Lakhs)
35. Nanocrystalline Plasticity (DST, Rs.15.00 Lakhs)
36. Optimization of design & operating parameters like wire speed, bath super heat, steel grades on calcium recovery and its efficacy (Rastriya Ispat Nigam Limited, Rs.6.45 Lakhs)
37. Optimization of Processing Parameters to Produce High Aspect Ratio Synthetic Wollastonite (Indian Rare Earths Ltd., Kerala, Rs.38.32 Lakhs)
38. Picometer displacements in piezoelectric thin film membranes for resonators (DST, Indo-Portuguese Joint Research project, Rs.3.70 Lakhs)
39. Process induced microstructural variation towards improved ductile-brittle transition temperature (DBTT) of 9Cr-1Mo steel (BRNS, Department of Atomic Energy (DAE), Rs.21.00 Lakhs)
40. Processing and characterization of bulk nanostructured brass (Department of Science and Technology, SERC, Rs.18.06 Lakhs)
41. Processing, characterization and deformation behavior of Ti-Fe-(Sn) ultrafine eutectic composites (ISIRD, SRIC, I.I.T. Kharagpur, Rs.5.00 Lakhs)
42. Solvent Extraction using Ionic Liquids for High Value Metal (IIT, Rs.4.70 Lakhs)
43. Structural Characterization of Materials Lab (MHRD, New Delhi, Rs.495.00 Lakhs)
44. Structure-property relations in ceramic composites for high temperature applications in nose cone tiles in hypersonic vehicles (Defence Research and Development Organization, Rs.72.96 Lakhs)
45. Studies on process optimisation and visualisation of laser cladding process (BRNS-DAE, Rs.18.00 Lakhs)
46. Studies on the deformation mechanism and evolution of plasticity in nano-/ultrafine lamellar composites (SGIRG Grant, SRIC, IIT Kharagpur, Rs.25.00 Lakhs)
47. Study of correlation between Processing , Microstructure , Microtexture and Property in a high strength, beta Titanium alloy Ti-5Al-5Mo-5V-3Cr (DRDO, Rs.40.00 Lakhs)
48. Study on the effect of heat-treatment on microstructures and properties of SUP9 and SUP11A steels (Soni Auto & Allied Industries Ltd., Kolkata - 700 001, Rs.5.16 Lakhs)
49. Synthesis and characterization of molybdenum disilicide heating element (Naskar and Company, Howrah - 711 103, Rs.0.00 Lakhs)
50. Synthesis of Al-based BMG Composite with Improved Ductility via Mechanical Alloying and SPS (DST, India, Rs.43.00 Lakhs)
51. Synthesis of Al-MWCNT nanocomposite (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
52. Thermomechanically processed high strength bainitic steel rails for Indian Railways, (RDSO, Ministry of Railways, , Rs.0.00 Lakhs)
53. Ti/TiB2 Bi-layered and Multi-layered Coating on Steel Substrate by Pulsed Laser Deposition (PLD) Technique to Improve Tribological Properties (CSIR, Rs.19.25 Lakhs)
54. Understanding the Effect of Crystalline Reinforcement in Al-based BMGNCs towards Improving Ductility and Fracture Toughness (SGIRG Grant, SRIC, IIT Kharagpur, Rs.25.00 Lakhs)

Consultancy Projects

1. Artificial Neural Network Modeling of Materials (GE India Technology Center Pvt. Ltd., Rs.2.50 Lakhs)
2. Charpy impact testing of TMT rebar (Tata Steel, Jamshedpur, Rs.10.00 Lakhs)
3. Comparative study between V and Nb microalloyed steels from Tata Steel in terms of precipitation strengthening (Tata Steel, Rs.26.90 Lakhs)
4. Comparative study between V- and Nb-microalloyed steels and optimizing the processing parameters for those grades (Tata Steel Jamshedpur, Rs.25.00 Lakhs)
5. Consultancy project on extractive metallurgy of polymetallic nodules (Ministry of Earth Science, New Delhi, Rs.40.53 Lakhs)
6. Corrosion resistance test of Reinforcement of Existing Major Bridge on Kanchnalla and River Bhargavi (CREB) (M/s Bhubaneswar Expressway Pvt. Ltd., N. Delhi – 110001, Rs.0.00 Lakhs)
7. Creep modelling of high temperature alloys for super critical applications (CHAC) (BHEL R&D, Hyderabad, Rs.6.00 Lakhs)
8. Development in process design to achieve improved structural integrity of gun barrel (Metal & Steel Factory, Ishapore, Rs.24.27 Lakhs)
9. Development of air cooled microalloyed steel with improved toughness for forging applications (Ashok Leyland, Rs.12.00 Lakhs)
10. Examination of cold rolled stainless steel samples (Salem Steel Plant, Rs.0.67 Lakhs)
11. Genetic Algorithms in Blast Furnace (Åbo Akademi University, Finland, Rs.0.00 Lakhs)
12. Improvement of Adhesion between Bead Wire and Rubber Material inside Radial Tires (Tata Steel, Rs.0.00 Lakhs)
13. Investigation on causes of Crack formation in cast Pb-5% Sb alloy spine and possible solutions. (Exide Industries Ltd, Durgachak, Haldia -721602., Rs.5.84 Lakhs)
14. Optimizing the properties of galvanized steel (TATA Steel, Rs.0.00 Lakhs)
15. Process Optimization of Polymetallic Nodules (Consulting for Extarctive Metallurgy) (Ministry of Earth Sciences, Rs.0.00 Lakhs)
16. SEM and TEM Examination of Cold Rolled Stainless steels (Salem Steel Plant, Tamil Nadu, Rs.1.00 Lakhs)
17. Strength and fracture behaviour of spot-welds in automotive steel sheets (Tata Steel, Rs.17.83 Lakhs)
18. Stress relaxation behavior of steel reinforcing strands (SRBS) (Tata Steel Limited, Rs.11.00 Lakhs)
19. Study of structure-property relations of wire ropes for acheiving improved service performance (Usha Martin Ltd., Rs.19.05 Lakhs)

Patents (filed / granted)

1. A hot-rolled high strength micro-alloyed steel with YS/UTS rato less than 0.8 for automotive application
2. An electrolyte bath composition for whisker resistant tin plating on bath substrate
3. Oxide dispersion strengthened powder metallurgy ferritic alloy and process for producing the same.
4. Synthesis of Bulk nanocomposites by non contact cavitation method

Visits Abroad by Faculty Members

1. Chakrabarti, D - Attending International Conference, Thermec-2013 (Las Vegas, USA, ) 1-8 December, 2013
2. Laha, Tapas - Attending Thermec 2013 (Las Vegas, USA, ) 30th Nov to 6th Dec 2013
3. Dutta Majumdar, Jyotsna - As an external expert to conduct Phd viva Voce examination (Malta, ) 4 days
4. Dutta Majumdar, Jyotsna - Discussion on collaborative research (Germany, ) 3 days
5. Dutta Majumdar, Jyotsna - To attend the International conference on Lasers in Manufacturing (Germany, ) 7 days
6. Dutta Majumdar, Jyotsna - to attend the Spring Meeting of European Materials Research Society (EMRS) and Present Paper (France, ) 6 days
7. Sant, Sudhindra B - Invited talk at MS&T13 (Montreal, Canada, ) Oct 28-31, 2013
8. Sant, Sudhindra B - Invited talk (Queens University, Canada, ) Nov 1, 2013
9. Kar, Sujoy Kumar - Research Collaboration (University of North Texas, ) 1 week
10. Singh, Shiv Brat - collorative work and symposium (Cambridge, ) 4 days in July 2013
11. Singh, Shiv Brat - Thermec 2013 conference (USA, ) December 4-6 2013

Invited Lectures by Faculty Members

1. Microstructural design of piezoelectric ZnO thin films as high frequency resonators. by Sant, Sudhindra B (Queens University, Canada)
2. Microstructural Design and Nature of Chemical Species for biological efficacy of novel antimicrob by Sant, Sudhindra B (MST13, Montreal, Canada)
5. Interfaces in ZrB2-SiC Composites by Mitra, Rahul (Kolkata - EMSI Conference)
6. Synthesis of Physically Functionalized CNT Reinforced Al-Si Nanocomposite by SPS by Laha, Tapas (Las Vegas, USA)
7. 2. Mechanical and Electro-chemical Properties of Laser Surface Alloyed AISI 304 Stainless Steel with by Dutta Majumdar, Jyotsna (Munich, Germany)
8. Laser Surface Engineering for Tribological Application by Dutta Majumdar, Jyotsna (AMPRI, Bhopal)
9. 9. Laser Surface Texturing of Ti-6Al-4V for Bio-implant Application by Dutta Majumdar, Jyotsna (Karlsruhe Institute of Technology, Germany)
10. Laser Composite Surfacing for Improved Wear Resistance by Dutta Majumdar, Jyotsna (University of Malta, Malta)
11. Role of Sn in Improving the Adhesion between Cu-Sn Alloy Coated Steel and SBR Based Rubber by Laha, Tapas (Thermec 2013, Las Vegas, USA)
12. Cored wire injection in steel melt by Roy, Gour Gopal (IT BHU, Vanarasi)
13. Evolution of RHF as chemical benefactor for liquid iron production from iron ore coal composite by Roy, Gour Gopal (IIIMT Bhubaneswar)
14. Recrystallization and austenite grain coarsening behavior during processing of microalloyed high str by Chakrabarti, D (RDCIS, SAIL, Ranchi)
15. Development of metallurgical structures during rolling and annealing of Copper by Chakrabarti, D (International Wrought Copper Council, Technical Seminar, Trident Hotel, Mumbai)
16. Ductile to brittle transition behaviour in steel: effect of microstructure and texture by Chakrabarti, D (Bengal Engineering and Science University, Shibpur)

**Books Published**


**Papers Published in Journals**

11. CFD analysis to estimate refractory erosion/scab formation on blast furnace hearth wall By Hemant Upadhyay and T. K. Kundu *Jindal Tech* 2, pp 22-28 (2013)
28. Effect of solution treatment and aging on microstructure and tensile properties of high strength beta titanium alloy, Ti-5Al-5V-5Mo-3Cr By Shashi Shekhar Rajdeep Sarkar Sujoy Kar Amit Bhattacharjee Materials and Design Accepted (2014)
Effects of particle shape and fluid temperature on heat transfer characteristics of nanofluids


Hot metal temperature variation during blast furnace tapping By Hemant Upadhyay and T. K. Kundu Jindal Tech 2, pp 67-72 (2013)


Influence of current density on surface morphology and properties of pulse plated tin films from citrate electrolyte By Ashutosh Sharma, Sumit Bhattacharya, Siddhartha Das and Karabi Das Applied Surface Science 290, 373-380 (2014)

Isothermal and non-isothermal oxidation kinetics of nano-oxide dispersed high Cr ferritic steel prepared by mechanical alloying By S.K. Karak, J. Dutta Majumdar, and I. Manna Powder Metallurgy http://dx.doi.org/10 (2013)


Legal Protection to Online Privacy vis-a-vis Growth of Ecommerce: An Empirical Study By Gargi Rajvanshi, Dr. Indrajit Dube, Dr. Tapas k. Bandhyopadhyay Journal of Telecommunication and Broadcasting Law Volume-II (2014)


Mechanical and electro-chemical properties of laser surface alloyed AISI 304 stainless steel with WC+Ni+NiCr By J. Dutta Majumdar Physics Procedia 41, 335 – 34 (2013)


Microstructural design of piezoelectric ZnO thin films as high frequency resonators By P. Abhinav, B. M. Skaria, B. Pramanick, K. Sreenivas and S. B. Sant Ceramics International accepted (2013)

52. Microstructure and size effect in ultrafine (Ti0.705Fe0.295)100−xSnx (0 ≤ x ≤ 4 at.% )
composites  By T. Maity and J Das  Journal of Alloys and Compounds  585, pp. 54–62
(2014)
53. Microstructure based and temperature dependent model of flow behavior of a polycrystalline
nickel based superalloy  By Sujoy Kumar Kar, S. K. Sondhi  Materials Science and
Engineering: A  601, 97-105 (2014)
54. Microstructure, texture, property relationship in thermo-mechanically processed ultra-low
carbon microalloyed steel for pipeline application  By R. Shukla, S.K. Ghosh, D. Chakrabarti,
55. Modeling and simulation of submerged injection of calcium powder in steel melt  By G. G.
Roy  IIM Metal News  17(1), 18-21 (2014)
56. Multi-objective Genetic Algorithms and Genetic Programming Models for Minimizing
Input Carbon Rates in a Blast Furnace Compared with a Conventional Analytic Approach  By
Rajesh Jha, Prodip Kumar Sen, Nirupam Chakraborti  Steel Research International
85(2),219 (2014)
57. Nano-Borides and Silicide Dispersed Composite Coating on AISI 304 Stainless Steel by
Laser Assisted HVOF Spray Deposition  By Prashant Sharma and Jyotsna Dutta Majumdar
Journal of Thermal Spray Technology  23, issue 7 (2014)
58. NANOTECHNOLOGY PATENTS IN THE AUTOMOTIVE INDUSTRY (A quantitative &
qualitative analysis)  By Raghavendra Prasad, and Tapas Kumar Bandyopadhyay  Recent
Patents on Nanotechnology (Revision Submitted) (0)
59. Organic, Inorganic, and Hybrid Solar Cells: Principles and Practice – Book review  By S. B.
Sant  Materials and Manufacturing Processes  accepted (2013)
60. Phase Stability in the Mo-Ti-Zr-C system via Thermodynamic Modeling and Diffusion
Multiple Validation  By Sujoy Kumar Kar, Voramon S. Dheeradhada, and Don M. Lipkin
61. Physics and Chemistry of Interfaces – Book review  By S. B. Sant  Materials and
Manufacturing Processes  accepted (2013)
62. Processing-Microstructure-Yield strength correlation in a near beta Ti alloy, Ti-5Al-5Mo-5V-
3Cr  By Sujoy Kumar Kar, Swati Suman, S Sivaprasad, Atanu Chaudhuri, Amit
Bhattacharjee  Materials Science and Engineering A  Accepted (2014)
63. Pulse reverse electrodeposition of Cu-SiC nanocomposite coating: Effect of concentration of
SiC in electrolyte  By Ajaya Pradhan and Siddhartha Das  J. of Alloys and Compounds  590,
294-302 (2014)
64. Refurbishment of AISI H13 Die Materials by Laser Cladding  By 2. G. Telasang, J. Dutta
65. Riding the unbridled horse: Indian Industrial Design Las and the broken strings  By Saurabh
Bindal and Dr Tapas Kumar Bandyopadhyay  European Intellectual Property Review  Issue-
1, March (2014)
66. Role of Sn on the adhesion in Cu-Sn alloy coated steel – rubber interface  By A. Banerjee, M.
Dutta, S. Bysakh, A.K. Bhowmick and T. Laha  Journal of Adhesion Science and Technology
v 28, pp 987–1004 (2014)
67. S. B. Sant, Low Dimensional Solids – Book review  By S. B. Sant  Materials and
68. S. B. Sant, Nanoparticles – Book review  By S. B. Sant  Materials and Manufacturing
Processes  accepted (2013)
69. Screening of Serine Protease Inhibitors with Antimicrobial Activity by Iron Oxide
Nanoparticles Functionalized with Dextran Conjugated Trypsin and in Silico Analyses of
Bacterial Serine Protease Inhibition.  By Santi Mandal, William. F. Porto, Debasis De, Ajay
Phule, Suresh Korpole, Ananta Ghosh, S K. Roy and Octavio Luiz Franco.  Analyst  139,
464-472 (2014)
70. Structure–property correlation in laser surface treated AISI H13 tool steel for improved


Papers Presented in Conferences


5. Titanium nitride dispersed surface on Ti-6Al-4V by cathodic arc evaporation for bio-implant applications, By J. Dutta Majumdar and Amit Biswas, Spring Meeting of the European Materials Research Society, Straubourg, (2013)


340
41. Microstructural design of piezoelectric ZnO thin films as high frequency resonators, By P. Abhinav, B. M. Skaria, B. Pramanick, K. Sreenivas and S. B. Sant, MS&T13, Montreal, (2013)
44. Monotonic Stress-Strain Model for R-104, By Sujoy Kumar Kar, Komplastech 2013, Zakapone, Poland, Europe, (2013)


52. Recrystallization and austenite grain coarsening behavior during processing of microalloyed high strength steels for line pipe applications, By Debalay Chakrabarti, Present & Future Trends in Auto & Line Pipe Steels, RDCIS Auditorium, RDCIS Ranchi, (2013)


54. Role of Sn on the Adhesion between Cu-Sn Alloy Coated Steel and SBR Based Rubber, By A. Banerjee, T. Laha, Thermec 2013, Las Vegas, USA, (2013)


Department of Mining Engineering

Head
Prof. Karanam Uma Maheshwar Rao

Professors
Bhattacharya, Jayanta  
*Ph.D.(IIT Kharagpur)*, Environmental Engineering and Management Social Impacts Mine Planning and Reliability Engineering

Bhattacherjee, Ashis  
*Ph.D.(Penn-State)*, Occupational Health and Safety and Operations Research applications in mining

Das, Samir Kumar  
*Ph.D.(ISM Dhanbad)*, Strata Control and Rock Mechanics, Mines Safety Engineering, Mine Environment

Deb, Debasis  
*Ph.D.(Alabama Univ, USA)*, Rock Mechanics, Numerical modelling, Mine Design, Ground Control

Mukhopadhyay, Subir Kumar  
*Ph.D.(IIT Kharagpur)*, Mine Planning and Design, Underground Metalliferous Mining, Surface Mining (Open pit/Opencast/ Quarry/On & Offshore Placer), Mine Safety Mining Laws and Mine Management, Mine and Mineral Economics Valuation Trade & Stockpiling, Small-scale Mining and Sustainable Development in Mining

Pal, Samir Kumar  
*Ph.D.(IIT Kharagpur)*, Geomechanics - Roof fall prediction in underground coal mines, Mine Void Filling – Blind backfilling of abandoned mines using sand and other waste material, Wear of Elastomers in Mining – Abrasion of elastomers against different rock types.

Pathak, Khanindra  
*Ph.D.(London Univ)*, Environmental Management in Surface Mining, Safety and Productivity of Mining Machinery, Application of Remote Sensing and GIS, Vetiver System Implementation for CSR-EMP Integration, Oil Spill Management

Rao, Karanam Uma Maheshwar  
*Ph.D.(IIT Kharagpur)*, Rock Mechanics, Mine Development, Underground Metal Mining, Back filling of mine voids

Sastry, Bhamidipati Suryan  
*Ph.D.(Utah)*,

Associate Professors
Chakravarty, Debashish  

Majumder, Arun Kumar  
*Ph.D.(Univ. of Queensland)*, Mineral Processing, Coal Washing, Solid-Fluid Interactions, Fine Particle Processing

Samanta, Biswajit  
*Ph.D.(IIT Kharagpur)*, Mine planning, Geostatistics, Mine environment and ventilation

Assistant Professors
Dey, Kaushik  
*Ph.D.(ISM, Dhanbad)*, Rock excavation blasting mechanised rock
Patra, Aditya Kumar  
Ph.D. (Imperial College, London), Air pollution measurement and modelling, Greenhouse gas emissions from mines, Human vibration in mines and allied industries, Industrial safety assessment and audit

Prusty, Basanta Kumar  
Ph.D. (Southern Illinois), Coalbed methane and shale gas, Geological Carbon Sequestration, Underground Coal Gasification

Verma, Abhiram Kumar  

Faculty Re-employment
S K Mukhopadhyay Visiting Professor

Brief Description of on-going activities

Environment and Safety- Application of LCA, GIS and remote sensing for soil and water analysis as a part of mine closure planning; Experimental and computational fluid dynamics studies for shock loss determination in mine air flow; Biological and passive treatment of mine waste water; Investigation of soil and water contamination vis-á-vis land use changes near mining fields. Study of human behaviour related accidents in mines; Epidemiological investigations to identify possible risk factor of occupational injuries in mines; The statistical methods for assessing risk factors included logistical regression, loglinear modeling and structural equation modeling.

Rock Mechanics / Ground Control- Finite element analysis for longwall strata control problems, and design of shield supports; Rock Joints and their influence on the stability of underground openings; Rock Mass characterization, Land reclamion and soil mechanics; Assessment of Fly ash composites as a substitute fill material for underground mine voids; Risk analysis for the safety management of coalmines; On the mechanics of rock fragmentation by drilling and cutting- studies on the linear cutting machine (LCM).

Mine Planning / Modeling- Application of various grade estimation techniques namely kriging, cokriging, stichastic simulation and neural networks for estimation of mining blocks for quality control in mines; Investigation of different statistical quality control techniques including univariate and multivariate control charts for controlling the grade of mineral at various locations; Grade control aspects in limestone and bauxite operations. Fault Tree Analyses and algorithm development for a Coal Handling Plant.

Advanced Surveying & Geoinformatics: Integration of GPS & I.SAR ground deformation data over mining areas. Use of lasers for assessment of stability of dumps. Vision based semi-automatic mine navigation system.

Collaborative Research- Collaborative research is ongoing with the French National Institute of Health and Medical Research (INSERM) for conducting research on injury epidemiology. In this study, the public health prevention methods were applied to occupational injuries in mines.

Thrust Areas

1. Rock Mechanics and Ground Control
2. Surface and sub-surface Environment
3. Mine Safety and Systems Engineering
4. Advanced Surveying and Geo-informatics
5. Safety Engineering
6. Clean Coal Technology

New Acquisitions

1. Total Kjeldahl Nitrogen Apparatus
2. Atomic Absorption Spectrophotometer (Graphite furnace)
3. Thermal gradient-differential scanning calorimetry
4. Oblique shear Equipment for shearing angle of 300, 350, 400, 450 and 500
5. Electronic lateral extensometer and compressometer (for NX size sample)
6. Rock Classification hammer (N-type)
7. Field density by Large Sand Pouring Cylinder [IS:2720, part XXVIII]
8. Pycnometer (capacity 250 gm or 500 gm or 1 kg) [IS:2720, part III]
9. Rapid moisture meter [IS:12175]
10. Dynamic cone penetration test apparatus for determination of cohesion and angle of internal friction
11. Pocket penetrometer
12. Proctor penetrometer (spring type)
13. Soil permeameter for both constant and falling head tests [IS:2720, part – 17, IS 11209]
14. Rock permeability apparatus for cylindrical specimen upto 100 mm dia and 100 mm high with high developing pressure upto 20 kg/sq. cm [IS:4348-1973]
15. Rock cutting Machine (2 H.P. motor operating on 440 volts 3 phase supply; rotates at approximately 2000 RPM.)
16. Diamond Cutting Saw 300 mm dia. (Thickness of blank 1.8 mm; Thickness of segment 2.8 mm)
17. Field CBR Test Apparatus (Capacity 100 kN; Penetration piston assembly
18. CBR mould of 150 mm IS x 175 mm high with clamping lugs completed with extension collar and perforated base plate made of gun metal
19. Beam Mould [100 mm x 100 mm x 500 mm]
20. Portable Swelling Pressure and Heave Evaluating Apparatus
21. Universal Triaxial Cell for 38mm to 100 mm diameter soil specimen with lateral pressure upto 10.5 kg/cm2
22. Pneumatic Control Panel, 2 lines for Universal Triaxial Cell
23. Digital Direct Shear Apparatus (servo-controlled) of Shearing load 50kN; Vertical load 50kN; accommodate sample size of 300 mm x 300 mm x 150 mm and 200 mm x 200 mm x 100 mm with dedicated Computer and data acquisition card/ s/w
24. Hydrometer with Hydrometer Glass Jar
25. One constant volume mould each for 38 mm; 50 mm; 75 mm and 100 mm diameter specimen for unconfined compressive strength (UCS) test as per IS: 2720-Part 10 (1991) including spacers for compaction and removal of specimen from mould
26. GRIMM 1.108
27. Respo CO analyser
28. 2 LUX meter
29. 2 Digital barometer
30. 2 Anemometer
31. 3 point pitot tube
32. Wireless sensor network application kit
33. Self-contained compressed oxygen breathing apparatus
34. Spirometer (Hellious)
35. Triaxial whole body and hand arm vibration meter
36. Depth perception meter
37. Eye fatigue tester
38. Bicycle ergometer
39. Anthropolometer
International Collaborations

French National Institute for Health and Medical Resaerch

Southern Illinois University Carbondale, USA

The University of Toulouse, France

Chonnam national University South Korea

Dong-A University South Korea

Imperial College London

Moscow State Mining University

University of Wollongong, Australia

Lectures by Visiting Experts

1. by Mr Vivekananda Rai (ONGC Bokaro)
2. Prospecting and Production of Petroleum and Job Prospects in Oil Industry by Shri Biman Borgohain (ONGC Kolkata)
3. Surface mine environment by Dr Jim Flatt (The University of Adelaide, Australia)

Doctoral and MS Degrees Awarded

1. Arup Roy : Synthesis of nano-materials and their application in waste water treatment.(PhD)
2. Amrendra Kumar : Impact of pollution reduction instruments on coal based energy industries(PhD)
3. Hemant Kumar : Stability analysis of pillars in deep underground metal mines using finite element method(PhD)

Member - Professional Bodies

1. Pathak, Khanindra, Life Member - Mining, Geology, Metallurgy Institute of India,
2. Pathak, Khanindra, Life Member - Acoustic Society of India
3. Pathak, Khanindra, Life Member - Indian Society for Technical Education
4. Pathak, Khanindra, Life Member - Institution of Engineers (India)
5. Pathak, Khanindra, Member - PNG Chamber of Mines and Petroleum
6. Deb, Debasis, Life Member - Indian Society of Theoretical and Applied Mechanics (ISTAM)
7. Deb, Debasis, Life-time - International Society of Rock Mechanics (ISRM)
8. Deb, Debasis, Life-time - Mining, Geology and Metallurgical Society of India (MGMI)
9. Chakravarty, Debashish, Associate - Associate Member of IEI
10. Chakravarty, Debashish, Life Member - Life Member of MGMI
11. Samanta, Biswajit, Regular - Institute of Engineer
12. Samanta, Biswajit, Regular - SME (Society of Mining Engineering, USA)
13. Samanta, Biswajit, Regular - MGMI
14. Prusty, Basanta Kumar, Life Member - Mining Engineers Association of India
15. Prusty, Basanta Kumar, Life Member - Mining Geological and Metallurgical Institute of India
16. Prusty, Basanta Kumar, Member - Institution of Engineers
17. Prusty, Basanta Kumar, Member - Society of Petroleum Engineers, USA
18. Prusty, Basanta Kumar, *Life Member* - Society of Geoscientist and Allied Technologists, India
19. Prusty, Basanta Kumar, *Life Member* - Indian Science Congress Association
20. Patra, Aditya Kumar, *Life member* - Institution of Public Health Engineers (IPHE)
21. Patra, Aditya Kumar, *Life member* - Mining, Geological and Metallurgical Institute of India (MGMI)
22. Patra, Aditya Kumar, *Life member* - Indian Science Congress Association (ISCA)
23. Patra, Aditya Kumar, *Life member* - Indian Institute of Chemical Engineers
24. Patra, Aditya Kumar, *Life member* - Society of Geoscientists and Allied Technologists (SGAT)
26. Patra, Aditya Kumar, *Member* - Institution of Engineers (India) (IE)
27. Verma, Abhiram Kumar, *Life Member* - International Society of Rock Mechanics
28. Verma, Abhiram Kumar, *Life Member* - Institute of Engineers (India)
29. Dey, Kaushik, *Life Member* - Indian Society of Rock Mechanics and Tunelling Technology
30. Dey, Kaushik, *Life Member* - Indian Science Congress Association
31. Dey, Kaushik, *Life Member* - Mining Geological and Metallurgical Society of India
32. Dey, Kaushik, *Life Member* - Mining Engineers Association of India
33. Dey, Kaushik, *Associate Member* - Institute of Engineers (India)
34. Majumder, Arun Kumar, *Life Member* - Indian Institute of Metals
35. Majumder, Arun Kumar, *Life Member* - Institute of Standard Engineers
36. Majumder, Arun Kumar, *Life Member* - Institution of Engineers (India)
37. Majumder, Arun Kumar, *Life Member* - Indian Institute of Mineral Engineers
38. Pal, Samir Kumar, *Fellow* - The Institution of Engineers (India)
39. Pal, Samir Kumar, *Life Member* - The Mining, Geological and Metallurgical Institute of India
40. Bhattacharya, Jayanta, *Fellow* - Indian National Acedemy of Engineering
41. Bhattacharya, Jayanta, *Member* - Mining Geological and Metallurgical Institute of India
42. Bhattacharya, Jayanta, *Member* - Indian Society of Technical Education
43. Bhattacharya, Jayanta, *Member* - Institution of Engineers India
44. Bhattacharya, Jayanta, *Member* - State Environmental Appraisal Committee, West Bengal
45. Rao, Karanam Uma Maheshwar, *Fellow Institution of Engineers FIE-112784* - Institution of Engineers - FIE
46. Bhattacherjee, Ashis, *Life Member* - Mining, Geological and Metallurgical Institute of India
47. Bhattacherjee, Ashis, *Life Member* - The Institution of Engineers India
48. Mukhopadhyay, Subir Kumar, *Senior Life Member* - Indian Society of Technical Education
49. Mukhopadhyay, Subir Kumar, *Senior Life Member* - Mining Engineers Association of India
50. Mukhopadhyay, Subir Kumar, *Chartered Engineer (Regular)* - The Institution of Engineers (India) Estd. 1923
51. Mukhopadhyay, Subir Kumar, *Senior Life Member* - The Mining, Geological & Metallurgical Institute of India, Estd. 1906

**Member - Editorial Board**

2. Bhattacharya, Jayanta (2012) *Member of the Editorial Board* - Institution of Engineers India Transactions on Material Science, Metallurgy and Mining
3. Majumder, Arun Kumar (2011) *Member of the Editorial Board* - World Environment
7. Rao, Karanam Uma Maheshwar (0) *Member. Editorial Board* - International Journal of Earth Sciences And Engineering
9. Samanta, Biswajit (2008) *Associate Editor* - Transactions of SME
10. Samanta, Biswajit (2008) *Associate Editor* - Mining Engineering

**Sponsored Research Projects**

1. An Automated Servo-controlled Direct Shear-cum-triaxial Testing Machine with Computer Control System and Power Pack (IIT Kharagpur, Rs.250.00 Lakhs)
2. Assessment Of Cracked Zone In The Post - Blast Walls Of Surface & Underground Excavations (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
3. CO2 Sequestration in Abandoned Coal Mine - A Fesibility Study (DST, Rs.27.60 Lakhs)
4. Design and development of application tool for differential InSAR technique to determine ground surface movement (KCSTC, ISRO, Rs.30.00 Lakhs)
5. DESIGN AND DEVELOPMENT OF APPLICATION TOOL FOR DIFFERENTIAL INSAR TECHNIQUE TO DETERMINE GROUND SURFACE MOVEMENT (SAC, Rs.35.60 Lakhs)
6. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-Learning (MHRD, Rs.500.00 Lakhs)
7. Development and application of a new partition curve for cyclones (Tega Industries Limited, Rs.21.00 Lakhs)
8. DEVELOPMENT OF A MATHEMATICAL MODEL FOR PREDICTING THE FISH-HOOK EFFECT IN HYDROCYCLONE CLASSIFIERS (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
9. Development of a Mixed Culture Bio-Reactor For Mine Drainage Treatment (MDT) (Korean Institute of Geoscience and Mineral Resources (KIGAM) (South Korea), Rs.8.70 Lakhs)
10. Development of Indigenous Tools for carrying out Random Sampling & Testing of Explosive and Accessories used in mines of Coal India Limited (CMPDI (Coal India Limited), Rs.0.00 Lakhs)
11. Development of roof fall prediction system for underground mines using wireless network (Coal India Ltd, Rs.216.98 Lakhs)
12. Development of RS-GIS based database for Uranium Mining and Milling in the West Khasi Hills district, Meghalaya (BRNS, Rs.32.00 Lakhs)
13. Development of rubber compound and repair techniques for trailing cables of underground mining machines (Coal India Ltd, Rs.187.84 Lakhs)
14. Development of soft computing model to forecast the capacity of powered support for Indian geo-mining condition (SRIC-DST, Rs.9.00 Lakhs)
15. Dispersion of particulate matter from deep opencast mines (ISIRD, SRIC, Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
16. Diversion of forest land for mining and other allied activities (Steel Authority of India Limited, Rs.27.30 Lakhs)
17. Effect of Mining on Water Regime (SAIL, Rs.27.80 Lakhs)
18. Effects of Mine Tailing and Jarofix leaching on Water Contamination (Hindustan Zinc Limited, Rs.19.00 Lakhs)
19. GPU BASED MULTI-TEMPORAL IMPLEMENTATION OF IMAGE CHANGE DETECTION ALOGRITHMS AND THEIR VERIFICATION (SAC, Rs.20.90 Lakhs)
20. Green house gas recovery from coal mines and unmineable coal beds and conservation to energy (EU Contribution, Rs.116.38 Lakhs)
21. Investigation on Augmentation of Life of Dump-Truck Tyres through the Improvement of Tyre Retreading Compound-Phase II (Coal India Limited, Rs.64.37 Lakhs)
22. Investigations of Bolt Behaviour in Development and Depillaring Panels under Blast Induced Dynamic Loading (CIL R&D Board, Rs.229.00 Lakhs)
23. Leaching Potential Studies of the Stock Piles of Run-of-Mine (Rom) Ore, Crusher Ore Tailings and Jarofix (LPS) (Hindustan Zinc Ltd. (HZL) Rajasthan, Rs.16.75 Lakhs)
24. Modeling Extent of Overbreak and Cracked Zone due to Blasting in Tunnels of Hydro-Electric Projects (CSIR, Rs.20.84 Lakhs)
25. National Mission on Education through Information and Communication Technology - NMEICT (MHRD, Rs.-0.00 Lakhs)
26. Numerical and Analytical Study of Crack Propagation Through Rock (ISIRD-SRIC, Rs.5.00 Lakhs)
27. Pedagogy Project for Mine Ventilation (MHRD, Rs.0.00 Lakhs)
28. Re-application of Model Studies on Gravity Blind Backfilling Method and Evaluation of a Pre-jamming Indication Parameter in the Field (Ministry of Coal, New Delhi, Rs.402.66 Lakhs)
29. Stope design and stability, production planning and paste backfilling to produce 5million tonne per annum ore from Malanjkhand underground copper mine (Hindustan Copper Limited, Rs.119.69 Lakhs)
30. Studies on Mine Closure Planning, its Methodology and Implementation in an Open Cast and Underground Coal Mine (UCM) (South Eastern Coalfields Limited (SECL) Bilaspur, Rs.9.60 Lakhs)
31. Studies On Shrinkage Swelling Characteristics Of Some Indian Coals To Ascertan Recoverability Of Chm From Deep Seated Coal And Shale Resources (CIL R&D, Rs.126.90 Lakhs)
32. Study of the Behavior of Oil Spill on Ocean Surface through Laboratory experiments, modeling and Satellite Image (Ministry of Earth Science, GoI, Rs.78.00 Lakhs)
33. STUDY ON MILL TAILINGS BASED COMPOSITES AS BACKFILL MATERIAL IN TUMMALAPALLE URANIUM MINES (ANDHRA PRADESH (BARC-UCIL, Rs.0.00 Lakhs)
34. Technical Study of Old and Active OB Dumps of WCL for Dimensional Optimization (CIL R&D Board, Rs.359.29 Lakhs)
35. The environmental impact of coal mines closure and ecological rehabilitation of mining area of India and Romania (Department of Science and Technology, Rs.5.20 Lakhs)
36. Underground coal gasification and its process optimisation for sub-bituminous coals of India by a laboratory study (SRIC, IIT, Rs.5.00 Lakhs)

Consultancy Projects

1. Applied Rock and Soil Mechanics Works for Mine Design System in UCIL mines (RSMW) (Uranium Corporation of India Ltd. (UCIL) GoI, Rs.9.88 Lakhs)
2. Aresting flow of fines from fines heaps at Gua ore mines (SAIL, Rs.0.80 Lakhs)
3. ASSESSMENT OF ACTION PLAN FOR DESIGN OF BREACHED ASH MOUND AT HIRAKUD UNIT OF HINDALCO INDUSTRIES LIMITED (HINDALCO Industries Limited, Rs.18.78 Lakhs)
4. Biological Condition and Ecological Assessment (BCEA) (Kolkata Municipal Corporation (KMC), Rs.2.94 Lakhs)
5. Blast design for a drive with a single boomer for 38 mm blasthole and post blast monitoring for safe blast design in haulage road (MOIL, Rs.4.00 Lakhs)
6. Coal as Raw Materials for Thermal Power Generation (The Orissa Power GenerationCorporation Limited., Rs.0.79 Lakhs)
7. Consultancy by IIT-KGP for compliance of FC & EC Conditions of KIOM-MIOM, (SAIL, Rs.22.00 Lakhs)
8. Consultancy by IIT-KGP for compliance of FC & EC Conditions of Manaoharpur Iron Ore Mines, Chiria, (SAIL, Rs.11.50 Lakhs)
9. Design and Stability Analysis of Crown/ Sill Pillars below A Filled Stope (Hutti Gold Mines Ltd. A Govt. of Karnataka Undertaking, Rs.10.97 Lakhs)
10. Design of air-cooling system at SCCL mine, Kothagudem (SCCL, Rs.3.75 Lakhs)
11. Design, development and demonstration of a new hydrocyclone to analyze the feasibility of generating different quality of overflows simultaneously (Tega Industries Limited, Rs.5056200.00 Lakhs)
12. Determination of IPT and CPT of Jhillimili mine (SEC L, Rs.0.40 Lakhs)
13. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning through ICT (Pedagogy Project; National Mission Project on Education through ICT, Rs.0.60 Lakhs)
14. Environmental impact assessment for fly-ash mixed dumping in JOCCM#1 (JSPL, Rs.5.10 Lakhs)
15. Feasibility Study of Sublevel in lode-4, F/W-A (Uranium Corporation of India Limited (UCIL), Rs.3.90 Lakhs)
16. Geo-Environmental Study for Fly-Ash Mixed Dumping in JPOCCM (JPL, Rs.5.20 Lakhs)
17. Geotechnical Instrumentation Monitoring and Data Analysis for Sub Level Open Stope at Bangur Chromite Mines (Underground) (GIMD) (The Orissa Mining Corporation, A Govt. of Orissa Undertaking, Rs.3.02 Lakhs)
18. Geotechnical Instrumentation, Monitoring and Data Analysis for open blast hole stoping at Khetri Copper Mine(Underground) (Hindustan Copper Limited, Khetri Copper Complex, P.O- Khetri Nagar - 333504, Dist. - Jhunihunu( Raj., Rs.7.10 Lakhs)
19. Heightening the tailings dam embankment at Sukinda Chromite Mines (Tata Steel, Rs.2.50 Lakhs)
20. Impact Assessment of Stoping of the L1 W2 Stope on the Settling Tanks of the Mine Water Treatment Plant (STMW) (Uranium Corporation of India Ltd. (UCIL), Rs.11.48 Lakhs)
21. Intent for Slope Stability Study of Overburden Dump at TRB Iron Ore Mines, Tensa, Jharkhand (TRBI) (Jindal Steel and Power Ltd., Sundargarh, Orissa, Rs.3.65 Lakhs)
22. NUMERICAL MODELING IN 3-DEMSION FOR SUBSIDENCE PREDICTION FOR LAW UNDERGROUND MINES OF MMIPL (MMIPL, Rs.2.85 Lakhs)
23. Numerical Modelling of Tailings Pond Dam for TATA SCM (SCM, TATA, Rs.2.60 Lakhs)
24. Performance Measurement of Surface Miner and Cost Benefit Analysis (NALCO, Rs.3.90 Lakhs)
25. Pit Slope Stability of Limestone Mines of Ambuja Cement Ltd (Ambuja Cement Ltd, Rs.2.95 Lakhs)
26. Safety Audit of Bhushan Steel Limited (Bhushan Steel Limited, Rs.20.00 Lakhs)
27. SCIENTIFIC STUDY FOR QUARTERLY ASSESSMENT OF GEO-ENVIRONMENTAL PARAMETERS AT JINDAL POWER OPEN COAL MINES (JPL, Rs.25.60 Lakhs)
28. Sealed-off Area Monitoring by Video Photography at Kunustoria Colliery (Eastern Coalfields Limited, Kunustoria Colliery, Burdwan, Rs.1.86 Lakhs)
29. Slope Stability Assessment, Safe Overall Pit Slope Study and its control measures at Mahlgawan Diamond Mine, Panna (National Mineral Development Corporation, Rs.5.68 Lakhs)
30. Slope Stability studies for Rawan Captive Limestone mine in Raipur (Ambuja Cements Ltd., Rs.4.50 Lakhs)
31. Slope Stability, safe over all pit slope study and its control measures at Majhgawan Diamond Mine (NMDC, Rs.5.68 Lakhs)
32. Slope stabilization by Vetiver System Technology (Tata Steel, Rs.24.00 Lakhs)
33. STABILITY ANALYSIS OF ASH-DYKE AT 4X250 MW JINDAL POWER PLANT, TAMNAR, RAIGARH (JPL, Rs.8.76 Lakhs)
34. Stability and strength test for Q-0, Dungri limestone Quarry (ACC Ltd, Rs.1.65 Lakhs)
35. Stability of Dump Slopes at Sukinda chromite mines, Sukinda. (TISCO -Tata Iron & Steel Co. Limited, Rs.12.00 Lakhs)
36. Stability of the parting between Ghusick (R-IX) and Ghusick (RIXA) seams and method of stabilization of void in Ghusick-A seam (R-IXA) (Eastern Coalfields Limited, Rs.8.98 Lakhs)
37. Study for fines dump slope stability at Thakurani Iron Ore Mines (FDSS) (Sarda Mines Private Limited, Rs.4.30 Lakhs)
38. Study of Dump Stability at Sukinda Chromite Mines, Tata Steel (Tata Steel, Rs.12.22 Lakhs)
39. Study of Pit Slope Stability in Kaliapani Chromite Mines of (Balasore Alloys Limited, Rs.3.00 Lakhs)
40. Study of Pit Slope Stability of Ari Dongri Iron Ore Mines (GPIL, Rs.4.66 Lakhs)
41. Study of Pit Slope Stability of Aridongri Iron Ore Mines (Godavari Power and Ispat Limited, Rs.4.66 Lakhs)
42. Study of ventilation system at Boula Chromite mine (FACOR, Rs.0.80 Lakhs)
43. Study on Impact of Surface Development on Underground Coal Mines in Durgapur and Asansol Sub-Divisions in Burdwan District (DUCM) (West Bengal Industrial Development Corporation Limited, Rs.9.37 Lakhs)
44. Study on intensity of noise and vibration due to non-blasting mechanical mining operations. (VTBM) (M/s. Birla Corporation Ltd., Rs.9.83 Lakhs)
45. Study Project for determining suitability of Surface Miners at NALCO Mines, Damanjodi, Orissa (NALCO, Rs.8.60 Lakhs)
46. Subsidence Study at ICCGroup of Mines (HCL, Rs.17.00 Lakhs)
47. Subsidence study of Surda, Kendadih & Rakha Mining Areas (SRMA) (Hindutan Cupper Limited (HCL), Indian Copper Complex Mining Project, Ghatsila, Jharkhand, Rs.17.68 Lakhs)
48. Survey of Defense Land, Barrack pore Cantonment (Cantonment Board, Rs.11.00 Lakhs)
49. Survey of Defense Land, Jalapahar Cantonment (Cantonment Board, Rs.6.00 Lakhs)
50. Survey of Defense Land, LebongCantonment (Cantonment Board, Rs.5.00 Lakhs)
51. Technical Guidance in respect of Geological report of Machhakata Coal block (TGRM) (Mahaguj Collieries Limited, Rs.1.95 Lakhs)

Visits Abroad by Faculty Members

1. Dey, Kaushik - Present a Technical Paper (Turkey, ) April 16 – 19, 2013
2. Patra, Aditya Kumar - EU Project review meeting (Ljubljiana and Velenje, Slovenia, ) 08-16 June 2013
3. Patra, Aditya Kumar - 23rd International Mining Conference and Exhibition (Antalya, Turkey, ) 16-19 April 2013
4. Bhattacherjee, Ashis - To discuss about collaborative research work (Moscow, ) June 25 - July 1, 2013
5. Bhattacherjee, Ashis - To present a paper at the 35th International Conference of Safety in Mines Research Institutes (London, ) October 14-17, 2013
6. Prusty, Basanta Kumar - International Conference (Vancouver Canada, ) March 2013
7. Prusty, Basanta Kumar - Attend review meeting of EU funded international research project (Slovenia, Europe, ) July 2013

Invited Lectures by Faculty Members

1. Expert Lectures on Rock Mechanics in Hard Rock Mining by Verma, Abhiram Kumar (ISM Dhanbad)
2. Professor S.K. Bose Memorial Lecture entitled Risk Assessment :An Emerging Trend To Address Safety by Bhattacherjee, Ashis (Dhanbad)
3. CO2 Sequestration in Underground Coal Mines by Prusty, Basanta Kumar (IIT Kharagpur)
4. Drainage of Methane for Enhanced Safety in Underground Coal Mines by Prusty, Basanta Kumar (IIT Kharagpur)

Books Published


Short-Term Courses, Training Programmes and Workshops organised

1. Land Acquisition and Environmental Clearance of Projects (5 day)
2. Risk Assessment and Accident Prevention in Mines (November 5-8)

Papers Published in Journals

7. Franken Macerals: Chemical Changes in Coal as a Result of Exposure to CO2. By Michael Hitch, Maria Holuszko, Basanta K Prusty, Jiajie (Gloria) Li, and Helen Segarty Under Preparation (0)

Papers Presented in Conferences

5. Anisotropic shear strength behavior of rock joints, By Kumar Rakesh, Khushiar Shadab, Verma AK, Int. Conf. on Coal and Energy – Technological Advances and Future Challenges, Kolkata, India, (2013)


Department of Ocean Engineering & Naval Architecture

Head
Prof. Trilochan Sahoo

Professors
Mandal, Nisith Ranjan  
*Dr.Inz.* (Poland), Wave and Tidal Energy, Computational Weld Mechanics and Welding Technology

Misra, Suresh Chandra  
*Ph.D.* (Newcastle UK),

Sahoo, Trilochan  
*Ph.D.* (IISc Bangalore), Coastal Hydrodynamics Hydroelasticity

Satsangi, Subir Kumar  

Sen, Debabrata  
*Ph.D.* (Canada), Free Surface Hydrodynamics, Marine Hydrodynamics, Dynamics of Marine Vehicles, Seakeeping and Maneuvering

Sha, Om Prakash  
*Ph.D.* (IIT Kharagpur), Marine Design and Production

Associate Professors
Bhar, Ashoke  
*Ph.D.* (IIT Kharagpur), Marine Structural Engineering

Bhaskaran, Prasad K  
*Ph.D.* (Kurukshetra), Wind-Wave Modeling, Marine Acoustics, Coastal Processes, Coastal Sediment Dynamics, Physical & Dynamical Oceanography, Ocean Wave Climate Projections

Warrior, Hari V  
Turbulence Modeling in Oceanography, Computational Fluid Dynamics

Assistant Professors
Bhattacharjee, Joydip  
*Ph.D.* (IIT Kharagpur), Marine Hydrodynamics, Wave-Structure Interaction, Wave Energy Converters

Datta, Nabanita  
*Ph.D.* (Univ. of Michigan, USA), Marine Dynamics, Vibrations, Hydroelasticity

Datta, Ranadev  
*Ph.D.*, Numerical Ship Hydrodynamics, Hydroelasticity of Floating Structures and Ships, Computational Geometry

Vishwanath, Nagarajan  
*Ph.D.* (Osaka Univ. Japan), Ship motions, Rudder systems, Mathematical modelling

Visiting Faculty
Sunny, Mohammed Rabius  
*Ph.D.* (Virginia), Structural Engineering (Marine Structures)

Faculty Appointments
Nabanita Datta  
Assistant Professor

Ranadev Datta  
Assistant Professor

Joydip BHattacharjee  
Assistant Professor

Md. Rabius Sunny  
Visiting faculty
Faculty Retirement
Misra, Suresh Chandra Professor

Brief Description of on-going activities

The Department is continuously changing the teaching courses as per the need of industry and trend in academics. Three new electives will be introduced from next academic session. Department is in the process of enhancing the ongoing research activities in the areas of marine hydrodynamics, design and production, Coastal processes and Engineering, marine structures. The Department has introduced the International summer and winter terms into the academic programs from the current academic year. The Department runs a National Program in Marine Hydrodynamics sponsored by Naval Research Board (DRDO) which aims to bridge the knowledge gap in Marine Hydrodynamics and develop indigenous R & D capabilities on Naval Systems. Apart from some of the ongoing training program, since January, 2014, the Department is providing training program involving faculty across various discipline within the Institute to Government officers of both Gujarat and West Bengal under integrated Coastal Zone Management Project in different batches. The Department is in the process of upgrading the infrastructure and augmenting the existing laboratory facilities taking into account the increase in students strength.

Thrust Areas


New Acquisitions

1. (i) NAPA Ship Design software, (ii) ADCIRC with SMS Interface, (iii) ORCAFLEX, (iv) WAMIT (v) MAXSURF (vi) SHIPFLOW (vii) Milling machine installed in Welding Laboratory

International Collaborations

A team from Southampton university, UK visited the Dept. for initiating collaborative research work

To initiate academic collaboration, a team from Alesund University College, Norway visited the Dept on 22nd January, 2014

Lectures by Visiting Experts

1. Scattering of a fluid-structure coupled wave at a flanged junction between two flexible waveguides by Jane B. Lawrie (Brunel University, UK)
2. 3-D flow measurement using stereo PIV/LDV system by Dr. Md. Hosseina (Dantec Dynamics, Denmark)
3. An insight into the design of the air conditioning system by Cmde A. S. Mitra (Principal Director, Directorate of Naval Architecture, Indian Navy)
Doctoral and MS Degrees Awarded

1. Sarat Chandra Mohapatra : Mathematical techniques in the hydroelastic analysis of floating and submerged flexible structures(Ph. D)
2. Bishakha Chakraborty : A response surface approach to the reliability analysis of FRP composite laminates used in ships(Ph. D)
3. Ramnarayan Mondal : Mathematical techniques for wave interaction with floating flexible structures in three dimensions(Ph.D)

Member - Professional Bodies

1. Sahoo, Trilochan, Life Member - Indian Society of Theoretical and Applied Mechanics(ISTAM)
2. Bhaskaran, Prasad K, Life Member - Indian Society of Theoretical & Applied Mechanics
3. Bhaskaran, Prasad K, Life Member - Ocean Society of India
4. Vishwanath, Nagarajan, Member - The Japan Society of Naval Architects and Ocean Engineers
5. Datta, Nabanita, Member - Society of Naval Architects and Marine Engineers
6. Satsangi, Subir Kumar, Member - Institution of Marine Technologists
7. Satsangi, Subir Kumar, Member - Indian Society of Technical Education
8. Satsangi, Subir Kumar, Member - Indian Society of Theoretical and Applied Mechanics
9. Sha, Om Prakash, Member - Royal Institution of Naval Architects, UK
10. Sen, Debabrata, Life Member - Ocean Society of India

Member - Editorial Board

4. Sen, Debabrata (0) Associate Editor - Journal of Ocean Engineering and Marine energy
5. Sha, Om Prakash (2012) Editorial Board Member - International Journal of Naval Architecture and Ocean Engineering (JNAOE), Korea
6. Sha, Om Prakash (0) Reviewer - Computer Aided Design,
9. Sha, Om Prakash (0) Reviewer - Computer in Industry

Awards & Honours

1. Bhaskaran, Prasad K (2014) Adjunct Professor, IIT Bhubaneshwar
2. Bhaskaran, Prasad K (2014) James Rennell MoES Young Fellow
3. Bhaskaran, Prasad K (2014) Member, Board of Studies, CUSAT Kochi

Sponsored Research Projects

1. An Investigation into the Maneuvering performance of ships in canals/channels around Indian Coast under different weather conditions (NRB, New Delhi, Rs.27.12 Lakhs)
2. ARTIFICIAL INTELLIGENCE FOR SOCIETAL NEEDS: KNOWLEDGE DISCOVERY AND INTELLIGENT DECISION MAKING FOR SOLVING PROBLEMS IN INDIAN CONTEXT RELATED TO ENER (IIT Kharagpur, Kharagpur, Rs.500.00 Lakhs)
3. CENTRE OF EXCELLENCE IN ROBOTICS (IIT Kharagpur, Rs.531.00 Lakhs)
4. Coastal Protection in the Mahakalpara area of Kendrapara district, Orissa (Ministry of Earth Sciences, New Delhi, Rs.44.17 Lakhs)
5. Developing a new eddy viscosity model in the presence of cavitation (NRB (submitted), Rs.0.00 Lakhs)
6. Development and Implementation of a Coupled ADCIRC-SWAN model for the Indian seas (Indian National Centre for Ocean Information Services, Ministry of Earth Sciences, Hyderabad, Rs.32.31 Lakhs)
7. Development of cage for Mari culture through numerical and physical modeling (Ministry of Earth Sciences, Government of India, Rs.47.76 Lakhs)
8. Development of high strength to weight ratio materials for the body of unmanned under water vehicle (MoES, Rs.76.02 Lakhs)
9. Experimental validation of theoretical models on sediment settling velocity and suspended sediment concentration using OCEANSAT data (NRB, New Delhi, Rs.9.56 Lakhs)
10. National Programme in Marine Hydrodynamics (Naval research board, Rs.255.00 Lakhs)
11. Research on ship maneuvering and propulsion performance using data from Voyage Data Recorder (VDR) and Automatic Identification System (AIS) (Ministry of Shipping, Government of India, Rs.27.48 Lakhs)
12. TOWING TANK EXPERIMENT FOR REDUCTION OF ENERGY DEMAND BY REDUCING RESISTANCE OF SHIPS BY FITTING BOW WINGS (SINGAPORE MARITIME INSTITUTE, Rs.18.25 Lakhs)
13. Weld Induced Distortion Analysis of 3-D Large Ship Structures (DST, New Delhi, Rs.13.44 Lakhs)

Consultancy Projects

1. CALIBRATION OF WATER CURRENT METER (West Bengal Government, Rs.0.20 Lakhs)
2. Consultant for Project ‘Indigo’ (Tata Consultancy Services, Rs.55.00 Lakhs)
3. Design analysis and proof checking of 440 m long Heavy Motor Vehicle Suspension Bridge - Phase-II (Public Works Department, Govt. of Uttarakhand, Dehradun, Rs.108.00 Lakhs)
4. Design of dock gate (Kolkata Port Trust, Rs.7.50 Lakhs)
5. Design of Leaf Type Lock Gate (KoPT, Rs.4.50 Lakhs)
6. Fatigue analysis of the Platform and Seat for AK630 Gun in Naval OPV, Goa Shipyard Ltd. Yard No.: 1194-96 & 1211. (Goa Shipyard Ltd., Rs.7.25 Lakhs)
7. Fatigue Calculations for Car-on-Rail (COR) Wagon, Project of Titagarh Wagons Ltd. (Titagarh Wagons Ltd., Rs.0.00 Lakhs)
8. Hydrodynamic analysis of fishing vessels (CIFT, Cochin, Rs.5.95 Lakhs)
9. Hydrodynamic and Sediment transport modeling studies for the Expansion of Adani Petronet Dahej Port, Gujarat (Cholamandalam MS Risk Services Ltd., Chennai, Rs.2.50 Lakhs)
10. Hydrodynamic Design & Development of Trimarans and Delta Hull Forms (NSTL Vizag, Rs.21.15 Lakhs)
11. Hydrodynamic design of high speed light weight torpedo (NSTL,DRDO, Visakhapatnam, Rs.22.25 Lakhs)
12. Impact of Storm Surge, Wind Waves and Seiches on the design of proposed Kalpasar Dam (Government of Gujarat, Rs.10.00 Lakhs)
13. MODEL FOR OCEAN WAVE ENERGY CONVERTER BUOY (DSIR (through: Mr. Sharat Kumar), Rs.1.00 Lakhs)
14. Model resistance/ self-propulsion tests, model wake measurements, hull form optimization using CFD of a 97 M OPV (GRSE, Rs.33.90 Lakhs)
15. Model Test for Self Propelled Sewage Barges Yard 446-451 (Bharati Shipyard, Mumbai, Rs.6.60 Lakhs)
16. Proof checking of the design calculations of Gantry Crane of Kankinara Project (Titagarh Marine Ltd., Rs.1.00 Lakhs)
17. Research on ship maneuvering using PMM captive tests and validation based on full scale maneuvering experiments (NSTL, Visakhapatnam, Rs.8.00 Lakhs)
18. Technical services in respect of leaf type Lock Gates at Kidderpore Dock, (Kolkata Port Trust, Rs.8.00 Lakhs)
19. Thermal re-circulation features in ambient waters and its dispersion characteristics (SENES Consultants India Pvt. Ltd, Mumbai, Rs.6.00 Lakhs)
20. Trajectory Study of an Underwater Object (NSTL, Visakhapatnam, Rs.4.21 Lakhs)

Visits Abroad by Faculty Members

2. Sha, Om Prakash - Safety & Energy Efficiency in River Transportation for a Sustainable Development of the Peru Amazon (Iquitos, Peru, ) 17-19 july, 2013

Invited Lectures by Faculty Members

1. Engineering education in India – past and present by Satsangi, Subir Kumar (IEI (India), Kharagpur)
2. Marine hydrodynamics : Progress and Status in the National Context by Sen, Debabrata (NIO Goa)
3. Hydroballistics : Forces, Dynamic model abnd Trajectory Simulation of Underwater Objects by Sen, Debabrata (FM University Balasore)
4. Mathematical challenges in Hydroelasticity by Sahoo, Trilochan (41st Annual Conference of OMS & Int Conference on Industrial Mathematics, KIITS Bhubaneswar)
5. Some issues on friction stir welding of AA5083 by Mandal, Nisith Ranjan (IIW International Congress 2014, New Delhi)
6. Weld Induced Distortion of Large Structures – Methods of Evaluation by Mandal, Nisith Ranjan (Indian Institute of Welding, Jamshedpur)

Short-Term Courses, Training Programmes and Workshops organised

1. Inhouse Training Programme on Practical Shipbuilding (Mar.03-14, 2014)
2. Integrated Coastal Zone Management with Gujarat perspective (20-27 February, 2014)

Papers Published in Journals

8. Effect of Atmospheric Forcing on Plume Dispersion and Nuclear Effluent Trajectories Investigated Using Dispersion Modelling for Kalpakkam Coast By Journal of Hazardous, Toxic, and Radioactive Waste (under review) (0)
16. On the application of a new formulation of nonlinear eddy viscosity based on anisotropy to numerical ocean models By Kaushik Sasmal, Subhendu Maity, Hari Warrior Journal of Turbulence (accepted) (0)
17. OVERVIEW AND PROSPECTS FOR DEVELOPMENT OF WAVE AND OFFSHORE WIND ENERGY By C. Guedes Soares, J. Bhattacharjee, D. Karmakar Brodogradnja No. 2 Vol. 65 (2014)
Papers Presented in Conferences

1. A polynomial chaos approach to predict uncertainty in twin-propeller twin-rudder ship maneuvers, By Anil Kumar Dash, Vishwanath Nagarajan, Om Prakash Sha, Annual Spring Meeting, The Japan Society of Naval Architects and Ocean Engineers, Sendai, Japan, (2014)


3. A study on applicability of CFD for a variety of practical marine hydrodynamic problems, By Sen, D and Saripilli, JaiRam, Int. conf. on Ship and Offshore Technology, IIT Kharagpur, (2013)


10. Expansion formula for velocity potential for wave interaction with floating and submerged structures, By S C Mohapatra, T Sahoo, Intl Workshop on Water Waves and Floating Bodies, (2013)


Department of Physics

**Head**
Prof. Arghya Taraphder

**Professors**

Bharadwaj, Somnath  *Ph.D. (IISc Bangalore)*, Astrophysics, Cosmology

Datta, Prasanta Kumar  *Ph.D. (Burdwan Univ)*, Ultrafast Lasers and Nonlinear Optics, Photonics

Kar, Sayan  *Ph.D. (IIT Kanpur)*, Gravitation and Geometry, High Energy Physics, Quantum mechanics

Kumar, Krishna  *Ph.D. (IIT Kanpur)*, Hydrodynamic flows, Pattern-forming instabilities

Mathur, Balbir Kumar  *Ph.D. (IIT Kharagpur)*, Web Based Service, Microprocessor, ERP, Thin Films

Ray, Samit Kumar  *Ph.D. (IIT Kharagpur)*, Semiconductor nanostructures, Condensed Matter Physics, Thin Films, Photovoltaics

Roy, Anushree  *Ph.D. (IISc Bangalore)*, Raman spectroscopy


Taraphder, Arghya  *Ph.D. (IISc Bangalore)*, Condensed matter physics, Condensed matter physics

**Associate Professors**

Das, Amal Kumar  *Ph.D. (IOP Bhubaneswar)*, Experimental Condensed Matter Physics, Magnetism including spintronics, Magnetic semiconducting nanoparticles and thin films, Mechanical and magnetic stress measurement of thin films

Dhar, Achintya  *Ph.D. (Jadavpur Univ)*, Organic Semiconductors, Semiconductor Nanostructures, Heterostructure Devices, Organic Solar Cells

Goswami, Dipak Kumar  *Ph.D. (Institute of Physics, Bhubaneswar)*, Surfaces and Interfaces Science, Nanoscale Science, Organic Semiconductors Thin Films and Nanostructures Growth, Organic Field-Effect Transistors (OFETs): Fabrication and Characterization, X-ray Physics, Ion-solid Interaction

Khastgir, Sugata Pratik  *Ph.D. (IOP Bhubaneswar)*, Mathematical Physics/High Energy Physics

Majumder, Sonjoy  *Ph.D. (IIA Bangalore)*, Computational Many-body physics, Atomic & Molecular Physics, Theoretical modeling of bulk and nano-materials, Astronomy and Astrophysics, Physics of Ultra-Cold atom

Nath, Tapan Kumar  *Ph.D. (IIT Kanpur)*, Magnetic oxide thin films and multilayers, Spin electronics, Nanostructured Magnetic oxides, Magnetic Alloys, Multiferroics, Condensed Matter Physics (Low temperature Physics), Magnetism and Superconductivity, Magnetic semiconductors, Strongly Correlated System

Panigrahi, Kamal Lochan  *Ph.D. (Institute of Physics, Bhubaneswar)*, String Theory, High Energy Physics
Physics, String Inspired Cosmology

Roy Chaudhuri, Partha Ph.D. (IIT Delhi), Fiber & Integrated Optics and Optoelectronics, Experimental Bio-Photonics & Nano-Photonics

Shukla, Pragya Ph.D. (JNU Delhi), Random matrix theory and Quantum Chaos, Condensed Matter Physics, Statistical Studies of Complex Systems, Theoretical Physics

Singh, Ajay Kumar Ph.D. (Calcutta Univ), Experimental Nuclear Physics, Double Beta decay studies

Srivastava, Sanjeev Kumar Ph.D. (JNU, New Delhi), Materials Engineering using Ion Beams, Nuclear Condensed Matter Physics, Quantum Criticality

Assistant Professors

Banerjee, Debamalya Ph.D. (IISc. Bangalore), Electron Paramagnetic Resonance (EPR), Supercooled liquid dynamics, Dynamic nuclear polarization (DNP)

Bhaktha, Shivakiran B N Ph.D. (Univ of Hyderabad), Glass Photonics, Optofluidics, Random Laser


Das, Baidya Nath Ph.D. (IIT Kharagpur), condensed matter physics

Gupta, Amar Nath Ph.D. (JNU), Biophysics and Soft Matter Physics

Hundi, Raghavendra Srikanth Ph.D. (Harish Chandra Research Institute), Theoretical particle physics

Manoj, Brundavanam Ph.D. (Hyderabad Univ.), Singular Optics, Applied Optics, Ultrafast Laser Filamentation

Maruthi Roy, Samudra Ph.D. (Jadavpur Univ.), Silicon Photonics, Nonlinear Photonics, Plasmonics

Scientific Officer

Chakraborty, Syamal Ph.D. (IIT Kharagpur),

Faculty Appointments

Dr. M.M. Brundavanam Assistant Professor

Dr. S. Roy Assistant Professor

Dr. R.S. Hundi Assistant Professor

Dr. A.N. Gupta Assistant Professor

Dr. D. Banerjee Assistant Professor

Dr. D.K. Goswami Associate Professor
Brief Description of on-going activities

The Department is carrying out research and development utilizing in-house facilities and in collaboration with sister departments. Many of the facilities have been developed in the department and procured from sponsored projects. Faculty and scholars are carrying out active research in the following areas: Astrophysical Spectroscopy, Astrophysics, Atmospheric Sciences, Atomic and Molecular Physics, Biophysics, Condensed Matter Physics, Physics of Complex Systems, Cosmology, Electronic properties of solids, ERP, Bio-Photonics, Optical Imaging, Nuclear Physics, Ferroelectricity, Fiber & Integrated Optics, Optoelectronics, Gravitation and Geometry, High Energy Physics, Hydrodynamics, Laser Physics, Nonlinear Optics, Photonics, magnetic semiconducting nanoparticles and thin films, Magnetism, Spintronics, Materials engineering, Mathematical Physics, Mechanical and magnetic stress, Microprocessors based systems, Monte Carlo Simulation of Radiation Detectors, Semiconductor Devices, Nano- and Bulk-material science, Nanostructured Magnetic Materials, Magnetic thin films and Multilayers, Multiferroics, Nanotechnology, Nonlinear Dynamics, Nonlinear instabilities, Nuclear condensed matter physics, Nuclear Structure, Double Beta Decay and Neutrino Physics, Optoelectronics, Organic Electronics, Particle and Cluster Emission in Fission and Fusion-Fission, Physics of Semiconductor Crystals and Thin Films, Quantum Many-Body Theory, Radiation Measurement Techniques, Radiation Sensors and Dosimetry, Renewable Energy Sources, Semiconductors, Nanostructures, Solid State Ionics, Thermoelectricity, Web Based Services, Engineering and characterization of materials using ion beams, String Theory, Superconductivity

Thrust Areas

1. Condensed Matter Physics
2. Non-linear Dynamics and complexity
3. Astronomy and Astrophysics
4. Nuclear and Particle Physics
5. Optics and Photonics

Lectures by Visiting Experts

1. LIGO-India: Locating Einsteins messengers and Inaugurating Gravitational Wave Astronomy by Prof. BalaIyer (Raman Research Institute, IndIGO Consortium, Bangalore)
2. At the donor/acceptor interface in Organic Photovoltaics: Energy or Charge transfer? by Dr. Raavi Sai Santosh Kumar (Nanyang Technological University, Singapore)
3. Novel Transport phenomena in hybrid junctions of Nanowires by Dr. Arijit Saha (Department of Physics, University of Basel, Switzerland)
4. Ultrafast probes Ultra-small: Using few-femtosecond IR pulses and EUV spectroscopy to interrogate collective dynamics in nanoscaleplasmon and superfluids by Dr. Sivarama Krishnan (TIFR-Hyderabad)
5. Quest for new physics in condensed matter systems by Mr. Sitikantha Dhurjati Das (Quantum Matter Group, Cavendish Laboratory, Cambridge UK)
7. Topological parameters in classical and quantum gravity by Dr. Sandipan Sengupta (Raman Research Institute, Bangalore)
8. Berry phase and gauge anomalies by Mr. Vatsal Dwivedi (Department of Physics, University of Illinois at Urbana-Champaign, USA)
9. Study of electron-phonon interaction with self-consistent basis generation scheme by Dr. Monodeep Chakraborty (Department of Solid State Physics, IACS, Kolkata)
10. Magneto-optic Kerr microscopy for nanomagnetism by Prof. Subhankar Bedanta (National Institute of Science Education and Research (NISER), Bhubaneswar)
11. NMR as a local probe of magnetism and spin dynamics by Dr. Panchanana Khuntia (Max Planck Institute for Chemical Physics of Solids, Dresden, Germany)
12. Studies on intermetallic compounds by perturbed angular correlation by Prof. C. C. Dey (SINP Kolkata)
13. Probing the Universe through Neutral Hydrogen Distribution by Prof. Tirthankar Roy Choudhury (NCRA-TIFR, Pune)
14. Some aspects of correlated material phenomena by Dr. Anamitra Mukherjee (University of Tennessee, Knoxville)
15. Quantum electronic and high frequency transport in carbon superlattice systems by Prof. Somnath Bhattacharyya (School of Physics, & Centre of Excellence in Strong Materials, University of the Witwatersrand, Johannesburg, South Africa)
16. Magnetically Disordered Interfaces in Magnetic Tunnel Junctions by Dr. Kalpataru Pradhan (University of Augsburg, Germany)
17. Bertrand Space-times, or, what General Relativity can teach us about galaxies by Prof. Tapobrata Sarkar (Department of Physics, Indian Institute of Technology Kanpur)
18. The Pebble Bed Modular Reactor, its Implications for Power Consumption in Developing Countries and some Material Properties of its Fuel by Professor Johan B Malherbe (Dept. of Physics, University of Pretoria, Pretoria 0002, South Africa)
19. A needlet ILC analysis of WMAP 9-year data by Dr. Soumen Basak (Service dAstrophysique (SAP), Centre d’Etudes de Saclay, France)
20. Ultrafast Dynamics of the Excited States Using Femtosecond Time-Resolved Spectroscopy by Dr. Dipak K. Palit (Head, Radiation & Photochemistry Division, Bhabha Atomic Research)
21. Coherent Control: Replacing Serendipity with Intention by Dr. Sisir K. Sarkar (Director, Chemistry Group, Bhabha Atomic Research Centre, Mumbai)
22. Laws of Universe by Professor Jnanadeva Maharan (Institute of Physics, Bhubaneswar)
23. Structural transitions of colloids under magnetic field & compressive strain by Dr. Junaid Masud Laskar (Max Planck Inst. for Dynamics and Self organization, Goettingen, Germany)
24. Gravitational Lensing: Probing the Unseen and Unaccounted for by Professor D. Narasimha (Tata Institute of Fundamental Research, Mumbai)

**Doctoral and MS Degrees Awarded**

1. Tirupathi Patri : Establishing structure-property correlation in multiferroic Bi1-x CaxFeO3 nanoceramics and solid solution with ferroelectric PbTiO3 and BaTiO3(PhD)
2. Kajal Mondal : Light Propagation in Microstructured Holey Optical Fibers and Designing New Fibers and In-line Active Fiber Devices(PhD)
3. K.D. Chandra Sekhar : Exploring the correlation of structural, magnetic and magnetodielectric properties in R2MnNiO6 and R1-xCaxMnO3(R=Rare earth) Perovskite systems.(PhD)
4. Trilochon Sahoo : Microstructure controlled magnetoeimpedance behavior of rapidly solidified iron-and cobalt-based metallic glass ribbons(PhD)
5. Pankaj Kumar Sinha : Studies on Three Dimensional Variational Data Assimilation of Wind Observations in Simulating Meteorological Systems over the Indian Region(PhD)
6. Suman Majumder : Probing the Epoch of Reionization through Radio-Interferometric Observations of Neutral Hydrogen(PhD)
7. Sudipta Koley : Correlated Electronic Models for Transition Metal Dichalcogenides(PhD)

**Member - Professional Bodies**

1. Datta, Prasanta Kumar, Member - SPIE (USA)
2. Datta, Prasanta Kumar, Regular - Optical Society of America
3. Datta, Prasanta Kumar, Life - Indian Laser Association

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4. Datta, Prasanta Kumar, *Regular Associate* - International Centre for Theoretical Physics, Trieste, Italy
5. Nath, Tapan Kumar, *Life Time Member* - Magnetic Society of India
6. Nath, Tapan Kumar, *Life time member* - Material Research Society of India
7. Nath, Tapan Kumar, *Full Member* - American Nano Society
8. Roy Chaudhuri, Partha, *Regular* - KIT Internation Exchange Club, Japan
9. Roy Chaudhuri, Partha, *Life Member* - Indian Science Congress Association, ISCA
10. Roy Chaudhuri, Partha, *Life Member* - Optical Society of India, OSI
11. Roy Chaudhuri, Partha, *Regular* - Optical Society of America, OSA
12. Roy Chaudhuri, Partha, *Life Member* - Institute of Electronics & Telecommunication Engineers, IETE
13. Srivastava, Sanjeev Kumar, *Member* - Indian Science Congress Association
14. Srivastava, Sanjeev Kumar, *Member* - Indian Physical Society
15. Chandra, Amreesh, *Life Member* - Indian Science Congress Association
17. Sharma, Shivcharan Lal, *Life Member* - Indian Physics Association
18. Sharma, Shivcharan Lal, *Life Member* - Indian Physical Society
20. Sharma, Shivcharan Lal, *Life Member* - Acoustical Society of India
22. Sharma, Shivcharan Lal, *Life Member* - Indian Society for Radiation Physics
23. Sharma, Shivcharan Lal, *Life Member* - Nuclear Track Society of India
24. Ray, Samit Kumar, *Member* - MRS, USA
25. Ray, Samit Kumar, *Member* - IEEE, USA
26. Bharadwaj, Somnath, *Member* - International Astronomical Union
27. Kar, Sayan, *Member* - Indian Association for General Relativity and Gravitation
28. Mathur, Balbir Kumar, *Senior Member* - IEEE
29. Mathur, Balbir Kumar, *Life member* - MRSI
30. Mishra, Shraddha, *Member* - American Physical Society

**Member - Editorial Board**

2. Kar, Sayan (2011) *Member, Editorial Board* - Indian Journal of Physics
5. Nath, Tapan Kumar (2012) *Editorial Board Member* - Dataset Papers in Nanotechnology
7. Panigrahi, Kamal Lochan (0) *Editorial Board Member: High Energy Physics* - Dataset Papers in Physics
9. Ray, Samit Kumar (2011) *Member of the Editorial Board* - Nanotrends
10. Ray, Samit Kumar (0) *Associate Editor* - Frontiers in Materials : Optics and Photonics
11. Roy, Samudra (0) *Referee* - Optics and Laser Technology (Elsevier)
12. Roy, Samudra (0) *Referee* - Optics Express (OSA)
13. Roy, Samudra (0) *Referee* - Optical Fiber Technology (Elsevier).
14. Roy, Samudra (0) *Referee* - Journal of Optical Society of America B

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Awards & Honours


Sponsored Research Projects

1. A Detailed Study of the Effect of Gamma Radiation on Structural, Optical and Electrical Properties of Indium Oxide Doped Tellurium Dioxide Thin Films (DAE-BRNS-GOI (Submitted for funding), Rs.36.00 Lakhs)
2. Co-operative Phenomena and Nanosize effect in some Correlated Systems (DAE-BRNS, Rs.18.00 Lakhs)
3. Detection/measurement of low magnetic field through phase modulation of light in optical fiber/ photonic crystal fiber coated with ceramic magnetostri (BRNS, Government of India, Rs.15.65 Lakhs)
4. Development and Characterization of Nanostructured thin films for SiGe Quantum Well Infrared Photodetector (QWIP) and ferroelectric based gas/chemi (DRDO, Rs.201.80 Lakhs)
5. Development of Fluorescent Whole Cell Optical Fibre Biosensor for Heavy Metal Pollutants (DOB, Ministry of Science and Technology, Government of India, Rs.44.00 Lakhs)
6. Development of Rare-Earth Doped Low-Loss Glass-Ceramic Waveguides by Sol-gel technique for Photonics Applications (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
7. Development of Real Time Gamma Radiation Dosimeters Employing Thin Films of Different Metal Oxides and Their Mixtures (BRNS-DAE-GOI (SRIC-Code: DRG), Rs.35.55 Lakhs)
8. Development of realtime gamma dosimeters employing thin films of different metal oxides and their mixtures. (BRNS, Rs.36.00 Lakhs)
9. Experimental investigation of the modes of random laser in disordered microfluidic channels. (SERB (DST, Young Scientist), Rs.24.24 Lakhs)
10. Generation of tunable mid-infrared coherent radiation in the range of 12.7-17um for strategic spectroscopic application (BRNS, Rs.22.57 Lakhs)
11. Graphene based hybrid solar cells (CSIR, Rs.20.92 Lakhs)
12. Green photonics using semiconductor nanostructures (DST, Rs.32.45 Lakhs)
13. Investigation of Electrical-, Magneto-Transport, Extraordinary Hall resistivity, Specific Heat and Magnetic studies in nanostructured CMR Manganites (DST, India (Completed, 2012-13), Rs.128.00 Lakhs)
14. MBE growth of strained Si/Ge layers and self-assembled Ge islands for heterostructure MOSFETs and flash memory devices (DST, New Delhi, Rs.161.66 Lakhs)
15. Molecular Structural Evolution of Nanoparticles Mediated Amyloid Protein Fibrils (DST, Rs.0.00 Lakhs)
16. Nanomaterials for smart energy systems (UKIERI, Rs.16.00 Lakhs)
17. Polymer composites for energy systems (Max Planck Society (Germany), Rs.8.50 Lakhs)
18. Pre-operative programme for Indian participation in the FAIR project at GSI, Darmstadt Germany- Accelerator and Detector-related R&D and protot (DST, Rs.15.00 Lakhs)
19. Proposal for Developing an Advanced Electromagnetic Modeling Platform for Complex, Arbitrary Microstructured Fiber and Designing Inline Active and No (DST, Government of India, Rs.10.80 Lakhs)
20. Realization of Packet-switched Node with optoelectronic and Photonic technologies for ultrabroadband communication systems and networks (Italian Ministry of Education, University and Research, Rs.300.00 Lakhs)
21. Second order cascaded nonlinear optical processes for all-optical photonic devices (DST, Govt. of India, Rs.7.62 Lakhs)
22. Semiclassical strings in AdS/CFT (DST, Rs.11.84 Lakhs)
23. Semiconductor Superlattices for Terahertz Emission at Room Temperature (DST-Russian Foundation of Basic Research, Rs.17.40 Lakhs)
24. Si/Ge Nanostructure sensitized hybrid solar cells (DST, Rs.47.45 Lakhs)
25. Studies on Laser-Optical Fiber-Based Micro-Imaging Techniques in the Analysis of Tissue Structure and Detection of Abnormalities (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
27. Study of hyperfine structure and isotope shift of Isotopes using relativistic highly correlated many-body theory (BRNS, DAE, Rs.17.00 Lakhs)
28. Theoretical studies on transition metal dichalcogenides (TID) (DST, Rs.15.00 Lakhs)
29. Theoretical Study of Hyperfine Interaction in Heavy Atoms and Molecules for Quantum Computation and Frequency Standard (IIT-Kharagpur(ISIRD), Rs.3.00 Lakhs)
30. To strengthen the post-graduate teaching and research facilities in the department (DST, New Delhi, Rs.365.00 Lakhs)
31. Upgradation of Basic Low Temperature and High Magnetic Field Facility for Spin-Electronics Research, (SGIRG, IIT Kharagpur (2014), Rs.25.00 Lakhs)

Consultancy Projects

1. Development of Admission Modules (IISER Admission Committee, Rs.6.00 Lakhs)
2. Guest House management System (IIT Kharagpur, Rs.3.00 Lakhs)
3. Measurement of optical nonlinearity of organic and polymer samples (DMSRDE, DRDO Kanpur, Rs.0.53 Lakhs)
4. Students Academic Management (IISER Pune, Rs.6.00 Lakhs)
5. Thin Film Characterization (Various departments & agencies, Rs.0.00 Lakhs)

Patents (filed / granted)

1. Solar based mobile charger

Visits Abroad by Faculty Members

1. Chandra, Amreesh - Collaborative Program (Max Planck Institute for Polymer Research, Germany, ) 1 month
2. Chandra, Amreesh - AvH Foundation sponsored CONNECT program (TU Braunschweig, Germany, ) 28 days
3. Chandra, Amreesh - Synchrotron XRD experiments (Photon Factory, Tsuka, Japan, ) 7 days
4. Shukla, Pragya - Scientific collaboration as Senior Associate (International Center for Theoretical Physics (ICTP), Trieste, Italy, ) 1 month
5. Shukla, Pragya - Scientific collaboration (National University of Singapore, Singapore, ) 10 days
6. Srivastava, Sanjeev Kumar - Experiment (DESY, Hamburg, Germany, ) 5th - 8th April, 2013
7. Srivastava, Sanjeev Kumar - International Conference (Seattle, WA, USA, ) 23rd - 28th June, 2013
8. Panigrahi, Kamal Lochan - Research (International Centre for Theoretical Physics (ICTP), Trieste, ) 75 days
9. Roy Chaudhuri, Partha - Invited Talk in JSA-OSA Symposium (Doshishya University, Kyoto Japan, ) September 16-20, 2013
10. Das, Amal Kumar - Collaborative research work (Jahannes Kepler University (JKU) Linz, Austria, ) March to December 2013
11. Roy, Anushree - visiting with ICTP TRIL fellowship (CNR, Pisa Italy, ) 27 days

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15. Ray, Samit Kumar - Research collaboration (Leibnitz University, Hannover, Germany, 27/11/13 - 28/11/13)
16. Ray, Samit Kumar - To deliver an invited lecture (Johan Kepller University Linz, Austria, 29/11/13 - 30/11/13)
17. Ray, Samit Kumar - Carrying out Synchrotron based experiments at DESY (Humburg, Germany, 4/4/13 - 10/4/13)

**Invited Lectures by Faculty Members**

1. Photonic Crystals: Periodic Interaction of Light with Matter by Roy Chaudhuri, Partha (HNPEED-2013, Mat Sc, IIT Kharagpur)
3. Analysis of Complex and Arbitrary Structure Optical Waveguides & Fibers by Roy Chaudhuri, Partha (Nanophotonics Workshop, Calcutta University)
5. Introduction to the Principles and Applications of Fiber Optic Sensors by Roy Chaudhuri, Partha (OFCS-2014, Kolaghat Engineering College)
6. Finite difference Mode Convergence Algorithm to Analyse Complex and Arbitrary Optical Waveguides, Fi by Roy Chaudhuri, Partha (INDO-UK Workshop, IIT Delhi)
7. Photonic Crystals & Photonics Sensors by Roy Chaudhuri, Partha (Workshop on Materials Science, University of Burdwan)
8. Designing Microstructured Optical Fiber towards High-Performance Fiber Amplifier by Roy Chaudhuri, Partha (ICOL-2014, IRDE, Dehradun)
9. Dispersion Engineering towards Ultra Broadband Supercontinuum generation in Soft glass based High-In by Roy Chaudhuri, Partha (JSAP-2013, Doshisha University, Kyoto, Japan)
10. High-Performance Erbium-doped Fiber Amplifier and Fiber Laser in PCF Host by Roy Chaudhuri, Partha (NLS-22, Manipal University, Karnataka)
11. Submicron-size high-index-core Bragg fiber with high nonlinearity by Roy Chaudhuri, Partha (WRAP-2013, IIT Delhi)
12. Interface Effect on Magnetoresistance of Ferromagnet/Semiconductor Heterostructure by Das, Amal Kumar (International Conference PSI2014 in Puri, Odisha)
13. Seeing the Universe with Redshifted 21-cm Radiation by Bharadwaj, Somnath (Presidency University, Kolkata)
14. Eddington inspired Born-Infeld gravity by Kar, Sayan (IIT Kanpur)
15. A century of extra dimensions (colloquium) by Kar, Sayan (IIT Kanpur)
16. Transverse polarization structure of an optical vortex beam in a birefringent crystal by Manoj, Brundavanam Maruthi (IIST, Trivandrum)
17. Physics of PLD grown epitaxial TiN(Ni)/p-Si heterojunction by Nath, Tapan Kumar (DAE-BRNS 7th National Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured Materials, IIT Kharagpur (PLD-2013))
18. Radiation Sensing Properties of Metal oxide Thin Films by Sharma, Shivcharan Lal (Kanpur University)
19. Roughening and smoothing in electronic growth of Ag on Si(111)-7x7 surfaces by Goswami, Dipak Kumar (Puri, India)
20. Enhanced magnetocaloric effect in Sm0.55Sr0.45MnO3 phase separated manganites by Nath, Tapan Kumar (International conference on functional materials (ICFM-2014, 5 - 7 Feb. 2014), Materials science centre, IIT Kharagpur)
21. Nanostructured Magnetic oxides by Nath, Tapan Kumar (Vidyasagar University, V.U., Midnapore)
22. Rotating thermal convection by Kumar, Krishna (Viswabharati, Santiniketan)
23. Physical Curl Forces by Shukla, Pragya (SN Bose center for Basic Sciences, Kolkata)
24. Complex Systems with Goldstone conditions: a statistical view point by Shukla, Pragya (Indian Institute of Science, Bangalore)
25. System dependent random matrix ensembles: a single parametric formulation by Shukla, Pragya (Department of Physics, IIT Indore)
26. Protein folding at single-molecule level by Gupta, Amar Nath (Bhubaneswar)
27. Nano-oxides for energy applications by Chandra, Ameesha (TU Braunschweig, Germany)
28. Semiconductor Nanomaterials as Probed by Inelastic Light Scattering by Roy, Anushree (NIT Durgapur)
29. III-V Semiconductor Nanowires of Wurtzite Phase as Probed by Inelastic Light Scattering by Roy, Anushree (Brescia, Italy)
30. by Taraphder, Arghya (MSU, USA. IIT Roorkee and many other places)
31. Nanostructure influence in transport processes through hetero-interfaces of organic cells by Dhar, Achintya (NREL, Colorado, USA)
32. Role of nanostructures for higher efficiencies in organic solar cells by Dhar, Achintya (IIT Kanpur)
33. Silicon Hybrid Nanostructures for Electronic and Photonic Devices by Ray, Samit Kumar (German Academy of Sciences, Halle, Germany)
34. Optical and Electrical Characteristics of Strained Ge Films / Nanostructures by Ray, Samit Kumar (Johan Kepler University Linz, Austria)
35. Light Emission and Charge Storage Characteristics of Ge Nanostructures by Ray, Samit Kumar (Leibnitz University, Hannover, Germany)
36. Optical Properties of Semiconductor Hetero- and Nanostructures Grown by Pulsed Laser Deposition by Ray, Samit Kumar (IIT Kharagpur)
37. Functional Devices using Low Dimensional Semiconductor Structures by Ray, Samit Kumar (Shiv Nadar University, Noida)
38. Structural and Optical Characteristics of Strained Ge Nanostructures by Ray, Samit Kumar (Puri)
39. Silicon Based Hybrid Nanostructures for Device Applications by Ray, Samit Kumar (IIT Bombay)
40. Silicon Germanium Heterostructures for Electronic & Photonic Devices by Ray, Samit Kumar (NIT Durgapur)
41. Silicon Based Nanophotonic Devices : Status & Trends by Ray, Samit Kumar (Bhubaneswar)

Books Published


Papers Published in Journals

2. A Griffiths-like phase in antiferromagnetic R0.5Eu0.5MnO3 (R = Pr, Nd, Sm), By A Karmakar, S Majumdar, S Kundu, T. K. Nath and S Giri, J. Phys.: Condens. Matter 25, 066006. (2013)
7. “Improvement of the nanostructured zinc oxide/polymer based solar cell efficiency through the incorporation of N,N’-Diocetyl-3,4,9,10-perylenedicarboximide (PTCDI-C8) nanoribbons as charge mediator”, By S. Pradhan and A. Dhar Synthetic Metals 176, p116-120 (2013)
15. Critical behavior and magnetic relaxation dynamics of Nd0.4Sr0.6MnO3 nanoparticles, By S. Kundu and T. K. Nath, Philosophical Magazine, 93, 2527 (2013)
20. Direct band gap optical emission from compressively strained Ge films grown on relaxed Si0.5Ge0.5 substrate By R. Aluguri, S. Manna, and S. K. Ray Applied Physics Letters 103, 161118 (2013)
21. Direct band gap optical emission from Ge islands grown on relaxed Si0.5Ge0.5/Si (100) substrate By R. Aluguri, S. Manna, and S. K. Ray J. Appl. Phys. 115, 013502 (2014)

24. E1- PNC transition amplitudes of the hyperfine components for $^2S_{1/2}$ $-$ $^2D_{3/2}$ transitions of $^{137}$Ba$^{+}$ and $^{87}$Sr$^{+}$ By Narendra Nath Dutta and Sonjoy Majumder Physical Review A (Accepted), arxiv: 1404.2020 (2014)

25. Effect of Mn doping on magnetic and transport properties of Nd0.5Sr0.5Co1-yMnyO3 (y = 0, 0.1, 0.3, 0.9, 0.95 and 1), By S. Kundu and T. K. Nath, Journal of Magnetism and Magnetic Materials, 325, 1–6, (2013)


28. Electroluminescence from metal- insulator-semiconductor tunneling diodes using compressively strained Ge on Si0.5Ge0.5 virtual substrates By S. Manna, R. Aluguri, S. Das, R.K. Singha and S.K.Ray Optics Express 21, pp. 28219-28231 (2013)


42. Giant junction magnetoresistance effect in ferromagnet/semiconductor heterostructures By Anirban Sarkar, Rajdeep Adhikari, and Amal Kumar Das JOURNAL OF APPLIED PHYSICS 114, 154513 (2013)
46. Improved magnetoeimpedance and mechanical properties on nanocrystallization of amorphous Fe68.5Si18.5Cu1Nb3B9 ribbons, By T. Sahoo, T. K. Nath, V. Srinivas, Journal of Magnetism and Magnetic Materials, 343 , 13 (2013)
49. Magnetic and transport properties of Mn0.02Sn0.98O2 thin films grown on p-Si varying O2 pressure By S. Bhaumik, S. K. Ray, and A. K. Das JOURNAL OF APPLIED PHYSICS 115, 123907 (2014)
50. Magnetic and transport properties of Mn0.02Sn0.98O2 thin films grown on p-Si varying O2 pressure By S. Bhaumik, S. K. Ray, and A. K. Das JOURNAL OF APPLIED PHYSICS 115, 123907 (2014)
51. Magnetic field induced dielectric relaxation in the strain glass state of Pr0.6Ca0.4MnO3 By K. Devi Chandrasekhar, A. K. Das, and A. Venimadhav JOURNAL OF APPLIED PHYSICS 113, 173907 (2013)
52. Magnetic Schottky diode exploiting spin polarized transport in Co/p-Si heterostructure By A. Sarkar, R. Adhikari, and A. K. Das APPLIED PHYSICS LETTERS 100, 262402 (2012)
57. Need for optimizing catalyst loading for achieving affordable microbial fuel cells By Inderjeet Singh and Amreesh Chandra Bioresource Technology 142, 77-81 (2013)
59. Observation of bi-relaxor characteristic in multiferroic 0.70Bi(0.90)Ca(0.10)FeO(3) - 0.30PbTiO(3) ceramics By P. Tirupathi and Amreesh Chandra Journal of Physics D: Applied Physics 46, 375304 (2013)


70. Predictions for BAO distance estimates from the cross-correlation of the Lyman-α forest and redshifted 21-cm emission. By Guha Sarkar, Tapomoy Bharadwaj, Somnath. Journal of Cosmology and Astroparticle Physics 08,023 (2013)


75. Relativistic coupled cluster calculations on hyper structures and electromagnetic transition amplitudes of In III. By Sourav Roy, Narendra Nath Dutta and Sonjoy Majumder. Physical Rev. A 89, 042511 (2014)


84. Sol-gel fabrication and characterization of ZnO and Zn2SiO4 nanoparticles embedded silica glass-ceramic waveguides By Kumara Raja Kandula, Anirban Sarkar, and B. N. Shivakiran Bhaktha Optical Materials Express 3 (2013)


87. Strain buildup in GaAs due to 100 MeV Ag ion irradiation By Shramana Mishra Sudipta Bhauimik Jaya Kumar Panda, Sumil Ojha , Achnitya Dhar , D. Kabiraj , Anushree Roy Nuclear Instruments and Methods in Physics Research B 316,192 (2013)


89. Structural, electrical and dielectric properties of La0.7Sr0.3MnO3–ErMnO3 multiferroic composites By S.K. Mandal, P. Dey , T. K. Nath, Materials Science and Engineering B 180, 70 (2014)


91. Superparamagnetic State by Linear and Non-Linear AC Magnetic Susceptibility in Mn0.5Zn0.5Fe2O4 Ferrites Nanoparticles, By T. Suneetha, S. Kundu, Subhash C. Kashyap, H. C. Gupta, and T. K. Nath, J. Nanoscience and Nanotechnology, 13, 270 (2013)


93. Temperature dependent current-voltage characteristics of Co0.65 Zn0.35Fe2O4/n-Si magnetic diode like structure, By A. Santhosh Kumar, J. Panda, and T. K. Nath Advanced Science Letters (accepted) (2014)


102. Tunable Selective Liquid Infiltration: Applications to low loss birefringent photonic Crystal Fibers (PCF) and its Single mode realization  By Partha Sona Maji and Partha Roy Chaudhuri  *Special issue on Photonic Crystal in Journal of Photonics and Optoelectronics* Accepted (2014)


**Papers Presented in Conferences**


15. Exchange bias effect concerned with tunneling magnetoresistance in Sm0.35Pr0.15Sr0.5MnO3 phase separated manganites, By S. K. Giri, P. T. Das, S. K. Hazra, T. K. Nath, Proceedings of 3rd international Symposium on Advanced Magnetic Materials and Applications (ISAMMA-2013), Taichung, Taiwan, (2013)

16. Fabrication and Analysis of Transmission Characteristics of Chemically Etched 2\times2 Fiber Coupler, By Saba N. Khan, Sudip Kumar Chatterjee and P. Roy Chaudhuri, WRAP-2013 held at IIT Delhi, IIT Delhi, (2013)


20. Field-induced magnetic phase transition in Pr3+ doped Sm0.5Sr0.5MnO3 manganites, By S. K. Giri and T. K. Nath, Proceedings of the 12th Joint MMM-Intermag Conference, Chicago, Illinois, USA, (2013)


22. Geometrical parameters dependence towards ultra-flat dispersion square-lattice PCF using tunable liquid infiltration, By Partha Sona Maji and Partha Roy Chaudhuri, WRAP-2013 held at IIT Delhi, IIT Delhi, (2013)


27. Impedance and modulus spectroscopy analysis of Mn0.5Zn0.5Fe2O4 nanoparticles, By H. Aireddy, U. Bidayat, and A. K. Das, AIP Conf. Proc. 1512, 328, (2013)


30. Influence of samarium doping on electronic and magneto-transport properties of La0.9-xSmxMnO3 (0.1 ≤ x ≤ 0.5) nanoparticles, By P. T. Das, K. Gupta, P. C. Jana and T. K.
31. International Conference on Magnetic Materials and Applications, By S. Bhaumik, S. K. Ray and A. K. Das, Magnetic property of Mn0.02Sn0.98O2-x thin film on p-Si and its application as magnetic diode, IIT Guwahati, (2013)


34. Low temperature resistivity anomaly in underdoped Pr0.8Sr0.2MnO3 manganite Nanoparticles, By S. K. Giri, P. Sengupta, A. Poddar, A. K. Nigam and T. K. Nath, Proceedings of 3rd international Symposium on Advanced Magnetic Materials and Applications (ISAMMA-2013), Taichung, Taiwan, page-107 (2013), (2013)


41. Modulation of twist induced circular birefringence in Sagnac loop containing a dual mode fiber segment, By Saba N. Khan, Sudip Kumar Chatterjee and P. Roy Chaudhuri, ICOL-2014 at IRDE, Dehradun, (2014)


44. Neutron diffraction study of Ni0.65-xCoxZn0.35Fe2O4 (0.0 ≤ x ≤ 0.4), By P. R. Mandal, R. Singh, A. Das and T. K. Nath, Proceedings of Conference on Neutron Scattering - 2014 (BRNS-DAE), IISER, Pune, (2014)


50. Performances of ring-shaped cladding structured PCF laser and triangular lattice PCF laser, By Kajal Mondal and Partha Roy Chaudhuri, WRAP-2013 held at IIT Delhi, IIT Delhi, 2013.


53. Probing the effect of grain size on transport, and magnetic properties of Pr0.7Sr0.3MnO3 nanoparticles, By P. T. Das, S. K. Girir, A. Taraphder and T. K. Nath, 3rd international Symposium on Advanced Magnetic Materials and Applications (ISAMMA-2013), Taichung, Taiwan, 2013.

54. Probing the magnetic state in nanoparticles of antiferromagnetic Nd0.4Sr0.6MnO3, By S. Kundu and T. K. Nath, Proceedings of ISJPS 2013, page 145 (2013), held in IIT KGP, 2013.


64. Size induced magnetic behavior in Nd0.4Sr0.6MnO3 nanoparticles, By S. Kundu and T. K. Nath, International Conference on Magnetic Materials and Applications (MagMA-2013), IIT Guwahati, 2013.

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65. Smooth Supercontinuum Generation in a Dispersion-Flattened Nonlinear High-Index-Core Bragg Fiber, By Sudip Kumar Chatterjee, Saba N. Khan and P. Roy Chaudhuri, WRAP-2013 held at IIT Delhi, IIT Delhi, (2013)
66. Spin reorientation and magnetodielectric effect in Gd-substituted YFe0.6Mn0.4O3, By P. R. Mandal and T. K. Nath, Proceedings of ISJPS 2013, page 134 (2013), held in IIT Kharagpur, (2013)
67. Strain induced first order magnetic phase transition in epitaxial Sm0.55Sr0.45MnO3 thin film, By S. K. Giri, P.T. Das and T. K. Nath, DAE-BRNS 7th National Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured Materials (PLD-2013), IIT Kharagpur, (2013)
74. Temperature dependent current – voltage characteristics of Co0.65Zn0.35Fe2O4/n-Si magnetic diode like structure, By A. Santosh kumar, J Panda and T. K. Nath,, National Seminar on Recent Trend in Condensed Matter Physics, ITER, SOA University, Bhubaneswar, (2014)
75. Temperature dependent giant positive Magnetoresistance in Co0.65Zn0.35Fe2O4/p-Si heterostructure magnetic Diode for Spintronics, By J. Panda and T. K. Nath,, Proceedings of ISJPS 2013, page 144 (2013), held in IIT KGP, (2013)
Advanced Technology Centre

Head
Prof. Sunando DasGupta

Professor
Roy, Jatindra Nath

Senior Scientific Officer
Gangopadhyay, Pranabendu, Microphotronics, Microstructuring & MOEMS, Integrated Optics, Fiber Optics

Awards & Honours
1. Gangopadhyay, Pranabendu (2012) Certificate of Appreciation was awarded by SPIE, USA, for serving as a reviewer for the journal Optical Engineering.

Sponsored Research Projects
1. Development of SU-8 based microstructures for integrated-optic and bio-applications (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)

Papers Published in Journals

Papers Presented in Conferences
2. Design of single mode LiNbO3 photonic wires and estimation of its bending losses for different bending radii., By P. Ganguly, International Conference on Fiber Optics and Photonics, Photonics-2012,, Channei, India,, (2012)
Centre for Educational Technology

**Head**
Prof. Bani Bhattacharya

**Professor**
Ray, Anup Kumar

**Associate Professor**
Bhattacharya, Bani  
*Ph.D. (IIT Kharagpur)*, Instructional Design Distance Education Technology Enhanced Learning Pedagogical Research

**Assistant Professors**
Bhowmick, Plaban Kumar  
*Ph.D. (IIT Kharagpur)*, Natural Language Processing in Education, Artificial Intelligence in Education, Computer Aided Education

Das Mandal, Shyamal Kumar  
*Ph.D. (Jadavpur Univ)*, Speech and Signal Processing

Mohanty, Atasi  
*Ph.D. (Utkal University)*, Cognitive Psychology Human Resource Development Health & Counselling Psychology, Educational Psychology Teacher Education

**Faculty Appointments**
Plaban Kumar Bhowmick Assistant Professor

**Visiting Faculty**
Prof. A.K. Ray  
*Ph.D*  Educational Technology; Video Systems Engg

**Faculty Retirement**
Anup Kumar Ray Professor

**Faculty Re-employment**
Bani Bhattacharya Associate Professor

**New Academic Programmes**
M Tech in Multimedia Information Processing

**Brief Description of on-going activities**

CET, IIT Kharagpur is offering an M.Tech Programme on “Multimedia Information Processing”. Students with B.Tech./B.E. or equivalent qualification in CSE/ECE/EE/Instrumentation Engineering/IT are eligible to apply. CET also offers Ph.D and M.S. programmes in both, areas related to educational pedagogy and in Speech and Image processing. Research scholars are already working in these areas. 11 research scholars are already working in the area of Educational Technology and Speech Processing. M.Tech programme for teachers of AICTE affiliated institutions and industry are being offered through videoconferencing mode at 3 studios in CET.
Ongoing Sponsored Projects: 1) National Program on Technology Enhanced Learning - CET, IIT Kharagpur has already developed more than 200 courses as a part of NPTEL phase I & II. 2) Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning. 90 courses have been completed in the pilot phase. The main phase program with objective of development of 200 courses has been started. These courses consist detailed curriculum documents with instructional objectives, assessment and references to learning resource materials. 3) Creation of Integrated Development Environment (IDE) for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon Standard (PLS) and Example lexicon in Hindi and Bangla Languages 4) Language Technology for E-learning Applications

Thrust Areas

1. The center has produced nearly 4,800 hours of video courses in various engineering subjects. These are in use in more than 250 engineering colleges, universities and R & D laboratories. These courses are primarily used for self-learning by faculty, staff and students. Significant demand for them exists in overseas markets also. CD & DVD versions of these courses are available. CET is now also making the courses available on HDDs – to be used in the Video-on-Demand (VOD) mode by institutions within their internal LAN. This allows access to any course on the LAN to a large number of users at any point of time along with the ability to control all normal play functions at will. More than 3700 users access these courses on any single day within the LAN of IIT Kharagpur.

2. Instructional Design; Technology Enhanced Learning; Teaching-Learning Process; Distance Education; Speech and Image processing; Speech Technology development for Indian Language and ICT application; Cognitive Psychology & Human Resource Development; E-learning; Natural Language Processing for e-Learning; Artificial Intelligence in Education;

New Acquisitions

1. The video studios are being updated to HD (High definition) system and as a result new set of instruments like camera, switcher etc are being installed.

2. Upgradation of M Tech software laboratory; Upgradation of project laboratory; Installation of new pedagogy server

Lectures by Visiting Experts

1. Massive Open Online Courses by Prof. Michael Lightner (University of Colorado)

2. Speech Prosody by Prof. Keikechi Hiroshi (Prof. Univ of Tokyo)

Doctoral and MS Degrees Awarded

1. Richa Anil Rastogi Mittal : Factors Influencing Students’ Performance in Engineering Education in India (PhD)

Member - Professional Bodies

1. Mohanty, Atasi, Life Member- No.1232 - Indian Academy of Applied Psychology

2. Mohanty, Atasi, Life Member - Indian Association of Health Research & Welfare

3. Mohanty, Atasi, Regular Member up to 2016 - National Academy of Psychology

4. Das Mandal, Shyamal Kumar, Member - International Speech Communication Association

5. Bhattacharya, Bani, Regular - International Forum of Educational Technology and Society

6. Bhattacharya, Bani, member - Technical Programme Committee, T4E, IEEE Hyderabad

7. Bhattacharya, Bani, Associate - Board of experts in E-Learning Forum and Distance Education, Commonwealth of Learning

**Member - Editorial Board**

1. Bhattacharya, Bani (2013) *Committee Member - The 7th European Conference on Games Based Learning (ECGBL13)*
4. Bhattacharya, Bani (0) *Member and Reviewer - IEEE Techsym*
5. Bhattacharya, Bani (2011) *Member and reviewer - ICALT 2011*

**Awards & Honours**

1. Das Mandal, Shyamal Kumar (2013) *Best Student paper awards COCOSDA 2013 by MS student Sankar Mukherjee*

**Sponsored Research Projects**

1. A Multi-modal and ICT based Intervention Programme for removing Specific Learning Difficulties among Children (Indian Council of Social Science Research- MHRD India, Rs.0.00 Lakhs)
2. Creation of IDE for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon Standard (PLS) and Example lexicon i (Department of Information Technology, Rs.47.26 Lakhs)
3. Creation of Integrated Development Environment (IDE) for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon (DIT, Rs.47.00 Lakhs)
4. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (MHRD, Rs.100.00 Lakhs)
5. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning ICE - main phase (MHRD, Rs.1600.00 Lakhs)
6. Language Technology for E-learning Applications (SRIC, ISIRD grant, Rs.5.00 Lakhs)
7. NPTEL (MHRD, Rs.1133.00 Lakhs)

**Invited Lectures by Faculty Members**

1. Creativity and Innovation by Mohanty, Atasi (Deptt of HSS IIT Kharagpur)
2. Outcome-based Curriculum Design by Das Mandal, Shyamal Kumar (BIT Misra)
3. Effective Teacher as a Reflective Practitioner by Mohanty, Atasi (Allahabad Motilal Nehru NIT)
4. Computer Assisted Spoken Language Learning (CASLL) for L2 Learners: A Study for L1 – Bengali, L2 – E by Das Mandal, Shyamal Kumar (AIISH Mysore)

**Papers Published in Journals**

1. Impact of Teacher Competence and Teaching Effectiveness on Students Achievement in Life Science Subjects at Upper Primary Stage By S. Banerjee, A.Mohanty, N.Das *Journal of Indian Education* February 2014 (2014)
2. Plan State Representation Using Heterogeneous Data Sources By Santa Maiti, Plaban Bhowmick, Debnath Mukherjeee *Advances in Smart Systems Research* 3 (2014)
Papers Presented in Conferences


4. How Quality of Work and Life has been perceived by Indian Employees?, By Atasi Mohanty, Gender & Attractive work: Sweden- India Meet on Strategic Thinking, TISS Mumbai, (2013)


Centre for Oceans, Rivers, Atmosphere and Land Sciences

Head
Prof. Arun Chakraborty

Associate Professors
Behera, Mukunda Dev  Ph.D. (IIRS, DehraDun), Land/ Vegetation Cover and River Basin Dynamics, Biodiversity and Geoinformatics Modeling, Forest Biomass and Carbon Sequestration, Ecosystem Ecology and Climate
Chakraborty, Arun  Ph.D (IIT Delhi), Ocean Dynamics and Ocean Circulation Modeling of the Bay of Bengal, Data Assimilation
Satyanarayana, Achanta Naga Venkata  Ph.D (BHU), Observations and Modeling of PBL dynamics and Thunderstorms, Meso-scale Modeling of weather events (Thunderstorms Monsoon), Upper Ocean Response Air Sea Interactions to Tropical Cyclones, Monsoon Meteorology, Air Pollution Modeling

Assistant Professors
Dash, Mihir Kumar  Ph.D. (Gujarat University), Satellite Oceanography, Mesoscale Ocean Modeling, Cryospheric Studies
Mandal, Manabottam  Ph.D. (IIT Delhi), Observations and modeling of land surface processes, Modeling of extreme weather events - tropical cyclones and thunderstorms, Regional climate modeling, Cloud Microphysics, Mesoscale and land surface data assimilation
Shaji, C  Ph.D. (IIT Delhi), Climate Variations, Ocean Modeling and Analysis, Coastal Processes, Monsoon Oceanography

Brief Description of on-going activities
The Centre is established in March 2005 with a vision to impart quality education in Earth System Science & Technology and conduct advance research on the multi-disciplinary aspects of earth and climate sciences with major focus on Land-Ocean-Atmospheric sciences interactions. Since 2006, the centre is offering M.Tech. degree in Earth System Science and Technology. The Centre has been actively participating in various programs of research and application importance at national and international levels. Beside, M.Tech. degree in Earth System Science and Technology the Centre is also offering Ph.D. and MS degrees. The Centre has set its goals, made strategies to meet the goals in phases in corroboration with the Institute’s broad vision. The Centre is leading Digital Earth Initiative of the Institute and gearing up for the development of a meso-scale Land-Ocean-Atmosphere coupled model, especially to suitable for Indian sub-continent for better understanding. The Centre aims at being a hub in the Global network of organizations involved in multi-disciplinary earth system studies and research; also contributing to the national development by informing the policymakers of the technological and scientific advancements in the field. The Centre has prepared a visionary road map and planned to execute in stages towards achieving the broad objectives; i.e., excellence in advanced teaching and research in earth system and climate studies.

Thrust Areas

1. Ocean modeling for Bay of Bengal, Indian Ocean and North Indian Ocean
2. Observation and modeling of thunderstorm
3. Modeling and prediction of tropical cyclone
4. Study of Forest Biomass and Carbon Sequestration
5. Monsoon Meteorology
6. Air pollution study
7. Observations and modeling of land surface processes
8. Mesoscale and land surface data assimilation
9. Cloud Microphysics
10. Cryospheric Studies
11. Satellite Oceanography

Lectures by Visiting Experts

1. Climate Impacts of Elevated Absorbing Aerosol Layers by Prof. S. K. Satheesh (IISC, Bangalore)
2. Ocean Data Assimilation by Dr. C. Gnanaseelan (IITM Pune)
3. Ocean Information and Services by Dr. M. Ravi Chandran (INCOIS)

Doctoral and MS Degrees Awarded

1. Shantanu Kumar Pani: Sources and Radiative Effects of Ambient Aerosols in an Urban Atmosphere in East India (Ph.D.)

Member - Professional Bodies

1. Mandal, Manabottam, Life Member - Indian Meteorological Society
2. Mandal, Manabottam, Member - Asia Oceania Geophysical Society
3. Satyanarayana, Achanta Naga Venkata, Life Member - India Meteorological Society, New Delhi
4. Satyanarayana, Achanta Naga Venkata, Member - Internatioal Association of Urban Climate (IAUC), USA
5. Dash, Mihir Kumar, Member - American Geo-physical Union
6. Chakraborty, Arun, Life member - Ocean Society of India
7. Chakraborty, Arun, Life Member - Indian Meteorological Society
8. Chakraborty, Arun, Life Member - The Indian Science Congress Association
9. Chakraborty, Arun, Life Member - Indian Geophysical Union
10. Behera, Mukunda Dev, Life Member - Indian Association of Angiosperm taxonomy
11. Behera, Mukunda Dev, Life Member - Indian Society of Remote Sensing
12. Behera, Mukunda Dev, Annual Member - International Association of Vegetation Science
13. Behera, Mukunda Dev, Life Member - Indian Society of Geomatics
14. Behera, Mukunda Dev, Life Member - National Institute of Ecology
15. Shaji, C, - Life Member: Indian Society of Theoretical and Applied Mathematics
16. Shaji, C, - Life Member: Ocean Society of India
17. Shaji, C, Life Member - Indian Geophysical Union
18. Shaji, C, - Life Member: American Geophysical Union, USA
19. Shaji, C, - Member: Japan Oceanographic Society, Japan

Member - Editorial Board

2. Chakraborty, Arun (2011) Associate Editor - Geoscience Research

Awards & Honours

1. Chakraborty, Arun (2013) Adjunct Faculty, IIT Bhubaneswar
2. Behera, Mukunda Dev (2014) *Erasmus Mundus Visiting Scholar*

**Sponsored Research Projects**

1. Analysis and simulation of land surface energy balance at a tropical site using INSAT-3D observations (ISRO, Rs.15.30 Lakhs)
2. Climate Change Programme Proposals (CCP-DST)(under process) (DST, Govt. of India, Rs.10.00 Lakhs)
3. Developing Ganga Basin Environment Management Plan-Biodiversity and Ecology Theme (Ministry of Environment and Forests (MOEF), New Delhi, Rs.32.00 Lakhs)
4. Development of a Hybrid Coordinate Ocean Model (HYCOM) for the Bay of Bengal (Indian National Centre for Ocean Information Services (INCOIS), Hyderabad., Rs.0.00 Lakhs)
5. Feature based study of Indian Ocean Circulation Using Saral Altika Observations (Indian Space Research Organization, Rs.15.42 Lakhs)
6. High resolution mesoscale prediction of land-falling Bay of Bengal cyclones for coastal disaster preparedness (MoES, Govt. of India, Rs.16.20 Lakhs)
7. Land Use Land Cover Dynamics in Relation to Human Dimensions and climate change in Mahanadi, ganga and Brahmaputra River Basin (Indian Institute of Remote Sensing, ISRO, DehraDun, Rs.41.00 Lakhs)
8. Monitoring of sea ice using oceandat - 2 scatterometer data for determination of climatic trend (Space Applications Centre (ISRO), Ahmedabad, Rs.22.80 Lakhs)
9. Observational & Modeling of Atmospheric Boundary Layer over different land surface conditions in the CTCZ domain (MoES, Rs.0.00 Lakhs)
10. Observational & modeling of atmospheric boundary layer over different land surface conditions in the CTCZ domain during different epochs of Indian summer (MoES, Rs.31.20 Lakhs)
11. Regional assimilation of land surface parameters over Indian landmass for providing surface boundary condition to numerical models for simulation of M (MoES, Rs.64.92 Lakhs)
12. Sea ice monitoring in the Arctic and the Antractic (National Centre for Antarctic and Ocean Research (MOES), Goa, Rs.45.00 Lakhs)
13. South Asian Precipitation A: Seamless Assessment (SAPRIS) (MoEs and UK, Rs.53.00 Lakhs)
14. Study of the surface and upper ocean Mesoscale features of North Indian Ocean from observation and Model (Ministry of Earth Sciences Through OASTC cell, IIT Kharagpur, Rs.31.36 Lakhs)

**Consultancy Projects**

1. Study of Forest change Proneness and Resilience in the Hindu-Kush Himalayan Landscapes (ICIMOD, Nepal, Rs.2.47 Lakhs)

**Visits Abroad by Faculty Members**

1. Behera, Mukunda Dev - Conference Presentation (Tartu, Estonia, ) 24 June to 1 July 2013
2. Behera, Mukunda Dev - Research Discussion (ICIMOD, Nepal, ) 08-10 January 2014
3. Behera, Mukunda Dev - Project Discussion (ICIMOD, Nepal, ) 08-13 March 2014

**Invited Lectures by Faculty Members**

1. Climate change and its impact over Bay of Bengal by Dash, Mihir Kumar (Dr. Harekrushna Mahatab College, Kupari)
2. What contributes to the Himalayan Plant Diversity Heterogeneity? by Behera, Mukunda Dev (ICIMOD, Nepal)
3. Mesoscale Prediction of Land-falling Bay of Bengal Cyclones by Mandal, Manabottam (India Meteorological Society, Kolkata)
4. Atmospheric Boundary Layer - Turbulent Transport mechanisms by Satyanarayana, Achanta Naga Venkata (IIT Kharagpur For Training Workshop for IFS Officers)

**Papers Published in Journals**

8. India’s biodiversity hotspots face climate change challenges By Chitale VS, Behera MD. *Nature India* doi:10.1038/nindia.2 (2014)
13. Surface mesoscale features associated with leading convective line-trailing stratiform squall lines over the Gangetic West Bengal By S. Dawn and M. Mandal *Meteorology and Atmospheric Physics* DOI: 10.1007/s00703- (2014)
Papers Presented in Conferences


5. Impact of Initial and boundary condition on mesoscale simulation of Bay of Bengal cyclones using WRF model, By K.S. Singh and M. Mandal, *HIGH IMPACT WEATHER EVENTS AND THEIR PREDICTION OVER HIGH IMPACT WEATHER EVENTS AND THEIR PREDICTION OVER THE SAARC REGION*, New Delhi, (2013)


Cryogenic Engineering Centre

**Head**
Prof. Kanchan Chowdhury

**Professors**
- **Bandyopadhyay, Syamalendu Sekhar**  
  Ph.D.(IIT Kharagpur), Natural gas processing, Carbon dioxide capture and sequestration, Air breathing propulsion, Separation processes
- **Chowdhury, Kanchan**  
- **Dey, Tapas Kumar**  
  Ph.D.(Delhi Univ), Superconducting Levitation, Thermal Properties of Polymer Nanocomposites, Electrical and thermal properties of Superconductors, Magnesium Di-boride Superconductors: Critical Current density and Pinning mechanism.
- **Rao, Vutukuru Vasudeva**  
  Ph.D.(IIT Madras), Vacuum Technology, Cryogenic Engineering, Applied Superconductivity
- **Sarangi, Sunil Kumar**  
  Ph.D.(Stony Brook),

**Associate Professor**
- **Ghosh, Parthasarathi**  
  Ph.D.(IIT Kharagpur), Low Temperature Processes and equipment, Cryogenic turboexpander and expansion devices, Helium Refrigeration and liquefaction systems, Cryogenic storage and transfer, Thermodynamics and heat transfer of supercritical helium

**Assistant Professors**
- **Adyam, Venimadhav**  
  Ph.D.(IISc. Bangalore), Multiferroics Spintronics Multicaloric cooling Nanomaterials and Thin film batteries
- **Ghosh, Indranil**  
  Ph.D.(IIT, Kharagpur), Compact Heat Exchangers, Heat Transfer in Porous Media, Sorption Cooling
- **Nandi, Tapas Kumar**  
  Ph.D.(IIT Kharagpur), Perforated plate matrix heat exchanger, Cryogenic wave expander, Cryogenic rocket propulsion
- **Sandilya, Pavitra**  
  Ph.D.(IIT Kanpur), Gas hydrates, Cryogenic transport Phenomena-based processes, CO2 capture and sequestration, Space cooling

**Faculty Appointments**
- **Parthasarathi Ghosh**  
  Associate Professor

**Faculty Retirement**
- **Sunil Kumar Sarangi**  
  Professor

**Brief Description of on-going activities**

Cryogenic Engineering Centre is engaged in teaching at UG and PG levels, sponsored research and consultancy remain at the core activity of the Centre.
The Centre is also active in Continuing Education through training engineers from industries, faculty from academic institutions, and scientists from R&D organisations by conducting short term courses and workshops in specialised areas like Cryogenic Engineering, Air Separation, Vacuum Technology etc.

**Thrust Areas**

1. Cryogenic Engineering  
2. Advanced Materials  
3. Nonconventional Energy

**Doctoral and MS Degrees Awarded**

1. Tisha Milind Dixit: Experimental and Theoretical Studies on Miniature Crossflow Heat Exchangers (MS)  
2. Sukanta Dash: Carbon dioxide capture by absorption in piperazine activated 2-amino-2-methyl-1-propanol solvent (Ph.D)

**Member - Professional Bodies**

1. Sandilya, Pavitra, *Life Member* - Indian Cryogenic council  
2. Nandi, Tapas Kumar, *Life Member* - Indian Society for Technical Education (ISTE)  
3. Nandi, Tapas Kumar, *Life Member* - Indian Cryogenics Council  
5. Ghosh, Farhasarathi, *Regular* - American Society of Mechanical Engineers  
7. Adyam, Venimadhav, *Permanent* - Magnetic Society of India  
8. Dey, Tapas Kumar, *Regular (life Member)* - Indian Cryogenic Council  
9. Dey, Tapas Kumar, *International Scientific Committee Member* - Asian Thermophysical Society  
10. Dey, Tapas Kumar, *Fellow (Life member)* - Thermophysical Society of India  
11. Dey, Tapas Kumar, *Regular (Life Member)* - Materials Research Society of India  
12. Rao, Vutukuru Vasudeva, *Senior Member* - IEEE-Senior Member  
15. Chowdhury, Kanchan, *Member* - Indian Institute of Chemical Engineers  
16. Chowdhury, Kanchan, *Member* - Indian Cryogenic Council  
17. Bandyopadhyay, Syamalendu Sekhar, *Life Member* - Indian Institute of Chemical Engineers

**Member - Editorial Board**

1. Dey, Tapas Kumar (2011) *Member* - Indian Journal of Cryogenics

**Awards & Honours**

1. Bandyopadhyay, Syamalendu Sekhar (2012) *Member, Programme Advisory and Monitoring Committee (PAMC) of National Programme of Carbon Sequestration Research of DST*

**Sponsored Research Projects**

1. A bridge project aimed at the expansion of Lithium ion battery research (SRIC, Rs.5.00 Lakhs)
2. Analysis & Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion-Phase II ( ISRO, Rs.30.00 Lakhs)
3. Design and development of perforated plate heat exchangers for cooling of gaseous helium by using liquid hydrogen (Indian Space Research Organisation, Rs.20.00 Lakhs)
4. Design, Fabrication and Testing of Miniature Heat Exchangers and Heat Sinks (COMPLETED) (CSIR, New Delhi, Rs.10.61 Lakhs)
5. Fabrication of oxide multiferroic thin films by RF Magnetron Sputtering: Investigation of magnetodielectric and magnetoferroelectric properties (DST, Rs.17.00 Lakhs)
6. Investigation of Magnetoelastic and Magnetodielectric behaviour in Charge Ordered Manganite System (CSIR, Rs.0.00 Lakhs)
7. Investigation on polymer nanocomposite for electronic packaging applications (CSIR, New Delhi, Rs.10.76 Lakhs)
8. Na-ion rechargeable batteries, a cost effective alternative to Li-ion technology (CSTEP, Rs.5.60 Lakhs)
9. Radiation Heat Transfer in Open Cell Metal Foam - An Experimental Study (ONGOING) (CSIR, New Delhi, Rs.18.42 Lakhs)
10. Refurbishing a DC/RF Sputtering and development of Ferromagnetic/semiconductor hybrid structures for spintronics (SRIC (Complted), Rs.4.60 Lakhs)
11. Studies on novel Heusler alloys for the development of environmentally friendly thermoelectric materials (DST, Rs.34.00 Lakhs)
12. Synthesis and multiferroic properties of AFe12O19 (A= Ba, Sr) nanoparticles reinforced polymer nanocomposites for space applications (CSIR, Rs.18.00 Lakhs)
13. Thermal and Mechanical Properties of Polymer Nanocomposites and Agro-fiber based Biocomposites ( Department of Science & Technology, Govt. of India, Rs.40.00 Lakhs)
14. Thermohydraulic simulation of LOX booster turbopump for semi-cryogenic rocket engine (ISRO, Rs.10.18 Lakhs)

Consultancy Projects

1. Characterization of cryochamber and soaking chamber (STNIL Cryogenics, Rs.1.00 Lakhs)
2. Conceptual Design of a Novel Method for Extraction of Methane Gas from Submarine Gas Hydrate by Seabed Heating (KDMIPE (ONGC), Rs.50.24 Lakhs)
3. Design of Support Structure for Cryogenic HTS Coil of HTSC Motor (BHEL, Rs.11.85 Lakhs)
4. Development of Gas Sweetening Technology for Removal of CO2 from Natural Gas and Industrial Gas Streams by Using Blended/Activated Amine Solvents. (Engineers India Limited (EIL)), Rs.30.00 Lakhs)
5. Discussion on feasibility of producing SO3 with pure oxygen and alternative cycle for oxygen production (Greentec India Pvt. Ltd., New Delhi., Rs.1.20 Lakhs)
6. R & D Projects on High Temperature Superconductor Technology (RDTS) (Power Grid Corporation of India Ltd, Rs.67.41 Lakhs)
7. Technical interaction and training of engineers in ORYX-GTL Plant at Doha, Qatar, 2013 (ORYX-GTL, Qatar, Rs.20.00 Lakhs)

Visits Abroad by Faculty Members

2. Bandyopadhyay, Syamalendu Sekhar - Invited lecture (Monash University, Australia, ) June 2013
3. Bandyopadhyay, Syamalendu Sekhar - Research collaboration (University of Melbourne, Australia, ) June 2013
Invited Lectures by Faculty Members

1. Cryogenics and Rocket Propulsion by Nandi, Tapas Kumar (Jawahar Novodaya Vidyalaya, Paschim Medinipur,WB)
2. Guest of honour and Chief speaker in seminar on Advances in Special materials by Rao, Vutukuru Vasudeva (Bhubaneswar)
3. to deliver Invited lectures at Powergrid, Gurgaon in the workshop on application of superconductors by Rao, Vutukuru Vasudeva (Gurgaon)
4. Invited Lecture and to Interact with faculty members of Electrical engineering dept of NIT Rourkela by Rao, Vutukuru Vasudeva (Rourkela)
5. Carbon dioxide capture with activated hindered amine solvents by Bandyopadhyay, Syamalendu Sekhar (Monash University, Australia)
6. Computational Methods for Chemical Engineers by Sandilya, Pavitra (Chennai)

Short-Term Courses, Training Programmes and Workshops organised

1. CRYOGENIC AIR SEPARATION-2014 (22-27 March, 2014)
2. Cryogenioc Technology: Materials, processes & equipment (17-21 February 2014)
3. PREVENTION OF FIRE IN OXYGEN-ENRICHED SYSTEMS-2014 (28-29 March 2014)
4. Two week course on Vacuum Technology and Process Applications (18-11-13 to 27-11-13)

Papers Published in Journals

10. Critical current density of MgB2 superconductor with (Bi,Pb)-2223 addition By D. Tripathi, and T. K. Dey Journal of Alloys Compounds Accepted-April-14 (2014)


6. Design of a setup to cool liquid nitrogen by bubbling helium, By P Sandilya, and Anuj Kumar, CHEMCON 2013, Mumbai, (2013)


12. Many hospital fires are due to oxygen enrichment: need for redesigning ventilation system, air conditioner and arrangement of intensive care units., By Shekhar Gaikwad, Kanchan Chowdhury, 24th National Symposium on Cryogenics, Institute for Plasma Res, Gandhinagar, (2013)


20. Probing of phase separation dynamics in Pr0.6Ca0.4MnO3 using dielectric spectroscopy, By K Devi Chandrasekhar, A K Das and A Venimadhav, Novel Materials: Adding material specific reality in physicists models, Natal, Brazil, (2012)
22. Thermal Conductivity of AlN (nano) added MgB2 superconductors?, By D. Tripathi, and T. K. Dey, 7th National Conference on Thermo-physical properties (NCTP-2013), CSJM University, Kanpur, (2013)
25. Vapour-liquid equilibrium of CO2 in piperazine (PZ) activated aqueous methyl diethanolamine (MDEA) and hybrid solvent aqueous (PZ+MDEA+Sulfolane) and simulation of CO2 absorption in these solvents, By Dash, S. K., Samanta, A.N., Bandyopadhyay, S. S., Indian Chemical Engineering Congress 2013, Mumbai, India, (2014)
Materials Science Centre

Heads
Prof. Shanker Ram

Professors
Adhikari, Basudam  Ph.D.(Calcutta Univ), Membrane Electrode Based Portable e-Tongue Device for Rapid Taste Characterization of Tea, Development of jute based fully biodegradable green composites, Development of jute-cement concrete composites, Development of jute based geotextiles, Development of jute based sound proofing panels, Development of a suitable processing technique for rubber coating of jute, Development of conducting polymer based gas sensors, Polymer based drug delivery systems, Development of volatile compound based biosensor for pest control, Development of polymer based taste sensor, Collagen and chitosan based scaffold for tissue engineering, Development of jute based baby diaper materials, Development of jute based fully biodegradable green composite, Ramie plantation and development of its downstream products

Banerjee, Susanta  Ph.D.(IIT Kharagpur), Fluorinated High performance polymers, Membrane based separation, Hyperbranched polymers, Light emitting polymers, Polymer synthesis and characterization

Banerji, Pallab  Ph.D.(Jadavpur Univ), Low dimensional semiconductors: Structures & Devices, Thermoelectricity, Photovoltaics, Organic semiconductors

Bhattacharya, Debasis  Ph.D.(Calcutta Univ), Synthesis and processing of meso porous ceramics for catalytic applications, Nano HAP for biomedical applications, High proton conductor for application in solid oxide fuel cell

Das, Chapal Kumar  Ph.D.(IIT Kharagpur), Nanocomposites, Direct fluorination, In situ Nanocomposites for supercapacitor Application, Polymer Blends and its compatibilization, In situ Nanocomposites for Microwave absorbing Materials, Graphene Based Nanocomposites, Organic Inorganic Hybrid Nanocomposites, Hybrid Materials for Fuel Cell Applications

Jacob, Chacko  Ph.D.(Case Western, USA), Materials Science/ Nanomaterials and Nanotechnology/Semiconductors

Ram, Shanker  Ph.D.(BHU, Varanasi), Glasses and disordered solids, Alloys and intermetallics, Nanoceramics and hybrid composites, Magnetics and magnetocaloric materials, Ferroics and applications, Porous materials and applications, Metallic foams for biological applications, Nanofluids and nanogelues, Films, Optical materials and applications, Biomaterials, Phase transformations and phase transitions, Photonics

Associate Professors
Khatua, Bhanu Bhusan  Ph.D.(IIT Kharagpur), Polymer-clay and Polymer-CNT Nanocomposites, Polymer Blends and Composites, Polymer Blend-Clay nanocomposites: Morphology control, Polymeric PTCR composites, Polymer-Graphene Nanocomposites, polymer-carbon
nanohorn nanocomposites, Polymeric Supercapacitors, Polymer Composites for EMI Shielding Applications

Majumder, Subhasish Basu Ph.D.(IIT Kanpur), Oxide gas sensors, Lithium rechargeable batteries, Natural fiber reinforced cement composites, Fly ash based ceramic products, Multiferroic thin films and composites

Assistant Professor

Brief Description of on-going activities

Apart from teaching various courses in our M. Tech. Program on Materials Science and Engineering we also teach undergraduate and post graduate level courses on biomaterials, ceramic, polymer and electronic materials to other departments of our Institute. So far as the research activity is concerned our Centre is engaged in development and application of novel polymers, ceramics and semiconductor materials supported by our Institute as well as by various funding agencies. In the area of polymer materials besides polymer modification we synthesize new polymers for application as electronic materials, membranes for gas separation, nanoclay and carbon nanotube reinforced composites for automobiles and other high performance speciality applications. Few research projects are in progress for jute fiber reinforced cement concrete and biodegradable rigid composites. The Centre is now also engaged in a new field of welding thermoplastics, recycling waste polymers and direct fluorination of polymers. Apart from activities on structural ceramics, refractories, and bioceramics, we are also investigating various research issues related to the synthesis of nano-crystalline shape memory materials for biomedical applications, nano-fluids, nano ceramics for drug delivery, nano-structured oxides for ceramic gas sensor and cathode materials for lithium rechargeable batteries. We are also actively involved in the research on ferroic and multiferroic thin/thick films, sensors magnetic and magnetocaloric materials. Novel inorganic and organic semiconductor materials are being synthesized and characterized for various electronic and optoelectronic applications. MOCVD growth of InGaP epitaxial layers as well as quantum dots are also being carried out for various applications such as solar cell, etc. Another important area of research is the synthesis and characterization of wide band gap materials like SiC, ZnO and nitride semiconductors and nano materials for device applications. Multiwall carbon nanotubes are also being synthesized by CVD on silicon substrates.

Thrust Areas

1. Nanomaterials / Nanocomposites
2. Energy Materials
3. Magnetic Materials
4. Electrically Conducting Polymer Nanocomposites
5. Polymeric Supercapacitors
6. Polymer Membranes for Gas Separation and Proton Exchange
7. Sensor Materials

New Acquisitions


**Doctoral and MS Degrees Awarded**

1. Sarada Prasad Kundu : Jute fibre reinforced cement concrete for structural applications(Ph.D.)
2. Muktikanta Panigrahi : Conducting Polymer Composite for Gas Sensing(Ph.D.)
3. Asish Malas : Elastomeric Nanocomposites Based on Organoclays, Expanded graphite and Graphene Oxide(Ph.D.)
4. S. Srinivas Kalyan Kamal : Synthesis and Characterization of Surface Modified Cobalt and Cobalt Alloys of Core-Shell Nanostructure(Ph.D.)
5. Prasanna A. A : Magnetostructural Transitions, Magnetocalory and Magnetoresistance in Heusler Ni-Mn-Sn Alloys of Granular Nanostructure(Ph.D.)
6. Sridevi A.N. : Jute reinforced soy resin based biodegradable composites(Ph.D.)
7. Rakesh Kumar Sahoo : The Role of the Catalyst in the Synthesis of one Dimensional Carbon Nano Structures(Ph.D.)
10. Aruna Kumar Mohanty : Semifluorinated Sulfonated Poly (Ether Sulfone)s: Proton Exchange membrane Materials(Ph.D.)
12. Sumanta Sahoo : Graphene based Polymer Nanocomposites for Supercapacitor Applications(Ph.D.)
13. Sumati Pati : Combustible gas sensing characteristics of undoped and indium doped zinc oxide thin films(Ph.D.)
14. Sandip Maiti : A Strategy to Achieve Low Percolation Threshold with High Electrical Conductivity in Polymer/Carbon Nanotube Nanocomposites Based on Polycarbonate(Ph.D.)
16. Sumit Chakraborty : Investigations on the reinforcing behavior of jute fibre in cement mortar(Ph.D.)

**Member - Professional Bodies**

1. Jacob, Chacko, Regular - National Academy of Sciences, India
2. Banerji, Pallab, Regular - MRS, USA
3. Banerji, Pallab, Member - IEEE, USA
4. Banerji, Pallab, Life - IACS
5. Banerjee, Susanta, Life Member - Materials Research Society of India (MRSI)
6. Banerjee, Susanta, Life Member - Society for Polymer Science India (SPSI)
7. Majumder, Subhasish Basu, Life Member - Materials Research Society of India
8. Khatua, Bhanu Bhusan, Life member - Society of the Polymer Science India
9. Adhikari, Basudam, Life Member - Materials Research Society of India
10. Adhikari, Basudam, Life Member - Society of Biomaterials and Artificial Organs (India)
11. Adhikari, Basudam, Life Member - Society of Polymer Science India
12. Adhikari, Basudam, Life Member - Biosensor Society of India
13. Adhikari, Basudam, Life Member - Asian Polymer Association
14. Adhikari, Basudam, Member of Regional Advisory Committee - CIPET, Haldia, West Bengal
15. Adhikari, Basudam, Trustee Board Member - Seva-Bharati, Kargpuri, Paschim Medinipur
16. Ram, Shanker, Regular - Life member of laser and spectroscopy society of India
17. Ram, Shanker, Regular - Member of the national academy of sciences, MNSc, Allahabad
18. Ram, Shanker, *Regular* - Member of international board of biography (USA)
19. Ram, Shanker, *Regular* - Life member of society for materials chemistry (SMC), BARC, Mumbai
20. Ram, Shanker, *Regular* - Life member of MRSI (India)
21. Ram, Shanker, *Regular* - Life member of magnetic society of India
22. Ram, Shanker, *Regular* - Life member of powder metallurgy association of India

**Member - Editorial Board**

1. Adhikari, Basudam (2010) *Member of Editorial Board* - Indian Journal of Chemical Technology, CSIR
2. Banerjee, Susanta (2013) *Editorial Advisory Board Member* - e-Polymers
6. Das, Chapal Kumar (0) *Member of the Editorial Board* - WJNSE
7. Das, Chapal Kumar (0) *Member of the Editorial Board* - Research Letters in Materials science
8. Das, Chapal Kumar (0) *Member of the Editorial Board* - Nano Trends
9. Das, Chapal Kumar (0) *Member of the Editorial Board* - Advances in Materials Science and Engineering
12. Pradhan, Deabrata (2011) *Associate Editor* - Materials Express
14. Ram, Shanker (2011) *Editorial Board Member* - ISRN Nanotechnology

**Awards & Honours**

1. Adhikari, Basudam (2014) *Winner of 4th National Award for Technology Innovation by Ministry of Chemical & Fertilizers, Department of Chemicals & Petrochemicals, Government of India*

**Sponsored Research Projects**

1. Centre of excellence for training and research in mirofluidics (CFM) (IIT Kharagpur, Rs.251.90 Lakhs)
2. Development of advanced multifunctional materials for electrochemical energy devices (Indo-Taiwan S&T Cooperation Programme (DST), Rs.30.28 Lakhs)
3. DEVELOPMENT OF ALUMINIUM NITRIDE (AIN) IN BULK FORM (DAF) (SSPL (CARS), Rs.24.33 Lakhs)
4. Development of cotton lap/cellulose pad substitute from jute (National Jute Board, Rs.41.08 Lakhs)
5. DEVELOPMENT OF CURED POLYPHOSPHAZENE FOR WIDE TEMPERATURE RANGE APPLICATIONS (DMSRDE Kanpur, Rs.23.00 Lakhs)
6. Development of durable water-repellent jute geotextiles with natural eco-friendly additive for application in erosion control in river banks (JMDC, Kolkata, Rs.168.73 Lakhs)
7. Development of eco-friendly / biodegradable rigid jute-based composites (JMDC, Kolkata, Rs.69.93 Lakhs)
8. Development of high energy density lithium ion prismatic batteries for laptops, solar and electric vehicles (Future Hi-tech batteries limited, Rs.3.00 Lakhs)
9. Development of MBE Cluster Tool Based Infrastructure and Process Integration Facility for Compound Semiconductor Nano-Devices (Department of Information Technology, Govt. of India, Rs.5,000.00 Lakhs)
10. Development of Membrane Electrode Based Portable e-Tongue Device for Rapid Taste Characterization of Tea (C-DAC, Kolkata, Rs.40.00 Lakhs)
11. Development of novel palladium gas sensors (IBSA (DST Tri-National), Rs.16.28 Lakhs)
12. Development of Organic-Organic and Organic-Inorganic Hybrid Nanocomposites for Supercapacitor Applications (DRDO, New Delhi, Rs.45.00 Lakhs)
13. Development of Phase Morphology in Incompatible Polymer Blends by using Nanoclay (DST, New Delhi, Rs.17.18 Lakhs)
14. Development of sensing element and alarm circuit module for hydrogen detection from rechargeable batteries (Naval Science and Technological Laboratory (DRDO), Vizag, Rs.10.00 Lakhs)
15. Development of shape memory magnetocaloric alloys for magnetic cooling and other applications: A nonconventional source of energy (IIT Kharagpur, Rs.0.00 Lakhs)
16. Development of Suitable Production System for Natural Rubber Coated Jute Fabrics for Novel End Uses (JMDIC, Kolkata, Rs.30.00 Lakhs)
17. Electrocatalytic investigation of hybrid alloy nanostructures (CSIR, Rs.24.00 Lakhs)
18. GaN/InGaN based light emitting diodes, solar cells and photoelectrochemical devices by MOCVD epitaxial processes (DST, New Delhi, Rs.696.00 Lakhs)
19. Grant for equipment (Alexander von Humboldt Foundation, Germany, Rs.9.02 Lakhs)
20. Heterointerface characterization of MOCVD grown InP quantum dots on Si (Indian beamline (DST), Photon Factory, Japan, Rs.1.50 Lakhs)
21. High strength polyimide-siloxane films with low heat shrinkage (DRDE (Completed), Rs.9.98 Lakhs)
22. Improvement of energy recovery from wastewater by dark fermentation followed by microbial fuel cells (DRDO, Rs.42.00 Lakhs)
23. India-Canada Centre for Innovative Multidisciplinary Partnership to Accelerate Transformation and Sustainability (IC-IMPACTS) (, Rs.0.00 Lakhs)
24. Industrial scale investigation for the fabrication of wear resistant ceramic tiles using NALCO coal ash (NALCO, Bhubaneswar, Rs.50.40 Lakhs)
25. Industrial scale investigation for the fabrication of wear resistant ceramic tiles using NALCO coal ash (NALCO, Bhubaneswar, Rs.50.00 Lakhs)
26. Integrated Project On Jute Ramie Blended Technical Textiles (National Jute Board, Kolkata, Rs.24.00 Lakhs)
27. Metal - oxide - semiconductor (MOS) based non - volatile memory devices using III - V semiconductor quantum dots as charge storage elements on Si sub (Department of Science & Technology, Govt. of India, Rs.48.00 Lakhs)
28. Molecularly engineered novel membrane precursors and preparation of novel polymer nanocomposite membranes for selective separation of gas mixture (DST (Completed), Rs.53.00 Lakhs)
29. Novel polymeric composite membranes for selective separation of gas mixtures (DST, New Delhi, Rs.55.00 Lakhs)
30. Novel polymeric composite membranes for selective separation of gas mixtures (DST, Rs.55.00 Lakhs)
31. Preparation and supply of poly(ether imide siloxane)s as membrane materials in bulk quantity for analytical sample inlet (DRDE (Completed), Rs.8.52 Lakhs)
32. Preparation of Novel Polymeric Materials for Chemical Sensor Application: Synthesis and Tailoring of Properties in Molecular Level (DRDE (Completed), Rs.7.54 Lakhs)
33. Self-controlled growth of Fe3BO6-δ (δ = 0, 1) nanofibrils with a bonded surface layer from a vitreous glass: A novel magnetodielectric material for (CSIR, New Delhi, Rs.20.00 Lakhs)
34. Silicon Carbide sensors as high temperature MEMS & MOSFET devices. (ISRO (KCSTC), Rs.5.88 Lakhs)
35. Synthesis and characterization of novel light emitting poly(arylene) and poly(arylene ether) and derivative thereof (CSIR (Completed), Rs.9.00 Lakhs)
36. Synthesis and multiferroic properties of AFe12O19 (A = Ba, Sr) nanoparticles reinforced nanocomposites for space applications (CSIR, New Delhi, Rs.14.56 Lakhs)
37. Synthesis of mixed metal oxide, and porous oxide nanostructured materials by using hydrothermal technique (ISIRD, SRIC, IIT-Kharagpur, Rs.5.00 Lakhs)
38. Synthesizing super-catalysts and tracking their catalytic pathways (DST, Indo-Korea Int., Rs.25.00 Lakhs)
39. Test Marketing of Cotton Lap/Cellulose Pad Substitute from Jute (National Jute Board, Kolkata, Rs.19.00 Lakhs)
40. Use of Nanocomposites for Efficient Welding of Thermoplastics (DST, New Delhi, Rs.7.90 Lakhs)

Consultancy Projects

1. Guidelines for recovery of Shellac Waste (Jaiswal Shellac Industry, Purulia, West Bengal, Rs.0.50 Lakhs)
2. Synthesis of PI-PDMS materials & preparation of membranes (L&T-Heavy Engineering, Rs.8.00 Lakhs)
3. Synthesis of the soluble para-aramid polymers (KERMEL-France (Completed), Rs.7.00 Lakhs)
4. Synthesis of the soluble para-aramid polymers (phase II) (KERMAL- France, Rs.3.50 Lakhs)
5. Thermoset polymer based meter boxes & distribution boxes: An ecological disaster (Ester Industries Limited, Gurgaon (Completed), Rs.5.00 Lakhs)
6. Trial Production of Corrugated Roofing Sheets with partial replacement of asbestos fiber by Jute (RAMCO, Chennai, Rs.3.00 Lakhs)

Patents (filed / granted)

1. A low cost, portable and drift corrected semi-conducting metal oxide gas sensor device and process for domestic and industrial applications
3. Biodegradable and rigid natural resin matrix jute fiber reinforced composites
4. Casting of concrete pipe reinforced with chemically modified jute fiber and method of casting such fiber reinforced concrete pipe
5. Chemically modified jute fiber reinforced high strength concrete and process thereof
6. Composition And Method For Making Polyarylene Ether Copolymers
7. Conductive wire compromising polysiloxane/polyimide copolymer blend
8. Conductive Wire Comprising A Polysiloxane /Polyimide Copolymer Blend
9. Conductive Wire Comprising A Polysiloxane/Polyimide Copolymer Blend
10. Development of cost effective membrane cathode assembly for a single chambered microbial fuel
11. Durability enhancement of lignocellulosic fibers by vegetable oil treatment
12. Earthen material based cathode separator assembly for bioelectrochemical system
13. Inherent Polymeric PTCR Composites: Article and Associated Device
14. Inherent Polymeric PTCR Composites: Article and Associated Device
15. Inherent Polymeric PTCR Composites: Composition and Associated Method
16. Inherent Polymeric PTCR Composites: Composition and Associated Method
17. Microbial transformation of lignocellulosic fibers using ecofriendly reagents for strength and durability enhancement
18. Polysiloxane / polyimide copolymers and blends thereof
19. Polysiloxane/Polyimide Copolymers And Blends Thereof
20. Process for Chemically Modified Jute Fiber Reinforced High Performance Cement Sheet
22. Process for making polysiloxane / polyimide copolymer blends
23. Process For Making Polysiloxane/Polyimide Copolymer Blends

Visits Abroad by Faculty Members

1. Jacob, Chacko - 15th Asian Chemical Congress (Singapore, ) August 19-24
2. Banerji, Pallab - to conduct experiment at Photon Factory (KEK), Tsukuba (Japan, ) 17 - 25 May 2013
3. Pradhan, Debabrata - Collaboration work (University of Waterloo, Canada, ) May 4 - July 20, 2013
4. Pradhan, Debabrata - Collaboration work (Yeungnam University, South Korea, ) Nov. 14 - Nov. 28, 2013
5. Banerjee, Susanta - To deliver an Invitaed talk in BPS-13 (Bayreuth, Germany, ) One week
6. Das, Chapal Kumar - To attending Conference (Hong Kong, ) 6-13 April, 2013
7. Majumder, Subhasish Basu - In depth discussion and laboratory work on Li ion battery (National Central University and ITRI, Taiwan, ) 9th to 31st December 2013
8. Adhikari, Basudam - To present a paper in IEEE Sensor 2013 (Baltimore, USA, ) November 4-6, 2013

Invited Lectures by Faculty Members

1. Layered-layered type composite cathodes for lithium ion rechargeable batteries by Majumder, Subhasish Basu (NCU, Taiwan)
2. Science and technology of high energy density composite cathodes for lithium rechargeable batteries by Majumder, Subhasish Basu (IISc, Bangalore: Taiwan-India bilateral workshop on energy storage devices)
3. Carbon based nanostructures by Jacob, Chacko (CGCRI Kolkata)
4. Nanomaterials and their applications by Jacob, Chacko (UGC Refresher Course on Recent Development on Nanoscience and Technology at Jadavpur University)
5. Sources for Fiber Optic Communication, White LEDs and Blu-ray Disc: three modern Photonic Devices by Banerji, Pallab (College of Engineering & Management)
6. Jute as Reinforcing fiber, Geotextile and Absorbent Material: From Myth to Reality by Adhikari, Basudam (S K University, Anantapur, AP)
7. Natural Fiber Reinforced Composites: From Myth to Reality by Adhikari, Basudam (CIPET, Cochin)
9. High performance fluorinated polymers by Banerjee, Susanta (Bayreuth polymer symposium (BPS-13), 15th to 17th September, Bayreuth, Germany)
10. Semifluorinated sulfonated high performance polymers for proton exchange membrane materials by Banerjee, Susanta (3rd FAPS polymer congress and MACRO-2013, 15th to 18th May, IISC, Bangalore)
11. Similarity in functionalities in nanomaterials and green nature relevant to advancing science and te by Ram, Shanker (The University of Burdwan, India)
12. Chemistry and physics of small structures of solids and applications by Ram, Shanker (The University of Burdwan, India)
13. Nonmaterials for energy applications?, QIP short term course on “Renewable energy materials and appl by Ram, Shanker (Indian Institute of Technology, Kharagpur, India)
14. Nanomaterials for photonics by Ram, Shanker (Indian Institute of Technology, Kharagpur, India)
15. Nucleation and growth of functional materials?, Short term course on “Nanomaterials: Synthesis and c by Ram, Shanker (NIT, Durgapur, India)
16. Nucleation and growth of solid of small structures by Ram, Shanker (Department of Physics, Gorakhpur University, Gorakhpur, India.)

17. Discovery of Raman scattering from molecules by Ram, Shanker (ISM Dhanbad, India)

18. Nucleation and growth of nanomaterials by Ram, Shanker (National Institute of Technology, Patna, India)

19. Polymers as Sensor Materials by Adhikari, Basudam (IIT Kharagpur)

20. Role of polymers in sensors and sensing: An overview by Adhikari, Basudam (Jadavpur University, Kolkata)

Short-Term Courses, Training Programmes and Workshops organised

1. Materials Engineering & Industrial Applications: Hybrid Nanocomposites for Photonics, Energy & Elect (November 11-22, 2013)

2. Materials for Advanced Applications (Sept 2-13, 2013)

3. Materials for Advanced Applications (2 weeks)

Papers Published in Journals


6. A comprehensive study on enhanced characteristics of modified polylactic acid based versatile biopolymer By Moumita Bishai, Swarnalok De, Basudam Adhikari, Rintu Banerjee European Polymer Journal 54, 52–61 (2014)


16. Compatibilized ethylene-propylene-diene terpolymer nanocomposites containing different type of organoclay By Asish Malas, Chapal Kumar Das Polimery-Polymers 58, 204-211 (2013)


21. Development of Microwave Absorbing Materials Based on DBSA doped Polyaniline/Pb(Zr 0.52 Ti 0.48 )O 3 Nanocomposites By Avinandan Mandal, Chapal Kumar Das Macromolecular Symposia 327, 99-107 (2013)

22. Development of modified expanded graphite-filled solution polymerized styrene butadiene rubber vulcanizates in the presence and absence of carbon black By Asish Malas, Chapal Kumar Das Polymer Engineering and Science 54,33-41 (2014)


27. Effect of Mixing Sequence of Polymer and Nanofillers on Thermo Mechanical as well as Morphological Property of the Nanocomposites By Goutam Hatui, Chapal Kumar Das, Swinderjeet Singh Kalra, Tanya Basu, C.Y. Yue Journal of Materials Science Research 2, 49-98 (2013)


31. EFFECT OF RUTHENIUM (III) INCORPORATION IN POLYANILINE BACKBONE: MATERIALS FOR SUPERCAPACITIVE ENERGY STORAGE APPLICATION By Soumen Giri, Debasis Ghosh, Chapal Kumar Das NANO: Brief Reports and Reviews 8, 1350026 (13 pages) (2013)
32. Effect of structural Integration on electrochemical properties of 0.5Li2MnO3-0.5Li(Mn0.375Ni0.375Co0.25)O2 composite cathodes for lithium rechargeable batteries By C. Ghanty, S. Chatterjee, R.N. Basu, and S.B. Majumder Journal of the Electrochemical Society 160 A1-A9 (2013)
34. Electrochemical and electrical performances of cobalt chloride (CoCl2) doped polyaniline (PANI)/graphene nanoplate (GNP) composite By S. Maiti and B. B. Khatua RSC Advances 3, 12874-12885 (2013)
35. Electrochemical characteristics of xLi2MnO3-(1-x)Li(Mn0.375Ni0.375Co0.25)O2 (0.0 ≤ x ≤ 1.0) composite cathodes: Effect of particle and Li2MnO3 domain size By C. Ghanty, R.N. Basu, and S.B. Majumder Electrochimica Acta Accepted (2014)
36. Electrochemical performances of 0.9Li2MnO3-0.1Li(Mn0.375Ni0.375Co0.25)O2 cathodes: Role of the cycling induced layered to spinel phase transformation By C. Ghanty, R.N. Basu, and S.B. Majumder Solid State Ionics 256 19 (2014)
41. Forming a Cr4+(3d2) spin doped Zr1-xCrxO2 (x ≤ 0.2) of small crystallites at moderate pressure: a spin-semiconductor By A. Sengupta and S. Ram Materials Chemistry and Physics 142, 717–725 (2013)
43. Graphene decorated with Ni(OH)2 and Ag deposited Ni(OH)2 stacked nanoplate for Supercapacitor application By Debasis Ghosh, Soumen Giri, Avinandan Mandal, Chapal Kumar Das Chemical physics letters 573, 41-47 (2013)


49. Hydrogen sensing characteristics of nano-crystalline Mg0.5Zn0.5Fe2O4 thin film: Effect of film thickness and operating temperature. By K. Mukherjee and S.B. Majumder. *International Journal of Hydrogen Energy* 39, 1185 (2014)


65. Low temperature MOCVD growth of high density and defect free InAs quantum dots on (100) p-GaAs substrates for nonvolatile flash memory applications By Sk Masiul Islam, P. Biswas, P. Banerji and R. Mukherjee Journal of Nanoscience Letter 4, 26 (2014)
66. Magnetism in spintronic compound Zr0.8Cr0.2O2 of small crystallites By A. Sengupta, S. Misra and S. Ram Journal of Nano Research in press (2014)
76. Preparation and Electrochemical Characterization of Polyamino Functionalized Copper Bridges Carbon Nanotube for Supercapacitor Applications By Soumen Giri, Chapal Kumar Das Journal of Nanoscience and Nanotechnology 14, 6373-6381(9) (2014)
83. Qualitative and quantitative discrimination of gases by ZnO thin film gas sensors using pattern recognition analysis By S. Pati, P. Banerji, and S.B. Majumder Analyst 139 1796 (2014)
86. Sequential mixing as effective method in the reduction of percolation threshold of multiwall carbon nanotube in poly(methyl methacrylate)/high-density poly(ethylene)/MWCNT nanocomposites By Rajat Patra, Supratim Suin, Dipankar Mandal and B. B. Khatua Journal of Applied Polymer Science In Press (2014)
87. Spectroscopic based study on the interaction between gold nanoparticle and poly(vinyl pyrrolidone) molecules in a non-hydrocolloid By M. Behera and S. Ram International Nano Letters 3, 17 (1-7) (2013)
89. Spectroscopic based study on the interaction between gold nanoparticle and poly(vinyl pyrrolidone) molecules in a non-hydrocolloid By M. Behera and S. Ram International Nano Letters 3, 17 (1-7) (2013)
92. Synthesis and characterizations of modified expanded graphite/emulsion styrene butadiene rubber nanocomposites: mechanical, dynamic mechanical and morphological properties By Asish Malas, Parthajit Pal, Soumen Giri, Avinandan Mandal, Chapal Kumar Das Composites Part B: Engineering 58, 267-274 (2014)
93. Synthesis and Microwave Absorbing Properties of Cu-Doped Nickel Zinc Ferrite/Pb(Zr0.52Tl0.48)O3 Nanocomposites By Avinandan Mandal, Debasis Ghosh, Asish Malas, Parthajit Pal, and Chapal Kumar Das Journal of Engineering 2013 (2013)
96. Thermoelectric properties of PbSe0.5Te0.5: x (Pbl2) with endotaxial nanostructures: a promising n-type thermoelectric material By P. K. Rawat, B. Paul and P. Banerji Nanotechnology 24, 215401 (2013)

Papers Presented in Conferences
2. A comparative study of the growth of CNTs with and without catalysts by atmospheric pressure chemical vapor deposition, **By Shivam Gupta and Chacko Jacob, ICFM-2014, IIT Kharagpur, (2014)**


7. Catalytic Growth of 3C-SiC Nanorods: Structural and Optical Characterizations, **By Afzal Khan, Chacko Jacob, 17th IWPSD, Amity Univ, Delhi, (2013)**


11. Conducting polymer integrated spinel nanostructured electrocatalyst for power generation in single chambered microbial fuel cell, **By S. Khilari, D. Pradhan, Recent Developments in Chemical Science & Technology: Young Scientists’ Meet, NIT Rourkela, (2014)**


14. Controlled drug delivery characteristics of poly (vinyl alcohol) anchored maleic anhydride grafted low density polyethylene, **By Akhtar Jahan Siddiqua, K. Chaudhury, and B. Adhikari, INTERNATIONAL CONFERENCE ON ADVANCEMENTS IN POLYMERIC MATERIALS (APM-14), CIPET, Bhubaneswar, (2014)**


16. Development of Cotton lap/Cellulose from Jute, **By Manisha Sharma, Sumit Das, B. Adhikari, Koel Choudhury, INTERNATIONAL CONFERENCE ON ADVANCEMENTS IN POLYMERIC MATERIALS (APM-14), CIPET, Bhubaneswar, (2014)**


18. Dielectric and magnetic properties in Li0.35Zn0.3Bi0.1Fe2.25O4 spinel ferrite, **By S. Misra and S. Ram, 10th National Conference on Solid State Iotics, IIT, Kharagpur, (2013)**

19. Dielectric and magnetic properties of Si coated CoFe2O4/Ba0.6Sr0.4TiO3/epoxy resin polymeric composites for microwave absorbing applications, **By Avinandan Mandal, Chapal Kumar Das, PPS 2013, IIT Bombay, (2013)**


29. Electromagnetic properties in Bi3+ substituted Li0.35Zn0.3Bi0.1Fe2.25O4 nanocrystallites, By S. Misra and S. Ram, *International Conference on Magnetic Materials and Applications, MagMA*, IIT Guwahati, (2013)


35. Growth and characterization of 3C-SiC nanorods Using Au as a Catalyst, By Afzal Khan, Chacko Jacob, *IUMRS-ICA*, Bangalore, (2013)

36. Growth and characterization of CNTs using nickel and nickel oxide as catalysts by atmospheric pressure chemical vapor deposition, By Shivam Gupta and Chacko Jacob, *25th AGM of MRSI*, Bangalore, (2014)


41. High performance fluorinated polymers, By S. Banerjee, Bayreuth polymer symposium (BPS-13), Bayreuth, Germany, (2013)
44. Impedance properties in magnetic-dielectric Zr0.8Cr0.2O2 nanocrystallites, By A. Sengupta and S. Ram, IEEE Xplore, (2013)
45. Influence of expanded graphite flakes on the physical and thermo-mechanical properties of natural rubber and solution polymerized styrene butadiene rubber for tire tread applications, By C. K. Das, Asish Malas, RAPT 2014, University of Culcutta, (2014)
46. Influence of microstructure on the magnetic properties in nanocrystallites of Zr1-xCrxO2 (x<0.2), By A. Sengupta and S. Ram, AIP Conference Proceedings, (2013)
52. Modification of CNT and its effect on Thermo mechanical, Morphological,Rheological properties of PEI/LCP blend system, By Goutam Hatui, Prof. C. K. Das, ICRRM 2013, IIT Kharagpur, (2013)
54. Nanostructures of carbon-based materials - beauty, form and function (invited talk), By Chacko Jacob, Recent Trends in Condensed Matter Physics (RTCMP OPS-31), ITER (SOA), Bhubaneswar, (2014)
62. Role of mineral acid on poly (aniline-co-m-aminobenzoic acid) synthesis and doping effect on ester sensing properties, By Jyoti Singh, R. Banerjee and B. Adhikari, *INTERNATIONAL CONFERENCE ON ADVANCEMENTS IN POLYMERIC MATERIALS (APM-14)*, CIPET, Bhubaneswar, (2014)
68. Synthesis and characterization of acrylic acid (AA) based polyaniline (PANI) conducting polymer, By Mukti Kant Panigrahi and Basudam Adhikari, *INTERNATIONAL CONFERENCE ON ADVANCEMENTS IN POLYMERIC MATERIALS (APM-14)*, CIPET, Bhubaneswar, (2014)
70. Synthesis and characterization of uniform size gold nanoparticle by using different protein like chymotrypsin and egg albumin, By Shyamal Mandal, Chacko Jacob and Soumen Das, *ICANN*, IIT Guwahati, (2013)
Reliability Engineering Centre

Head
Prof. V N Achutha Naikan

Professor
Naikan, V N Achutha  Ph.D.(IIT Kharagpur), Reliability and Quality Engineering, Condition Monitoring, System Simulation

Associate Professor
Chaturvedi, Sanjay Kumar  Ph.D., Maintenance Engineering, System Reliability Modelling and Analysis, Reliability Data Analysis, Reliability Estimation

Assistant Professors
Goyal, Neeraj Kumar  Ph.D.(IIT Kharagpur), Software Reliability, System Reliability Analysis, Probabilistic Risk Assessment, Network Reliability, Accelerated Life Testing
Sarma, Monalisa  Ph.D.(IIT Kharagpur), Software reliability, Big data analysis, Cloud computing

Faculty Appointments
Monalisa Sarma  Assistant Professor

Brief Description of on-going activities
The Centre is developing a Virtual Lab on fault Diagnosis of Rotary Systems. This lab will be useful for virtually creating certain faults in rotating systems and then diagnose the fault and its severity. The research activities are now focusing more on experimental research. Accelerated life testing on various engineering components and systems are being carried out in out laboratory. Other activities include organizing short term courses on latest topics of Reliability Engineering for officers and engineers of the Industry, Defense Organizations and R & D Establishments. Safety and reliability studies of nuclear power plants and missile systems are other activities. Reliability Availability Maintainability and safety (RAMS) aspects of Indian Railways is another focus area.

Thrust Areas

1. Software Reliability and Cloud computing
2. Condition Monitoring and Maintenance
3. Reliability Testing and Estimation
4. Probabilistic Risk and Safety Analysis

International Collaborations

Collaborative Research work on "Software Reliability Modelling" with DNV Norvey is progressing

Lectures by Visiting Experts

1. Reliability of Repairable Systems by Dr. A. Syan Sundar (Vishakhapatnam Steel Plant)
2. Reliability Engineering research in Indian Scenerio by Dr. Edwin Vijay Kumar (Vishakhapatnam Steel Plant)
Member - Professional Bodies

2. Chaturvedi, Sanjay Kumar, *Member* - IEEE
3. Chaturvedi, Sanjay Kumar, *LIFE MEMBER* - SERSA
4. Goyal, Neeraj Kumar, *Life Member* - Society for Reliability and Safety
5. Goyal, Neeraj Kumar, *Life Member* - SYSTEMS SOCIETY OF INDIA
7. Naikan, V N Achutha, *Regular* - Institution of Engineers (India)
10. Naikan, V N Achutha, *Member* - System Society of India

Member - Editorial Board

5. Goyal, Neeraj Kumar (2013) *Reviewer* - Central European Journal of Computer Science
19. Naikan, V N Achutha (0) *Editorial Board Member* - Intl. jl. of Systems Assurance and Management

Awards & Honours

1. Sarma, Monalisa (2012) *IBM SUR Award, IBM Research Corpn, USA*

Sponsored Research Projects

1. Reliability modeling, Analysis and Prediction of 21 NA (Absolute) Pressure Transducers (ISRO, Rs.8.40 Lakhs)
2. Rotating Machinery fault Simulation lab (MHRD, Rs.52.00 Lakhs)
3. Standardization of Virtual Keyboards in Indic Languages (Department of Electronics and Information Technology (DeitY), New Delhi, Rs.22.00 Lakhs)
Consultancy Projects

1. Hazarad Identification and Risk Assessment of Industrial Activities (ITR, Chandipur, Rs.9.50 Lakhs)
2. RAMS for Garuda (DRDL Hyderabad, Rs.20.00 Lakhs)
3. Reliability analysis of Permanent magnet machine set and its associated controller’ (BHEL, Rs.6.60 Lakhs)
4. Reliability Assessment and Improvement (Secure Meters Limited, Rs.3.51 Lakhs)
5. Reliability Improvement of Metering Products (Larsen & Toubro, Mysore, Rs.10.00 Lakhs)
6. RELIABILITY MODELING AND PREDICTION OF PROCESS CONTROL SYSTEM (DRDO Panagarh, Rs.8.03 Lakhs)
7. Reliability Prediction and FMEA/FMECA of CFF Oxygen System (DEBEL, Bangaluru, Rs.10.00 Lakhs)
8. Reliability Prediction and Testing of Electrical Products (Crompton and Greaves, Mumbai, Rs.10.00 Lakhs)
9. Reliability Work Package for Missile Project: Phase II (DRDL, Hyderabad, Rs.12.50 Lakhs)

Patents (filed / granted)

1. Efficient Binary Trie for Application to Medical Electronic Dictionary in Health Care

Visits Abroad by Faculty Members

1. Naikan, V N Achutha - Visiting Professor (University of Maryland, USA, ) 13-01-2013 to 30-06-2013

Invited Lectures by Faculty Members

1. Maintainability Analysis by Naikan, V N Achutha (ESCI, Hyderabad)
2. RAMS for Railway Systems by Naikan, V N Achutha (DLW Varanasi)
3. Reliability Engineering and Life Testing by Naikan, V N Achutha (PSGCT, Coimbatore)
4. Reliability Centred Maintenance by Goyal, Neeraj Kumar (DRDO Panagarh)
5. Failure Distributions and Reliability Modeling by Goyal, Neeraj Kumar (IMRT Hyderabad)

Short-Term Courses, Training Programmes and Workshops organised

1. Reliability Modeling of Sensors Network System for Critical Applications IV (December 09-14, 2013)

Papers Published in Journals

2. CSLAT: An SLA Template for Cloud Service Management By Dheeraj Rane and Monalisa Sarma International Journal of Communication Networks and Distributed Systems Accepted in 2014 (0)
3. Design of 4-disjoint gamma interconnection network layouts and reliability analysis of gamma interconnection Networks By S. Rajkumar and Neeraj Kumar Goyal Journal of Supercomputing Accepted (2014)
5. Multi Phase Reliability Analysis with Variable Phase duration and Variable Phase Sequence
   By Sarma P. S., S. K. Chaturvedi, Damodar Garg and Sudhangshu Chakravorty

6. Multi Phase System Reliability Analysis using Excel
   By Sarma P. S., S. K. Chaturvedi, Damodar Garg and Sudhangshu Chakravorty

7. Out of range error probability assessment for any computer program
   By Sushant Mohan Dewal and Neeraj Kumar Goyal

8. Reliability Analysis of Temperature Sensor System
   By Swajeet Pilot Panchangam and V.N.A. Naikan

9. Reliability Modeling of Rotary Systems Subjected to Imbalance
   By V.M.S. Hussain and V.N.A. naikan

10. Reliability-based Design Optimization of Broad-band Microwave Absorbers
    By H. Gargama, S. K. Chaturvedi, A. K. Thakur

11. Reliability-based design optimization scheme for designing electromagnetic shielding structures
    By H. Gargama, S. K. Chaturvedi, and A. K. Thakur

12. Security Monitoring and Assessment of an Electric Power System
    By PUROBI PATOWARY and NEERAJ KUMAR GOYAL
    International Journal of Performability Engineering Accepted (2014)

13. Techniques for optimal placement of transducers for fault detection in rotating machines
    By Fatima Sahab, Amiya Ranjan Mohanty, Sabyasachi G Dastidar and V.N.A. Naikan

Papers Presented in Conferences

1. Accelerated Life Testing of Aluminum Electrolytic Capacitors: Effect of Applied Voltage on Life,
   By Arvind Rathore and V.N.A. Naikan,
   SRESA National Conference on Reliability and Safety Engineering, Thiruchirapally, (2014)

2. Effective time domain features for distinguishing coupling effects on misaligned shaft,
   By Fatima Sahab, Amiya Ranjan Mohanty and V.N.A. Naikan,
   Proceedings of Acoustics, New Delhi, (2013)

3. Environmental Study on Battery Performance at Low Temperature,
   By Bhavdeep Mago and V.N.A. Naikan,
   SRESA National Conference on Reliability and Safety Engineering, Thiruchirapally, (2014)

4. Most Effective Transducer Locations for Permanent Health Monitoring of A Rotating Machine,
   By S. Fatima, A. R. Mohanty and VNA Naikan, 20th International Congress on Sound and Vibration, Bangkok, (2013)

5. Multiple fault classification using support vector machine in a machinery fault simulator,
   By Fatima Sahab, Amiya Ranjan Mohanty and V.N.A. Naikan,
   10th International Conference on Vibration Engineering and Technology of Machinery, Manchester, UK, (2013)

6. Shaft misalignment detection by thermography,
   By Fatima Sahab, Amiya Ranjan Mohanty and V.N.A. Naikan,
   21th International Congress on Sound and Vibration, Beijing, China, (2014)

7. Virtual Fault Simulation for Sympathetic Vibrations of Rotating Machine,
   By Dipti Prakash Behera and V.N.A. Naikan,
   IEEE International Advance Computing Conference (IACC), Noida, (2014)
Rubber Technology Centre

**Head**
Prof. Dipak Khastgir

**Professors**
Bhowmick, Anil Kumar  *Ph.D. (IIT Kharagpur),* Electron beam modification of polymers, Polymer nanocomposites, Conductive rubber composites for EMI shielding application of Mobile phones and mobile towers, Waste plastics modified bitumen for highway application, Dielectric elastomer for smart functions, High Performance composite as friction materials, Shape Memory Polymer Nanocomposites

Chaki, Tapan Kumar  *Ph.D. (IIT Kharagpur),* Polymer nanocomposites, Conductive polymer/polymer composites and EMI shielding materials, Biodegradable polymer and polymer composites, Rheology/morphology and phase behaviour of polymer blends, Small angle X-ray and neutron scattering (SAXS/SANS) on polymers/nanomaterials/ protein/virus, Carbon nanotubes: synthesis/characterization/processing, Thermoplastic elastomers, Conjugated polymers for renewable energy application

Das, Narayan Chandra  *Ph.D. (IIT Kharagpur),* Polymer nanocomposites, Conductive polymer/polymer composites and EMI shielding materials, Biodegradable polymer and polymer composites, Rheology/morphology and phase behaviour of polymer blends, Small angle X-ray and neutron scattering (SAXS/SANS) on polymers/nanomaterials/ protein/virus, Carbon nanotubes: synthesis/characterization/processing, Thermoplastic elastomers, Conjugated polymers for renewable energy application

Khastgir, Dipak  *Ph.D. (IIT Kharagpur),* Development of Polymer & Composites for Graded Dielectrics and High Voltage Insulation application, Polymer Composites & Nano Composites for Electrical and Electronic applications, Textile Technology for Rubber Product and Protection against Biodegradation

Nando, Golok Behari  *Ph.D. (IIT Kharagpur),* Polymer Blends and Polymer Nano-Composites, Chemical modification and Grafting of Rubbers and additives, TPEs and TPVs from waste polymers and Rubbers, Rubber in strategic areas of applications such as in Automotive tyres Cables and Railways

**Associate Professors**

Chattopadhyay, Santanu  *Ph.D. (IIT Kharagpur),* Viscoelasticity of rubber composites and polymer based nanocomposites, Synthesis and application of block copolymers and hydrogels for drug delivery, Preparation and evaluation of thermoelectric / stimuli-responsive nanocomposite materials, Self-assembled nanostructures for controlled delivery

Naskar, Kinsuk  *Ph.D. (Univ. of Twente, The Netherlands),* Polymer blends and composites, High performance Thermoplastic elastomers (TPEs) and Thermoplastic vulcanizates (TPVs), Electron beam (EB) processing of polymers and elastomers, Green Tyre Technology, Shape memory polymer alloys

Singha, Nikhil Kumar  *Ph.D (IIT Bombay),* Tailor-made polymers via Controlled Radical Polymerization, Block (AB & ABA) & graft copolymers, Smart self-healing and self-cleaning polymeric materials, Tailor-made polymer nanocomposites, Thermoplastic elastomers (TPE), Polyurethane, Tailor-made modification on elastomers
**Faculty Appointments**
Nil
Nil
Nil

**Faculty Retirement**
Nil

**Faculty Re-employment**
Nil

**Faculty Resignation**
Nil

**New Academic Programmes**
Nil

**Brief Description of on-going activities**

The Centre works in close collaboration with other departments and centers of this Institute and other R & D organizations in India and abroad. Several research projects sponsored by different agencies are in operation. The faculty members are engaged in different research areas: (1) Polymer composites and nanocomposites (2) Chemical modification of rubbers, (3) Thermoplastic elastomers based on novel blends and alloys, (4) Recycling of rubber waste (5) Ionomers, (6) Conductive rubber composites for electrical and electronics application, (7) Electron beam modification of polymers (8) Rheology and processability of rubber compounds and polymer blends, (9) Polymer foam and microcellular rubber composite for various critical and industrial applications, (10) Development of rubber blends and composites for different industrial application like cable, oil seal, tank track pad, vibration isolators, high voltage insulators (11) Development of adhesives and coatings. (12) Development of biodegradable polymer and recycling of rubber and polymer (13) Controlled radical polymerization, (14) Development of polymers for biomedical application, electronic application.

Centre will initiate two research projects under Centre for Railway Research (CRR), IIT Kharagpur.

**Thrust Areas**

1. i) Rubber product design & development ii) Polymer blends and polymer (nano)composites iii) Synthesis of tailor-made polymers and modification polymers/rubbers iv) Green approach in polymer synthesis and technology v) Smart polymer & nanocomposites in novel applications; electrical, electrical, self-healing & biomedical applications vi) Recycling of polymers and rubbers

**New Acquisitions**

Lectures by Visiting Experts

1. Conductive Polymer Composites by Dr. Sudip Ray (University of Auckland, New Zealand)
2. Advances in Carbon Black Technology by Dr. S. Chakraborty (President, Himadri Chemicals Ltd., Hoogly W.B. India)

Doctoral and MS Degrees Awarded

1. Shibulal G.S. : Influence of a Multifunctional Coupling Agent on Aramid Short Fiber Reinforced Thermoplastic Elastomers(Ph.D)

Member - Professional Bodies

1. Singha, Nikhil Kumar, Life Member - Life Member of Chemical Research Society of India (CRSI)
2. Singha, Nikhil Kumar, Member - American Chemical Society (ACS), Rubber Division, USA
3. Singha, Nikhil Kumar, Life Member - Life Member of Society of Polymer Science of India
4. Singha, Nikhil Kumar, Life Member - Life Member of Materials Research Society of India (MRSI)
5. Chattopadhyay, Santanu, Member - Materials Manufacturing Ontario (Ontario, Canada)
6. Chattopadhyay, Santanu, Life Member - Society for Polymer Science, India
7. Chaki, Tapan Kumar, Life - Indian Rubber Institute, India
8. Chaki, Tapan Kumar, Life - Plasma Science Society of India
9. Chaki, Tapan Kumar, Life - Society of Polymer Science
10. Chaki, Tapan Kumar, Life - Indian Thermal analysis Society, India
11. Chaki, Tapan Kumar, Life - Materials Research Society of India
12. Nando, Golok Behari, Regular - American Chemical Society, Rubber Division, Akron, Ohio, USA
13. Nando, Golok Behari, Life - Materials Research Society of India,
14. Nando, Golok Behari, Life - Society for Polymer science, India
15. Nando, Golok Behari, Regular Member - Indian Rubber Institute
16. Nando, Golok Behari, Life - Indian Association for Radiation Protection
17. Khastgir, Dipak, Life Member - Polymer Society of India
18. Khastgir, Dipak, Member - American Chemical Society, Rubber Division.
19. Khastgir, Dipak, Life Member - Indian Thermal Analysis Society
20. Das, Narayan Chandra, Member - American Chemical Society
21. Das, Narayan Chandra, Member - Americal Physical Society
22. Das, Narayan Chandra, Member - Neutron Scattering Society of America
23. Das, Narayan Chandra, Associate Member - Sigma Xi: The Scientific Research Society

Member - Editorial Board

1. Das, Narayan Chandra (0) Editorial Board Member - Advances in Nanoparticles
3. Singha, Nikhil Kumar (0) Member of the Editorial Board - American Journal of Macromolecular Science
4. Singha, Nikhil Kumar (0) Member of the Editorial Board - Frontiers in Chemistry (Polymer Chemistry Section)
Awards & Honours

1. Singha, Nikhil Kumar (2013) *Fulbright-Nehru Senior Research Fellowship by USA-India Educational Foundation (USIEF)*
2. Singha, Nikhil Kumar (2013) *MRSI Medal by Material Research Society of India (MRSI)*

Sponsored Research Projects

1. Application of nanotechnology for improving impermeability of gas and moisture of TBR/PCR inner liner materials (CEAT Tyres, Mumbai, Rs.24.00 Lakhs)
2. Application of TPE-General Purpose Elastomer Blends for Use in PCR and TBR Tyres (CEAT Tyre, Vadodara, Rs.23.42 Lakhs)
3. Development and failure analysis of outdoor high voltage insulators from Silicone rubber and Silicone rubber blends used by Indian Railways (RDSO, Lucknow, Rs.78.96 Lakhs)
4. Development of Composition and Standardization of Properties of Composites Brake Blocks for Application of Coaches of Indian Railways (RDSO, Lucknow, Rs.77.00 Lakhs)
5. Development of Novel Polymeric Materials for Self-healing Applications (PSA) (DRDO, Rs.16.00 Lakhs)
6. Development of radiation processed flexible conductive rubber based composites for electromagnetic interference shielding applications of mobile phone (BRNS, Mumbai, Rs.24.94 Lakhs)
7. Development of Rubber Nanocomposite base encapsulant (NPOL, DRDO, Kochin, Rs.9.90 Lakhs)
8. Development of shape memory polymer blends via radiation cross-linking (DAE, BARC, Mumbai, Rs.19.46 Lakhs)
9. Development of Shape Memory Polymer Nanocomposites (SMPN) for Space Deployable Material (NSD) (KCSTC, IIT Kharagpur, Rs.10.96 Lakhs)
10. Development of special purpose heat resistant cable insulating compounds based on blends of LLDPE and PDMS rubber by electron beam irradiation techn (Department of Atomic Energy, BARC, Trombay, Mumbai, Rs.13.11 Lakhs)
11. Exploring silica-filled ENR in tyre application: a novel Green Technology (DST, New Delhi, Rs.39.05 Lakhs)
12. Novel heat and oil resistant thermoplastic Vulcanizates (TPVs): development, characterization and performance (Council of scientific and industrial research, New Delhi, Rs.18.38 Lakhs)
13. Novel Microporous polymeric membrabnes for medical applications (Department of BioTechnology, Ministry of Science and Technology, Govt of India, Rs.34.44 Lakhs)
14. Novel Polymers by Controlled Radical Ring Opening Polymerization (CRROP) of Vinyl Cycloalkane (NVC) (DST, New Delhi, Rs.23.08 Lakhs)
15. Preparation and characterization of PVC-Silicone blends (DRDO, New Delhi, Rs.24.57 Lakhs)
16. Segmented Polyurethane Laponite clay nano composites for fire and flammability (ISRO, Bangalore, Rs.10.52 Lakhs)
17. Shape Memory Polymer Nanocomposites (Kalpana Chawla Space Technology Cell, Rs.10.97 Lakhs)
19. Tailor-made fluoropolymers using controlled radical polymerization (CSIR, New Delhi, Rs.20.28 Lakhs)
20. Thermoplastic Elastomers based on Polymer Blends and their Nanocomposites (Bridgestone Corporation, Japan, Rs.3.50 Lakhs)
Consultancy Projects

1. Characterization of Emulsion samples (CESP) (Asian Paints Limited, Rs.0.80 Lakhs)
2. Development of Conveyor Compound (IBBU) (TATA Steel Jamshedpur, Rs.10.50 Lakhs)
3. Development of Elastomeric Bearings (Hindustan Aeronautics Limited (HAL), Foundry and Forge Division, Bangalore India, Rs.2.25 Lakhs)
4. Development of heat Exchanger Gaskets for Food and Non-food grade applications (Vikas Rubber Industries, New Delhi, Rs.2.19 Lakhs)
5. Development of Two Part Compound for conveyor belt (Phoenix Yule, Kalyani, Rs.3.20 Lakhs)
6. Estimation of Rubber content (Modern Malleables Limited, Kolkata, Rs.0.28 Lakhs)
7. Failure analysis of adhesive joints (TISCO Jamshedpur, Rs.10.00 Lakhs)
8. Identification of polymers (Prag Industries Limited, Lucknow, Rs.0.15 Lakhs)
9. Thermoplastic Elastomers based on Polymer Blend and their Nanocomposites (BBAT) (Bridgestone Corporation, Tokyo, Japan, Rs.3.68 Lakhs)
10. To identify and test rubber compounding ingredients from sustainable sources (GECN) (LANXESS Elastomers B.V., The Netherlands, Rs.6.43 Lakhs)

Patents (filed / granted)

1. A Polyimide Filled EPDM Nanocomposite
2. A Process for the preparation of capacitative barium titanate nanoleaves
3. A single pot process for polar modification on polyolefinic elastomers via tailor-made graft copolymerization
4. Bromobutyl Rubber-Homopolymer of Epichlohydrin blended rubber nanocomposites
5. Development of novel light rocket motor insulation compound based on Polyimide – nanosilica filled EPDM-BIIR
6. Elastomer Nanocomposites based on Insulation Material for Rocket Motors
7. Method for producing thermoplastic polymer compounds
8. Synergistic combination of dual dopants for improved electrical conductivity in conducting polymer

Visits Abroad by Faculty Members

1. Khastgir, Dipak - To present paper and chair a session in Int. Conference on Advances of Polymer Science & Technology (Yogakarta Indonesia, ) 7-10 October, 2013
2. Chattopadhyay, Santanu - Attending ICMAT-2013 (Singapore, ) 30th June -6th July, 2013
4. Singha, Nikhil Kumar - Fulbright-Nehru Senior Research Fellowship (The University of Tennessee, Knoxville, USA, ) 5th August,2013- 3rd April, 2014

Invited Lectures by Faculty Members

1. Novel Thermoplastic Elastomeric Nanocomposites by Chaki, Tapan Kumar (Haldia Institute of Technology, Haldia)
2. Ablative polyimide based EPDM nanocomposites by Chaki, Tapan Kumar (University of Calcutta, Kolkata, India.)
3. Polymer Cable Technology by Khastgir, Dipak (Indian Rubber Institute, Mysore)
4. An approach to improve technical properties of TPEs by Chattopadhyay, Santanu (National Rubber Conference, Kolkata)
5. Synthesis and Morphological Study of Branched PE-PCL Immobilized Biocompatible Superparamagnetic NC by Chattopadhyay, Santanu (FAPS-MACRO, IISC, Bangalore)
6. Tailor made Functional Polymer and its Composites via Controlled Polymerization & Click Chemistry by Singha, Nikhil Kumar (University of Akron, USA)

7. Tailor made Functional Polymers by Controlled/living Polymerization & Click Chemistry by Singha, Nikhil Kumar (Oak Ridge National Laboratory, Tennessee, USA)

**Books Published**


**Papers Published in Journals**


14. Electrochemical synthesis of nanostructured polyaniline: Heat treatment and synergistic effect of simultaneous dual doping  
   By S. Bhandari, N. K. Singh, D. Khastgir  

15. EPDM and NR-based TPVs via electron induced reactive processing  
   By U. Gohs, M. Mondal, V. Thakur, K. Naskar and G. Heinrich  
   TPE Magazine 01, 37  (2014)

16. Facile preparation of uniform barium titanate (BaTiO3) multipods with high permittivity: impedance and temperature dependent dielectric behavior  
   By N. K. Singh, S. Dutta, S. K. Chaki, Tapan Kumar Khastgir, Dipak  
   RSC Advances 4(3) 1212-1224  (2014)

17. Maleic anhydride grafted Polybutadiene as a Controlled Defibrillating and Dispersing Agent for Short Aramid Fiber Reinforced Thermoplastic Polyurethane Composite with Improved  
   Mechanical Properties  
   By G. S. Shibulal and K. Naskar*  
   Journal of Applied Polymer Science 130, 2205  (2013)

18. Mechanical, electrical, and dielectric properties of polyvinylidenne fluoride/short carbon fiber composites with low electrical percolation threshold  
   By R Ram, M Rahaman, D Khastgir  
   Journal of Applied Polymer Science 131 (3)  (2014)

19. Morphology and cyclic voltammetry analysis of in situ polymerized polyaniline/graphene composites  
   By DK Mahla, S Bhandari, M Rahaman, D Khastgir  

20. Natural weather, soil burial and sea water ageing of low-density polyethylene: Effect of starch/linear low-density polyethylene masterbatch  
   By M. Elanmugilan, P. A. Sreekumar, N. K. Singh, M. A. Al-Harthi, S. K. De  

21. Novel thermoplastic vulcanizates (tpvs) based on silicone rubber and polyamide exploring peroxide cross-linking  
   By T. Chatterjee, S. Weissner, G. Heinrich and K. Naskar*  
   Express Polymer Letters 8, 220  (2014)

22. Phase behaviour and separation kinetics of polymer blends  
   By N.C. Das  
   Journal of Microscopy 253, 198  (2014)

23. Phases of superfluid helium in smooth pore  

24. Poly(meth)acrylate Grafted EPDM via Reverse Atom Transfer Radical Polymerization: A Single Pot Process  
   By D. J. Haloi, K. Naskar and N. K. Singh  
   European Polymer Journal 49, 4098  (2013)

25. Polyaniline, ethylene vinyl acetate semi-conductive composites as pressure sensitive sensor  
   By M Rahaman, TK Chaki, D Khastgir  

26. Preferential distribution of polyaniline in different phases of acrylate triblock copolymer  
   By Subhendu Bhandari, Nikhil K. Singh, and Dipak Khastgir  
   Material Express 4, (2),115-124  (2014)

27. Preparation of Poly (2-Hydroxyethyl Methacrylate) Microspheres bearing Metronidazole, an Antiprotozoal Drug  
   By Debashis Mondal, S. K. Ghosh and N. K. Singh  
   Advanced Science, Engineering and Medicine. 6, 1-5  (2014)

28. Proton exchange properties of flexible diamine-based new fluorinated sulfonated polyimides  
   By Preetom Sarkar, Aruna Kumar Mohanty, Parthasarathi Bandyopadhyay, Santanu Chattopadhyay and Susanta Banerjee  
   RSC Advance 4, 11848-11858 (2014)

29. Reversible addition fragmentation chain transfer (RAFT) polymerization of 2,2,3,3,4,4,4 hepta fluoroacrylate (HFBA)  
   By B. P. Koiry, M. Moukwa, N. K. Singha  
   Journal of Fluorine Chemistry 153, 137-142  (2013)

30. Role of calcium stearate as a dispersion promoter for new generation carbon black-organoclay based rubber nanocomposites for tyre application  
   By Tapas R Mohanty, Vivek Bhandari, Arup K. Chandra, Pijush K. Chattopadhyay and Santanu Chattopadhyay  
   Polymer Composites 34 (214-224)  (2013)

31. Stearate modified zinc- aluminum layered double hydroxides and acrylonitrile butadiene rubber nanocomposites  
   Polymer-plastics Technology and Engineering 52, 65 (2014)

Papers Presented in Conferences

8. Electrical and electromagnetic interference shielding properties of carbon nanotube and poly(methyl methacrylate) composites, By Das, NC, Sokol, PE, Nayak, L, Chaki, TK, 246th National Meeting of the American-Chemical-Society (ACS), Indianapolis, IN, (2013)

Rural Development Centre

Head
Prof. P B Singh Bhadoria

Associate Professors
Bhowmick, Pradip Kumar  Ph.D., D.Litt., Tribal & Rural Development Planning
Lahiri, Debabrata  Ph.D. (BHU, Varanasi), Economics of Renewable Energy Economics of Microfinance Monitoring & Evaluation Technology Transfer
Mahapatra, Subhash Chandra  Ph.D. (IIT Kharagpur), Crop Production and Development Transfer & Management of Rural Technology

Brief Description of on-going activities

A. Teaching: two courses viz. RD30002 and RD30004 at undergraduate level as professional breadth
B. Research and Development: 1. Essential oil production technology; 2. Fish feed production from non-conventional biological sources; 3. Farm level technology for processing of agricultural products.
C. Extension: 1. Transfer of agricultural products processing technology; 2. Organization of training and workshops on rural technology application

Thrust Areas

1. Development and Transfer of Technology, Resource Planning and Marketing, Tribal Development

Lectures by Visiting Experts

1. Energy, Ecology and Rural Development by Professor Y P Singh (Distinguished former Professor and Alumnous of IIT Kharagpur)

Member - Professional Bodies

1. Mahapatra, Subhash Chandra, Life Member - Indian Society for Tuber Crops
2. Mahapatra, Subhash Chandra, Life Member - Mushroom Society of India (MSI)
3. Mahapatra, Subhash Chandra, Life Member - Weed Science Society, West Bengal
4. Mahapatra, Subhash Chandra, Life Member - Association of Food Scientists and Technologists (India)
5. Mahapatra, Subhash Chandra, Life Member - Eastern India Horticulture and Biotechnology Centre
6. Mahapatra, Subhash Chandra, Life Member - Indian Mushroom Growers Association
7. Mahapatra, Subhash Chandra, Life Member - Indian Society of Agricultural Science
8. Lahiri, Debabrata, Regular - American Agricultural Economics Association
9. Lahiri, Debabrata, Regular - International Institute of Fisheries Economics and Trade (IIFET)
10. Lahiri, Debabrata, Life Member - Indian Society of Agricultural Marketing
11. Lahiri, Debabrata, Annual - Indian Society of Agricultural Economics
12. Lahiri, Debabrata, Life Member - Agricultural Economics Research Association
13. Lahiri, Debabrata, Life Member - Indian Academy of Social Sciences
14. Bhowmick, Pradip Kumar, Regular - The Institute of Social Research and Applied Anthropology
15. Bhowmick, Pradip Kumar, Regular - Indian Political Economic Association
**Member - Editorial Board**


**Sponsored Research Projects**

1. Demonstration of Technologies for Green House Production of Roses and Extraction of Rose Oil (Department of Science & Technology, New Delhi, Rs.17.60 Lakhs)
2. Innovative use of undulating drought prone fragile lateritic wastelands in the remote tribal belt recourse to larger scale production of a kharif mino (Department of Science & Technology, SEED Division, Technology Bhavan, New Mehrauli Road, New Delhi - , Rs.15.15 Lakhs)
3. Innovative use of undulating lands...Niger crop...(IUU) (DST, SEED Division (Tribal Sub Plan), Rs.15.15 Lakhs)
4. Res. & Dev. and Dissemination of Human Energy or Minimal Energy Driven Composit Devices for Farm Level Processing of Agricultural Products: 2nd phase (Directorate of Agricultural Marketing, Govt. of West Bengal under the RKVY Scheme of Govt, Rs.25.00 Lakhs)
5. Research & Development and Dissemination of Appropriate Technology for Small Scale Grain Storage for Value Addition, Improving Marketability and Incom (Department of Agriculture MW & C Branch Government of West Bengal Marketing, Rs.40.00 Lakhs)

**Technology Transferred**

1. Farmers of various districts in West Bengal - Grinder for spices and other grains : Rs. 22.00 Lakh
2. Farmers of various districts in West Bengal - Mini Pulse Mill : Rs. 18.00 Lakh
3. Farmers of various districts in West Bengal - Vegetable Seed-Oil Extractor : Rs. 23.00 Lakh

**Patents (filed / granted)**

1. A Composite Technology of Turmeric (C. longa) Processing Including Polishing, Grinding and Extraction of Turmeric Oil and Curcumin at Rural Level
2. Low cost extractor for Turmeric oil and curcumin

**Invited Lectures by Faculty Members**

1. RURAL DEVELOPMENT POLICIES, APPROACHES AND STRATEGIES by Bhowmick, Pradip Kumar (THE INSTITUTE OF SOCIAL RESEARCH AND APPLIED ANTHROPOLOGY)

**Papers Presented in Conferences**

G S Sanyal School of Telecommunication

**Head**
Prof. Saswat Chakrabarti

**Professor**
Chakrabarti, Saswat *Ph.D.(IIT Kharagpur)*, Digital Communications, Wireless Communications, Bio-telemetry

**Assistant Professors**
Das, Goutam *Ph.D.(Univ. of Melbourn)*,
Das, Suvra Sekhar *Ph.D.(Aalborg Univ., Denmark)*, Broadband Mobile Communications, Physical & MAC Layer, 4G, OFDM, MIMO, Packet Scheduling, Link Adaptation, Femto Cells
Sen, Debarati *Ph.D.(IIT Kharagpur)*, Wireless Communication, 4G and Beyond, PHY and MAC Layer, Short Range Communication, Green Communication, Coherent Optical Communication

**Faculty Appointments**
Debarati Sen Assistant Professor
Nicola Marchetti Visiting Assistant Professor

**New Academic Programmes**
Proposed a new MTech program on "Wireless Communications and Networks".

**Brief Description of on-going activities**
First phase of VICET activities successfully completed in late 2013 resulting in 11 patents and more than 39 technical publications. The activity has now been extended for another 3 years.

Taking all steps to ensure the introduction of a specialized MTech program in the areas of wireless communications and networks. Seven new subjects have already been launched towards this goal.

Have embarked on an ambitious program of creating a futuristic wireless test-bed with support from IIT Khargpur (SGDRI program - Rs. 2.5 crores), MICT. Govt. of India and multiple industry partners with a total projected budget of Rs. 24 crores.

**Thrust Areas**

1. Wireless communications and networking
2. Optical communications and networking
3. Statistical signal processing
New Acquisitions

1. FPGA test/ Programming facility with data acquisition cards
2. Radio Transceivers with FPGA test/ Programming facility
3. Embedded DSP Board with data acquisition

International Collaborations

Dr. Nicola Marchetti of Trinity College, Dublin will be visiting GSSST as a visiting assistant Professor during summer, 2014.

Dr. D. Sen is visiting Technical University of Munich, Germany through DAAD Faculty Exchange Scheme.

Lectures by Visiting Experts

1. MEMS Sensor Augmentation for Vehicular & Pedestrian Navigation by Jai Ganesh Balakrishnan (Texas Instruments, Bangalore)
2. by Partha P. Pande (Washington State University, Pullman)
3. Wi-Fi based Positioning and Augmentation in Outdoor & Indoor Environments by Sthanunathan Ramakrishnan (Texas Instruments, Bangalore)
4. by Aditya Vempaty (Syracuse University, New York)

Doctoral and MS Degrees Awarded

1. Sanjeet Kumar : Channel coding and energy efficiency in low complexity distributed image and video coding(Ph.D)
2. Pankaj Kumar Gupta : Energy Assessment, Modelling and Energy Saving During Signaling Activities in Mobile Networks(MS)

Member - Professional Bodies

1. Das, Suvra Sekhar, Member - IEEE
2. Ray, Priyadip, Member - IEEE
3. Sen, Debarati, Member - IEEE
4. Sen, Debarati, Member - IEEE ComSoc, IEEE RCC, IEEE WIE, IEEE TCCC
5. Sen, Debarati, Associate Member - IEI
6. Chakrabarti, Saswat, Member - IEEE

Member - Editorial Board


Awards & Honours

1. Sen, Debarati (2014) DAAD-IIT Faculty Exchange Fellowship
2. Sen, Debarati (2013) IETE N V Gadadhar Memorial Award

Sponsored Research Projects

1. An Integrated framework for radio resource sensing and opportunistic communication in collaborative cognitive radio network (Recommended by WG) (DeitY, Rs.96.98 Lakhs)
2. Bayesian Multi-user detection in on-off random access channels (IIT Kgp, Rs.5.00 Lakhs)
3. Design and Simulation of Baseband Digital CDMA Transceiver (ITR, DRDO, Rs.9.50 Lakhs)
4. Development of Interference Mitigation methods through Base Station Cooperation in Next Generation Wireless Broadband Mobile Communications Networks (DIT, Rs.90.60 Lakhs)
5. Energy Efficient Radio for Next Generation Cellular (Vodafone, Rs.185.00 Lakhs)
6. Facility for Design, Development and Testing of Next Generation Telecom Gears (IIT kgp, Rs.250.00 Lakhs)
7. Self Configuring Networks: Flexible Spectrum Sharing for Home Base Station in Next Generation Mobile Telecommunication Systems (Vodafone, Rs.19.00 Lakhs)
8. STANDARDIZATION ACTIVITY IN 4G & BEYOND IN RAN. (Vodafone, Rs.32.75 Lakhs)
9. Studies on FadeMitigation Control for Microwave Satellite Signal Propagation (ISRO, Rs.10.00 Lakhs)
10. VICET (Vodafone India, Rs.452.00 Lakhs)
11. Virtual Laboratory Fading Channel & Mobile Communications, http://203.110.240.139/ (MHRD, Rs.53.00 Lakhs)

**Patents (filed / granted)**

1. A Method for Ensuring High Volp Capacity in LTE
2. A method to obtain high data rate and continous service over multiple radio access networks
3. A novel multirate orthogonal frequency division multiplexing system proposal to reduce intercarrier interference
4. Enhancing spectral efficiency of OFDM systems by Data Transmission over Pilot Tones
5. Method and Apparatus for Generating Multiple Sets of Codes for Spread Spectrum based Communication Systems
6. Method and System for Handling Interference Between a Low Power Network and a High Power Network
7. Method and System for Identifying an Emergency Signal of an Electronic Device by a Coordinator Device
8. Method and System of Frequency Synchronization for Sub-Band Multicarrier based Wideband Systems
9. Method and System of Timing Synchronization at Sub-sampled rate for Sub-sampled Wideband systems
10. Methods and Devices for Handling Inter-Symbol Interference in a Sub-band Ultra-Wideband Communication Environment
11. Scalable Sub-Band Ultra-wideband Communication System
12. System and Method for Sub-sampled OFDM based Sub-band Wideband for Energy Efficient UWB and 60GHz Communications
13. Timing Synchronization Method and Apparatus in a Wireless Communication System

**Books Published**


**Papers Published in Journals**

1. Area Spectral Efficiency of Co-Channel Deployed OFDMA Femtocell Networks By Prabhu Chandhar, Suvra Sekhar Das IEEE Transactions on Wireless Communications accepted (2014)


Papers Presented in Conferences


5. Call Admission Control for Real-Time Traffic in OFDMA Based Cellular Networks, By Subhendu Batabyal, Suvra Sekhar Das, National Conference on Communications 2013, (NCC13), IIT Delhi, (2013)


Rajendra Mishra School of Engineering Entrepreneurship

Head
Prof. Partha Pratim Das

Assistant Professors
Bhattacharjee, Titas  Fellow of IIM Calcutta, Entrepreneurial Finance, Corporate Governance
Bhowmick, Bhaskar  FPM (IIM, Ahmedabad), Leadership and succession Strategies, Business Environment and Identifying Measures
Chakraborty, Basab  Ph.D.(IIT Madras), Nano Technology & New Material, Medical Devices & Imaging, Energy Management & Entrepreneurship
Roy, Ram Babu  Fellow, IIM Calcutta (Ph D), Big Data and Business Analytics, Healthcare Operations Management, Health Service Delivery Models, Complex Networks

New Academic Programmes

RMSoEE was founded at Indian Institute of Technology (IIT) Kharagpur in the year 2010 aims to shape entrepreneurial minds of the engineering students. The School imparts strong entrepreneurial culture and develops skills in venture creation for early and late start-ups. The school offers a 5 year integrated dual degree with M. Tech in Engineering Entrepreneurship and B. Tech in an Engineering discipline.

Brief Description of on-going activities

1. Entrepreneurial outreach: RMSoEE being a department of entrepreneurship works in tandem with the aim of providing facilities to the entrepreneurs, with the help of STEP/TBI, TIETS and E-Cell, the different supporting agencies and numerous programs organized at IIT-Kharagpur.
   -STEP-TIETS-TBI works as a conduit between IIT KGP and external world to facilitate technology transfer and convert research outcomes of entrepreneurs to commercially viable propositions. This year TIETS and TBI funded 7 start up companies of amount Rupees 96 Lakh.
   -The school provides the entrepreneurship training to faculties and students of other engineering schools. This year school conducted 2 FDP and 4 TEDP programs updating 30 faculties and 51 students.

2. Global Entrepreneurship Summit: It is the largest student-level entrepreneurial summit in India. The latest GES 2014 was scheduled at IIT Kharagpur from 10th-12th January, 2014.
   -1400 students from all over India participated.
   -Programs included:
     Start-up Camp,
     Connect the Dots,
     Elevator pitch,
     Panel Discussion,
     Innovation Exhibition,
     Founder’s Meet

3. International Summer and Winter Term on Big Data Analytics: RMSoEE is offering a course in
‘Big data analytics’ in the first International Summer and Winter Term (ISWT) started by Indian Institute of Technology Kharagpur in collaboration with reputed national and international faculty.


-The occasion was graced by the esteemed presence of Mr. Arindam Mukherjee, Chief Executive Officer, Alumnus Software Ltd. as the Chief Guest. Prof. Rajendra Singh, Dean(UGS), who was the officiating Dean(PGS&R), IIT Kharagpur presided over the function.

-The students presented their research through posters which evoked a lot of interest.

-The day closed with a panel discussion on University startup is an anti-cultural dream in India.

**Thrust Areas**

1. RMSoEE has identified four thrust areas of research and project implementations based on the strength and skill sets of faculties in the department;
   A. Business Analytics
   B. Health care Service delivery
   C. Energy Management and Entrepreneurship
   D. Start up Environment and ecosystem Analysis

The school is committed to design new courses in regular offerings and in Summer-Winter term schools in supporting to build up these areas. Faculties are also writing projects for in-house, national level and international level funding to strengthen the application areas. The academic team is designing teaching labs, research labs, and application labs to support the research and teaching activities in these identified and related fields.

**New Acquisitions**

1. A. **Innovation Lab**: I-lab is where innovations are born. Innovation Lab at RMSoEE, aims to produce entrepreneurially oriented competent individuals. Each student of RMSoEE is attached with innovation laboratory during their IIT learning journey. The lab provides
   1. Added the facility of web conferencing
   2. Added the facility of high performing printing for students
   3. Computing facility made for 24*7 hrs
   4. Networking with alumni and industrial associations broaden.

2. B. **Analytics Lab**: The analytics lab at RMSoEE is envisioned to provide hands-on training to the students and innovators on application of various analytical tools and techniques for business intelligence and business decision making. The lab would house necessary hardware platform and software tools for big-data analytics in health care and entrepreneurial ventures:
   1. Added Monte Carlo simulation software.
   2. Two work stations added with 2X Intel Xenon processor.
   3. Faculty computers are added with Intel Core i5-4500 series processors.
   4. Heavy duty scanner and printer added to faculty facilities.

3. C. **Modeling lab**: Lab will provide with access to high-end technologies revolving around computer modelling and visualization of multi-dimensional environments as they apply to nearly any discipline. A multitude of hardware and software technologies are combined in the 3D Lab, including Virtual Reality, Scientific Visualization, Imaging Technology, 3D Modeling and Animation, Computer Graphics, Rapid Prototyping:
   1. Experts on modelling through software are on collaboration.
   2. Multi color, multi material, multy nozzle 3D printer with 100 micron accuracy bought in the lab.
   3. Sourcing for input materials required for 3D modelling are done.
International Collaborations

1. Prof. I J Chiang, Taipei Medical University, Taiwan for a course in Big Data Analytic.
2. Prof. Paul Lillrank, Aalto University for research on healthcare management.
3. Dr. Ajit Kumar, Postdoctoral Fellow, Graduate Institute of Cognitive Neuroscience, National Central University, Taiwan for research in healthcare domain.
4. Prof Sanjay Mishra, University of Kansas, USA for research on Entrepreneurship and Innovation.

Lectures by Visiting Experts

1. Entrepreneurship and its challenges. by Mr. Arindam Mukherjee (CEO, Alumnus Software)
2. Social Entrepreneurship by Anjan Ghosh (Director, SINI)
3. Improving Productivity and Benchmarking by Dr. Palus Tokki (University of Alto, Finland)
4. The right time for Venture Capital by Dr. Saibal Roy (Founder, ARW)
5. Entrepreneurship by Arjun Sen (President and Board Member at PanIIT Alumni India. Founder, ZENMANGO)
6. Innovations in Health Care Services by Dr. Paul Lillrank (University of Alto, Finland)
7. Innovations at KVK: Case of Seva Bharati by Dr. Ranjan Kumar Sen (Seva Bharati)

Member - Professional Bodies

1. Roy, Ram Babu, Associate Member - The Institution of Electronics and Telecommunication Engineers (IETE)

Member - Editorial Board


Sponsored Research Projects

1. Faculty Development Programme (FDP) (Dept.of Science and Technology, Govt. of India, Rs.175000.00 Lakhs)
2. SUPPORT OF ENTREPRENEURIAL AND MANAGEMENT DEVELOPMENT OF SMES THROUGH INCUBATORS (SEI) (Ministry of MSME, Govt. of India, Rs.17.29 Lakhs)
3. SUPPORT TO TEPP OUTREACH CUM CLUSTER INNOVATION CENTRE (TOCIC) AT INDIAN INSTITUTE OF KHARAGPUR UNDER PROMOTING INNOVATIONS IN INDIVIDUALS, START-UPS (DSIR, NEW DELHI, Rs.12.00 Lakhs)
4. Technology based Entrepreneurship Development Programme (EDP) (Dept.of Science and Technology, Govt. of India, Rs.1200000.00 Lakhs)
5. TECHNOLOGY BUSINESS INCUBATOR (TBI) (Department of Science and Technology, Govt. of India, Rs.20.00 Lakhs)
6. Technology Incubation and Development of Entrepreneurs (TIDE) (Department of Information Technology, Govt of India., Rs.1.55 Lakhs)
7. Technology Refinement & Marketing Programme (TREMAP) (TIFAC, Department of Science & Technology, Goverment of India, Rs.40.00 Lakhs)
8. TEPP OUTREACH CENTRE (TPP) (Department of Science & Technology (DST), Government of India, Rs.6.00 Lakhs)

Invited Lectures by Faculty Members

1. Entrepreneurship by Bhowmick, Bhaskar (IMI KOLkata)
2. Entrepreneurship and New Ventures by Prabha Bhola (Bhubaneswar (EMBA, VGSoM))
3. Business valuation by Bhattacharjee, Titas (Institute of Chartered Accountants of India)
4. Entrepreneurial Finance in Faculty Development Programme by Bhattacharjee, Titas (STEP, IIT Kharagpur)
5. Entrepreneurship and Social Impact by Bhowmick, Bhaskar (STEP IIT Kharagpur)

**Short-Term Courses, Training Programmes and Workshops organised**

1. Big data analytics (Two weeks (to be offered in summer*))

**Papers Published in Journals**


**Papers Presented in Conferences**

Rajiv Gandhi School of Intellectual Property Law

Head
Prof. Khushal Vibhute

Associate Professors
Dube, Dipa  
Ph.D. (Calcutta University), Crimes against Women

Dube, Indrajit  
Ph.D. (Calcutta University), Corporate Law & Governance, Environmental Governance, Competition Law

M. Padmavati  
Ph.D. (Central Univ. Hyderabad), Plant Metabolic Pathways Drug regulation Biodiversity Bioenergy IP and commercialisation

Raju, K. D.  
Ph.D. (JNU), International Law, Intellectual Property Law, International Trade Law

Assistant Professors
Basu, Arindam  

Shankar, Uday  

Shreya, Matilal  
LL.M. (Case Western), Secondary Copyright Infringement

Shukla, Gaurav  
L.L.M (D.A.V.V. Indore), Direct & Indirect Taxation, International Taxation, Civil Laws

Subramanian  
LLM (Germany), Ph.D. (Nagpur Univ.), International law, International Human Rights law, International Investment law

Faculty Appointments
Mr. Gaurav Shukla  
Assistant Professor

Brief Description of on-going activities

TIFAC Eastern Region "Women Scientist Scholarship Scheme" Program

Research in Corporate Legal Affairs with special reference to Corporate Governance under the IICA


Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur

Plant Metabolic Pathway Laboratory

Implementation of Feature in the Indian Patent Office Search Platform-IPATS

GI Registration and Post Registration Measures of Traditional Handloom Textiles from Orissa
Intellectual Property Education, Research and Public Outreach Program

Legal & Policy Framework in Renewable Energy Sector: A Study of Eastern India

Corporate Governance in Energy Sector in India

Thrust Areas

1. Intellectual Property Law
2. Corporate Laws
3. Environmental Laws
4. Criminal Law
5. Public Law
6. International Law
7. Energy Law

Lectures by Visiting Experts

1. The Development of Criminology by Prof. B.B. Pande (Ex- Prof. Delhi University)
2. Code of Criminal Procedure by Mr. Sujit Kumar Nandi (Professor, KIIT Law School and Ex-Faculty, State Judicial Academy)
3. Judicial Accountability by Prof. M.P. Singh (Vice Chancellor, NUJS)
4. Working of World Bank by Mr. Bajor Mehta (World Bank Senior Urban Specialist)
5. Legal Research Methodology by Prof. Ishwar Bhat (Vice Chancellor, NUJS Kolkata)

Doctoral and MS Degrees Awarded

1. Gaurav Choubey : Utility Patents in India (LL.B.)
2. Sriram Chakraborty : Corruption and Good Governance in India (LL.B.)
3. Umang Srivastava : Access to Justice in India (LL.B.)
4. Anand Singh : Corporate Crime (LL.B.)
5. Ankush Verma : Drug Pricing: Looking through the prism of Human Rights (LL.B.)
7. Jogeshwar K.P. Mishra : Performers Right- The Indian Understanding (LL.B.)
8. Sunil Phatak : Top Management Succession and Corporate Governance (LL.B.)
9. Rajeev Gupta : Joint venture and Competition in India (LL.B.)
10. Aparup Pakhira : Corporate Structure & Governance (Ph.D)
11. M.P. Ram Mohan : Transboundary Nuclear Liability Regime (Ph.D)
13. Adhar Kashyap : decision Model to Prioritize and Select Urban Infrastructure Projects (M. Tech)

Member - Professional Bodies

1. M. Padmavati, Life Member - Biotech Research Society of India
2. M. Padmavati, Member - International Patent Information User Group
3. M. Padmavati, Member - Biotech Consortium India Limited
4. M. Padmavati, Member - Association of Teachers and Researchers in IP (ATRIP)
5. M. Padmavati, Member - World Bioenergy Association
6. M. Padmavati, Member - Scientific Committee Member, Food Safety Standards Authority India
7. M. Padmavati, *Member* - West Bengal Science and Technology Council
8. Dube, Indrajit, *Academic Member* - European Corporate Governance Institute, London
10. Dube, Dipa, *Life* - Indian Society of Criminology
11. Dube, Dipa, *Regular* - International Society of Victimology
12. Raju, K. D., *Nominated* - IUCN CEL
13. Raju, K. D., - High Power Committee Appointed by the High Court of Calcutta on Wetlands
14. Raju, K. D., *Life Member* - Indian Society of International Law
15. Shankar, Uday, *Individual Member* - International Association of Constitutional Law
16. Shankar, Uday, *Individual Member* - Indian Society of International Law
17. Basu, Arindam, *Member* - International Environmental Association
18. Basu, Arindam, *Member* - Greenpeace India
19. Subramanian, *Associate Member* - Indian Society of International Law
20. Subramanian, *Member* - British Institute of International and Comparative Law
21. Subramanian, *Member* - Society for International Economic Law
22. Vibhute, Khushal, *Member* - Research Advisory Committee of the Research Unit for Socio-Legal Studies, University of Calgary, Alberta, Canada
23. Vibhute, Khushal, *Life Member* - Indian Law Institute, New Delhi
24. Vibhute, Khushal, *Member* - IUCN Academy of Environmental Law, Ottawa, Canada
25. Vibhute, Khushal, *Life Member* - Indian Society of International Law, New Delhi
26. Vibhute, Khushal, *Life Member* - Environmental Scientists' Association of India
27. Vibhute, Khushal, *Member* - International Jurists’ Organization (Asia)
28. Vibhute, Khushal, *Member* - South Asian Society of Criminology and Victimology (SASCV)

**Member - Editorial Board**

3. Dube, Indrajit (2011) *Member* - Public Administration Research
8. Subramanian (2012) *Member, Board of Editors* - International Journal of Legal Studies and Research

**Sponsored Research Projects**

1. Bioactive peptide synthesis from honey protein and its characterisation (CSIR, Rs.18.42 Lakhs)
2. Corporate Governance in Energy Sector in India (National Foundation For Corporate Governance, New Delhi, Rs.4.00 Lakhs)
3. Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur (Dept. of Infromation Technology, Rs.115.00 Lakhs)
4. Ganga River Basin Management Plan - Policy, Law & Governance (Ministry of Environment, Rs.30.00 Lakhs)
5. IICA Hub (Ministry of Corporate Affair, Rs.40.00 Lakhs)
6. Intellectual Property Education, Research and Public Outreach (MHRD, New Delhi, Rs.76.00 Lakhs)
7. Legal and Policy Framework in Renewable Energy Sector: A Study of Eastern India (ISIRD, Rs.4.84 Lakhs)
8. Plant Metabolic Pathway Laboratory (MHRD, Rs.43.00 Lakhs)

Consultancy Projects

1. Analyzing European and US patent cases (Longbow Legal Ltd., Rs.4.00 Lakhs)
2. GI Registration of Traditional Handloom Textiles from Orissa (Department of Textiles, Government of Orissa, Rs.19.00 Lakhs)
3. Optimum Utilisation of Land Resources (GreenInfra Creation Pvt. Ltd., Rs.2.50 Lakhs)
4. Post Registration Measures of Sambalpuri Bandha Saree & Fabrics and Sonepur Saree & Fabrics (The Apex Handloom Weavers Co-operative Society (Boyanika), Odisha, Rs.4.00 Lakhs)
5. Study on Implementation of features in the Indian Patent office Search Platform, IPATS (Siddhast Ip Innovation Pvt) Ltd., Rs.6.00 Lakhs)

Visits Abroad by Faculty Members

1. Dube, Dipa - International Conference (Singapore, ) December 9-11, 2013
2. Dube, Indrajit - To attend workshop on Responsibility and Accountability of Corporate Ownership, Copenhagen Business (Copenhagen, Denmark, ) 9th to 10th May

Invited Lectures by Faculty Members

1. Arbitration under the MSME Act by Subramanian (National University of Juridical Sciences, Kolkata)
2. Novartis Judgement of Sec 3d by M. Padmavati (Chanakya Law University, Patna)
3. Welfare Implications in Pharma in Recombinant Drug segment by M. Padmavati (Competition Commission of India)
4. Invitation to judge Technology Law moot at Symbiosis Law School Pune by M. Padmavati (Symbiosis Law School Pune)
5. Panel Discussion Member of the 15th Year Celebration of Patent Information Centre Kolkata by M. Padmavati (Patent Informatics Centre, Kolkata)
6. Bioenergy plantations and impact on biodiversity by M. Padmavati (Goldman Public Policy School, University of Berkeley, CA, USA)
7. Sec 3d of the Indian Patent Act: Defining Metrics by M. Padmavati (University of Washington, Seattle, USA)
9. Expert Member for the National Workshop on TK and ABS- A national Dialogue by M. Padmavati (Hyderabad)
10. Medicinal Plants by M. Padmavati (School of Natural Product Studies, Jadavpur University)
11. Benifit sharing of GIs in Orissa by Raju, K. D. (Sambalpur)
12. 3 Lectures on Business Method Patents by Raju, K. D. (DIT IPR Course Content Preparation)
13. Models of Corporate Law & Governance by Dube, Indrajit (Gujarat National Law University, Gandhinagar, Gujrat)
14. Comprehensive Legislation on Ganga River Basin Management by Dube, Indrajit (Save Ganga Mission, Mumbai)
15. Role of Regulatory Agencies in Developing Business Laws in India by Dube, Indrajit (National University of Study and Research in Law, Ranchi)
16. Sustainable Development through an Inclusive Approach. A myth or a fallacy? by Dube, Indrajit (ECO Build India,, Mumbai)
17. Trafficking of Women - A Legal Perspective by Dube, Dipa (Vidyasagar University, Midnapore)
18. Role of Women in Criminal Justice System by Dube, Dipa (National Judicial Academy, Bhopal)
19. Legal Research Methodology – Reflections & Relevance by Vibhute, Khushal (WB National University of Juridical Sciences (NUJS))
20. Hypothesis and Research Design in Legal Research by Vibhute, Khushal (WB National University of Juridical Sciences (NUJS))
21. Contribution of Supreme Court in the Development of Criminal Law and Human Rights during 2013 by Vibhute, Khushal (National Judicial Academy of India, Bhopal)
22. Criminal Justice System in India: An Overview by Vibhute, Khushal (National Judicial Academy of India, Bhopal)
23. Panel Discussion (Session Co-chair): Contribution of High Courts in Development of Criminal Law by Vibhute, Khushal (National Judicial Academy of India, Bhopal)

Books Published

1. Dr. Raju KD: Company Directors - Supplement published by Eastern Law House (2014)

Papers Published in Journals

10. How Important is Water - As a Human Right in India By Himanshu Shekhar, Uday Shankar and Dipa Dube Indian Human Rights Law Review Vol. 4, No.1, 129 (2013)

12. Is Corporate Succession Plan Important? Reading From India By Indrajit Dube & Sunil Phatak *Journal on Governance* (2013)


17. Public Opinion in the Wake of Nirbhaya Gang Rape- Ominous Signs for India By Dipa Dube *Journal of Advanced Research in Management & Social Science* Vol. 3(1), 89-103 (2014)

18. Role of Independent Director in Corporate Governance - Reference to India By Indrajit Dube & Aparup Pakhira *Journal of Corporate Board: Role, Duties and Composition* Vol 9 Issue 1 p 50 (2013)


**Papers Presented in Conferences**


5. Cyber Crimes Against Women, By Nilima Sarangi, Dr. Raju KD and Dr. Dipa Dube, *37th All India Criminology Conference*, National Law School, Patiala, (2014)


8. GI Benifit Sharing, By Shivangi Tiwari and Dr. Raju KD, *National Conference on IPR*, Delhi University, (2014)


Ranbir and Chitra Gupta School of Infrastructure Design and Management

Head
Prof. Uttam Kumar Banerjee

New Academic Programmes

The School currently offers one M.Tech programme in "Infrastructure Design and Management". The first batch of M.Tech students has been admitted during the 2008-2009 academic year

Brief Description of on-going activities

The school was inaugurated by Padma Bhushan Professor Lord Shusantha Kumar Bhattacharyya of Warwick Manufacturing group on 18th of August 2008 (Institute Foundation Day). An advisory Council comprising eminent experts from different fields as external experts has been constituted. The first meeting of teh advisory council meeting was held on 29th March 2009

Thrust Areas

1. Transportation engineering (Planning, design, operation and management of highways, airport and seaport infrastructure) Environmental Engineering (Planning, design, operation and management of water supply and waste management systems, Environmental Impact Assessment) Facilities Infrastructure (Urban infrastructure planning and design, Facility programming and specialized building design, building automation systems design, building management systems, regional infrastructure planning and construction) Power systems (Planning, design, operation and management of Thermal, hydel and Nuclear Power Plants, Renewable Power Plants, Power generation, transmission and distribution, power system planning and reliability) Infrastructure Project management Infrastructure Financing and Infrastructure Regulatory Issues

New Acquisitions

1. The school has acquired 10 desk top computers, PRIMAVERA and MX Roads softwares
School of Information Technology

**Head**
Prof. Rajib Mall

**Professors**
Ghosh, Soumya Kanti  
*Ph.D.*, Geospatial Database and Web Services, Network Security, Cloud Computing

Gupta, Arobinda  
*Ph.D. (Iowa)*, Distributed Systems, Mobile Computing

Sural, Shamik  
*Ph.D.*, Information and System Security, Image and Video Processing

**Associate Professors**
Misra, Sudip  

Samanta, Debasis  
*Ph.D. (IIT Kharagpur)*, Biometric Based System security, Big Data Security and Analysis, Human Computer Interaction, Computational Intelligence

Sreenivasa Rao, Krothapalli  
*Ph.D. (IIT Madras)*, Speech Processing, Multimedia Signal Processing, Pattern Recognition, Neural Networks

**Assistant Professor**
Sahay, Rajiv Ranjan  

**Brief Description of on-going activities**

Computer and Communication Networks: Development of architectures, protocols and algorithms for mobile ad-hoc networks, vehicular ad-hoc networks, wireless sensor networks and wireless mesh networks, smart grid communications, cloud computing. Geographical Information System: Enterprise-wide GIS database development and its policies and protocols to make it accessible as platform independent and support for decision making are under research and development. Human Computer Interaction: Development of user interfaces for the under privileged users such as language illiterate, physically disabled etc. Application of Information Communication Technology (ICT) for the mass such as multimodal interaction, multimodal text composition mechanism, user modeling, interface adaptation, personalization, evaluation are the some areas of research. Computational modeling to brain for informatics, cognitive behavior is also another active area of research. Speech Processing: Researchers working in this area are focusing on characterization and incorporation of emotions in speech, speaker recognition system for handheld devices in varying background environments and development of Text-to-Speech (TTS) system for Indian languages. Network Security: Various areas of network security are being explored, like penetrating testing, development of new algorithms for cryptography, their efficient and attack-resistant hardware implementation etc. Systems Security: Survivable information system architecture to tolerant with potential information warfare attacks is under development. Such systems are typically characterized by the presence of a

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large repository of sensitive data in a distributed environment. The architecture takes into account the presence of multiple operating systems and database platforms, their known and potential vulnerabilities as well as possibilities of simultaneous attacks from adversaries. It will be developed as a generic model which can be used to build specific information systems in a number of application domains like e-governance, finance and insurance, education, etc.

**Thrust Areas**

1. Distributed computing, wireless ad hoc and sensor networks, cloud computing, ubiquitous computing, network security, database systems and data mining, systems security, human computer interaction, geographical information system, speech processing, computer vision, VLSI design.

**International Collaborations**

1. Prof. Gerhard Rigoll, Dept. of EE, Technical University of Munich, Germany 2. Prof. V. Atluri, Dept. of MSIS, Rutgers University, USA

**Lectures by Visiting Experts**

1. A computational framework for exploring the role of speech production in speech processing/recognition by Dr. Prasanta Kumar Ghosh (University of Southern California (USC), Los Angeles, USA)
2. GCC Complier Design Reserach by Prof. U. P. Khedkar (Indian Institute of Technology Bombay)
3. Cell Phone – the Most Trusted Personal Device (MTPD) for Universal Applications by Dr. Amalendu Chatterjee (Univista Inc. USA)

**Member - Professional Bodies**

1. Sural, Shamik, *Senior Member* - IEEE
2. Samanta, Debasis, *Senior Member* - IEEE
5. Sreenivasa Rao, Krothapalli, *Regular member* - International Speech Communication Association (ISCA)
7. Sreenivasa Rao, Krothapalli, *Senior Member* - IEEE
8. Misra, Sudip, *Senior Member* - IEEE
10. Sahay, Rajiv Ranjan, *Member* - IEEE

**Member - Editorial Board**

1. Misra, Sudip (2011) *Associate Editor* - EURASIP Journal on Wireless Communications and Networking
4. Misra, Sudip (2011) **Associate Editor** - Security and Communication Networks (Wiley)
5. Misra, Sudip (2011) **Editorial Board Member** - IET Networks
7. Misra, Sudip (2011) **Associate Editor** - Telecommunication Systems Journal (Springer SBM)
8. Samanta, Debasis (2009) **Member of the Editorial Board** - International Journal of Communication Networks and Distributed Systems
10. Samanta, Debasis (2008) **Member of the Editorial Board** - ICFAI University Journal of Information

**Awards & Honours**

1. Misra, Sudip (2013) **Best Paper Award in CITS 2013 (Computer Systems Track)**, Piraeus-Athens, Greece
3. Misra, Sudip (2012) **IEEE ComSoc Asia Pacific Outstanding Young Researcher Award** (Awarded during APB Meeting, IEEE GLOBECOM, USA)

**Sponsored Research Projects**

1. Accurate analysis of vocal folds activity for speech and biomedical applications (AVS) (MHRD, Govt. of India., Rs.33.00 Lakhs)
2. Centre of Excellence in robotics (CEE) (SRIC, IIT Kharagpur, Sponsored Research & Industrial Consultancy, IIT Kharagpur, Rs.531.75 Lakhs)
3. Characterization and incorporation of emotions in speech (ISIRD, IIT Kharagpur, Rs.3.00 Lakhs)
4. Decoding and exploring ancient classification of Indian music through machine learning method and audience response (ITA) (MHRD, Govt. of India., Rs.150.00 Lakhs)
5. Design and Development of Integrated Security Risk Management for an Enterprise Network (Department of Information Technology, New Delhi, Rs.73.13 Lakhs)
7. Development of an GeoSMS Framework to facilitate Location based Services (DST, New Delhi, Rs.26.85 Lakhs)
8. Development of Feasibility Assessment Model for Adaptation of Underground Coal Gasification Technology in the North-East Region of India (Department of Electronics and Information Technology, Govt. of India, Rs.32.14 Lakhs)
9. Development of text to speech (TTS) synthesis system for Indian languages (Phase-II) (Department of Information Technology, Govt. of India., Rs.97.94 Lakhs)
10. Measurement to Management (M2M): Improved Water Use Efficiency and Agricultural Productivity Through Experimental Sensor Network (ITRA, Media Lab Asia, Rs.155.64 Lakhs)
11. Prosodically guided phonetic engine for searching speech databases in Indian languages (Department of Information Technology, Govt. of India., Rs.60.38 Lakhs)
12. Speaker recognition system for handheld devices in varying background environments (Department of Science and Technology, Govt. of India., Rs.23.03 Lakhs)
13. Standardization of Virtual Keyboards in Indic Languages (Department of Electronics and Information Technology (DeitY), Rs.22.00 Lakhs)
14. Synthesis of Low Power High Performance Mixed VLSI CMOS Circuits (Department of Science and Technology, Govt. of India, Rs.26.00 Lakhs)
15. Target tracking in Distributed Wireless Sensor Networks in the Presence of Misbehaving Nodes (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)

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16. Towards Robust, Efficient and Secure Data Acquisition in Underwater Sensor Networks (Department of Electronics and Information Technology, Govt. of India, Rs.54.22 Lakhs)
17. Virtual Lab in Software Engineering (Ministry of Human Resource Development, Rs.42.00 Lakhs)
18. Virtual Labs: Advanced Network Technology (MHRD, Rs.35.00 Lakhs)
19. Virtual Labs: Software Engineering (MHRD, Rs.35.00 Lakhs)

Consultancy Projects

1. Checking Border Violation by Civilians Through Technological Solution (Border Security Force (BSF), India, Rs.3.06 Lakhs)
2. Design & Development of a Penetration Testing and Security Assessment Tool, (Ministry of Defence, New Delhi, Rs.49.00 Lakhs)

Patents (filed / granted)

1. Recovering 3D structure using blur and parallax, Rajiv R. Sahay and A.N. Rajagopalan

Visits Abroad by Faculty Members

3. Misra, Sudip - Avail Humboldt Fellowship (Hamburg, Germany, ) May-July 2013
5. Misra, Sudip - Attend conference (Cagliari, Sardinia, Italy, ) July 2013

Invited Lectures by Faculty Members

1. Routing in Delay Tolerant Networks by Gupta, Arobinda (IIT Guwahati)
2. Self-Stabilizing Distributed Algorithms by Gupta, Arobinda (ISI Kolkata)
3. Distributed Algorithms by Gupta, Arobinda (NIT Durgapur)
4. Speech Interface to Mobile Phones by Sreenivasa Rao, Krothapalli (PVP Siddartha Institute of Technology, Vijayawada, Andhra Pradesh)
5. Challenges in Text-to-Speech Synthesis by Sreenivasa Rao, Krothapalli (Balasore Engineering College, Balasore, Orissa.)
6. Gait Based Human Recognition by Sural, Shamik (American Chamber Of Commerce in India, Kolkata)
7. Importance of Prosody in Various Speech Applications by Sreenivasa Rao, Krothapalli (NITK, Suratkal)
8. Speech Processing in Mobile Environments by Sreenivasa Rao, Krothapalli (V R Siddartha Engineering College, Vijayawada)
10. Acquisition and Incorporation of Prosody for Text-to-speech Synthesis by Sreenivasa Rao, Krothapalli (DAICT, Gandhi Nagar)
11. Crypto-Biometric System for Big Data Security by Samanta, Debasis (NIT Durgapur)

Books Published


Papers Published in Journals

14. Fingerprint Indexing using Minutiae-based Invariable Set of Multidimensional Features By Somnath Dey, Om Prakash Singh, Debasis Samanta International Journal of Biometrics (IJBM) Accepted (2014)
16. Hazy image enhancement based on the full-saturation assumption By Yangyang Xiang, Rajiv R. Sahay, Mohan Kankanhalli accepted in IEEE International Conference on Multimedia and Expo Workshops (ICMEW), San Jose, USA (2013)
27. Seeing through the fence: Image de-fencing using a video sequence By Vrushali S. Khasare, Rajiv R. Sahay, Mohan Kankanhalli accepted in IEEE International Conference on Image Processing (ICIP), Melbourne, Australia (2013)
30. Super-resolution de-fencing: Simultaneous fence removal and high-resolution image recovery using videos By Chetan S. Negi, Koyel Mandal, Rajiv R Sahay and Mohan Kankanhalli
By T. Ojha, M. Khatua and S. Misra  

32. Towards Full Network Virtualization in Horizontal IaaS Federation: Security Issues  
By Anant V Nimkar and Soumya K Ghosh  

33. Two-Stage Intonation Modeling using Feedforward Neural Networks for syllable based Text-to-Speech Synthesis  
By V. Ramu Reddy and K. Sreenivasa Rao  
Computer Speech and Language (Elsevier) Vol. 27, 1105-1126 (2013)

34. Word Prediction System for Text Entry in Hindi  
By Manoj Kumar Sharma, Debasis Samanta  
Transactions on Asian Language Information Processing (TALIP) Accepted (2014)

Papers Presented in Conferences

1. A Fault-Tolerant Routing Protocol for Dynamic Autonomous Unmanned Vehicular Networks,  
By S. Misra, P. V. Krishna, H. Agarwal, A. V. Vasilakos, V. Saritha and M. S. Obaidat,  

2. A mobility aware scheduler for low cost charging of electric vehicles in smart grid,  
By J. C. Mukherjee, A. Gupta, COMSNETS 2014, Bangalore, (2014)

3. A Syllable-Based Framework for Unit Selection Synthesis in 13 Indian Languages,  
By Hemant A Patil, K Sreenivasa Rao, N P Narendra et. al.,  
16th International Oriental COCOSDA Conference (IEEE Explore), Gurgaon, India, (2013)

4. An Administrative Model for Spatio-Temporal Role based Access Control,  
By Manisha Sharma, Shamik Sural, Vijay Atluri and Jaideep Vaidya,  

5. Analysis of Detection of Vowel Offset Point for Coded Speech,  
By Jainath Yadav and K. Sreenivasa Rao,  
6th International Conference on Contemporary Computing (IC3), IEEE Explore, Noida, India, (2013)

6. Analysis of Language Identification Performance based on Gender and Hierarchial Grouping Approaches,  
By Bellamkonda Bhaskar, Dipanjnan Nandi and K. Sreenivasa Rao,  
International Conference on Natural Language Processing (ICON-2013), CDAC, Noida, India, (2013)

7. Analysis of Spatial Autocorrelation for Accident Data Based on Spatial Decision Tree,  
By Shrutiilipi Bhattacharjee, Bimal Ghimire, and Soumya K. Ghosh,  
4th International Conference on Computing for Geospatial Research and Application (Com.Geo 2013), CA, USA, (2013)

8. Analysis of TRBAC with Dynamic Temporal Role Hierarchies,  
By Emre Uzun, Vijayalakshmi Atluri, Jaideep Vaidya and Shamik Sural,  
27th IFIP WG 11.3 Conference on Data and Applications Security and Privacy (DBSEC 2013), Newark, USA, (2013)

9. Automatic Phonetic and Prosodic Transcription for Speech Documents in Indian languages: Bengali and Oriya,  
By R Ravi Kiran, Sunil Kumar, Manjunath K E, Apoorv Chaturvedi, Biswajit Satapathy, Debadatta Pati and K. Sreenivasa Rao,  
International Conference on Natural Language Processing (ICON-2013), CDAC, Noida, India, (2013)

10. Automatic Phonetic Transcription for Read, Extempore and Conversation Speech for an Indian Language: Bengali,  
By Manjunath K E. and K. Sreenivasa Rao,  
National Conference on Communications (NCC-2014), IIT Kanpur, Kanpur, India., (2014)

11. Catastrophic Collision in Bio-nanosensor Networks: Does it really matter?,  
By N. Islam, S. Misra, J. Mahapatro, J. J. P. C. Rodrigues,  
24. Gait Recognition from Front and Back View Sequences captured using Kinect, By Pratik Chattopadhyay, Shamik Sural and J. Mukherjee, 5th International Conference on Pattern Recognition and Machine Intelligence, Kolkata, India, (2013)
26. High quality text-to-speech synthesis system with efficient duration models developed using coding schemes based on vowel production characteristics, By V. Ramu Reddy and K. Sreenivasa Rao, 13th International Conference on Intelligent Systems Design and Applications (ISDA-13), Universiti Putra Malaysia, Malaysia, (2013)


45. Toward Mining of Temporal Roles, By Barsha Mitra, Shamik Sural, Vijay Atluri and Jaideep Vaidya, 27th IFIP WG 11.3 Conference on Data and Applications Security and Privacy (DBSEC 2013), Newark, USA, (2013)

School of Medical Science & Technology

Head
Prof. Pranab Kumar Dutta

Associate Professors
Bhattacharya, Sangeeta Das  MD (Johns Hopkins Univ.), Evidence Based Health Policy, Internal medicine and pediatrics, Vaccine preventable diseases in HIV infected children, Global Health, Development of College Mental Health Programs in the Indian Scenario

Chatterjee, Jyotirmoy  Ph.D., Multimodal Medical Imaging-Analysis Regenerative Medicine Cancer Theranostics Natural Healing Agent

Chaudhury, Koel  Ph.D.(Delhi), Women’s Health, Oxidative stress and Infertility, Proteomics and Metabolomics for Biomarker Discovery and Understanding Disease Pathogenesis, Development of natural antioxidant nanoparticles

Das, Soumen  Ph.D (IIT Kharagpur), Microsystem Technology, MEMS BIOMEMS and Microfluidic devices, Electro-physiological characterisation of biospecies, Medical electronics

Dhara, Santanu  Ph.D.(IIT Kharagpur), Biomaterials and Regenerative Medicine: Fabrication Bioactivation Cell biology assay, Customized implant development, Bioactivation of Implant, Tissue Engineering, Near Net Shape Forming, Green machining, Medical Textile, 3D printing and Patterning, Dense and Porous Implants

Mandal, Mahitosh  Ph.D.(Jadavpur Univ.), Cancer Biology, Signal Transduction, Apoptosis, Cell Cycle, Angiogenesis, Drug Delivery, Multi Drug Resistance, Cancer Stem Cell

Manjunatha M  Ph.D. (IIT Madras), Bioinstrumentation & Biomedical Imaging, Functional Electrical Stimulation of Nerve and Muscle, Biosignal Processing, Neural Engineering and Retinal Prosthesis, Neurorehabilitation & Bio-Robotics

Mitra, Analava  Ph.D.(IIT Kharagpur), Natural Products Research, Drug encapsulation, Clinical trials, Pharmacoepidemiology

Assistant Professor
Chakraborty, Chandan  Ph.D.(IIT Kharagpur), Biostatistics & Medical Informatics, Computer Vision & Pattern Recognition for Medical Imaging Informatics, Computational Pathology & Neuroinformatics, Statistical Machine Learning & Computer Aided Diagnosis (CAD)

Faculty Appointments
Santanu Dhara  Associate Professor
Chandan Chakraborty  Associate Professor
Sangeeta Das Bhattacharya  Associate Professor

Faculty Re-employment
Prof. Sujay Guha  Professor on Re-employmen
**Brief Description of on-going activities**

- Development of micro-fluidic Biochips / Bio-MEMS for medical application.
- Laser speckle imaging of blood-flow in microcirculation.
- Development of statistical analyzer & disease pattern recognizer for Oral Pre-cancer and cancer.
- Design of an intelligent diagnostic tool through the extraction of diagnostic rules for asthma.
- Proteomics and reproductive health
- Vaccine preventable diseases in HIV infected children
- Integrated macro & micro-imaging on various healing & non-healing wounds including oral & breast precancer & cancer for their early characterization through image processing & analysis
- Physico-chemical characterization of natural wound healing agents for the development of wound dressing technology.
- Development of detailed database on respiratory rhythms for identifying their temporal & spatial characteristics in health & disease.
- Development of biodegradable scaffold for tissue engineering and wound research.
- In vitro screening of anti-diabetes molecules.
- Design of a three dimensional scaffold and drug delivery system in arthritic hip joint.
- Signal Transduction and cancer biomarker
- Oxidative stress and Infertility
- Development of natural antioxidant nanoparticles
- Proteomics and Metabolomics in Reproductive Health
- Neutraceuticals and Herbal medicine

**Thrust Areas**


**International Collaborations**

RIKEN, BSI Japan

**Lectures by Visiting Experts**

1. From Chromatin to Wiring by Prof. Adran Moore (RIKEN, BSI Japan)
2. New age surgery with pinhole techniques: from research lab to the hospital clinic by Dr. Shuvro H. Roy-Choudhury (Fortis Hospital)
3. Astrocytic modulation of in vivo neural activity and sensory plasticity by Professor Hajime Hirase (RIKEN, BSI Japan)
4. Nuclear Medicine by Dr. Soumen Roy (Tata Medical Centre)

**Doctoral and MS Degrees Awarded**

1. Saralasrita Mohanty : reverse Engineering Approach towards Development of Customized Dental and Maxillofacial Prostheses(Ph.D.)
2. Raunak Kumar Das : Epithelial Molecular Attributes for Evaluating malignant Potentiality of Oral Sub-Mucous Fibrosis(Ph.D.)
5. Anup Sharma : Effect of Diluted and Agitated Cardiotropic Drug Digitalis purpurea on Heart Conduction: A study on Indian Bufo Melanostictus(Ph.D.)
6. Vikram Venkatraghavan : Fuzzy Uniformity Index for Texture analysis(MS)
7. Lopamudra Das : Multi-Modal Pathobiological Attributes in Augmenting Cervical cancer Diagnostics(Ph.D.)
9. Saikat Kumar Jana : Effect of Oxidative Stress on the Pathogenesis and Endometrial Receptivity in women with Endometriosis and Therapeutic management using Duan Drug loaded Nanoparticles (Ph.D.)
10. Prabir Sarkar : Content based Microscopic Image retrieval for Leukemia recognition from Peripheral Blood Smears (MS)

**Member - Professional Bodies**

2. Chaudhury, Koel, *Life Membership* - The Society for Free Radical Research-India (SFRR-India)
3. Chaudhury, Koel, *Life membership* - Indian Society of Andrology
5. Chaudhury, Koel, *Life membership* - Indian Society of Biomaterials
7. Mandal, Mahitosh, *Associate Member* - American Society for Biochemistry and Molecular Biology
8. Mandal, Mahitosh, *Life Member* - Indian Association for Cancer Research
9. Mandal, Mahitosh, *Associate Member* - Indian Science Congress Association
10. Mandal, Mahitosh, *Life Member* - Physiological Society of India
11. Mandal, Mahitosh, *Associate Member* - American Association for Cancer Research
12. Chatterjee, Jyotirmoy, *Chairman* - Institutional Ethics Committee (IEC)
13. Chatterjee, Jyotirmoy, *Vice-President (Selected)* - Indian Association of Cancer Research-WB Chapter
14. Chatterjee, Jyotirmoy, *Member of BoS* - Board of Studies (BoS), CHST,BESU,Shibpur
15. Chatterjee, Jyotirmoy, *Project Reviewer* - DST, Govt of India
16. Manjunatha M, *Senior Member* - IEEE
17. Manjunatha M, *Life Member* - Bio-Medical Engineering Society of India
18. Manjunatha M, *Member* - The Institution of Engineers (India)
19. Manjunatha M, *Member* - International FES Society
20. Manjunatha M, *Senior Member* - IEEE-EMBS
21. Dharu, Santanu, *Member* - SBAOI
22. Dharu, Santanu, *Member (Annual)* - TERMIS
23. Dharu, Santanu, *Regular* - Society for Polymer Science, India
24. Dharu, Santanu, *Regular* - American Ceramics Society
25. Dharu, Santanu, *Member* - STEMRI
27. Chakraborty, Chandan, *Regular Member* - European Society of Human Reproduction and Embryology (ESHRE)
28. Chakraborty, Chandan, *Chairman, Institutional Review Board* - Tata Medical Center, Kolkata
29. Chakraborty, Chandan, *Regular Member* - Association for Computing Machinery (ACM)
30. Chakraborty, Chandan, *Regular Member* - Institute of Electrical and Electronics Engineers (IEEE)
31. Chakraborty, Chandan, *Life Member* - Indian Society for Medical Statistics (ISMS)
32. Chakraborty, Chandan, *Life Member* - Indian Science Congress Association (ISCA)
33. Mitra, Analava, *Life Member* - Indian Medical Association
34. Mitra, Analava, *Life Member* - IMA College of General practitioners
35. Mitra, Analava, *Member* - National Association of Psychologists
36. Mitra, Analava, *Member* - Centre of Applied Medicine Kathmandu-Nepal
37. Mitra, Analava, *Member* - Society for Advanced studies in Medicine and surgery
38. Das, Soumen, *Member* - IEEE
Member - Editorial Board

2. Chakraborty, Chandan (2012) *Member, International Editorial Board* - Artificial Intelligence Research (Canada)
20. Mitra, Analava (0) *Member* - World Journal of diabetes

Awards & Honours

1. Mandal, Mahitosh (2013) *Best Poster Award at Indian Association of Cancer Research Meeting at Delhi*,
2. Chakraborty, Chandan (2013) *DAE-Young Scientist Research Award from Dept of Atomic Energy, Govt. of India*
3. Chakraborty, Chandan (2012) *IBM Faculty Award, New York, USA*
4. Chakraborty, Chandan (2012) *IBM-Shared University Research Award*
5. Chakraborty, Chandan (2013) *IBM-Shared University Research Award*
7. Mandal, Mahitosh (2012) *Sm Subha Mukherjee Memorial Award by the Physiological Society of India*

Sponsored Research Projects

1. Assessment of endometrial receptivity and its correlation with sub endometrial blood flow (SEBF) in women with latent genital tuberculosis (ICMR, Rs.30.86 Lakhs)
2. Centre of excellence for training and research in microfluidics (IIT Kharagpur, Rs.251.00 Lakhs)
3. Characterization and Grading of Brain Gliomas using MR images – A Computer Vision Approach (DAE-Young Scientist Research Award, Dept. of Atomic Energy, Govt. of India, Rs.13.30 Lakhs)
4. Computer-Aided Fundus image analyzer for Diabetic Retinopathy Screening (DBT, Govt of India, Rs.20.66 Lakhs)
5. Design & Feasibility Study of Versatile Low-cost Functional Electrical Stimulator (FES) for Hemiplegics (National Institute for the Orthopaedically Handicapped (Min. of Social Justice & Empowerment, GOI), Rs.16.50 Lakhs)
6. Development & realisation of silicon tunneling accelerometer (ISRO, Rs.35.00 Lakhs)
7. Development of a Statistical Analyzer based Computer Aided Diagnostic (CAD) System for Asthma (DST, Govt of India, Rs.13.00 Lakhs)
8. Development of biodegradable polymer encapsulated besifloxacin nanoparticles: a novel therapeutic approach for endophthalmitis (Netra Jyoti Seva Mandiram Veerayatan, Nalanda, Rajgir., Rs.7.56 Lakhs)
9. Development of Ceramics Based Bioactive Scaffold Through Bone Tissue Engineering (BSH) (CSIR, Rs.17.00 Lakhs)
10. Development of Dense and Porous Titanium Components via Powder Metallurgy Route for Biomedical Applications (DRDO, Rs.67.83 Lakhs)
11. Development of Pattern Recognition Algorithms for Quantitative Characterization of Ovarian Ultrasound and Doppler images (WBDSST, Rs.9.00 Lakhs)
12. Dielectric separation of biological cells in microfluidic channel (NPMASS, Govt. of India, Rs.10.80 Lakhs)
13. Early prediction of gestational hypertension (Pregnancy induced hypertension): A proteomics approach (Department of Biotechnology, Rs.22.38 Lakhs)
14. Engineered Silk Matrices for optimization of in vitro 3D Tumour Model (Indain Council of Medical Research, Rs.49.00 Lakhs)
15. Enhanced production, purification and characterization of marine bacterial lipopeptide as potential broad spectrum antimicrobial and anti cancer agent (Ministry of Earth Science, India, Rs.100.03 Lakhs)
16. Haptic Torch for Mobility of Visually Impaired and Blind People (SRIC, IIT KHARAGPUR, Sponsored Research & Industrial Consultancy, IIT Kharagpur, Rs.1.00 Lakhs)
17. Identification of potential biomarkers for the diagnosis of endometriosis: a proteomics approach (DST, Rs.25.20 Lakhs)
18. Improving Breast Cancer diagnosis and prognostication: Automated Multimodality Image Analytics to develop easily accessible quick throughput solutions (MHRD, Govt. of India, Rs.54.50 Lakhs)
19. Indian Origin Silk based biomimetic scaffords for engineering of load bearing tissue (Dept of Biotechnology, India., Rs.34.13 Lakhs)
20. Integrated Application of Multimodal Optical Coherence Tomography and Multispectral Imaging for Spatio - functional Characterization of Skin Towards i(IIT,Kharagpur (Announced on 08.03.2014), Rs.25.00 Lakhs)
21. Involvement of functional single nucleotide polymorphisms (SNP) of matrix metalloproteinase (MMP) gene promoters in the cell type specific regulation (DBT, Rs.52.00 Lakhs)
22. Metabolomics study of women with polycystic ovary syndrome (PCOS): A system biology approach (Department of Biotechnology, Rs.25.99 Lakhs)
23. Metabonomics study of Primary Open Angle Glaucoma (POAG) to understand underlying disease mechanism and hence development of new treatment strategies (Purnima Netralaya, Jamshedpur, Rs.12.00 Lakhs)
24. Pilot Program for Nutritional Intervention Amongst Primary School Children at Kashijora (IIT KGP, Rs.1.00 Lakhs)
25. Prevention of Pneumonia in Children with HIV infection (ICMR, Rs.55.00 Lakhs)
26. Role of long-term doxycycline as matrix metalloproteinase (MMP-2 and MMP-9) inhibitor in chronic obstructive pulmonary disease (COPD) (WB DST, Rs.4.65 Lakhs)
27. Sequence Dependent Molecular Action of ZD6474 with Paclitaxel and Radiation in Progress and Treatment of Breast Cancer (PRB) (DBT, India, Rs.35.00 Lakhs)
28. Structural & Molecular Characterization of Cutaneous Cells Behavior under Varied Physico-chemical Ambience towards Improving Skin Tissue Engg. (CCB) (SERB DST, Rs.51.65 Lakhs)
29. Test marketing of cotton lap/ cellulose pad substitute from jute (National Jute Board, Rs.19.20 Lakhs)
30. Therapeutic efficacy and bioavailability of various polyphenolics present in tea as an adjuvant in the treatment of Alzheimer’s Disease (NTRF, Rs.22.78 Lakhs)
31. To Evaluate the Clinical Efficacy of the Functional electrical Stimulation (FES) therapy in Stroke Survivors (Indian Council of Medical Research, Rs.20.00 Lakhs)

**Patents (filed / granted)**

1. A novel mask, designed to prevent dust particle-derived occupational hazard like pneumoconiosis, by a unique dual approach mechanism?
2. A process for fabrication of customized ceramic products by CNC machining of green ceramics compacts using diamond impregnated tool’ by S. Mohanty, S. Dhara
3. A process for Production of Collagen and By-Products from Fresh Water Fish Origin and Applications Thereof
4. Adaptive weighted local difference order statistics filter (US Patent application )
5. Anti Bacterial Hydrogel Composition and Application Thereof
7. **CHARGE BALANCED SELF ADJUSTING ELECTRICAL STIMULATOR FOR CORRECTING FOOT DROP PROBLEM**
8. Development of a sustained intestinal release o/w/o andrographolide emulsion for better organoleptic and therapeutic efficacy.
9. Digital Microscopy Equipment With Image Acquisition, Image Analysis and Image Communication
10. Formulation of a nutraceutical butter for treating psoriasis & eczema
11. iMEdiX to A multi-tier secure modular system for telemedicine and e-healthcare
12. In situ iodination with amine/hydroxyl derivatives for non-invasive imaging and other applications thereof
13. Method and apparatus for enhancing representations of microcalcifications in a digital mammogram image
14. Method and System for Analyzing Breast Carcinoma using Microscopic Image Analysis of Fine Needle Aspirates
15. Method and system for characterizing tissues in optical coherence tomography(Indian patent application)
17. VENUCANE: An Electronic Travel Aid for Visually Impaired Blind People

**Visits Abroad by Faculty Members**

1. Manjunatha M - For attending/presenting a paper at the 11th Vienna International Workshop on FES (Congress in Graz and a visit to TU Graz, Austria, ) September 19-21, 2013
2. Dhara, Santanu - Presenting our work (Wu-Zhen, Sanghai, China, ) 6 days
3. Manjunatha M - Taiwan-India Symposium on Medical Device Innovation (National Cheng Kung University, Tainan, TAIWAN, ) 9-10 Dec 2013
4. Mandal, Mahitosh - Collaborative Research Work (Virginia Commonwelth University, Richmond, USA, ) Mid May,2013- 30th June,2013
5. Mandal, Mahitosh - Conference (San Antonio, TX, USA, ) 10/12/2013 to 14/12/2013
6. Mandal, Mahitosh - Collaborative Research Work (M D Anderson Cancer Center, Houston, TX,USA, )
Invited Lectures by Faculty Members

1. pH-responsive gold niosome-mediated co-delivery of siRNA and thymoquinone induces Akt knockdown in t by Mandal, Mahitosh (KIIT, Bhubaneswar)
2. MEMS for space application by Das, Soumen (MEMS and Sensors at NIT Silchar)
3. Mobile Diagnostics - MEMS Perspective by Das, Soumen (College of Engineering and management, Kolaghat)
4. Microfabrication process and BioMEMS by Das, Soumen (IEEE Workshop on MEMS, Microfluidics & Microsystems With Hands-on training in Device Simulation and Microfabrication Process, at IIT Kharagpur)
5. Cell manipulation in microfluidic environment by exploiting their electrical properties by Das, Soumen (Jadavpur University)
6. Biomaterials by Dhara, Santanu (Materials Science IITKGP workshop)
7. Biomimetic Design and Fabrication for Tissue Engineering by Dhara, Santanu (NIT Silchar)
8. Fabrication aspects for Rehabilitation by Dhara, Santanu (Kolaghat Engineering College)
9. Wound Management by Dhara, Santanu (National Burn Centre, Mumbai)
10. Reverse Engineering Approach for Customized Fabrication of Implants by Dhara, Santanu (NIT Durgapur)
11. Tissue Engineering Strategy and Benefits by Dhara, Santanu (BESU)
12. In the opinion of the house – ‘Letrozole should be banned for use in ovulation induct by Chaudhury, Koel (ART-AIM UPDATE 2013, Kolkata)
13. Advancement in Biomedical Science & Technology by Manjunatha M (Tata Medical Center, Kolkata)
15. Software development for diabetic retinopathy screening by Chakraborty, Chandan (Pune, India)
16. Medical Imaging Informatics Approach for Disease Screening by Chakraborty, Chandan (NIT Durgapur)
17. Multimodal and Multi-Scale Imaging for Cancer & Regeneration Research by Chatterjee, Jyotirmoy (International Seminar on Technological Advances in Healthcare (TAH-2013), BESU, Shibpur)
18. Multi-modal developmental model in CSR-ECL mode by Mitra, Analava (ECL)
19. INTRODUCING BRAIN PLASTICITY AND NEURO-MODULATION : IN VIVO AND IN VITRO TECHNIQUES by Manjunatha M (Ravenshaw University, Cuttack)
21. FES in stroke and CP Rehabilitation: A Clinical Study by Manjunatha M (Indo-British Neurosciences Symposium at Institute of neurosciences Kolkata)
22. Improvement of gait and muscle strength with FES in sub-acute & chronic stroke patients by Manjunatha M (MANIPAL UNIVERSITY)
23. Thymoquinone synergistically enhances the efficacy of tamoxifen/diosgenin by inhibiting Akt mediated by Mandal, Mahitosh (Indian Association for Cancer Research)
24. Vaccine access in high risk children perspectives from pediatric HIV management West Bengal by Bhattacharya, Sangeeta Das (Christiana Health Systems, Newark Delaware)

Books Published


15. An EMG-control functional electrical stimulation (FES) system for restoration of gait in foot drop patients By Sukanta Kumar Sabut, Manjunatha Mahadevappa International Journal of Biomedical Engineering and Technology Accepted (2013)


20. Assessment of vascular health using photoplethysmograph and a Two-Pulse synthesis model for patients under hemodialysis with End Stage Renal Disease By Goswami, D., Mukhopadhyay, J., Chaudhury, K. 2013 Indian Conference on Medical Informatics and Telemedicine (ICMIT) 68-72 (2013)


32. Effect of total calorie consumed in breakfast, lunch, evening snacks and dinner in blood biochemistry profiles of Diabetics By Sutapa Mukherjee, Baishakhi Dey, Subhayan Das, Satyahari Dey, Analava Mitra Food Science and Technology 2(2), 15-19 (2014)


34. Effects of increased protein intake as a variant of rural diet in human volunteers of rural Bengal By Sutapa Mukherjee, Baishakhi Dey, Subhayan Das, Goutam Thakur, Chandan Chakraborty, Analava Mitra JMEDI Research in Press (2014)

51. Hunting for necrosis in the shadows of intravascular ultrasound By Debdoort Sheet, c, Corresponding author contact information, E-mail the corresponding author, E-mail the corresponD Sheet, A Karamalis, A Eslamia, P Noël, R Virmani, M Nakano, J Chatterjee, AK. Ray, Andrew F. L, S G. CarlierF, N Navab, A Katouzian Computerized Medical Imaging and Graphics 38 (2) :104-112 (2014)
53. Improvement of cellular uptake, in vitro antitumor activity and sustained release profile with increased bioavailability from a nanoemulsion platform By 6. Choudhury H, Gorain B,


60. Markers of oxidative stress in follicular fluid of women with endometriosis and tubal infertility undergoing IVF. By Singh, A.K., Chattopadhyay, R., Chakravarty, B., Chaudhury, K. Reproductive Toxicology Vol 42, Pg 116-124 (2013)


62. Modelling a BCI system to estimate FES stimulation intensity for individual stroke survivors in foot drop cases By M. Mahadevappa C. Shendkar P. Lenka A. Biswas R. Kumar Biomed Tech- Biomedical Engineering/Biomedizinische Technik.(Berlin) © 2013 ISSN (Online) 1862-278X 58 (Suppl. 1) (2013)


75. Role of 3D printing technologies in combating biomedical and drug delivery challenges By Prakash Katakam, Baishakhi Dey, Fathi H Assaleh, Shanta Kumari Adiki, Babu Rao Chandu, Analava Mitra Critical Reviews in Therapeutic Drug Carrier System Accepted (2014)

Papers Presented in Conferences

1. 1H NMR based metabolite profiling for understanding the complex relationship connecting oxidative stress with endometriosis,. By K. Chaudhury, S. K. Jana, M. Dutta, M. Joshi, S. Srivastava, B. Chakravarty., 69th Annual Meeting of American Society of Reproductive Medicine, Boston, (2013)
2. 1H NMR Based Serum Lipidomic Analysis in Women With Polycystic Ovarian Syndrome (PCOS), By Roy Choudhury, S., Chaudhury, K., Duttaray, C., Lodh, I. & Chakravarty, B., 3rd European Lipidomic Meeting, Pardubice, Czech, (2013)
7. Association Between Baseline Plasma HIV Viral Load And Nasopharyngeal Pneumococcal Colonization in Children with HIV Infection, By D. Robert, B.K. Arya, M. Mallick, S. Das

9. BI69A11, a novel small molecule inhibitor of AKT kinase with antitumor activity showed antiproliferative effect on colon cancer by induction of apoptosis, By Ipsita Pal, Mahitosh Mandal, Indian Association for Cancer Research, New Delhi, (2013)


13. CHARACTERIZING AND ELUCIDATING MOLECULAR PATHWAYS IN BREAST CANCER STEM CELLS, By Subhayan Das, Aditya Parekh, Mahitosh Mandal, Indian Association of Cancer Research, Tribandam, Kerala, India, (2014)


35. Modelling a BCI system to estimate FES stimulation intensity for individual stroke survivors in foot drop cases, By M. Mahadevappa C. Shendkar P. Lenka A. Biswas R. Kumar, 11th Vienna International Workshop on FES, Graz, Austria, (2013)


37. Non-invasive Optical Coherence Tomography Evaluation of Wound Healing Progression under Topical Application Honey with Immuno-histochemical Corroboration(Accepted), By


Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)

Inflammation in HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)


Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)

Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)

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Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)

Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)

Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)

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Pneumococcal Carriage In HIV Infected Children And Mothers From West Bengal, By BK Arya, S. Das. Bhattacharya, S K Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)


Role of follicular fluid concentrations of MMP-2, MMP-9 and their tissue inhibitors (TIMP-1, TIMP-2) on oocyte quality in PCOS women, By Gunja Bose, Elavarasan Subramani, Sanghamitira Ghosh, Ratna Chattopadhyay, Koel Chaudhury, Baidyanath Chakravarty, ART-AIM Update 2013, Kolkata, (2013)

Serum IL-10 is a predictive marker of poor endometrial receptivity in women with idiopathic recurrent spontaneous miscarriage, By A. Ganesh, P. Banerjee, B. Chakravarty, K. Chaudhury., 69th Annual Meeting of American Society of Reproductive Medicine, Boston, (2013)


Simulation of Electrode-Tissue Interface with Biphasic Pulse Train for Epiretinal Prosthesis, By S. Biswas, S. Das, and M. Mahadevappa, COMSOL Conference, bangalore, India, (2013)

Streptococcus pneumoniae, Staphylococcus aureus, and Haemophilus influenzae Nasopharyngeal Colonization in HIV Infected Children and Their Mothers During a
Haemophilus influenzae type b Vaccine Stu, By BK Arya, S. Das Bhattacharya, SK Niyogi et al., 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, (2014)


56. Thymoquinone alters Akt phosphorylation and mediates apoptotic induction in Human breast cancer cells, By Shashi Rajput, Mahitosh Mandal, ICSCC, New Delhi, (2012)
School of Water Resources

Head
Dhrubajyoti Sen

Assistant Professors

Tiwari, Manoj Kumar  Ph.D.(IIT Kanpur), Fate and transport of pollutants in water and soil mediums, Treatment of hazardous and persistent pollutants in surface and ground waters, Contaminated site management, Water/Wastewater treatment, Development of analytical protocols, Water Supply and Distribution

Faculty Appointments
Manoj Kumar Tiwari  Assistant Professor

New Academic Programmes

The M. Tech. Programme in Water Engineering and Management aims at professing the students with integrated and interdisciplinary approaches of water management involving hydrological, biophysical, chemical, economic, institutional, legal, and policy-planning aspects, to solve the ever-growing set of water-related challenges in industry, agriculture, and domestic sectors. The Programme is intended for professionals and researchers from a wide range of backgrounds. It aims to develop knowledge, insight and skills required to design, implement and evaluate water management policies and strategies. Graduates will be able to promote the judicious use of water and achieve effective governance of water resources.

Brief Description of on-going activities

A sponsored network project entitled "Land Use and Land Cover (LULC) Dynamics in Relation to Human Dimensions and Climate in Mahanadi River Basin, Orissa", funded by NRSC, Hyderabad, 2009-2014

A sponsored network project entitled “Interdisciplinary network for holistic environment system analysis, eco-system services, integrated modelling and sustainable resources management (INNO-ASIA)”, funded by the German Federal Ministry of Education and Research (BMBF), 2010-2014

A research project on “Development of a 1-D Transient Conservative Pollutant Transport Model for Meso-scale Application” is sponsored by SRIC, IIT Kharagpur under ISIRD to Dr. B. Sahoo, Assistant Professor for Feb. 2013 – Jan. 2015.


Thrust Areas

1. River basin planning and management (considering the aspects of flood, drought or contaminant)
2. Water and wastewater treatment and quality control
3. Urban, rural and industrial water supply and distribution systems
4. Remote sensing and GIS application in water resources
5. Water governance and policy issues
6. Irrigation and drainage system planning
7. Climate impact on water and environment

**New Acquisitions**

1. Double Ring Infiltrometer
2. Automatic Raingauge

**International Collaborations**


**Lectures by Visiting Experts**

1. Hydrodynamics / mixing and transport by Walter H. Graf (Professor, Laboratoire de recherches hydrauliques, Lausanne, Suisse)

**Member - Professional Bodies**

1. Sahoo, Bhabagrahi, *Life Member* - Indian Association of Hydrologists (IAH)
2. Sahoo, Bhabagrahi, *Regular Member* - American Geophysical Union (AGU)

**Member - Editorial Board**

1. Sahoo, Bhabagrahi (2013) *Associate Editor* - International Agricultural Engineering Journal (IAEJ)

**Sponsored Research Projects**

1. AI-based prediction of storm and inundation from Doppler weather radar (MHRD, Rs.26.44 Lakhs)
2. Development of a 1-D Transient Conservative Pollutant Transport Model for Meso-scale Application (ISIRD, SRIC, Rs.5.00 Lakhs)
3. Future of Cities (Management of Urban Water Supply Network) (MHRD, Rs.0.00 Lakhs)
4. INNO-ASIA networking project (Federal Ministry of Education and Research (BMBF), Germany, Rs.0.00 Lakhs)
5. Land Use Land Cover (LULC) Dynamics in Relation to Human Dimension and Climate in Mahanadi River Basin, Orissa (MRB) (Indian Institute of Remote Sensing (IIRS), Dehradun, Rs.12.80 Lakhs)

**Consultancy Projects**

1. Hydrological Data Analysis for Estimation of Monsoon and Lean E-flows of the Dri and Tangon Rivers in Arunachal Pradesh (EMAA) (Central Inland Fisheries Institute (ICAR), Barrackpore, Kolkata, Rs.0.50 Lakhs)
Books Published


Papers Published in Journals


Papers Presented in Conferences

Vinod Gupta School of Management

**Head**
Prof. Kalyan Kumar Guin

**Professors**
Guin, Kalyan Kumar  
*B.Tech. (IIT Kharagpur)*

Mukerjee, Prithwis  
*Ph.D. (Texas)*

Rajib, Prabina  
*Ph.D. (IIT Kharagpur)*, Corporate Finance, Derivatives (Financial & Commodity), Indian Capital Market

Sinha, Gautam  
*Ph.D. (IIT Kharagpur)*

Teltumbde, Anand

**Associate Professors**
Datta, Biplab  
*Ph.D (IIT Delhi)*, Marketing Management, Leadership and Teamwork, Services Marketing

De, Sadhan Kumar  
*Ph.D. (UK)*

Sahney, Sangeeta  
*Ph.D. (IIT Delhi)*, Quality in Education, Sales and Distribution Management, Services Marketing, Services Quality, Organizational Behavior, Marketing Management, Consumer Behavior

**Assistant Professors**
Arunprasad, P  
*Ph.D. (IIT Madras)*

Barai, Parama  
*Fellow (XLRI, Jamshedpur)*

Bhattacharya, Sujoy  
*Ph.D. (IIT&Mgt, Gualior)*, Data Analytics, Option Pricing, Quantitative Marketing

Madhavan, Vinodh  
*D.B.A. (USA)*, Credit Default Swap Indices, Long-Term Dependence, Nonlinear Time Series Analysis

Malik, Aradhna  

Mishra, Chandra Sekhar  
*Ph.D. (Utkal University)*, Financial Reporting and Analysis, Mergers and Acquisitions, Business Valuation, Financial Markets

Misra, Arun Kumar  

Mukhopadhyay, Susmita  
*Ph.D. (Calcutta Univ.)*, Organizational Health and spiritual health, Human Resource Management, Business Ethics, Microfinance, Competency Mapping

Pradhan, Rudra Prakash  

Sarkar, Ashutosh  
*Ph.D. (IIT Kharagpur)*

**Visiting Faculty**
Ghosh, Kunal Kanti  
*M.Tech. (IIT Kharagpur)*, Supply chain management

**Faculty Resignation**

P. Arunprasad  
Assistant Professor

Madhavan, Vinodh  
Assistant Professor

**New Academic Programmes**

Dual Degree Postgraduate programme in Financial Engineering with interested departments at IIT Kharagpur.

Launched 3-Year Executive MBA (EMBA) Programme in Kolkata and Bhubaneswar in July-September 2010.

**Brief Description of on-going activities**

Currently offering MBA, EMBA, MS, Dual Degree (B Tech + MS in Financial Engineering) and Ph.D. degrees.


Conducting Management Development Programs and In-House Training Programs for various industries.

**Thrust Areas**

1. Big Data Analytics including Financial Analytics, Marketing Analytics and HR Analytics
2. Banking, Derivatives and Risk Management,
3. Project Management

**New Acquisitions**

1. Bloomberg Real-time Database
2. AceEquity Financial Database

**International Collaborations**

Continuing collaboration with University of Nebraska, Omaha, and Creighton University

**Lectures by Visiting Experts**

1. India Awareness and Local Roots by Ms. Ranjini Manian (CEO, Global Adjustments)
2. Life beyond VGSoM by Mr. Shibaji Bose (Director, Consultree India)
3. CSR and Companies Bill by Mr. Jay Vikram Bakshi (CEO, Digiqom Solutions)
4. Overview of FMCG Industry by Mr. Chironmoy Chatterjee (COO, Perfetti Van Melle)
5. The Impact of Offshoring New Product Development (NPD) to Emerging Markets on Shareholder Value by Prof. Venkatesh Shankar (Professor, Coleman Chair in Marketing, Texas A&M University)
6. Steps to Entrepreneurship by Mr. Romit Choudhury (Co-Founder, Northwest College for Advanced Learning)
7. Big Data & Interpretation by Mr. Rohit Tripathi (VP- Product and Innovation, SAP Labs)
8. Global Trade, Tax and Social Justice by Dr. Krishen Mehta (Senior Advisor, Tax Justice Network)
9. Overview of Consulting Industry in India by Mr. Anubrata Chakraborthy (Director, Deloitte, Touche & Tomasu Consulting India)
10. Building Leadership Skills while at Business School by Mr. Ravi Santhanam (Founder - MetaDrsti Advisory)
11. Business of Entertainment by Mr. Narayan Ranjan (Chief Financial Officer at Viacom 18 Media Pvt. Ltd.)
12. B2B Marketing by Mr. Arun Kumar (Head, Channel management, Blue Star Ltd.)
13. Impact of Technology on the Securities Markets in India by Mr. Nehal Vohra (Chief Regulatory Officer, BSE India)
14. Corporate Communications by Ms. Vasudha Jha (Director, Kirkos Consultancy)
15. Made in India (Brand Empowerment) by Mr. Arnab SenGupta (“National Head - Modern Trade, B2B & Business Development Emami Biotech Limited”) 

**Doctoral and MS Degrees Awarded**

1. Shashwati Banerjee : Ultra Poor Migrants’ Survival Against Highly Irregular Income – A case study of few districts in West Bengal.(MS)
2. Subhasis Biswas : Relative and Informational Efficiency, Maturity Effect and Market Integration: An Empirical Study on select Indian Commodity Futures(Ph.D.)
3. Rakesh Arrawatia : Assessment and Implications of Competition in the Indian Banking Sector(Ph.D.)
4. Punyaslok Dhall : Factors affecting Buyer-Seller Relationship Sustainability in Small and Medium Enterprises in India(Ph.D.)
5. Shiv Shankar Tripathi : Development of Insights on Product and Service Innovations in Organisations(Ph.D.)
7. Rituparna Basu : Store Format choice In Emerging Retail Markets(Ph.D.)
8. Prasant Rout : A Strategic analysis of implementation and usage effectiveness of Enterprise Information systems in Indian Organisations(Ph.D.)
9. N.M.Leepsa : Post Merger and Acquisition Performance: Evidence from Manufacturing Companies in India(Ph.D.)
10. Swapan Purkait : A study of Phishing Attacks and Effectiveness of the Countermeasures(Ph.D.)

**Member - Professional Bodies**

1. Datta, Biplab, Regular - Council of Architecture
2. Sahney, Sangeeta, Member Category - All India Management Association
3. Sahney, Sangeeta, Member - Indian Society for Quality (ISQ) (Asian Network for Quality)
4. Pradhan, Rudra Prakash, Member - Eco-Ethic International Union, Germany
5. Pradhan, Rudra Prakash, Member - Society for Sustainable Infrastructure Development & Healthy Environment
6. Pradhan, Rudra Prakash, Senior Member - Multiple Criteria Decision Making, USA
7. Pradhan, Rudra Prakash, Member - Society for Infrastructure System
8. Pradhan, Rudra Prakash, Member - Indian Society for Probability & Statistics
9. Pradhan, Rudra Prakash, Member - Transportation Research Group of India
10. Pradhan, Rudra Prakash, Member - International Association of Financial Engineers
11. Pradhan, Rudra Prakash, Senior Member - Regional Science Association, India
12. Pradhan, Rudra Prakash, Member - Operational Research Society of India
13. Pradhan, Rudra Prakash, Member - International Project Finance Association
14. Pradhan, Rudra Prakash, Member - Sustainability Research & Policy Network
15. Pradhan, Rudra Prakash, Senior Member - Indian Econometric Society
16. Pradhan, Rudra Prakash, Member - Indian Institute of Banking & Finance
17. Pradhan, Rudra Prakash, Member - Indian Science Congress
18. Pradhan, Rudra Prakash, Member - Global Development Network
19. Mishra, Chandra Sekhar, Life Member - Indian Accounting Association
20. Sarkar, Ashutosh, Member - Production and Operations Society USA
21. Sarkar, Ashutosh, Life Member - Society of Operations Management
22. Sarkar, Ashutosh, Life Member - Indian Institute of Industrial Engineering
23. Malik, Aradhna, Member - American Psychological Association
24. Malik, Aradhna, Regular - Academy of Management
25. Malik, Aradhna, Member - Asian Society Against Dementia
26. Malik, Aradhna, Life Member - Society for Scientific Values
27. Malik, Aradhna, Mentor - National Mentoring Network
28. Malik, Aradhna, Regular - International Communication Association
29. Malik, Aradhna, Life Member - Indian National Portage Association
30. Mukerjee, Prithwis, Founder - ACM India Council - official India affiliate of the Association of Computing Machinery, US

**Member - Editorial Board**

5. Mukhopadhyay, Susmita (0) Member of editorial board - Psybernews
9. Nag, Barnali (0) Reviewer - Energy - The International Journal
10. Nag, Barnali (0) Reviewer - Energy Policy
11. Nag, Barnali (0) Reviewer - International Journal of Environmental Technology and Management
13. Nag, Barnali (0) Reviewer - International Journal of Environment and Waste Management
15. Nag, Barnali (2005) Associate Editor - South Asia Economic Journal
16. Pradhan, Rudra Prakash (0) Reviewer - Cities
17. Pradhan, Rudra Prakash (0) Reviewer - Journal of Research in International Business and Management
18. Pradhan, Rudra Prakash (0) Reviewer - Journal of Management and Business
19. Pradhan, Rudra Prakash (0) Reviewer - International Journal of Educational Research
20. Pradhan, Rudra Prakash (0) Reviewer - International Research Journal of Management and Business Studies
21. Pradhan, Rudra Prakash (0) Reviewer - International Journal of Peace and Development Studies
22. Pradhan, Rudra Prakash (0) Reviewer - Neural Computing and Applications
23. Pradhan, Rudra Prakash (0) Member - The Management Accountant
24. Pradhan, Rudra Prakash (0) Member - Journal of Social Welfare and Management
25. Pradhan, Rudra Prakash (0) Reviewer - Review of Economics and Finance
26. Pradhan, Rudra Prakash (0) Reviewer - Kindler
28. Pradhan, Rudra Prakash (0) Reviewer - Journal of Social and Management Sciences
29. Pradhan, Rudra Prakash (0) Reviewer - Universal Journal of Marketing and Business Research
30. Pradhan, Rudra Prakash (0) Member - International Journal of Economics and Management Sciences
31. Pradhan, Rudra Prakash (0) Reviewer - Review of Urban and Regional Development Studies
32. Pradhan, Rudra Prakash (0) Member - Australian Journal of Business and Management Research
33. Pradhan, Rudra Prakash (0) Reviewer - Journal of Management and Technology
34. Pradhan, Rudra Prakash (0) Member - Asian Economic and Financial Review
35. Pradhan, Rudra Prakash (0) Reviewer - British Journal of Economics, Management and Trade
36. Pradhan, Rudra Prakash (0) Reviewer - Arth Anvesan
37. Pradhan, Rudra Prakash (0) Reviewer - South Asian Journal of Management
38. Pradhan, Rudra Prakash (0) Reviewer - Malaysian Journal of Economic Studies
40. Pradhan, Rudra Prakash (0) Member - International Journal of Financial Research
41. Pradhan, Rudra Prakash (0) Reviewer - African Journal of Economic and Management Studies
42. Pradhan, Rudra Prakash (0) Member - Pragyaan
43. Pradhan, Rudra Prakash (0) Reviewer - South Asia Economic Journal
44. Pradhan, Rudra Prakash (0) Member - ARASH
45. Pradhan, Rudra Prakash (0) Member - African Journal of Science and International Relations
46. Pradhan, Rudra Prakash (0) Reviewer - Energy Systems
47. Pradhan, Rudra Prakash (0) Member - International Journal of Happiness and Development
48. Pradhan, Rudra Prakash (0) Member - Journal of Management and Strategy
49. Pradhan, Rudra Prakash (0) Reviewer - Economic Modelling
50. Pradhan, Rudra Prakash (0) Reviewer - Journal of Social Sciences
51. Pradhan, Rudra Prakash (0) Reviewer - Journal of Developing Areas
52. Sahney, Sangeeta (2012) Member of Review Committee - Globsyn Management Journal
54. Sahney, Sangeeta (2012) Member of Review Committee - The TQM Journal
55. Sahney, Sangeeta (2012) Member of Review Committee - The International Journal of Organizational Analysis
57. Sahney, Sangeeta (2012) Member of Editorial Advisory Board - Emerald Emerging Markets Case Studies
58. Sahney, Sangeeta (2012) Member of Review Committee - Quality Assurance in Education
59. Sahney, Sangeeta (2012) Member of Review Committee - The International Journal of Business and Information
60. Sahney, Sangeeta (2012) Member of Editorial Board - The International Journal of Engineering, Science and Technology
61. Sahney, Sangeeta (2012) Member of Editorial Board - The International Journal of Business, Management and Social Sciences

Awards & Honours


Sponsored Research Projects

1. A Comparative Assessment of Performance of Select Institutes of Higher Education. (Indian Council of Social Science Research, ICSSR, Rs.4.86 Lakhs)
2. Econometric Modelling on Data Analysis (Rs.5.00 Lakhs)
3. Econometric Modelling on Time Series (Rs.2.50 Lakhs)
4. Money management Issues and Practices of the Ultra Poor Populations in West Bengal (ISIRD, Rs.0.00 Lakhs)
5. Outlook of Venture Capitalists towards academic startups (ISIRD, Rs.5.00 Lakhs)
6. Reconfiguring DANA (generosity) as a new Institutional Financial Mechanism for Social Enterprises (DGE) (MHRD, Rs.75.00 Lakhs)
7. Risk Management in Supply Chain: A Study from the Perspective of Indian Industry (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
8. Socio Economic Development in India (Rs.0.00 Lakhs)
9. The ageing population in India (Sponsored Research and Industrial Consultancy wing of IIT Kharagpur, Rs.0.00 Lakhs)

**Consultancy Projects**

1. Delay analysis of 2nd Phase Expansion of NALCO’s Alumina Refinery (NALCO, Rs.0.00 Lakhs)
2. Operations Gurukul Workshop (Tata Management Training Centre [TMTC] Pune, Rs.3.00 Lakhs)
3. Performance Evaluation of Continuous Surface Miner at Panchpatmali Bauxite Mines (NALCO, Rs.0.00 Lakhs)
4. Project Management for Coal India Executives (Indian Institute of Coal Management [IICM], Ranchi, Rs.2.50 Lakhs)
5. Project Management Module for Voltas Executives (Tata Management Training Centre [TMTC] Pune, Rs.1.50 Lakhs)

**Visits Abroad by Faculty Members**

1. Sahney, Sangeeta - International Conference of Technology and Business Management, INFOMS (American University of Emirates, Dubai, ) 24-26th March, 2014
2. Datta, Biplab - International immersion for EMBA students (University of Nebraska at Omaha, USA, ) 1 week
3. Pradhan, Rudra Prakash - Conference (Thailnad, ) February
4. Pradhan, Rudra Prakash - Conference (Netherland, ) 2013

**Invited Lectures by Faculty Members**

1. Commodity Market regulation by Rajib, Prabina (Asian Business School, BBSR)
2. Exotic Commodity Derivatives by Rajib, Prabina (XLRI)
3. Intercultural communication by Malik, Aradhna (Narula Institute of Technology, Agarpara, Kolkata)
4. Intercultural Communication by Malik, Aradhna (IIT Guwahati)

**Books Published**

2. Dr Amita, Dr D Acharya, Dr I Roy Chowdhury, Dr lakshmi Kumar, Dr S Mukhopadhyay, Dr Veerashekharappa: EFFECT OF RESERVE BANK OF INDIA REGULATIONS ON PUBLIC SECTOR LENDING FOR MICROFINANCE INSTITUTIONS published by IFMR Chennai (2012)
3. Dr. Amita Dharmadhikary-Yadwabkar, Dr. Lakshmi Kumar, Dr. Mani Nandhi, Dr. Susmita Mukhopadhyay, Dr.: RETHINKING RESERVE BANK OF INDIA (RBI) REGULATIONS
FOR MFIS AN ANALYSIS OF MICROFINANCE CLIENTS FROM URBAN AND SEMI-URBAN COMMUNITIES published by IFMR Chennai (2013)


Short-Term Courses, Training Programmes and Workshops organised

1. 6-day Supervisory Development Programme for L&T Construction (6 Days)
2. MDP for E2 & E3 Level Executives of UCIL (Two days)
3. Supervisory Training workshop for L & T (One week)

Papers Published in Journals

17. Role of industry relatedness in performance of Indian acquirers - long and short run effects
   By Barai, P and Mohanty, P  *Asia Pacific Journal of Management*  1-29  (2014)

18. The Determinants of Long Run Finance Development: The ARDL Bound Testing Approach

19. The Nexus between Openness and Economic Growth: Evidence from a Multivariate Panel VAR Model
   By Pradhan R P  *Finance India*  Forthcoming  (2013)

20. Validating a Conceptual Model of Service Quality in Technical Education

21. Winners and Losers in M&A Game: Evidence from Manufacturing Companies in India

**Papers Presented in Conferences**


Alumni Affairs & International Relations

Dean of Alumni Affairs & International Relations
Prof. Siddhartha Mukhopadhyay, Electrical Engineering

Managing Director, Institutional Development (ID) Program
Chinna Boddipalli

Institutional Development Program
Shreyoshi Ghosh
Shruti Gupta
Anupam Sarkar
Anirban Roy
Pushkar Srivastava
Arnab Das

Office of Dean of Alumni Affairs & International Relations
Shampa Goswami
Prasenjit Banerjee
Sadhan Banerjee

Technology Alumni Association, Kharagpur
Dr. Dilip Nanda, Computer Informatics Centre – Secretary and Officiating President
Prof. Kajal Biswas, Mechanical Engineering – Joint Secretary
Prof. Joy Sen, Architecture & Regional Planning – Treasurer

Alumni Affairs

Present Activities and Achievements: Alumni Connectivity, Communications and Publications, Branding, Fundraising, Events Management

Connectivity: The number of alumni connected by various means to IIT Kharagpur has been increased through active efforts during this year. The present status of connectivity is given below.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Present Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIT-KGP Alumni Portal</td>
<td>10,710 alumni registered – up from 8000</td>
</tr>
<tr>
<td>Mass Mail to Alumni</td>
<td>36,500 (email count) – up from 23000</td>
</tr>
</tbody>
</table>
LinkedIn University Page Reach | 32,020 alumni connected – up from 12000
Facebook Page Reach | 76336 Reach (alumni + non-alumni) – up from 1000

**Communications:** Communications are made through mass mailing and postings at the web portal and the social media such as Facebook, LinkedIn and YouTube.

**Mass Mailing:** Effective Institute-Alumni communication has been maintained through mass mails to alumni, students, faculty members, retired faculty members and parents to update them regularly about the Institute news and developments. The various modes of Institute communication are as follows:

- KGP Connection, an online fortnight newsletter
- Seasonal Greetings
- Various fund-raising campaigns update

**Web Portal:** Web portal is updated on a fortnightly basis and also on-demand. Till the financial year which is being reported the portal was managed by Eklavya Creations. Following facilities are provided - news and events announcements, online donation, events registration, job portal, emailing facility

**Social Media:** Regular posts are made on Facebook and LinkedIn. Also Videos uploaded on YouTube and circulated through available channels.

**Publications:**

1. Annual and quarterly print publications help exchange of news and stories among alumni, students and faculty. Among these are KGPian and Yearnings of Yore.
2. The Alumni Annual Report is the initiative of ID Program which includes information about fundraising initiatives, donors and its beneficiaries, new projects in the Institute etc.

**Branding:**

**Public Relations:** PR coverage was done for various events, R&D and happenings at the Institute. On an average 2 articles were published every month with one or more of 20 print media house (English, Hindi, vernacular) with total number of insertions being at 76 for the FY 2013-14. Among these the news which got maximum coverage were Convocation 2013, 1000+ Placement by Training & Placement in the first phase and R&D projects of Food in a Tube.

**Ranking – Gathering Data for Metrics and Benchmarking:** Data is being submitted annually for domestic and international ranking to the two top international ranking agencies such Times Higher Education, QS. Also submitted to national ranking agencies such as Outlook, India Today, Dataquest, The Week, GHRDC

**Brand Merchandising:** Brand Merchandising is being managed by the Office round the year and made available to the alumni, faculty, students and other visitors. Merchandise is sold during the events like Convocation, Alvida and Annual Alumni Meet. Space for has been allocated at the newly
renovated Technology Students Gymkhana to sell branded souvenirs of IIT-KGP. In order to make this effective the Institute has already trademarked its logo and brand name.

**Yearbook and Alumni Card**: Yearbook and Alumni Card are being distributed to all passing out students during Convocation. Those who could not come for the Convocation these were sent to them along with their degree certificates. More than 2000 students in 2012-13 received the Yearbook and Alumni Card.

**Fund Raising**

**Founding Endowment Batch (Grass roots) campaign**: This campaign is for alumni across all the batches to donate for their respective batches and a classroom when they reach the minimum target of INR 50 lakhs. In the current financial year 2013-14, the batch of 1984 has become the Super Endowment Batch by raising more than INR 1 crore and the batch of 1970 is in the process of claiming the 2nd position. 1968 and 1975 batches too have become Founding Endowment batches by raising INR 50 lakhs each.

**My Imprint**: This program facilitates the final year students to give back to their Alma Mater by contributing their caution money and a part of their annual earning. Class of 2013 has raised about INR 18 lakhs through 'My Imprint Program' in support of creating KGP Endowment for students’ services.

**Other Campaigns**: Among the other campaigns being run or introduced are Vision 2020 Annual Donors and Parents Campaigns. A new campaign which was introduced was Corporate Fundraising through their CSR programs and Microsoft India Development Center was the first donor. It funded the R&D project by Prof. Chandan Chakraborty, School of Medical Science & Technology IIT Kharagpur on Medical Imaging Informatics for Skin Wound and Malaria Screening.

**Shri Gopal Rajagarhia International Programmes** - Shri Gopal Rajagarhia (B.Tech./ CH/ 1968) facilitated launching of the international program along with few other student programs with the seed endowment funding of INR 10 crores of which he has donated INR 3 crores. IIT Kharagpur proposes to create an Endowment Fund, with monetary contributions to be made by Shri Rajagarhia family, which would be utilized towards activities of the “SHRI GOPAL RAJAGARHIA INTERNATIONAL PROGRAMMES AT IIT KHARAGPUR”. These programmes shall be designed to support international exchange of faculty and students.

**Events Management**

**Foundation Day**: The Office of Dean (AA&IR) along with Technology Students’ Gymkhana organized this day-long event on August 18th, 2013. This year the Nina Saxena Excellence in Technology Award in the memory of alumna and scientist Dr. Nina Saxena (1992/B.Tech/ECE/SN) was given jointly to two teams viz. STREE, a wing of National Service Scheme (NSS) IIT Delhi which works in the areas of women empowerment for developing an android app called “SAFE HANDS” and the Desalination Division, Bhabha Atomic Research Centre, Trombay, Mumbai for developing Hybrid membrane technology for removal of uranium from ground water. The Foundation Day lecture was delivered by distinguished alumni Dr. Amit Chatterjee (1984/B.Tech/ECE), General Manager for the Visual Studio Team Test Business at Microsoft, India. The lecture was followed by a lively interactive session between the Director and a group of school students from Kolkata organized by alumnus Rajiv Agarwal.
**Alvida:** This is the annual farewell event for outgoing students which was organized by Technology Alumni Association, Kharagpur Chapter in association with the Office of Dean (AA&IR) on 2nd April 2013. Alvida ’2013 had an overwhelming participation of over 2800 students.

**Institute Lecture Series (2013-2014):**

- Prof. Kunal Basu, Said Business School, University of Oxford, UK on Engaging with Society: A Campus View
- Prof. D. D. Sarma, Solid State and Structural Chemistry Unit, IISC, Bangalore on Nanoscience and Technology with an emphasis on Photoluminescence from semiconductor nanocrystals: Beyond the obvious
- Dr. Bijoy Chatterjee, Director, University Relation, Texas Instruments on ‘Prospects of Students in Semiconductor Industry’
- Mr. Kumud Srinivasan, President, Intel India on ‘Launch of Intel IEC, 2014 & Technology’
- Prof. Sarit Kumar Das, Dean R&D, IIT Madras
- The Office also provides logistic support to the Spiritual Heritage Lecture Series organized every Wednesday during Semesters

**Convocation:** The Office provides various logistic support towards Convocation registration and awarding of the Distinguished Alumnus Awards.

**Distinguished Alumnus Awards 2013**

- Aditi Chattopadhyay (1980/B.Tech/AE)
- Aniruddha Ray (1966/B.Tech/EE)
- Devinder Kumar Gupta (1964/B.Tech/AG)
- Jay Chatterjee (1958/B.Arch/AR)
- K.G Narayanan (1964/B.Tech/EC)
- Kamal Kumar Sarbadhikari (1964/B.Tech/ME)
- Parimal Kanti Bharadwaj (1974/M.Sc/CY)
- Rabindra Nath Nayak (1980/M.Tech/EE)
- Somnath Ghosh (1980/B.Tech/ME)

**Memoranda of Understanding:** The Institute signed the following MoUs during the period April 2013 – March 2014

<table>
<thead>
<tr>
<th>MoU</th>
<th>Signed Date</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoU between MCX Stock Exchange Limited, Mumbai and VGSOM, IIT Kharagpur</td>
<td>22.01.2013</td>
<td>3 years</td>
</tr>
<tr>
<td>MoU with Rhein-Waal University of Applied Sciences, Germany</td>
<td>27.02.2013</td>
<td>5 years</td>
</tr>
<tr>
<td>MoU with International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad</td>
<td>06.03.2013</td>
<td>5 years</td>
</tr>
<tr>
<td>MoU between IIT Kharagpur and Leibniz-Institut Polymerforschung, Dresden, Germany</td>
<td>06.03.2013</td>
<td></td>
</tr>
</tbody>
</table>
|   | Cooperation agreement between IIT Kharagpur and The University of British Columbia, Applied Science | Signed on 25.03.2013  
Validity: 5 years |
|---|---|---|
| v) | MoU with the Governors of The University of Alberta, Edmonton, Alberta, Canada | Signed on 04.04.2013  
Validity: 5 years |
| vi | Institutional Collaboration Agreement with National Taiwan University of Science and Technology, Taipei, Taiwan, ROC | Signed on 28.06.2013  
Validity: 5 years |
| vii) | Agreement with Moscow State Mining University, Moscow, Russia | Signed on 27.06.2013  
Validity: 5 years |
| viii) | MoU with Confederation of Indian Industry (CII), Eastern Region, Kolkata | Signed on 19.09.2013  
Validity: 3 years |
| ix) | MoU with Tata Medical Centre (TMC), Kolkata | Signed on 24.09.2013  
Validity: 5 years |
| x) | MoU with University of Dublin, Ireland | Signed on 01.11.2013  
Validity: 5 years |

**International Relations**

**Present Activities:** Exchange Program and Facilitation of Visitors (Inbound and Outbound)

**Exchange Programs:** As per MoU, the Institute permitted the following students to undergo academic courses/internship at IIT Kharagpur during April 2013 – March 2014

<table>
<thead>
<tr>
<th>Name of the University</th>
<th>Name of the student(s)</th>
<th>Duration of visit</th>
</tr>
</thead>
</table>
| Polytech Lille, France | Ms. Fanny Tissot  
Ms. Julie Deschamps | Dept. of Agricultural & Food Engineering  
01.05.2012 – 31.07.2012  
Postgraduates |
| University of California, Berkeley | Ms. Katherine He  
Ms. Ramya Prathuri  
Ms. Akshita Dutta  
Mr. Jay Patel  
Mr. Rohan Jonnalagadda | Dept. of Chemical Engineering & Dept. of Electrical Engineering  
16.06.2012 – 12.08.2012  
Undergraduates |
| Technische Universitat, Darmstadt, Germany | Ms. Judith Elin Vesper | Dept. of Mechanical Engineering  
Postgraduates |
| Leibniz University, Hannover, Germany | Mr. Tim Federmann | Dept. of Architecture & Regional Planning  
August 2012 – July 2013 |
Postgraduates

<table>
<thead>
<tr>
<th>University</th>
<th>Full Name</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia Commonwealth University, USA</td>
<td>Mr. Demetrius Adams</td>
<td>06.01.2013 – 11.01.2013</td>
</tr>
<tr>
<td></td>
<td>Mr. Joshua Monday</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mr. David Tchao</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ms. Abigail McFarland</td>
<td></td>
</tr>
</tbody>
</table>

Undergraduates

<table>
<thead>
<tr>
<th>Roll No</th>
<th>Name</th>
<th>Dept.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10IM30026</td>
<td>Srikar Settur</td>
<td>IM</td>
</tr>
<tr>
<td>10IM10010</td>
<td>Ashif Sikandar Iquebal</td>
<td>IM</td>
</tr>
<tr>
<td>10MF10007</td>
<td>Ayan Hazra</td>
<td>ME</td>
</tr>
<tr>
<td>10ME10059</td>
<td>Suhas Maji</td>
<td>ME</td>
</tr>
<tr>
<td>10MT10002</td>
<td>Ajaya Pratap Jena</td>
<td>MT</td>
</tr>
<tr>
<td>10MT10012</td>
<td>Dheeraj P.R.</td>
<td>MT</td>
</tr>
</tbody>
</table>

**Outbound Exchange:** They are 3rd year B.Tech. students from Mechanical Engg. Dept., selected by the Warwick Manufacturing Group, University of Warwick, United Kingdom under the IIT Kharagpur-University of Warwick MoU for eight weeks summer internship at Warwick in the summer of 2013.

**Visits:** Faculty members from the Institute visit to various international universities such as Tokyo, Wollongong, Alto, Southampton. The Office provides data of alumni and relevant contacts located at the places visited by the faculty. Also visitors from reputed international universities and research organizations visit the Institute during the year many among whom are alumni. Some such universities are Leibniz, Stuttgart etc. The Office provides all necessary logistic support towards such visits.
Central Library

The Central Library, IIT Kharagpur is one of the largest technological libraries in Asia, which is fully automated and facilitates more than 10,000 users from students, research scholars, faculty and staff of the Institute. Its website address is http://www.library.iitkgp.ernet.in.

<table>
<thead>
<tr>
<th>1.</th>
<th>ACADEMIC STAFF:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>Professor S. Chattopadhyay  Ph. D (IIT-Kharagpur), MURP (SPA Delhi), B.Arch (Calcutta), Cert. Housing (Newcastle, UK), Dip. Housing (Lund, Sweden), AITP, Housing, Urban Planning and Building Materials.</td>
</tr>
<tr>
<td>Librarian</td>
<td>Sutradhar, B  Ph. D, M.Sc., M Lib.I.Sc., C.C.A</td>
</tr>
<tr>
<td>Assistant Librarians</td>
<td>Shankar, U  M Lib.I.Sc., M.A</td>
</tr>
<tr>
<td></td>
<td>Mazumdar, K  Ph. D, M Lib.I.Sc., B.Com, CPDA</td>
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<tr>
<th>2.</th>
<th>RETIREMENT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Dulal Kumar Chanda, Senior Technician, retired on May’2013</td>
<td></td>
</tr>
<tr>
<td>Ms. Dipali Adak, Assistant Library Information Officer, retired on June’2013</td>
<td></td>
</tr>
<tr>
<td>Mr. Arun Kumar Das, Senior Technician, retired on July’2013</td>
<td></td>
</tr>
<tr>
<td>Mr. Ramanuj Pal, Senior Technician, retired on December’2013</td>
<td></td>
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<tr>
<td>Ms. Sima Rani Pal, Senior Attendant, retired on March’2014</td>
<td></td>
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</tbody>
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<tr>
<th>3.</th>
<th>PRINT AND ELECTRONIC COLLECTION ADDED DURING 2013-14</th>
</tr>
</thead>
</table>
### New Journals / E-databases Added During 2013-14

**Journals:**

1. Journal of Astronautical Sciences (PR)/American Astronautical Society
3. Agronomy Journal (OL)/American Society of Agronomy
4. Traditional Dwelling and Settlement Review (PR)/IASTE
5. International Journal of Innovation & Regional Development (OL)/Inderscience
6. Open House International (OL)/Open House International Association
7. Journal of Bacteriology (OL)/American Society of Microbiology
8. Journal of Biological Chemistry (OL)/American Society of Microbiology
9. Microbiology (OL)/Society for General Microbiology
10. International Journal of Environment & Waste Management (OL)/Inderscience
11. International Journal of Environment Technology and Management (OL)/Inderscience
13. Canadian Journal of Civil Engineering (OL)/NRC Research Press
14. Geotechnique (OL)/Thomas Telford
15. Journal of Chemical Education (OL)/American Chemical Society
16. Journal of Chemical Engineering of Japan (OL)/JCEJ
17. Journal of Aerospace Information Systems (OL)/AIAA
18. Journal of Micromechanics and Microengineering (OL)/Institute of Physics
19. Control and Intelligent System (OL)/Acta Press
<table>
<thead>
<tr>
<th>No.</th>
<th>Journal Name</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>International Journal of Modelling, Identification &amp; Control (OL) / Inderscience</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>RSC Gold Package (48 titles) (OL) / Royal Society of Chemistry</td>
<td></td>
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<tr>
<td>23</td>
<td>SPIE Digital Library ((10 titles) (OL) / SPIE</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>World Scientific Journals Package (10 titles) (OL) / World Scientific</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>AIR Law College (12 titles) (PR &amp; OL) / All India Reporter Pvt. Td.</td>
<td></td>
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<tr>
<td>26</td>
<td>Indian Bar Review (PR) / Bar Council of India</td>
<td></td>
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<tr>
<td>27</td>
<td>International &amp; Comparative Law Quarterly (OL) / Cambridge University Press</td>
<td></td>
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<tr>
<td>28</td>
<td>Corporate Law Adviser (PR) / Corporate Law Adviser</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>International Journal of Corporate Governance (OL) / Inderscience</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Annual Survey of Indian Law (PR) / Indian Law Institute</td>
<td></td>
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<tr>
<td>31</td>
<td>Journal of the Indian Law Institute (PR) / Indian Law Institute</td>
<td></td>
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<tr>
<td>32</td>
<td>Indian Journal of Criminology and Criminalistics (PR) / Inst of Criminology and Forensic Science</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Criminal Law Review (OL) / Sweet &amp; Maxwell</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Law Quarterly Review (OL) / Sweet &amp; Maxwell</td>
<td></td>
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<tr>
<td>35</td>
<td>Annals of Mathematics (OL) / Mathematical Science Pub</td>
<td></td>
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<tr>
<td>36</td>
<td>Journal of Thermophysics and Heat Transfer (OL) / AIAA</td>
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<tr>
<td>37</td>
<td>Bone and Joint Journal (The) (PR) / Bone and Joint</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Journal of Bone and Joint Surgery (The) (PR) / Bone and Joint</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Smart Materials and Structures (OL) / IOP</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>International Journal of Mining and Mineral Engineering (OL) / Inderscience</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>European Journal of Mineral Processing and Environmental Protection (OL) / Minerals Engineering International</td>
<td></td>
</tr>
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<td>43</td>
<td>Asia Miner (The) (OL) / Mining Media International</td>
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</tr>
<tr>
<td>44</td>
<td>Transaction of the Society for Mining, Metallurgy and Exploration (OL) / SME</td>
<td></td>
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<tr>
<td>45</td>
<td>Lasers in Engineering (OL) / Old City Pub. House</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>International Shipbuilding Progress (OL) / IOS Press</td>
<td></td>
</tr>
</tbody>
</table>
50  Kautschuk, Gummi, Kunststoffe (OL) / Huthig GmbH
51  Polymers and Polymer Composites (OL) / Smithers Rapra
52  Paediatrics (OL) / American Academy of Paediatrics
53  Circulation (OL) / Lippincott Williams and Wilkins
54  Journal of the American Medical Association (OL) / American Medical Association
55  Annals of Surgery (OL) / Lippincott Williams and Wilkins
56  Health Affairs (OL) / Project HOPE
57.  Taylor & Francis Science & Technology and Social Science Package (1201 titles)
58.  Nature Journals Package (30 titles)

E-databases:
1  ACP Journal club / American College of Physicians
2  PsycARTICLES / American Psychological Association
3  BIS Standard (updated) / Bureau of Indian Standards
4  Bloomberg Data Services / Bloomberg
5  CMIE Databases (Prowess, CapEX, Industry Outlook & Economic Outlook) / CMIE
6  SCC Online (Platinum Plus) / Eastern Book Company
7  Technical Insights / Frost and Sullivan
8  www.energylineindia.com / Indianpetro.com
9  Turnitin2 – Anti Plagiarism Web Tool (for 1000 users) / iParadigms, LLC
10  ISO Standards (Complete) / ISO
11  Project Muse / John Hopkins Univ Press
12  Wiley Journals Archives (Core Collection) / John Wiley
13  Synthesis Lectures on Computer Science (Collection#1) / Morgan & Claypool Publishers
14  Springer Materials (Archives) / Springer
15  Springer Protocols (Archives) / Springer
16  Thieme Journals Archive (Synlett & Synthesis) / Thieme Pub
17  Mobility in Cities Database / UITP
18  SciFinder Academic Unlimited Access Plan / Chemical Abstracts Services
5. **INDEST-AICTE CONSORTIUM**

As a core member of INDEST-AICTE Consortium, Central Library has been availing of access to all the full-text databases, electronic resources subscribed by the consortium. This year the facility has been come down due to inadequate budget of the consortium and some of the electronic resources have been subscribed by the member institutions as per negotiated price of the consortium.

6. **BOOK FAIR**

Since 1999, the Central Library of IIT Kharagpur has been organizing Technology Book Fair every year to support the information needs of IIT Kharagpur community. The fair can reasonably claim a special status in being the only one of its kind in the area of Science and Technology organized by an educational institution in this country. As a window on the frontier less world of books in diverse fields of thought, the fair gives us an opportunity to update and enlarge our vistas of knowledge.

The 9th Technology Book Fair-2014 was held during the period from 7-10 January 2014 at Vikramashila New Complex (Adjacent Kalidas Auditorium). Prof. Kunal Basu, currently at Said Business School, University of Oxford and an eminent writer as Chief Guest had inaugurated the Book Fair on 7th January 2014 at 11:30 A.M. There were 40 Book suppliers/publishing agencies participated in the 9th Technology Book Fair-2014.

A series of workshop viz a) Know your e-sources at Central Library and its access b) Turnitin anti-plagiarism web tool training session c) Get the best from SciFinder and its new features d) Web-Scale discovery services: Single window access to Library e-resources were organized by the Central Library.

7. **WORKSHOPS / SEMINARS**

Central Library has organized a number of workshops during the year:

i) Workshop on “Springer Materials & Springer Protocols” in Digital Library on 26 June 2013 organized by Central Library and sponsored by M/s Springer (India) Private Ltd. About 75 participants from the research scholars and students of the Institutes were attended in the workshop.


iii) Workshop on “Author Workshop” in Netaji Auditorium on 12 February 2014 organized by Central Library and sponsored by M/s Springer (India) Private Ltd. About 550 participants from the faculty members, research scholars and students of the Institutes were attended in the workshop.
iv) Workshop on Open Source Software for Library Management”, 3-7 June 2013, organized by Central Library, IIT Kharagpur. 60 participants from all over India were participated in the workshop.

8. NEW LIBRARY SERVICES FOR THE USERS

24 X 7 hours library facilities for 15 days during Semester Examinations of the undergraduate students.

1. Digital Library Services

No. of Document Delivery Services : 44 out of 70

No. of Turnitin Anti Plagiarism Services
   a) Student id : 309
   b) Instructor id : 153
   c) Report delivered : 22

No. of JCPDS Software Services : 153
No. of Book Accompany CD delivered : 48
No. of Ph. D. Theses digitized : 583

2. Circulation Section

Circulation Section is the gateway between users and document. Sop it plays a major role to any library and information system. Circulation Section performs issue, renewal and return of books using the library management software LibSys. Apart from this basic task, many other jobs like membership registration, issue of no dues certificate, inter library loan service and overdue fine collection, book reservation, various e-mail alert generations, etc. and entertaining all kinds of queries are being performed by this section. Central Library Circulation Section is kept open for 63 hours a week.

3. Institutional Digital Repository

Central Library has developed an Institutional Digital Repository (IDR) using open source software namely DSpace. The IDR collects, preserves and disseminates in digital format of the research output (Ph.D theses, Technical Reports, Faculty Publications, etc.) within IIT Kharagpur Research Community. It enables the Institute community to deposit (self archiving) their preprints, postprints and other scholarly publications using a web interface and organize these publications for easy retrieval. At present, the access of IDR is restricted within the IIT Kharagpur campus LAN only.

4. Renovation Works
Central Library Seminar Room has been renovated to a modern sophisticated sound proof Seminar Room with a seating capacity of 120 participants.

5. **Facilities created for library users**

24 x 7 hours reading room facility has been introduced for 15 days during Semester Examinations of the Undergraduate Students.
Central Research Facility

Chairman
Prof. Rahul Mitra, MME Materials Science Division

Prof. Ananta K. Ghosh, BT, Life Science Division (01-04-2013 to 30-11-2013)

Prof. Amit Kumar Das, BT, Life Science Division (01-12-2013 onwards)

Associated Faculty
Prof. A. Basak, - In charge, CD Polarimeter
Prof. M. Bhattacharjee - In charge, EPR
Prof. S. K. Srivastava - In charge, ESCA
Prof. S. K. Ghosh - In charge, FACS
Prof. S. K. Pabi - In charge, XRD, HRXRD
Prof. J. Dutta Majumder - In charge, FE-SEM
Prof. B. Adhikari - In charge, FTIR
Prof. T.K. Nath - In charge, Hall Effect
Prof. R. Banerjee - In charge, HPLC
Prof. Rahul Mitra - In charge, HRTEM
Prof. K.K. Ray - In charge, UTM (Instron)
Prof. A.K. Das - In charge, MALDI, XRD (Protein Crystallography)
Prof. S. Das Gupta - In charge, ITC
Prof. T. Pathak - In charge, Mass Spectrometer
Prof. S.B. Singh - In charge, OES
Prof. J. Dutta Majumder
Prof. K. Biswas - In charge, Optical Microscopy
Prof. P. Roy Chowdhury - In charge, Optical Fiber
Prof. A.K. Ghosh - In charge, PCR, 2-D Gel. DNA Sequencer
Prof. R. Mitra - In charge, SEM
Prof. C. Jacob - In charge, SPM
Prof. S. Das - In charge, TEM
Prof. K. Das - In charge, Thermal Analysis
Prof. S.H. Dey - In charge, LC-MS/MS
Prof. V. Adyam - In charge, SQUID
Prof. A. Roy - In charge, Raman Spectrometer
Prof. T. Laha - In charge, Nanoindentation & Nanotribology

Senior Scientific Officers

Ph. D. (IIT Kharagpur), Experimental & theoretical condensed matter physics.
M.Sc., Ph. D. (IIT Kanpur), Inorganic Chemistry, Scanning Electron Microscopy and Metal Matrix Composites

Brief descriptions of on-going activities

Life Science Division

1. 2D GEL Laboratory: Two-dimensional gel electrophoresis system: this equipment is used for analyzing protein samples (qualitative and quantitative) provided by investigators (students, scholars and faculty of the department of Biotechnology, SMST, and ALPGE).

2. DNA Sequencer; Real time Polymeric Cyclic Reaction (PCR) analyzer, 2-Dimensional gel electrophoresis Laboratory: This equipment is use to determine nucleotide sequence of DNA samples provided by different investigators (students, scholars and faculty of the department of Biotechnology, SMST, ALPGE and AgFE).

3. Real Time PCR machine Laboratory: this machine is used to analyze gene expression level (quantitative) in different tissue samples provided by investigators (students, scholars and faculty of the department of Biotechnology, SMST, ALPGE).

4. FACS Laboratory: the BD FACSCalibur™ system is four-color, dual-laser, bench top system capable of both cell analysis and sorting. This machine is designed specifically to support a wide range of applications like immunophenotyping, absolute counting, residual white blood cell enumeration, stem cell analysis and isolation by sorting. Recent Experiments carried out with this instrument include drug delivery, detection of apoptotic cell death by TUNEL Assay, interaction between cell and fluorescent labeled toxin molecules, and cell cycle analysis.

5. High Pressure Liquid Chromatography Laboratory: HPLC is an efficient technique used for the separation of macro/micro molecules such as organic compound, amino acids, nucleotides, aroma/fragrance, enzymes and proteins etc. this equipment has quaternary pumps, along with different detectors like Refractive Index (RI) and Photo diode array at variable wavelengths, manual injecting valves, ports as well as various columns for separating different molecules.

6. MALDI_ToF Laboratory: Matrix Assisted laser Desorption Ionization (MALDI)- Time of flight (ToF) mass spectrometry is used for mass analysis of polymers, proteins and other small molecules (>500Da),. As well as for biomarker identification of different species.

7. Protein Crystallography: Protein X-ray Crystallography (PX) Laboratory: Rigaku Micromax 007HF X-ray generator is equipped with RaxisIV++ detector and X-steam cryo for X-ray diffraction studies of protein crystals to determine their 3D structure in atomic resolution.
Three dimensional structures of proteins from pathogenic organisms like *M. tuberculosis* and *S. aureus* have been determined.

8. **Isothermal Titration Calorimetry (iTC200 Systems):** iTC200 is used for characterization of molecular interactions of small molecules, proteins, antibodies, nucleic acids, lipids and other biomolecules. Enzyme kinetics, assessment of the effect of molecular structure changes on binding mechanisms, assessment of biological activity are also possible. Direct measure of sub-millimolar to nanomolar binding constants ($10^{-2}$ to $10^{-9}$ M$^{-1}$) and measurement of nanomolar to picomolar binding constants ($10^{-9}$ to $10^{-12}$ M$^{-1}$) using the competitive binding technique.

**Materials Science Division**

1. **Field Emission Scanning Electron Microscope Laboratory:** the field emission gun assisted scanning electron microscopy (FE-SEM, Supra 40V, Carl Zeiss, Germany) provides an excellent scope of microstructural characterization using secondary or back scattered imaging, energy dispersive spectroscopy and electron back scattered diffraction analysis. The samples analysed include various metals and alloys, semi-conducting and insulating films, refractories, polymeric and ceramic powders, failed engineering components and hiyrid/composite materials.

2. **FTIR Laboratory:** FTIR analysis of different samples in powder, liquid and also film form in MID-IR and FAR-IR range are done at both ambient and above ambient temperatures by our institute students and faculties.

3. **Hall Effect Laboratory:** Electrical resistivity (conductivity), Magnetoresistance and Hall voltage measurements of metals, semiconductors, oxides, heterostructures, etc. Are carried out in the temperature range of $10 - 300$ K by employing a closed cycle Helium refrigeration cryostat in the magnetic field range of -10 kOe -0 -+10 kOe. The magnetoresistance and Hall measurements employing a Vander Pauw four probe technique are also used for characterization of materials like magnetic oxides, spintronic materials, nanometric materials, spin sensor material, magnetic multilayers, semiconducting materials, etc.

4. **High Resolution Transmission Electron Microscope Laboratory:** The HRTEM laboratory is equipped with the JEOL JEM-2100 High Resolution Transmission Electron Microscope, OXORD INCA EDS microanalytical system and GATAN CCD camera. This instrument is used for observation of specimens to observe the microstructures at high resolution, up to the level of arrangement of atoms, and determination of the crystal structure detects and grain sizes as well as chemical composition at selected positions. In metals, ceramics, polymers rubbers and semiconductor. The machine is routinely used for research on nano-structured materials, bulk alloys, thin films powders, and composites. In addition, it is possible to study phase transitions at low temperatures using the specimen holder operating at the liquid nitrogen temperature.

5. **Optical Emission Spectrometer Laboratory:** Optical emission spectrometer (Model No. ARL 3460) is used for very fast, reliable and accurate analysis of chemical composition. In this machine, the energy coming out from a spark formed between sample and an electrode is converted into a spectral pattern, which is used to analyze the presence of element and it’s quantitative analysis (form the intensity of spectrum).

6. **Optical Fiber Laboratory:** The research in this laboratory is based on design, fabrication and analysis of microstructured optical fiber. The optical fiber perform fabrication unit mainly consists of optical lathe machine, real time monitoring system for temperature and gas flow controller, movement/speed controller of the mechanical stack-holding assembly, and the flame-brush unit. The accessory units like nitrogen plant, chiller plant are integral part of the system.

7. **Scanning Electron Microscope (SEM) Laboratory:** The SEM laboratories are equipped with 1) JEOL JSM-5800, 2) ZEISS EVO-60 Scanning Microscopes. The analytical attachments with these instruments are OXFORD ISIS-300, INCA Energy-250 EDS systems, INCA Wave-500
WDS system and HKL Channel-5 EBSD system. The projects associated with the instrument are aluminum alloys, In-situ composites, failure analysis of materials, Biomaterials, Nanostructured materials, Microalloyed steel, Laser surface alloying, Cutting tool materials, Functionally graded materials, Intermetallics, Rubber and Polymer based composites, Ceramic materials etc.

8. **Scanning Probe Microscope Laboratory**: A wide variety of samples have been examined using the Scanning Probe Microscope in the last year. These include metals, polymers semiconductors, nanomaterials, etc.

9. **TEM Sample Preparation Laboratory**: This laboratory provides services for preparing samples of different types of TEM study using instruments like cryo-ultramicrotome jet polisher, and precision ion polishing system (PIPS) etc.

10. **Thermal Analysis Laboratory**: The thermal analysis laboratory is equipped with Differential Scanning Calorimeter (DSC), Thermo-gravimetric and Differential Thermal Analyzer (TE-DTA) and Thermo Mechanical Analyzer (TMA). The DSC is being extensively used to study the thermal stability of nanocomposites, glass transition temperatures of polymeric materials, and curing of polymeric materials. The recent works of significance done with the TG-DTA system include the evaluation of thermal stability of polymer nano composites, TG studies have been carried out on the calcinations of aqueous combustion synthesized metal oxide powders, analysis of reactions towards formation of new ceramic compounds, effect of mechanical milling on the reaction onset temperature of aluminium based nano composites, etc. The TMA is being used to study the sintering behavior of nano composite materials as well as to determine the thermal expansion coefficients of some newly developed materials.

11. **X-ray Diffraction Laboratory**: X-ray diffraction (XRD) facility includes three units: PW Philips 1710, Expert PRo I and Expert PRo II. While the first unit is used for routine powder diffraction studies, Expert PRo I is dedicated to texture and residual stress analysis and high temperature XRD. Expert PRo II unit is utilized for powder diffraction at normal and high resolution and low angle incidence mode. These units are extensively used to conduct phase analysis and identification, crystallite size determination, plastic strain measurements, texture evolution, surface residual stress measurements, phase transition studies (ex situ and in situ), volume fraction determination and failure analysis of engineering components.

12. **Circular Dichroism (CD) Spectrometer Laboratory**: Circular Dichroism (CD) J-810-150-S Model, 150W air-cooled Xenon Lamp, Head-on photomultiplier tube, 163-900 nm measurement range Circular Dichroism (CD) is observed when optically active matter absorbs left and right hand circular polarized light slightly differently. It is measured with a CD spectropolarimeter. The instrument needs to be able to measure accurately in the far UV at wavelengths down to 190-170 nm. The difference in left and right handed absorbance A(l)-A(r) is very small (usually in the range of 0.0001) corresponding to an ellipticity of a few 1/100th of a degree. The CD is a function of wavelength. It has become a powerful tool to analyze the structure of biomolecules and their interaction with various ligands. Changes in the CD spectra reflect a perturbation in the structure of biomolecules brought about by changes in conditions like temperature, pH or drug binding. Protein folding/unfolding can be followed by changes in the CD spectra. Stereochemistry of products through enzymatic reactions is also an important activity of CD spectroscopy, which is related to the 3D-structure of the active site of an enzyme. Stereochemistry of products through enzymatic reactions is also an important activity of CD spectroscopy, which is related to the 3D-structure of the active site of an enzyme.

13. **Mass Spectrometer Laboratory**: Mass Spectrometer LCT is a compact, fully integrated, computer controlled, high performance, orthogonal acceleration Time-of-Flight (oa-TOF) Mass Spectrometer that can be configured for a wide range of LC-MS applications. It provides both exact molecular weight (HRMS) and structural information (LRMS) for characterization of
mainly organic compounds and some organometallic compounds and metal complexes with excellent sensitivity. Both synthesis and elemental confirmation can be obtained that is essential for the support of patent applications or for the submission of data to scientific journals. The types of projects on which the equipment can be associated with are based on Synthesis Confirmation, Elemental Confirmation, Structure of Natural Products, Drug Discovery, Supramolecular Interactions/Drug-Receptor Interactions, and Environmental Monitoring. The equipment has been rendering extremely valuable service since its inception to the users within IIT, Kharagpur and external users from various academic institutes, R & D laboratories and industries.

14. **SQUID VSM Laboratory**: The Quantum Design MPMS SQUID VSM EverCool system features an integrated pulse-tube cryocooler-dewar system. This eliminates the need to use any liquid cryogens for the operation of the MPMS SQUID VSM. It offers 1x10^-8 emu sensitivity with fast data acquisition. A maximum DC magnetic field up to 7T in temperature range 2-1000K is available in both DC and AC magnetization measurements. Information about hysteresis loops, relaxation times, magnetic field and temperature dependence of magnetic moment can be obtained. Magnetic properties of broad range of samples related to materials, geological and biological can be analysed.

15. System Model No:- SVSM-EC, Serial No. SMT 043

16. **Transmission Electron Microscope Laboratory**: Transmission Electron Microscope with ability to study structure and composition is being procured. The chosen electron microscope is operated at acceleration voltages up to 200 kV. The machine is equipped with high tilt specimen stage, which is essential for examination of structural defects in materials. It will be possible to study specimens using bright and dark field imaging, selected area diffraction, convergent beam electron diffraction and energy dispersive spectroscopy. The Energy Dispersive X-Ray Analyzer provided with the transmission electron microscope will be able to detect element composition, both qualitatively and quantitatively. The CCD Camera records images on high resolution transmission electron microscope electronically. The accompanying softwares are going to be used in analyses of images. Model FEI-TECNAI G2 20S- TWIN.

17. **Raman Spectrometer Laboratory**: Raman spectroscopy is an efficient non-destructive tool, which provides enormous information on various physical properties of new state of art materials. The Triple Raman Spectrometer, T64000 from Jobin Yvon, Horiba, France, is equipped with Ar-Kr ion laser (with 10 laser lines) as an excitation source, a triple monochromator and a CCD detector (1024x256 pixels). It has a capability to reject Rayleigh line to a very high extent for all 10 laser lines. Hence, using this instrument one can record spectra from as low as 2 cm^-1 Raman shift. Other than material characterization, it can be used for resonance Raman measurements and acoustic phonon measurements.

18. No tool-specific sample preparation is required for the measurements. The incident radiation can directly interact with the sample. The system works for all types of sample, solid (powder or crystalline), liquid and gas.

19. **Nanoindentation & Nanotribology Laboratory**: The nanoindenter with nano-tribological testing facility (TI 950 TribolIndentor, Hysitron Inc., USA) in the “Nanoindentation & Nanotribology Laboratory” at Central Research Facility in IIT Kharagpur is a Nanomechanical characterization instrument with in-situ SPM (Scanning Probe Microscopy) imaging, facility, through which mechanical properties like hardness, Young’s modulus, stress-strain behavior, creep indentation fatigue resistance and fracture toughness of thin films, coating, individual phases in a multiphase alloy, composites and soft biological tissues can be studied. The instrument is capable of carrying out various mechanical testing operations in nano-scale as well as in micro-scale, owing to its dual head testing capability. The various mechanical testing could be carried out at higher temperature (up to 400°C) also. Integrated with low-noise three-plate capacitive transducers and
electronics, the multi-layered enclosure and active vibration isolation system provide excellent environmental separation for the instrument.

20. **High Resolution Mass Spectrometry Laboratory**: Mass Spectrometer Model Xevo G2 QT of Waters UK Ltd. The Xevo G2 QTof Mass Spectrometer is a highly sensitive, exact mass bench top system. The instrument is equipped with a T-wave collision cell and with an orthogonal acceleration Time-of-Flight (oa-ToF) mass analyzer with a wide mass range up to 100,000 m/z and a resolving power of 20,000 FWHM. It provides both exact molecular weight (HRMS) and structural information (LRMS) for characterization of mainly organic compounds and some organometallic compounds and metal complexes with excellent sensitivity. The range of compounds for which the instrument can be used varies widely from small organic, inorganic, compounds to oligomers, polymers and biomolecules. The instrument will provide elemental confirmation that is essential for the support of patent applications or for the submission of data to scientific journals. The system incorporates IntelliStart™ technology, for automated system optimization and status monitoring, ensuring that the highest quality data is routinely available to all levels of operation.

21. **Isothermal Titration Calorimeter**: Model, iTC200 Systems (GE Healthcare, USA), Non-reactive Hastelloy® cells for chemical resistance, Peltier controller for rapid temperature equilibration, operating within a temperature range of 2°C to 80°C.

22. **AFM Laboratory**: A new Atomic Force Microscope (Model 5500, Agilent Technologies, USA) has been installed in CRF in October 2013, and has been thrown open to users across the Institute. Apart from the regular scanning modes, that is contact and intermittent contact modes, the state of the art instrument is equipped with closed Z loop scanner for measurement of force between two surfaces, under liquid imaging capability, temperature control stage (30°C to 250°C) with in-situ imaging capability for time resolved experiments, integrated environmental control (with 6 ports for purging and venting), EFM (Electrical Force Microscope) and KFM (Kelvin probe microscope) in single pass amplitude and frequency modulation (force and gradient) modes, external variable magnetic field MFM with a magnetization range of ± 850 Gauss. Since installation the instrument has been used to scan more than 600 samples till March 2014, spanning across 30 research groups in the Institute. Every day two three hour slots are given to the users, in which typically three samples are scanned. Experiments like EFM, MFM and under water imaging however takes longer time. Different samples that have been scanned successfully include polymer, metals, composites, biological molecules like proteins, quantum dots, nano patterns etc.

23. **Nuclear Magnetic Resonance (NMR) spectrometer Lab**: Recently, the institute has procured a Bruker Avance III HD 600 MHz (1H frequency) Nuclear Magnetic Resonance (NMR) spectrometer, which has been installed in Central Research Facility (CRF). The spectrometer is for recording high resolution one dimensional (1D) and two dimensional (2D) spectra of chemical and biological samples in solution. It has three probes, (a) broad band probe for recording spectra of all the NMR active nuclei, including 19F, (b) one three channel (1H, 13C and 15N) inverse probe for 1D, 2D and triple resonance spectral measurements and (c) one liquid helium cooled cryoprobe for very high resolution spectral measurements. Also, it has variable temperature attachment for recording spectra at lower or higher temperatures.

24. **Dual Beam FIB-FEG Microscope Lab**: (Model: Auriga Compact Cross Beam system, Carl Zeiss, Germany) has been procured at CRF and is undergoing installation. It is equipped with both Electron and Ion Beam sources for applications including scanning electron microscopy, focused ion beam milling and lithography, along facility for TEM sample thinning and lift-out (Omniprobe 200, Oxford Instruments), as well as 3D energy dispersive spectroscopy and electron backscattered diffraction (Aztec, Oxford Instruments). The system can be used for observation using secondary and backscattered electron imaging modes, chemical analysis, orientation mapping, TEM sample preparation, as well as processing of nanostructures.

**New Acquisitions**
1. DUAL/ CROSS BEAM FEG/FIB, CARL ZEISS MICROSCOPY GmbH, GERMANY.  
   STATUS: Being installed.

2. AVANCE III HD 600 MHz ONEBAY HIGH PERFORMANCE DIGITAL NMR SPECTROMETER, BRUKER BioSpin INTERNATIONAL, SWITZERLAND.  
   STATUS: Being installed.

3. SCANNING PROBE MICROSCOPE SYSTEM WITH DIFFERENT MODULES FOR MORPHOLOGICAL AND STRUCTURAL CHARACTERIZATION, AGILENY TECHNOLOGIES, SINGAPORE.  
   STATUS: Installation Completed.

4. PHI 710 SCANNING AUGER NANOPROBE, PHYSICAL ELECTRONICS, USA  
   STATUS: Being installed.

5. FLUORESCENCE ACTIVATE CELL SORTER, Model- FACS ARIA-III, BECTON DICKINSON HOLDING, SINGAPORE.  
   STATUS: Installation Completed.

6. GENETIC ANALYZER (APPLIED BIO SYSTEM-3500), LIFE TECHNOLOGIES HOLDINGS Pte. Ltd, SINGAPORE.  
   STATUS: Installation Completed.

7. MALDI – TOF.  
   STATUS: Ordered.

Central Workshop and Instruments Service Section

Chairman : Prof. A. Roy Choudhury
WS : Dr. S. Patra

The Central Workshop & Instruments Service Section (CWISS), a unique service centre at IIT, Kharagpur was established in 1965 to cater to the fabrication of custom made Instruments to sustain the Post Graduate & Research activity in the Institute for all the departments and centres.

It is one of the major service sections of the Institute having following units:

(1) Mechanical
(2) Glass Blowing
(3) Carpentry
(4) Electronics
(5) Audio Visual

Apart from executing Work Orders from various Depts./Centres/Sections of the Institute, CWISS also undertakes Workorders from outside on cost basis.

1. Mechanical Section

a. Dr. S. Patra, Assistant Workshop Superintendent

Mechanical Section in CWISS comprises Mechanical fabrication, Mechanical Instrument and Glass Blowing Section.

b. Mechanical Fabrication Section

It is equipped with various types of machines like CNC Lathe, table mounted CNC Lathe, CNC Engraving, CNC Milling, EDM, Milling, Conventional Lathe, Bench Lathe, Watch Maker’s Lathe, Drilling, Shaping Machine, Bench Drill, Bench Shaper, Grinding Machines (Surface, Cylindrical, Pedestal, Belt and Hand operated), Jig Boring, Power Saw, Shearing Machine, Polishing, Press, Arc Welding, Brazing and Soldering, etc. We have recently purchased one CNC WEDM and Laser welding machine these has enhanced our fabrication quantity and quality as well.

The Mechanical Fabrication Section caters the service to almost all the departments of the Institute for any type of Precision and complicated mechanical fabrication or repair with various types of metals with the machines available in section mostly for research and project works and regular experiment classes for B. Tech. and M. Tech. as per design.

In CNC Machines we use different types of software for drawings like Auto CAD, Rhinoceros, 3D Studio Max, Solidworks etc. for drawing works of the components to be fabricated and also use different types of CAM software for their fabrication.

During the year 2013-14 the Mechanical Section has performed jobs of about 153 workorders.

Some of the notable fabrications successfully completed by CWISS are as follows:

1) Fabrication of different types of fixtures.
2) Chassis of Robot and gears of Robocup.
3) Fabrication of Die and Extruder.
4) Fabrication of Die-Punches of different sizes.
5) Fabrication of different sizes tensile, Charpy specimens, creep specimens of different materials.
6) Fabrication of Rack, Pinion & Gears.
7) Fabrication of Moulds with different type of metals.
8) Fabrication of dilatometer samples.
9) Fabrication of different types of grippers.
10) Fabrication of Micro-channel of various sizes.
11) Fabrication of different types of adopters.
12) Fabrication of various types of electrodes.
13) Fabrication of fixtures for experiments.
14) Fabrication of shaft encoder.
15) Fabrication of SEM samples.

2. Glass Blowing Section

This section is equipped with glass blowing lathe, glasscutter, glass grinder, glass annealing chamber, etc.. Mainly glass work of Borosilicate glass is done here with the help of oxygen & LPG for Departments, like Chemistry, Bio-Technology, Chemical, Cryogenic, Mechanical, Material Science, Metallurgical & Materials Engg., Agriculture & Food Engg., Physics & Meteorology etc. The main fabrication jobs of this section include different type of condensers, Dewars, different volume capacity F.B, R.B., Flask with neck joints, manometer, U & S Tubes, glass bubbler, glass coil for oil bath, gas collector, etc. The fabrication of Glass ware items are done as per drawing and design of the equipments. Shortly we are going to arrange for training the interested Institute staff on Glass Blowing and fabricate different glassware items.

3. Carpentry Section

Housed in the workshop complex behind Chemical Engg. & Automobile Section, This section has Auto Planner, Joints Nature’s machinery, Vertical Band Saw and Multipurpose Machine. Apart from carpentry jobs, as per requirement of the Institute it does also undertake construction of MS Frames, Hand painting, Spray painting, Polishing, Writing of name plates, display board & jobs as required by students projects.

This section also meets the major requirements of furniture of the Institute. During the year 2013-14, this section has completed 119 Workorders of various departments of the Institute.

Details of some of the work done during 2013-14:

1) Faculty Table set -- 33 Nos.
2) Office Table -- 07 Nos.
3) Computer Table -- 12 Nos.
4) Laboratory Table -- 21 Nos.
5) Conference type meeting table -- 01 No.
6) Book Shelf -- 03 Nos.
7) Students’ model of different shape -- 25 Nos.
8) Framing of metallic name plate -- 01 No.
9) Tender Box -- 01 No.
10) Repair of Furniture -- 07 Nos.
11) Name Plate/ Sign Board -- 82 Nos.
12) Modification of damaged furniture -- 01 No.
13) No parking board -- 05 Nos.
14) Trolley type tray -- 01 No.
15) Partition -- 04 Nos.
16) Key -- 01 Nos.
17) Daily chart board -- 01 No.
18) First Aid Box -- 01 No.
19) High / Low bench -- 50 Nos.
20) Stools -- 67 Nos.
21) Notice Board -- 04 Nos.

4. Electronics Section

Electronics section of CWISS has facilities for repair of different types of electronic equipments. It also helps users in their design and development activities. A LPKF PCB Prototyping machine is available in this section which helps the users of different departments in fabrication of double sided PCBs.

5. Audio Visual Section

Audio Visual Cell is primarily involved in providing audio visual support for conducting regular classes at different lecture halls (approximately 400 classes per week). It supports audiovisual facilities with Multimedia projectors, Document cameras, PCs and PA system with wireless microphones for the following class rooms: V1, V2, V3 & V4 at Vikramshila complex and F116, F127, F142, F232 & F244 at main building area. During last semester the Cell could extend support to 10 new classrooms at Nalanda classroom complex. A total 44 nos. of classrooms at Nalanda classroom complex, equipped with full AV equipments, will be available in the next Autumn semester 2014.

AV Cell used to provide support about 11,600 regular classes throughout the year in aforesaid classrooms. Besides these the Cell provides AV facilities for all seminars, symposiums, workshops,
short term courses and meetings at Gargi, Moitrei, S. N. Bose Auditorium and associated programme at Netaji, Kalidas Auditorium, Senate hall, Committee room and Board room. All the T. S. G. activity programmes are also supported by the Cell. AV Cell also provides support to various student activities like Quiz, Plays, Spring festival, Kshitij, Inter Hall competitions and T&P activities.

It also helps in various other academic activities like Convocation, Senate Meeting, National & International seminars, Conferences and Workshops and also including JEE & GATE units. AVCell also given technical support for pre-placement talk during office hours & beyond office hours and sometime till midnight for special cases.

The Audio Visual Cell has a good number of sophisticated equipments like Multimedia Projectors, Document Cameras, High quality Amplifiers and Mixtures, Wireless Microphones & Conference Systems and other peripheral supporting systems. Primary maintenance of these equipments are also maintained by AVCell staff itself.
**Centre for Theoretical Studies**

**HEAD:** P.K.Chattaraj (Till 07.10.13), Sayan Kar (From 08.10.13)

**FACULTY MEMBERS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 P. K. Chattaraj</td>
<td>M. Sc., Ph.D (IIT Bombay)</td>
<td>Chemistry (Theoretical Chemistry, Quantum Chaos )</td>
</tr>
<tr>
<td>3 A. Taraphder</td>
<td>M. Sc., Ph.D (IISc Bangalore)</td>
<td>Physics (Theoretical Condensed Matter Physics)</td>
</tr>
<tr>
<td>4 S.Bharadwaj</td>
<td>M. Sc., Ph.D (IISc Bangalore)</td>
<td>Physics (Theoretical Astrophysics and Cosmology)</td>
</tr>
<tr>
<td>5 Sayan Kar</td>
<td>M. Sc., Ph.D (IIT Kanpur)</td>
<td>Physics (Relativity and High Energy Physics)</td>
</tr>
<tr>
<td>6 S. Pratik Khastgir</td>
<td>M. Sc., Ph.D (IOP, Bhubaneswar)</td>
<td>Physics (Mathematical Physics and Integral Models)</td>
</tr>
<tr>
<td>7 Anirvan DasGupta</td>
<td>B.Tech, M.Tech., Ph.D (Kanpur)</td>
<td>Mechanical (Dynamics, Control and Robotics)</td>
</tr>
<tr>
<td>8 S.P.Pal</td>
<td>B. Tech (Hons.), M. Tech, Ph.D (IISc Bangalore)</td>
<td>Computer Sc. and Eng. (Computational geometry, Design and analysis of algorithms.)</td>
</tr>
<tr>
<td>9 S. Bandyopadhyay</td>
<td>M. Sc., Ph.D (IISc Bangalore)</td>
<td>Chemistry (Computational Chemistry, Molecular Modelling )</td>
</tr>
<tr>
<td>10 Somesh Kumar</td>
<td>MSc.,Ph.D (IIT Kanpur)</td>
<td>Mathematics (Statistical Decision Theory and Inference, Quantum Computing)</td>
</tr>
<tr>
<td>11 Suman Chakraborty</td>
<td>Ph.D</td>
<td>Mechanical (Microfluidics and Nanofluidics, Interfacial Phenomena, Transport Phenomena in Materials Processing, Computational Fluid Dynamics (CFD))</td>
</tr>
<tr>
<td>12 G.P.Raja Sekhar</td>
<td>Ph.D.(Hyderabad Univ)</td>
<td>Mathematics (Boundary integral methods for viscous flows, Mass transfer in porous biological pellets)</td>
</tr>
<tr>
<td>13 Pratima Panigrahi</td>
<td>Ph.D.(Bangalore)</td>
<td>Mathematics (Combinatorics, Graph Theory)</td>
</tr>
<tr>
<td>14</td>
<td>Head, Mathematics</td>
<td></td>
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<tr>
<td>15</td>
<td>Head, Physics</td>
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</tr>
</tbody>
</table>

**Associate of CTS:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 P. A. Deshpande</td>
<td>Ph.D.(IISc., Bangalore)</td>
<td>Chemical (Electronic structure calculations, Computational catalysis, First principles analysis of physiological reactions)</td>
</tr>
<tr>
<td>Staff: Name</td>
<td>Degree</td>
<td>Specialization</td>
</tr>
<tr>
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</tr>
<tr>
<td>Ujal Halder</td>
<td>Post Diploma in Computer App., Diploma in Electrical Engg.</td>
<td>Computer (Administration, Networking, Web development, Troubleshooting etc.)</td>
</tr>
<tr>
<td>Project Staff: Name</td>
<td>Project, Post</td>
<td>Period</td>
</tr>
<tr>
<td>Soumya Bhattacharya</td>
<td>JRF</td>
<td>3 years</td>
</tr>
</tbody>
</table>

**Brief Descriptions on-going activities**

Research is carried out in CTS on the following areas:

I. Astrophysics, Cosmology and Relativity
   
   (i) Magnetic fields of strange stars and neutron stars
   
   (ii) Large scale structure formation in the Universe
   
   (iii) Bulk-brane dynamics

II. Dynamics and control
   
   (i) Nonlinear dynamics: Bifurcation Theory and Chaos
   
   (ii) Control theory
(iii) Vibrations

III. Mathematics, Mathematical physics and Theoretical Computer Science

(i) Integrable models
(ii) Computational and combinatorial geometry
(iii) Pure and applied mathematics
(iv) Quantum computation and quantum information
(v) Graph and Hypergraph Theory

IV. Theoretical Condensed Matter Physics

(i) Computational Condensed Matter and Statistical Physics

(ii) Superconductivity

V. Theoretical Chemistry

(i) Large scale simulations of complex systems

(ii) Density functional theory, quantum chaos

Thrust Areas

1. Astrophysics, Cosmology & Relativity
2. Nonlinear Sciences
3. Mathematics, Mathematical physics and Theoretical Computer Science
4. Theoretical Condensed matter Physics
5. Theoretical Chemistry

Courses and Graduate Programme:

- CTS is offering new advanced post-graduate courses which are relevant across departments through involvement of faculty from various departments. These courses are:

  1. Methods in molecular simulations (TS70001)
  2. Advanced dynamics (TS70002)
  3. Wave propagation in continuous media (TS70003)
  4. Advanced Mathematical techniques (TS70004)
  5. Advanced quantum theory (TS70005)
  6. Quantum mechanics and quantum computing (TS70006)

- CTS are also admitting PhD students through institute fellowships, CSIR fellowships. Currently two such students are enrolled.

CTS courses taught (2013-14):
1. Quantum mechanics and quantum computing (TS70006) (Autumn)
2. Advanced Mathematical techniques (TS70004) (Autumn)
3. Methods in molecular simulations (TS70001) (Spring)
4. Wave Propagation in continuous media (TS70003) (Spring)

COLLABORATIVE EFFORTS

The Centre for Theoretical Studies has very active collaborative research programmes in the board areas of Astrophysics and Cosmology. The research carried out under this collaboration is focused mainly on Cosmology. The collaboration with NCRA, TIFR, Pune is through a sponsored project funded by BRNS, DAE, Mumbai. This focuses on the possibility of using low-frequency radio wave observations to study a variety of astrophysical processes through the 21 cm neutral hydrogen radiation, including turbulence in the interstellar medium and the early universe.

Visitors during 2013 – 2014 under CTS Visitors Programme: 10

Lectures by Visiting Experts: 12
Computer and Informatics Centre

HEAD : Prof. Prabir Kumar Biswas

CONCERNED FACULTY/OFFICERS (with degrees and specialization)

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilip Kumar Nanda</td>
<td>M.Sc, DIIT, PhD (IIT Kharagpur)</td>
<td>IT Infrastructure Management and Operations, Application Software &amp; Numerical Techniques</td>
</tr>
<tr>
<td>Partha Goswami</td>
<td>BTech (C.U), M.Tech (IIT Kharagpur)</td>
<td>Enterprise &amp; Optical transport network</td>
</tr>
<tr>
<td>Alok Baran Das</td>
<td>B.Tech (CU)</td>
<td>Networking, Hardware Specialist &amp; Troubleshooter</td>
</tr>
<tr>
<td>Surid Kumar Das</td>
<td>B.Tech, M.Tech (Rajasthan Vidyapith Deemed University)</td>
<td>Hardware, Computer Network</td>
</tr>
<tr>
<td>A. Chattopadhyay</td>
<td>M.Sc, M.S (IIT Kharagpur)</td>
<td>Hardware, OS, Network Security &amp; Applications</td>
</tr>
<tr>
<td>Sudipto Das</td>
<td>B. Tech, M.Tech (Rajasthan Vidyapith Deemed University)</td>
<td>OS, Network Applications and Security</td>
</tr>
<tr>
<td>Deepan Banerjee</td>
<td>B.Tech (WBUT)</td>
<td>Networking, Routing Switching &amp; Wireless</td>
</tr>
<tr>
<td>Tanumoy Ghosal</td>
<td>B.Tech (WBUT)</td>
<td>Networking &amp; Security Aspects</td>
</tr>
<tr>
<td>Subhasish Chattopadhyay</td>
<td>B Tech (WBUT)</td>
<td>Networking &amp; Specialist in FTTH</td>
</tr>
</tbody>
</table>

*Retired on 31.01.2014

FACILITIES

Networking Facilities in the Institute

The QPN facility provided in the Institute campus is running with satisfaction and with time more number of locations is being brought under its fold by CIC. This facility is currently being used as the lifeline for all Department/Centre/Schools/Sections who are using the networking rigorously for their daily work schedule. The Institute Internet bandwidth has been increased by 1 Gbps. This has been done by relocating the bandwidth available to the Institute for NKN video conferencing. In addition to the network usage being carried out for the research and academic activities of the Institute there are
many other utility services of the Institute that are regularly utilizing the network. Some the utilities are:

- Computerized remote capturing of data for billing from Electric Meters in the Campus
- Centralized monitoring & recording of Video input from security surveillance cameras placed at strategic locations
- Hosting of websites of all support services for online complain & query system
- Centralized network support to Training & Placement activities for online tests, interviews & video conferencing

Networking facilities have been extended to the following location by during the year under review. Some of the location where major networking has been undertaken is given below:

- Dr B R Ambedkar hall of Residence
- Lal Bahadur Sashtri hall of Residence
- Addition Network points of Azad & Nehru Hall of Residence
- Mother Teresa hall of residence for girl students
- Bachelors Flat 1 & 3 Converted to Girls Hostel accommodation
- CEP Guest house & Residence
- V Niwas Annex building
- 2 BR & 1 BR Faculty & Staff quarters
- New building of Computer Science & Engineering Department
- Second Floor of Bio Technology Department
- Sir J C Bose Laboratory Complex
- 2nd floor of Industrial & System Engineering
- Nalanda Class Room Complex
- PC Lab V of CIC
- Networking to the Kendriya Vidyalaya, DAV Model School, Hijli High School and St Agnes School

**Laboratory Facility**

- The CIC laboratories has been used in full swing for conducting Institute Computing laboratory classes, registration of students in both semesters, Training & Placement activities, short term courses and International seminars, tech festival like Kshitij, Spring festival and other computer contests organized by Department/Centers/Schools of the Institute.
- The CIC PC laboratories have also supported online examinations like GATE exams.

**Other Facilities (Software & Hardware)**

- Institute has renewed the existing antivirus software “Trend Micro Enterprise Security Suite with Advanced Reporting Module” for 20000 User licenses. This software would be protecting the Endpoint Security, Gateway security, Web Gateway, Messaging Gateway, Mail Servers, File Servers and also be capable of providing advanced reporting on possible threats.
- Software for Mail Messaging Solution for 20000 users is also in use faculty, staff and students of the Institute.
- VPN support is being provided to users for connecting to Institute network from any outside network.
• Other software available to the user community include, Microsoft campus wide licensing, Software's like Abacus (for finite element modeling and analysis), MATLAB (for integrated technical computing), Solid Works (for engineering drawing), PASW (statistical package) and ANSYS etc.

• Additional Blades have been procured to augment the existing facilities and support the ERP activities, JEE & GATE examinations.
Continuing Education Center

1. Name of the Centre/Unit : Continuing Education Centre.

2. Full name of the Dean : Prof. Om Prakash Sha

3. Short Term Courses Organized by the Unit

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<tr>
<th>Sl. No.</th>
<th>Short term courses organized under</th>
<th>No. of Courses</th>
<th>No. of participants</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>QIP (AICTE) Short Term Courses</td>
<td>07</td>
<td>210</td>
<td>11 Weeks</td>
</tr>
<tr>
<td>2.</td>
<td>Sponsored/Self finance Short term courses</td>
<td>60</td>
<td>1600 (approx.)</td>
<td>1 week for each course (approx.)</td>
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<tr>
<td>3.</td>
<td>Workshop/ National &amp; International Conference</td>
<td>18</td>
<td>800 (approx.)</td>
<td>3-4 days for each conf.</td>
</tr>
<tr>
<td></td>
<td>Total =</td>
<td>85</td>
<td>2610</td>
<td></td>
</tr>
</tbody>
</table>

3-Year M. Tech Programme organised by the Unit

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Subject</th>
<th>No. of Students</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Electrical Engineering</td>
<td>54</td>
<td>3 Years</td>
</tr>
<tr>
<td>2.</td>
<td>Electronics and Electrical Communication Engineering</td>
<td>82</td>
<td>3 Years</td>
</tr>
<tr>
<td>3.</td>
<td>Information &amp; communication Technology</td>
<td>54</td>
<td>3 years</td>
</tr>
</tbody>
</table>

3-Year Executive MBA Programme organised by the Unit

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Campus</th>
<th>No. of Students</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kolkata campus</td>
<td>25</td>
<td>3 Years</td>
</tr>
<tr>
<td>2.</td>
<td>Bhubaneswar campus</td>
<td>04</td>
<td>3 Years</td>
</tr>
</tbody>
</table>

Empowerment of Students and Teachers through Synchronous & Asynchronous
Instruction (EIT) under NMEICT, MHRD

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Title of Workshop</th>
<th>No. of trainers/ participants</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Analog Electronics</td>
<td>221 / 7427</td>
<td>1 week / 2 weeks</td>
</tr>
<tr>
<td>2.</td>
<td>Signal &amp; Systems</td>
<td>237 / 8730</td>
<td>1 week / 2 weeks</td>
</tr>
<tr>
<td>3.</td>
<td>Fluid Mechanics</td>
<td>229 / 8000</td>
<td>1 week / 2 weeks</td>
</tr>
</tbody>
</table>

International Summer and Winter Term (ISWT 2014)

Indian Institute of Technology Kharagpur from May 2014 is starting its first international summer and winter term (ISWT) where the national and international participants will get an opportunity to seek knowledge and experience from reputed International faculty through intensive study of subjects and personal interactions. 19 subjects will be offered during the summer term (May-June-July) and 10 subjects during the winter term (December). These subjects are designed around current and multidisciplinary themes of Science, Engineering, Management and Law. The duration for each subject is of 2 weeks or 10 working days with a judicious blend of lectures and tutorials per day.

4. Facilities:

   Video-Conferencing Studios at Kolkata (3), Bhubaneswar (3) and Kharagpur (4) & Raipur (2)
   Seating Capacity (60 + 40 + 40 + 40 + 40)

Seminars/Workshops/Conferences Organized by the Unit

   Total No. of Workshops/Conferences Organized : 18
   Total No. of participants attended : 800 +

Particulars of M.Tech and Ph.D scholars joined/completed under QIP

   A. No. of Teachers completed Ph.D degree under QIP : 07
   B. No. of Teachers completed M.Tech programme under QIP : 08
   C. No. of Teachers joined Ph.D programme under QIP : 10
   D. No. of Teachers taking advance admission to Ph.D programme under QIP : 12
   E. No. of Teachers joined M.Tech. programme : 07

Particulars of 3-year M.Tech Programme:

   A. No. of students completing the course under EC specialisation : 23
   B. No. of students completing the course under EE specialisation : 15
   C. No. of students completing the course under IT specialisation : 13

Particulars of 3-year Executive MBA programme
A. No. of students completing the course from Kolkata campus : 25
B. No. of students completing the course from Bhubaneswar campus : 04

**CD Cell activities**

Manuscripts for text books completed : 01
The Estate Electrical and Mechanical Works Section is constantly engaged in upgradation and modernisation of the power system starting from the receiving substation at 33kV to the Distribution Substations, power distribution system in the departments and sections and renovation of the internal wirings of the existing departments and sections with the latest state of the art using energy efficient luminaries and aesthetically appealing accessories.

The major achievements of the section are enumerated as follows:-

- **Augmentation and Modernisation of main receiving 33kV/11kV Substation from 9.0 MVA to 20.1 MVA**

- **Augmentation and upgradation of the 11kV/415V distribution substations to double their capacities with new transformers, Vaccum Circuit breakers for 11kV and Air Circuit breakers for low voltage distribution.**

- **Augmentation of existing substation at Balarampur Pump house**

- **Implementation of Ring main system in the institute has been successfully completed in the 11kV and 415V network so as to ensure reliability of power supply despite fault in a particular line.**

- **Modernization of the distribution system in the departments, Centres and section by replacement of the low voltage distribution panels using Air Circuit breaker and Moulded Case Circuit breakers, rewiring by concealed method and using energy efficient luminaries for illumination.**

- **Trunk Bus alley in the first floor of the main building has been successfully implemented to ensure safety and frequent failure outbreak of fire from electric short circuit.**

- **Illumination augmentation of the Swimming pool, Gyan Ghosh stadium, Tennis court, Basketball and Volleyball court in accordance with intentional illumination standards using relevant illumination software.**

- **Installation of energy efficient LED street lights in different new roads of the campus.**

- **Illumination of the landscaped area in front of the Students Activity Centre.**

- **The section has successfully installed green, silent and environment friendly DG sets at Kolkata extension centre, Biotechnology department and CORAL.**

- **Students Activity Centre:** Electrification of the new Students Activity Centre along with provisions for emergency power. The latest international standards of illumination for indoor sports lighting has been followed strictly.
• **Laboratory Complex:** The first phase of the electrification of the new laboratory complex to cater to the requirements of the first year students has been successfully completed and handed over to the respective departments.

• Electrification of the MBE-MOCVD Laboratory in the CWISS building.

• Installation of Capacitor banks at 11kV and 415V for improvement of Power factor. Steps have also been taken towards improvement of power quality by installation of FACTS devices.

• The electrification of Rajendra Mishra School of Engineering Entrepreneurship and Innovation Laboratory in the STEP complex has been successfully completed and handed over to the respective department.

• Centre for Railway Research: The electrification of the research has been successfully completed. The electrical works consisted of the following
  
  • A new 3x500 kVA substation dedicated to the Centre to cater to the loads of the various experimental facilities.

  • Internal electrification and workshop illumination of the centre using the latest standards.

  • Establishment of a single phase 25kV source for experimental facility.

**WORKS UNDER PROGRESS**

• Augmentation of existing substation at Anikut Pump house.
• Installation of Solar Power for illumination of the lake and the adjoining area.
• Electrification of the Steel Technology Centre.
• Electrification of the Mechanical workshop.
• Electrification of the Annex to the new Computer Science building.
• Electrification and upgradation of the sheds behind the hanger for CRR, PK Sinha Centre for Bio Energy, Transportation lab of the Civil Engineering department and OE & NA laboratory.
• Expansion and Electrification of the Nehru Museum.

**NEW WORK TAKEN UP**

• Implementation of 100 kwp Micro Grid system using Solar Power.
• Installation of Cable Management System and Bus Trunking facility for the administrative building.
• Augmentation of Substation no- 5.
• Implementation of SCADA and data acquisition from energy meters of the quarters in the campus using Wi fi network of the Institute.
• Replacement of 25 nos old electrical panels in halls and also distribution board’s with new state of art modular panels and MCB distribution boards for better distribution of electricity by replacing old and burn out electrical panels and Distribution Boards.
ESTATE CIVIL HEAD OFFICE

As a part of the ongoing infrastructural development, various construction projects have been taken up by Estate Civil Head Office. Current status of those projects is as follows:

STUDENTS ACCOMMODATION:
650 rooms of B.R. Ambedkar Hall of Residence have already been handed over. Renovation of 118 capacity Girls’ Hostel in the existing Old Kendriya Vidyalaya is completed and 76 rooms have already been handed over to HMC.

NALANDA CLASSROOM COMPLEX:
58 class rooms have been handed over & Furniture etc. for 30 class rooms have been completed for use. Classes are being held from this semester in 30 class rooms.

J.C. GHOSH SCIENCE BLOCK & P.C ROY LABORATORY BLOCK:
Roof slabs for both the Blocks are complete.

A.J.C. BOSE LABORATORY COMPLEX:
Construction of extension portion is already over and all laboratories had been handed over and they are under use.

NEW WATER SUPPLY PROJECT:
8.40 km. of pipelines have been laid. Construction at river bed is going on.

DEVELOPMENT OF CHILDREN PARKS AT CAMPUS:
Six children parks at Campus have been developed. Recently one Children Park near Gas Godown has been inaugurated by the Director on 5th June, 2014.

EXPANSION WORK IN ACADEMIC BUILDINGS:
Entire Expansion work of Department of IE&M, Chemical Engineering and New buildings for Department of Mechanical Engineering and Computer Science & Engineering have been completed. Expansion work of Department of Biotechnology is completed. Expansion works of Department of A&RP, Materials Science Centre, SMST, NCC etc. are under process.

CONSTRUCTION OF A-TYPE FACULTY APARTMENTS:
For 2 Blocks total RCC completed. For 1 Block (28 Flats) will be handed over shortly and balance 28 Flats will be handed over on December, 2014.

CONSTRUCTION OF B-TYPE FACULTY APARTMENTS:
Conceptual drawings approved. BOQ scrutiny is in progress.

CONSTRUCTION OF MARRIED SCHOLARS ACCOMMODATION:
Conceptual drawings approved. After scrutiny of BOQ submitted for additional amount approval, which has been approved in the 115th BWC. Construction started.
CONSTRUCTION OF FAUCULTY TRANSIT APARTMENTS:
Conceptual drawings approved. After scrutiny of BOQ submitted for additional amount approval, which has been approved in the 115th BWC. Construction started.

EXPANSION OF VIKRAM SARABHAI RESIDENTIAL ACCOMMODATION:
Conceptual drawings approved. BOQ scrutiny is in progress.

CONSTRUCTION OF SUPER SPECIALITY HOSPITAL:
The Master Plan for the Super Speciality Hospital has been accepted by the Institute. The floor layouts of the Hospital building to be considered in the first phase have also been approved by the Institute. The Architect and PMC would make another presentation on 19.06.2014 involving the overall layout of the Hospital building and other services buildings for approval of IIT Kharagpur. All plans etc. are approved. Tendering process will start very soon.

CONSTRUCTION OF RESEARCH PARK AT RAJARHAT KOLKATA:
CPWD have submitted the floor plans and the same have been approved by the Institute after several interactions. The preliminary estimate has been recently received from CPWD, Kolkata. CPWD have been advised to initiate the process of submission of drawings to NKDA.

CONSTRUCTION OF NIVEDITA HALL OF RESIDENCE:
Foundation work is going on for the new construction.
Extra Academic Activities
National Service Scheme

Introduction

Recent activities of the National Service Scheme (NSS) team of IIT Kharagpur are summarized herein. The scheme is administered according to the guidelines of the Ministry of Youth Affairs and Sports, Government of India and endeavors to add an extra dimension to the higher education by motivating youth for community service. The activities undertaken in this program has been included in the core curriculum of the undergraduate program of IIT Kharagpur. The curriculum requires three hours to be performed by each student over the entire academic session. Participating students are only entitled to their usual privileges at IIT Kharagpur if they demonstrate a satisfactory performance in the program.

At present NSS team of IIT Kharagpur includes about 1000 students every year (a five-year total of about 4000 students), mainly from the 1st and 2nd year of the undergraduate program, 16 Program Officers, a Program Coordinator and a part time accountant. The current yearly expenditure of the program stands at about Rupees four lakh ten thousand, of which Rupees three lakh seventy thousand was the grant-in-aid sanctioned by the state government. Currently, the team is organized into 15 units, each comprising of between 60 and 70 students. Names and contact particulars of the present team of Program Officers (PO) and Program Coordinator (PC) can be found in Table 1. Twenty villages and slums spread over an area extending to about 8 km from IIT Campus have been adopted by NSS units of IIT Kharagpur. Weekly and special (yearly) activities of NSS at these villages are described in the following section.

<table>
<thead>
<tr>
<th>Name (Function, Unit)</th>
<th>Telephone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>V Racherla (PO, 1)</td>
<td>3222 282900</td>
<td><a href="mailto:vikranth.racherla@mech.iitkgp.ernet.in">vikranth.racherla@mech.iitkgp.ernet.in</a></td>
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<tr>
<td>RK Rawat (PO, 2)</td>
<td>3222 282864</td>
<td><a href="mailto:rkrawat@hijli.iitkgp.ernet.in">rkrawat@hijli.iitkgp.ernet.in</a></td>
</tr>
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<td>D Dhara (PO, 3)</td>
<td>3222 282326</td>
<td><a href="mailto:dibakar@chem.iitkgp.ernet.in">dibakar@chem.iitkgp.ernet.in</a></td>
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<tr>
<td>A Nag (PO, 4)</td>
<td>3222 281900</td>
<td><a href="mailto:ahinnag@chem.iitkgp.ernet.in">ahinnag@chem.iitkgp.ernet.in</a></td>
</tr>
<tr>
<td>DK Swain (PO, 5)</td>
<td>3222 283170</td>
<td><a href="mailto:swain@agfe.iitkgp.ernet.in">swain@agfe.iitkgp.ernet.in</a></td>
</tr>
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<td>MK Das (PO, 6)</td>
<td>3222-282924</td>
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<tr>
<td>MP Rajak (PO, 7)</td>
<td>3222 281800</td>
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<tr>
<td>M Halder (PO, 8)</td>
<td>3222 283314</td>
<td><a href="mailto:mintu@chem.iitkgp.ernet.in">mintu@chem.iitkgp.ernet.in</a></td>
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<tr>
<td>P Guha (PO, 9)</td>
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<tr>
<td>NDP Singh (PO, 10)</td>
<td>3222 282324</td>
<td><a href="mailto:ndpradeep@chem.iitkgp.ernet.in">ndpradeep@chem.iitkgp.ernet.in</a></td>
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<tr>
<td>P Bhattacharya (PO, 11)</td>
<td>3222 282472</td>
<td><a href="mailto:paramita@civil.iitkgp.ernet.in">paramita@civil.iitkgp.ernet.in</a></td>
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<tr>
<td>RK Sen / BM Manoj (PO, 12)</td>
<td>3222 283752</td>
<td><a href="mailto:rksen@hijli.iitkgp.ernet.in">rksen@hijli.iitkgp.ernet.in</a></td>
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<tr>
<td>A Deb (PO, 13)</td>
<td>3222 283412</td>
<td><a href="mailto:arghya@civil.iitkgp.ernet.in">arghya@civil.iitkgp.ernet.in</a></td>
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<td>S Misra (PO, 14)</td>
<td>3222 282338</td>
<td><a href="mailto:smisra.editor@gmail.com">smisra.editor@gmail.com</a></td>
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<tr>
<td>V Adyam (PO, 15)</td>
<td>3222 282340</td>
<td><a href="mailto:yenimadhav@hijli.iitkgp.ernet.in">yenimadhav@hijli.iitkgp.ernet.in</a></td>
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<tr>
<td>A George (PO, Admin)</td>
<td>3222 283236</td>
<td><a href="mailto:abraham@arp.iitkgp.ernet.in">abraham@arp.iitkgp.ernet.in</a></td>
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<tr>
<td>D Roy (PC, NSS)</td>
<td>3222 283456</td>
<td><a href="mailto:debasis@civil.iitkgp.ernet.in">debasis@civil.iitkgp.ernet.in</a></td>
</tr>
</tbody>
</table>
Activities

NSS – IIT Kharagpur work on a range of social issues including teaching, organization of medical camp and blood donation camp, and conducting environmental and social awareness campaigns. Its regular and special activities are summarized in the following subsections.

Regular Activities

Each unit identifies activities in adopted villages or slums based on their survey and open house meetings to consult local residents, government representatives (e.g., Panchayat Members, and Municipal Councillors), community workers and leaders (e.g., School Teachers, Rural Medical Practitioners, and Anganwadis) and government officials (e.g., SDO, BDO, and forestry officials). Main activities undertaken by the units during their weekly involvement are listed in Table 2.

Special Activities

Special activities included NSS Annual Camp, celebrations of the Independence Day and the Annual Day of NSS – IIT Kharagpur. The special activities are listed in Table 3.

NSS – IIT Kharagpur in the news

The activities undertaken by NSS – IIT Kharagpur were covered by local media. Additional and latest information on the activities of NSS – IIT Kharagpur can also be found at nssiitkgp.blogspot.com.
<table>
<thead>
<tr>
<th>Unit</th>
<th>Location (Number of volunteers / beneficiaries)</th>
<th>Activities (duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sonamukhi and Jhuli: 75 / 100</td>
<td>Teaching at 3 primary schools (Jan-Apr), computer training for local youth (Jan-Apr), clothes collection from IIT Campus for distribution amongst slum dwellers and at Annual Camp (Apr), Prerana scholarship distribution (Jan-Apr)</td>
</tr>
<tr>
<td>2</td>
<td>Salboni and Ayodhagar: 54 / 200</td>
<td>Teaching at Shishu Shiksha Kendra of state government at Ayodhyagarh (Jan-Apr), and collection of clothes, books and household items from IIT Campus and their distribution at Salboni and Ayodhyagarh (Jan-Apr), distribution of books and stationery items to school students (Feb-Mar), open house with local residents and local government representatives (Mar)</td>
</tr>
<tr>
<td>3</td>
<td>Salua Board and Rakhalgeria Primary Schools: 64 / 175</td>
<td>Teaching (curricular and extra-curricular) village students of grades up to VI (Jan-Apr)</td>
</tr>
<tr>
<td>4</td>
<td>Porapara and Chamrusai: 70 / 200</td>
<td>Teaching and taking computer classes Premananda Ashram School, Chamrusai (Jan-Apr), maintenance of a club building used for tutoring local children (door / window painting, whitewashing of building walls and repair of a shed) at Porapara (Feb-Apr), survey of social and economic conditions of Porapara residents (Mar-Apr), institution of a scholarship in memory of Abhik Mahto, a class VI student from Porapara under Unit 4 tutorship, who passed away recently (Apr), open house with local residents and local government representatives (Apr)</td>
</tr>
<tr>
<td>5</td>
<td>Pariapara: 75 / 250</td>
<td>Teaching at a primary school (Jan-Apr), Setting up a library at the primary school (Feb), organizing a cricket match between NSS volunteers and Pariapara residents (Jan) and a sports meet (Mar), filing online for SC/ST certificates for ~30 Pariapara residents (Mar-Apr)</td>
</tr>
<tr>
<td>6</td>
<td>Gholghoria: 74 / 350</td>
<td>Teaching at Gholghoria primary school (Jan-Apr), maintenance of school building (door / window painting, whitewashing of building walls) at Gholghoria primary school (Feb-Apr), tending of saplings (Jan-Apr), water quality testing (Jan-Apr), medical camp in which about 180 villagers from Gholghoria, Ayodhyagarh, Salboni and Gopali were treated by seven doctors and one optometrist and were provided with prescribed medicine free of cost (Jan), organization of a sports meet (Mar)</td>
</tr>
<tr>
<td>7</td>
<td>Gangadharpur and Debigeria: 64 / 350</td>
<td>Teaching at a state government Shishu Shikshika Niketan (Jan-Apr), maintenance of school building and premises (door / window painting and erection of a bamboo fence) at primary school (Mar-Apr), organization of a football tournament and a sports meet (Jan), distribution of exercise books and stationery at Kenthia Primary School (Jan), Prerana scholarship distribution (Jan-Apr)</td>
</tr>
<tr>
<td>8</td>
<td>Balarampur (71 / 300)</td>
<td>Teaching students of grades IX to XII (Jan-Apr), organizing test for awarding Prerana scholarships (Apr), data collection for SC/ST certificate filing for about 50 villagers (Jan-Apr), administering “Vivekdisha,” a distance learning program for high school students webcast from RKMVU, Belur, Howrah (Jan-Apr), clothes collection from IIT Campus and distribution at Balarampur (Jan-Feb), Help two destitute village residents with hutments repair (Apr)</td>
</tr>
<tr>
<td>9</td>
<td>6 IIT residence halls (12 / 35): Mata Mandir, Durga Mandir and Shiv</td>
<td>Teaching underprivileged children employed within IIT Campus and slum households around IIT Kharagpur</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Details</td>
</tr>
<tr>
<td>-----</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>10</td>
<td>Ayma (44 / 600) and Kasturba Primary School (26 / 100)</td>
<td>Teaching at Chhattisgarh High School, Ayma and Kasturba Primary School, Balarampur (Jan-Apr), personality development training for students at Chhattisgarh High School (Jan-Apr), school facilities upkeep (Jan-Apr), collecting and donating books for school library at Chhattisgarh High School (Jan-Apr), help organizing sports meet at Chhattisgarh High School (Jan)</td>
</tr>
<tr>
<td>11</td>
<td>Talbagicha (69 / 120)</td>
<td>Teaching 50 to 60 students of standards VIII to X at Talbagicha High School twice a week (30 volunteers Jan-Apr), clothes and medicine from IIT campus collection and cataloging collected items (39 NSS volunteers Jan-Apr), administering “Vivekdisha” (Jan-Apr), Kanyashree Prakalpa baseline survey (Feb-Apr), maintenance of school building (whitewashing of two class rooms) (Apr), organization of thalassemia awareness camp (Feb) and a camp blood testing for thalassemia detection (80 beneficiaries) (Mar)</td>
</tr>
<tr>
<td>12</td>
<td>Rangametia (70 / 120)</td>
<td>Teaching primary school students (Jan-Apr), Kanyashree Prakalpa baseline survey (Feb-Apr), open house with local residents and local government representatives leading to the identification of adult education and water quality assessment as two potential future activities (Mar)</td>
</tr>
<tr>
<td>13</td>
<td>Kashijora (60 / 150)</td>
<td>Teaching at Kashijora Primary School (Jan-Apr), cleaning and upkeep of school premises (Jan-Apr), distribution of first aid kit 60 village residents (Jan), collecting books from IIT campus residents and setting up a library at Kashijora Primary School with donated books (Jan-Mar)</td>
</tr>
<tr>
<td>14</td>
<td>Ghagra (64 / 200)</td>
<td>Teaching primary school children (Jan-Apr), temple rehabilitation (Jan-Apr), organizing test for awarding Prerana scholarships (Apr), organizing a medical camp that served about 50 Ghagra residents and distribution of medicine free of cost to the patients (Mar)</td>
</tr>
<tr>
<td>15</td>
<td>Sholadahar (65 / 200)</td>
<td>Teaching at a primary school (Jan-Apr), tutoring Sholadahar high school students (Jan-Apr), vocational training (Jan-Apr), medical camp (50 beneficiaries) (Mar), organizing cultural events and street plays to spread awareness on the benefits of SC/ST certificates and Kanyashree Prakalpa (Feb, Apr)</td>
</tr>
</tbody>
</table>
### Table 3. Special activities

<table>
<thead>
<tr>
<th>Event / date(s) / Location</th>
<th>Activities (duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Youth Day / January 12, 2014 / IIT Kharagpur</td>
<td>A rally was organized by NSS – IIT Kharagpur to mark the occasion continuing with the NSS tradition. Campus residents participated in the rally alongside NSS volunteers. They followed a 5-km course with colorful posters.</td>
</tr>
<tr>
<td>Republic Day / January 26, 2014 / IIT Kharagpur</td>
<td>NSS volunteers participated in the celebration of Republic Day in the IIT Kharagpur Campus as in other years. Continuing with IIT Kharagpur tradition, NSS volunteers facilitated the celebration by organizing local school children and providing refreshments to them on January 26 as well as during the children’s rehearsal on two occasions before the actual celebration. As in other years, an issue of NSS – IIT Kharagpur newsletter, “Anuraag,” was published on this day for distribution amongst guests. Unit 10 helped organize the annual sports meet at Chhattishgarh High School, Ayma on this day.</td>
</tr>
<tr>
<td>Blood donation camp / April 5, 2014 / BC Roy Technology Hospital, IIT Kharagpur</td>
<td>The Annual Blood Donation Camp was organized by NSS, IIT Kharagpur on April 12 in IIT campus with the joint help of BC Roy Technology Hospital, IIT Kharagpur and Kharagpur Voluntary Blood Donors’ Association. The blood bank collected total 120 units.</td>
</tr>
<tr>
<td>Annual Day, NSS – IIT Kharagpur / April 12, 2014 / IIT Kharagpur</td>
<td>The day was marked by distribution of best volunteer certificates to 35 work groups of 15 units of NSS – IIT Kharagpur by Professor PP Chakrabarti, Director, IIT Kharagpur and Professor Rajendra Singh, Dean (UGS), IIT Kharagpur. 1st year volunteers of Units 3 (gold medalists), 15 (silver medalists) and 4 (bronze medalists), also received their medals from Professors Chakrabarti and Singh for their performance of in the last NSS Annual Camp at Ayma, Kharagpur. Chandrasekhar Memorial Scholarship (instituted by Professor Jacob Chacko and his students in memory of one of Professor Chacko’s students) to six Class XI students was given away by Professor Jacob Chacko of IIT Kharagpur. The celebration was concluded by a cultural program by school children from villages / slums, where NSS – IIT Kharagpur operate.</td>
</tr>
</tbody>
</table>
Institute Information Cell

*Prof.-in-Charge: Prof. B.K. Mathur*

The Institute Information Cell has been the hub of academic information service of the Institute all round the year. In the past year, the Cell has renovated the web sites of the Institute and Online Notice-Board. The Cell also created and hosted sites of about forty conferences, seminars, workshops and short-term courses held during the past year and to be held in the next academic year. In addition to regular updating information on departmental pages, academic programmes, profiles of all faculty, halls of residences and administrative positions in the Institute.

The Cell also developed additional information modules for in-house application and they can be used in any other academic organization as well. These are: on-line Faculty Self Appraisal Package, departmental Report Package, Online Voting System, Guest House Booking Package, Extension of on-line Message Board facility to the Academic Section, Training and Placement Section and Doctorates Information System. In a major development of Guest House Management, all guest houses are brought under a common operating system and online booking facility has been extended to faculty. The Cell has made available the basic information about all Institute Staff on the LAN. The Cell has also developed software for various service sections for online filling of complaints.
Kalpana Chawla Space Technology Cell

HEAD: PROF. DIPANWITA ROY CHOWDHURY

ASSOCIATED FACULTY

Professor

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. D. R. Chowdhury</td>
<td>Ph.D</td>
<td>Cryptography and Security, VLSI</td>
</tr>
<tr>
<td>Dr. B. K. Sarkar</td>
<td>Ph.D</td>
<td>RF &amp; Microwave Engineering</td>
</tr>
<tr>
<td>Dr. S. Sanyal</td>
<td>Ph.D</td>
<td>RF &amp; Microwave Engineering</td>
</tr>
<tr>
<td>Dr. S. Chakraborti</td>
<td>Ph.D</td>
<td>Communication</td>
</tr>
<tr>
<td>Dr. S. S. Bandyopadhyay</td>
<td>Ph.D</td>
<td>Cryogenic Engg</td>
</tr>
<tr>
<td>Dr. K. Bandyopadhyay</td>
<td>Ph.D</td>
<td>Satellite Communication</td>
</tr>
<tr>
<td>Dr. I. Manna</td>
<td>Ph.D</td>
<td>Material</td>
</tr>
<tr>
<td>Dr. I. Sengutpa</td>
<td>Ph.D</td>
<td>Mobile Communication, VLSI</td>
</tr>
<tr>
<td>Dr. S. Banerjee</td>
<td>Ph.D</td>
<td>VLSI based embedded system design for signal/image processing, Biomedical Instrumentation</td>
</tr>
<tr>
<td>Dr. T. K. Chaki</td>
<td>Ph.D</td>
<td>Rubber</td>
</tr>
<tr>
<td>Dr. N V A Naikan</td>
<td>Ph.D</td>
<td>Reliability and Quality Engineering</td>
</tr>
<tr>
<td>Dr. Sunando Dasgupta</td>
<td>Ph.D</td>
<td>Microscale Transport Process and Microfluids</td>
</tr>
<tr>
<td>Dr. Ajay Chakrabarty</td>
<td>Ph.D</td>
<td>EMI/EMC</td>
</tr>
<tr>
<td>Dr. J. Mukhopadhyay</td>
<td>Ph.D</td>
<td>Image Processing, Medical Informatics, Bio- informatics</td>
</tr>
<tr>
<td>Dr. D. Maity</td>
<td>Ph.D</td>
<td>Seismic Analysis of Dam, Health Monitoring of Structures, Cost Effective Housing</td>
</tr>
<tr>
<td>Dr. A. S. Dhar</td>
<td>Ph.D</td>
<td>VLSI Architecture Design</td>
</tr>
<tr>
<td>Dr. G. Saha</td>
<td>Ph.D</td>
<td>Communication</td>
</tr>
<tr>
<td>Dr. T. K. Bhattacharya</td>
<td>Ph.D</td>
<td>RF MEMS</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. J. Datta Majumdar</td>
<td>Ph.D</td>
<td>Nano fluid based</td>
</tr>
<tr>
<td>Dr. S. Sen</td>
<td>Ph.D</td>
<td>Capacitive Sensors and MEMS, Control Allocation, Fractional Order Circuits and Systems, Robust Control</td>
</tr>
<tr>
<td>Dr. P.K. Das</td>
<td>Ph.D</td>
<td>Thermal Engineering, Gas-liquid two phase flow-instrumentation and hydrodynamics, CFD for multiphase flow, Nano fluids, Thermo hydraulics of nuclear reactors, Liquid-liquid two phase flow, Experimental thermo-fluid science</td>
</tr>
<tr>
<td>Dr. J. Mukhopadhyay</td>
<td>Ph.D</td>
<td>Image processing, Medical Informatics, Bio-Informatics</td>
</tr>
<tr>
<td>Dr. P. P. Das</td>
<td>Ph.D</td>
<td>Image Processing, Software Engineering, Object-Oriented Analysis &amp; Design, Language Translation.</td>
</tr>
</tbody>
</table>

**Associate Professor:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. C. Chakrabarty</td>
<td>Ph.D</td>
<td>Control System</td>
</tr>
<tr>
<td>Dr. S. B. Sant</td>
<td>Ph.D</td>
<td>Material</td>
</tr>
<tr>
<td>Dr. Raja Datta</td>
<td>Ph.D</td>
<td>Optical &amp; Wireless Network</td>
</tr>
<tr>
<td>Dr. D. Chakravarty</td>
<td>Ph.D</td>
<td>Mining &amp; Geostatics</td>
</tr>
<tr>
<td>Dr. B. Samanta</td>
<td>Ph.D</td>
<td>Mining &amp; Geostatics</td>
</tr>
<tr>
<td>Dr. P. Mitra</td>
<td>Ph.D</td>
<td>Machine Learning, Data Mining, Information Retrieval</td>
</tr>
<tr>
<td>Dr. D. Mukhopadhyay</td>
<td>Ph.D</td>
<td>VLSI, Cryptology</td>
</tr>
<tr>
<td>Dr. A. Bhattacharya</td>
<td>Ph.D</td>
<td>RF &amp; Microwave Engineering</td>
</tr>
<tr>
<td>Dr. M. Sinha</td>
<td>Ph. D</td>
<td>Aerospace Engineering</td>
</tr>
<tr>
<td>Dr. A. Mitra</td>
<td>Ph.D</td>
<td>Nutraceuticals &amp; herb based medicine/Diabetology, Drug encapsulation, Clinical Trials</td>
</tr>
<tr>
<td>Dr. Soumen Das</td>
<td>Ph.D</td>
<td>MEMS &amp; Microsystems</td>
</tr>
<tr>
<td>Dr. I. Chakrabarti</td>
<td>Ph.D</td>
<td>VLSI Design for Image and Video Processing and Communication</td>
</tr>
<tr>
<td>Dr. Abhijit Das</td>
<td>Ph.D</td>
<td>Cryptography, Computational Number Theory</td>
</tr>
<tr>
<td>Name</td>
<td>Degree</td>
<td>Specialization</td>
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</tr>
<tr>
<td>Dr. Arun Chakrabarty</td>
<td>Ph.D</td>
<td>Ocean Dynamics and Ocean Circulation Modeling of the Bay of Bengal, Data Assimilation</td>
</tr>
<tr>
<td>Dr. P. Mitra</td>
<td>Ph.D</td>
<td>Machine Learning, Data Mining, Information Retrieval</td>
</tr>
<tr>
<td>Dr. N. K. Singha</td>
<td>Ph.D</td>
<td>Tailor-made polymers via Controlled Radical Polymerization, Block (AB &amp; ABA) &amp; graft copolymers, Smart self-healing and self-cleaning polymeric materials, Tailor-made polymer nanocomposites, Thermoplastic elastomers (TPE), Polyurethane, Tailor-made modification on elastomers.</td>
</tr>
<tr>
<td>Dr. P. Ghosh</td>
<td>Ph.D</td>
<td>Low Temperature Processes and equipment, Helium Refrigeration and liquefaction systems, Cryogenic turboexpander and expansion devices, Cryogenic storage and transfer, Thermodynamics and heat transfer of supercritical helium.</td>
</tr>
<tr>
<td>Dr. Arnab Roy</td>
<td>Ph.D</td>
<td>Aerodynamics, Computational Fluid Dynamics</td>
</tr>
</tbody>
</table>

**Assistant Professor:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
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</thead>
<tbody>
<tr>
<td>Dr. P. K. Chakraborty</td>
<td>Ph.D</td>
<td>Solid-State Science and Technology</td>
</tr>
<tr>
<td>Dr. T. K. Nandi</td>
<td>Ph.D</td>
<td>Cryogenic Engg</td>
</tr>
<tr>
<td>Dr. R. Roy</td>
<td>Ph.D</td>
<td>Numerical Computation of Wave functions</td>
</tr>
<tr>
<td>Dr. M. K. Mondal</td>
<td>Ph.D</td>
<td>Microwave circuits</td>
</tr>
<tr>
<td>Dr. Arijit De</td>
<td>Ph.D</td>
<td>EMI/EMC, RF Microwave</td>
</tr>
<tr>
<td>Dr. S. K. Varshney</td>
<td>Ph.D</td>
<td>Fiber Optics Sensors, Plasmonics, Specialty fibers photonic crystal fibers</td>
</tr>
<tr>
<td>Dr. Nilanjan Mitra</td>
<td>Ph.D</td>
<td>Physics and Mechanics of solids and fluids, Continuum Mechanics of defects in materials</td>
</tr>
<tr>
<td>Dr. Karabi Biswas</td>
<td>Ph.D</td>
<td>Sensor Design, Development of Instrumentation System, Study of Fractional Order Systems</td>
</tr>
<tr>
<td>Name</td>
<td>Degree</td>
<td>Specialization</td>
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</tr>
<tr>
<td>Dr. Ratna Dutta</td>
<td>Ph.D</td>
<td>Attribute Based Cryptosystems and Broadcast Encryption, Key Pre-Distribution in WSN and Self-Healing, Elliptic Curves and Pairing based Cryptography, Oblivious Transfer and Private Set Intersection Protocols, Lattice-Based Cryptography, Signature and Commitment Schemes</td>
</tr>
<tr>
<td>Dr. S. S. Das</td>
<td>Ph.D</td>
<td>Broadband Mobile Communications, Physical &amp; MAC Layer, 4G, OFDM, MIMO, Packet Scheduling, Link Adaptation, Femto Cells</td>
</tr>
<tr>
<td>Dr. S. K. Panda</td>
<td>Ph.D</td>
<td>Sheet metal forming, Hydroforming, Bulk forming, Formability test design and development, Theory of plasticity for metal forming, Laser and resistance spot welding of sheet metal</td>
</tr>
<tr>
<td>Dr. Sujoy Kumar Kar</td>
<td>Ph.D</td>
<td>Physical and Mechnical Metallurgy, Processing-Microstructure-Microtexture-Property Relationship, Materials and property modeling, Materials systems: Ti alloys and Ni based superalloys and steels for power plant applications</td>
</tr>
</tbody>
</table>

**Emeritus Professor:**

<table>
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<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
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<tbody>
<tr>
<td>Dr. K. G. Naryanan</td>
<td>Ph.D</td>
<td>Microwave Engineering</td>
</tr>
</tbody>
</table>

**Officer:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Specialization</th>
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</thead>
<tbody>
<tr>
<td>Dr. Saswati Ghosh</td>
<td>Ph.D</td>
<td>EMI/EMC, RF Microwave Circuit &amp; Antenna</td>
</tr>
</tbody>
</table>

**Brief description of on-going activities:**
Space Technology Cell, IIT Kharagpur was renamed as Kalpana Chawla Space Technology Cell and was formally inaugurated by Chairman ISRO on 17th November 2004. This Cell has been functioning under the supervision of chairman of Space Technology Cell since June 1998. The Cell is being funded by ISRO, DRDO, CMPDIL Ranchi, etc. During the period under report the following highlights of sponsored research activities in this inside KCSTC and in different of departments of IIT Kharagpur:

1. Dual Mode Ring Resonator Bandpass Filter with wide stopband
2. Design of Wide-band, Sharp-rejection Bandpass Filters with Parallel – coupled Lines
3. Compact Bandpass Filters with Wide Controllable Fractional Bandwidth
4. Analysis of linear tapered waveguide by two approaches
5. Compact Sharp cutoff wide stopband low-pass filter using defected ground structure and spurline
7. On An Algorithm for Boundary Estimation of Commonly Occuring Heart Value Diseases in Time Domain
8. Log Gabor Wavelet and Maximum a Posteriori Estimation in Speaker Identification
9. A Robust Heart Sound Segmentation Algorithm for Commonly Occurring Heart Value Diseases
10. An object based coding scheme for frontal surface of defective fluted ingots
11. A Hierarchical Framework for Generic Sports Video Classification
12. Texture Classification Using a Novel, Soft-Set Theory Based Classification Algorithm
13. Performance of high rate data in wideband CDMA with correlated interferers
15. Effects of correlated interferers on packet data in presence of voice in cellular CDMA
16. Resource allocation for data in presence of voice in cellular CDMA with correlated interferers
17. Estimation of Antenna Factor of Wire Antenna as EMI Sensor Fusion
18. An Evolutionary Algorithm based approach to Automated Design of Analog and RF circuits using Adaptive Normalized Cost Functions
19. Image – based classification of Defects in Frontal Surface of Fluted Ingot
20. Impedance Calculation of Broadwall Longitudinal Slot on Rectangular Waveguide
21. Harmonic Suppression and Miniaturization of Microstrip Branch Line Couplers
22. Method of Moment Analysis of Arbitrary Length Longitudinal Slot on Broadwall of Rectangular Waveguides
23. Analysis of Longitudinal Slot Antennas in the Broadwall of Standard and Non-standard Rectangular Waveguides
24. Planar Compact, Wideband Bandpass Filters with Wide Upper Stopband
25. Estimation of EMI from Waveguide Joints and Analysis of Thick Rectangular windows and Open-end of a Rectangular Waveguide as EMI Sensors
27. U-Shaped microstrip structure to decrease DGS resonance frequency
28. Analysis of Wire Antennas as an Element in Reflect Array Antennas
29. Theoretical Investigation of Phase Control Using Variable Length Dipole and Loaded Dipole in Reflectarray Antenna
30. Monopole Antenna Loaded with Dielectric Resonator as EMI Sensor
32. Detection of Water Layer within the Earth Surface & Underground Coal Mines using Electromagnetic Wave
33. Imaging of Water Layer and buried object using Electromagnetic wave
34. Compact Wideband Bandpass Filters with Extended Upper Stopband
35. Harmonic Suppression and Size Reduction of Planar Branch Line Couplers
36. Method of Moment Analysis and Impedance Calculation of Broadwall Longitudinal Slot on Rectangular Waveguides
37. Compact Highpass Filter using Complementary Split Ring Resonator
38. Switched Beam Array Antenna for Sectorized Optimum Power Distribution into Discrete Localities of Rural Area
40. Multiple Beamforming using Switched Beam Array Antenna
41. Application of Multiple Cavity Modeling Technique for Accurate Analysis of Waveguide Fed Thick Rectangular Window
42. Comparison of IE3D and CST-Microwave Studio Simulator for Planar Microwave Filter design
43. Study on the Effect of Different Shapes of Defective Ground Structures Using Finite-Difference Time-Domain Technique
44. The role of GTD in the analysis and design of Antennas on shipboard platforms
45. A Wide-band Lumped Element Compact CAD Model of Si-Based Planar Spiral Inductor for RFIC
46. Design of a 1 V Low Power 900 MHz QVCO, 19th IEEE/ACM International Conference on VLSI Design
47. High Level Synthesis of Linear Analog Systems, International Conference on Emerging Applications of IT (EAIT 2006)
48. AGC of a Hydrothermal System with Thyristor Controlled Phase Shifter in the Tie-Line
49. Texture Classification Using a Novel, Soft-Set Theory Based Classification Algorithm
50. TEM Characterization of Polyester – Urethane – Clay (3 Weight%) nanocomposite
51. Improvement of performance of planner antenna using composite dielectric. EBG, RIS, SIAD structure are used for the improvement (Graind and Bandwidth enhancement, Miniaturization)
52. Efficient permittivity and permeability, slow wave structure and its application in electromagnetic wave propagation in media

**Thrust Areas**

1) Liquid Combustion, Propulsion and Cryogenics
2) Space Communications and EMI/EMC
3) Micromachine Sensors
4) Control, Navigation and Guidance
5) Embedded Systems and IP-Cores
6) Life Support Engineering
7) Smart Materials & Exotic Materials
8) Power Electronics
9) Space Education

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10) Electronics Devices

11) Cryogenics

SPONSORED RESEARCH (Sponsored by ISRO-IIT Kharagpur Cell): 37

INVITED LECTURES BY FACULTY MEMBERS: 6
Rajbhasha Vibhag

Chairman
Prof. D. K. Gupta

Hindi Officer
Dr. Rajeev Kumar Rawat

On Going Activities of Vibhag

Translation
All the documents, correspondence, Institute's Annual Report and Annual Accounts statement are translated by Rajbhasha Vibhag apart from the routine translation of various technical / non technical documents, administrative orders and letters from English to Hindi and vice versa. In addition to the translation of documents, the Vibhag ensures the bilingual display of different nameplates, notice boards, rubber stamps, and preparation of Degrees / Diplomas certificates awarded by the institute.

Hindi Training
Rajbhasha Vibhag has initiated Hindi Training to Institute employees for Praveen and Pragya course under Hindi Teaching Scheme. The classes are arranged in Institute with the help of Sri K K Pathak, Hindi Pradhyapak, Hindi Teaching Scheme. Upto December 2013, 194 employees have been trained up to Pragya level.

Hindi Workshops and Seminars
With a view to create awareness for use of Hindi as Official Language in official work as well as to accelerate the pace of its progressive use, Rajbhasha Vibhag used to organize various training programmes, Workshops and Seminars for the employees / Officers of the Institute throughout the year. In the previous year 2013-14 the following events took place:-

On 16th May, 08th August, & 6th November, 2013 and 20th March, 2014, three Hindi workshops were organized for the employees. In these Dr. Rajeev Kumar Rawat, Hindi officer briefed the employees about the techniques for doing their day to day official work in Hindi and also hands-on training was given to them to be able to work on computer in hindi, noting and drafting.

Celebration of HINDI DIVAS
During the month of September, Rajbhasha Vibhag has organized "Hindi Saptah" from 10- 14th Sep 2013. Several programmes and competitions in Hindi were organised for employees and students of the Institute as well as for the students of nearby schools. Winners were motivated with certificates and hindi books as prizes.

Publication
Rajbhasha Vibhag publishes a monthly News Magazine "Jharokha" in Hindi covering all the academic, cultural, extra-curricular activities of the institute with the rules, regulations, policy matters related to Rajbhasha.

**Resources and Achievements**

**Softwares**

Rajbhasha Vibhag has several Hindi Softwares like i-leap, ISM Publisher, ISM Office, Leap Office etc. Vibhag also uses the tools, PARIVARTAK, MANTRA, TRANSLITERATION, etc developed by Department of Official Language, MHA, Government of India, C-DAC and other agencies. Recently ISM V.6 was procured which is Unicode compatible.

**UNICODE**

The Vibhag has activated UNICODE in all the computers of departments and trained the employees to work in Hindi.

**Rajbhasha Library**

Rajbhasha Vibhag has a full fledged Library with a collection of more than 1200 books of different writers on literature, fiction, poetry, prose, play and various subjects of translation and language.

**Bilingual web site**

The Rajbhasha Vibhag has made its website bilingual. Useful information links are available on Vibhag Website regarding training programmes, incentives schemes, different tools etc. The Rajbhasha Vibhag has also made the Institute's website bilingual and efforts are being made to make the contents of the website also bilingual.

**Committees**

**Official Language Implementation Committee and Progress Measurement Committee**

The Institute has constituted Official Language Implementation Committee (OLIC) for the implementation of Rajbhasha Policies and to monitor the progressive use of Hindi in the Institute in day-to-day work. A meeting of the OLIC is held quarterly and is chaired by the Director. This year the meetings were held on 18.06.2013, 26.11.13 and 13.03.2014 to discuss various issues.

**Town Official Language Implementation Committee (TOLIC)**

In addition to this, Rajbhasha Vibhag, IIT Kharagpur plays a vital role in co-ordination for implementing the Official Language policy in the town. As the Director of the Institute is the senior most officer of Central government in Kharagpur, Rajbhasha Vibhag, Ministry of Home Affairs, Government of India has nominated him as Chairman of Town Official Language Implementation Committee (TOLIC). All the central government offices, Banks, Corporations, Autonomous bodies and enterprises are the members of TOLIC. At present there are 49 member Offices in the committee. The committee has been assigned the task of implementing the Rajbhasha policies and ensuring the orders and directives of government. The Director, Prof. Partha P Chakraborty has nominated Prof. D. K. Gupta, Chairman/Rajbhasha Vibhag as
Executive Chairman and Dr. Rajeev Kumar Rawat, Hindi Officer as Member- Secretary of TOLIC to look after the routine work of committee. As per the calendar, the meetings of TOLIC Khargpur are fixed to be held in January and August. In the previous year two meetings were held on 20.08.2013 and 20.03.14. The meetings were chaired by the Chairman TOLIC and attended by Heads of the member offices with their Hindi Staff. Rajbhasha Vibhag invites the employees of TOLIC member offices to participate in the workshops, seminars and training programmes organized in IIT Kharagpur.
Science & Technology Entrepreneurs’ Park (STEP)

NAME OF THE UNIT

Science & Technology Entrepreneurs’ Park / Technology Business Incubators (STEP/TBI)

FULL NAME OF THE CONCERNED OFFICER

Prof. Indranil Sen Gupta
Professor, Department of Computer Science & Engineering, &
Prof-in-Charge of Incubation and Entrepreneurship Programme, SRIC &
Managing Director, Science and Technology Entrepreneurs' Park,
Indian Institute of Technology Kharagpur, India

MAJOR ACTIVITIES:

1) High end TBI lab with VLSI based equipments has been established to facilitate the entrepreneurs under TBI/STEP incubation.

2) Infrastructure facilities created:

- Construction of incubation facilities 13,500 sq.ft. is under process. Out of that, 4500 sq.ft. is completed and already under use at STEP, Gopali.
- A set of twenty cubicles for the usage of Entrepreneurs have been established in the old building of STEP, IIT Kharagpur.
- The companies can access these cubicles and avail the facilities for their design and testing.
- Prof. Ajoy Kumar Ray, Vice Chancellor and Dr. M. K. Sanyal, professor & Head, Department HRM, Indian Institute of Engineering Science & Technology visited STEP on 28th March, 2014 for the possible collaboration on E-Cell activities and entrepreneurial programme.
- Prof. Paul Lillrank (Aalto University, Finland) visited STEP, IIT Kharagpur in the month of January, 2014 and delivered lectures on “Quality Management for Entrepreneurial ventures” and visited Seva-Bharati School of Living, Kapgari, Jhargram, West Midnapur district of West Bengal, towards awareness camp on health delivery model. Dr. Ranjan Sen, Alumnai of IIT Kharagpur and Chairman of Seva-Bharati School of Living visited STEP for the possible collaboration in the field of agricultural innovation & entrepreneurial activities to change the socio-economic scenario of extreme rural area of Jhargram.

3) TIFAC-SIDBI Technology Innovation Programme (SRIJAN): On the 10th day of January, 2014 the programme was held at STEP, IIT Kharagpur. Around 100 (hundred) innovators attended the meeting where 17 innovators have showcased their product. The scheme provides support to entrepreneurs (either start up or existing) to scale-up / commercialize new products / process based on technology innovations. Dr. P. R. Basak, Head-TIFAC/SIDBI Technology Innovation Programme, New Delhi, Mr. S. Ramakrishnan, General Manager, SIDBI, Kolkata, Prof. Indranil Sen Gupta, Managing Director, STEP, Prof. Partha Pratim Das, Head, Rajendra Mishra School of Engineering Entrepreneurship along with 5 (five) other professors of RMSoEE attended the meeting. Honorable Director of IIT Kharagpur also visited during the meeting.
4) **PRISM Awareness Meet:** On the 26th day of March, 2014, Dr. Ramanuj Banerjee, Scientist ‘D’, DSIR, New Delhi, Govt. of India, visited STEP, IIT Kharagpur to discuss the details of PRISM project. Prof. Indranil Sen Gupta, Prof. Partha Pratim Das, Prof. Basch Chakraborty, Prof. Satyahari Dey and Mr. Sumit Biswas, Assistant Registrar, SRIC were present at the meeting.

5) **Entrepreneurs Meet:** On March 29, 2014 an entrepreneur’s meet was organized at STEP, IIT Kharagpur. Prof. Indranil Sen Gupta, as new Managing Director of STEP inaugurated the programme and addressed the entrepreneurs. He has interacted with the incubatees about the guidelines and policies of various funding programmes available through different Govt. Projects. Prof. Indranil Sen Gupta (MD, STEP), shared his experience and appreciated the step taken by the young entrepreneurs and innovators for their development. Mr. S. C. Santra (GM, STEP) explained the activities of the centre and support mechanisms for the grassroots entrepreneurs and innovators.

6) **PRISM Awareness Camp:** On the 29th day of March 2014, a PRISM Awareness Camp was held at STEP, IIT Kharagpur. Around 50 (fifty) innovators attended the meeting including professors of various department of IIT Kharagpur. Prof. Indranil Sen Gupta, PI of the project, discussed in details about the project and attended to all the queries made by the innovators. Prof. Indranil Sen Gupta asked innovators to submit PRISM Proposals in a large numbers as Tepp Outreach & Cluster Innovation Centre (TOCIC), IIT Kharagpur will be happy to help the innovators in all respect.

7) **Faculty Development Programme (FDP):** We have successfully conducted entrepreneurship (academic and practice) based one faculty development programme (FDP) in 2013-14. Seventeen faculty members participated in the programme. The participants were taught how to start E-Cell in their respective institution, how to create courseware on entrepreneurship, and how to promote entrepreneurial activity in their corresponding areas.

8) **Technology based Entrepreneurship Development Programme (TEDP):** We have successfully conducted entrepreneurship (energy, environment, education & health) based two entrepreneurship development programme (TEDP) in 2013-14. Fifty one students from Science background participated in the programme. The participants were taught how to start their own business based on their own innovation.

9) **The Global Entrepreneurship Summit (GES):** The annual flagship event of E-Cell IIT Kharagpur unfurled in a grand style on 10 January 2014 as more than 2000 students from all over the country watched in awe. The GES summit 2014 witnessed workshops, interactive sessions and lectures from eminent personalities like Mr. Avinash Vashistha, Chairman and Geography Managing Director, Accenture India; Mr. Anil Joshi, Ex- President, Mumbai Angels; Mr. Varun Agarwal (Alma Mater), Mr. Arunachalam Muruganantham (Jayaashree Industries), Mr. Bhaskar Majumdar (Heath Ventures, IIT Kgp Alumnus), Mr. Farrhad Acidwalla (Rockstah Media), Ms.Ira Trivedi(Novelist, Entrepreneur),Ms. Devita Saraf (Vu Technologies), Mr. MN Srinivasu (Bill Desk) and Mr. Sam Pitroda (Advisor to PM, Chairman, National Innovation Council). Mr. Avinash Vashistha and Mr. Anil Joshi were the keynote speakers for the inauguration ceremony. The three day conference served as a platform for discussion of opportunities and programs for promoting entrepreneurship at IIT Kharagpur and in India on the whole and chalk out common strategies. The GES witnessed several programs and conclaves as well which were widely appreciated by the participants. Mr. Rajat Sharma Chairman and Editor-in-Chief, India TV) and Mr. Sharad Gupta(CEO, 10kya.com) were the keynote speaker at the closing ceremony.
TIETS-TIDE—Screening Committee Meeting: A screening Committee meeting, consisting of Prof. Indranil Sen Gupta, Prof. Partha Pratim Das, Prof. Satyahari Dey, Prof. Bhaskar Bhowmick and Mr. Subhash Chandra Santra, General Manager, STEP, was organized on February 7, 2014. 4(four) Start-ups of IIT Kharagpur and 1 (one) Start-up of IIT Madras have participated in the committee. Rs.17 lakh have been disbursed to two of them for product development and commercialization of their innovations.

TDB—Screening Committee Meeting: A screening Committee meeting, consisting of Prof. Indranil Sen Gupta, Prof. Partha Pratim Das, Prof. Satyahari Dey, Prof. Bhaskar Bhowmick and Mr. Subhash Chandra Santra, General Manager, STEP, was organized on February 7, 2014. 2(two) companies, formed by IIT Kharagpur students, have participated in the committee. Rs.22 lakh have been disbursed to both of them for product development and commercialization of their innovations.

Thrust Areas of Research

TBI Research: Following fields of development are well supported and bolstered by TBI (Test/Measurement, Design and Characterization lab)

- Embedded System Design & Development (High and Low End FPGA/DSP development board) for major below application.
- Wireless Communication
- Image Processing
- Medical: Biometric passports, Active & Passive semiconductor devices design & Modeling, Low Noise receiver & Power amplifier
- Design & Development for medical instrumentation

Management Research:

- Business Architecture/Business Networks for SME
- Information & Communication Technology (ICT) applications in Healthcare
- Technology Interventions of Growth Ventures
- The Education-Enterprise association for entrepreneurship through ideation, incubation and entrepreneurial integration
- Product Development Strategy for Startup Firm
- Business Intelligence for Entrepreneurial venture
- Quality of Service for SME

Brief descriptions of on-going entrepreneurial activities at STEP

Total No. of companies: 84
STEP IIT Kharagpur Campus: 71
STEP Gopali Campus: 13

Other Assistance of Entrepreneurial Activities:

- Entrepreneurship support through MSME grant.
- MSME IIT Kharagpur centre has funded 9 innovators and approved another 2 innovator.

LECTURE BY VISITING EXPERT: 01

SEMINARS/WORKSHOPS/CONFERENCES: 07
Sponsored Research & Industrial Consultancy (SRIC)

The academic excellence of an educational institution stands on its research capability, where learning and innovation complement each other. IIT Kharagpur has been committed towards developing and maintaining the highest standards in both fundamental research as well as applied research. The wide variety of engineering sciences at IIT Kharagpur provides a unique environment that fosters interdisciplinary research in cutting edge technology areas, such as energy, nanotechnology, semiconductors, bioengineering, and computational sciences. The diversity of in-house expertise at IIT Kharagpur has also catalyzed the development of a healthy ecosystem for large scale industrial collaborations in multi-disciplinary areas, such as automotive control software, railways research, steel technology, petroleum and biofuels research, industrial robotics, and many more. IIT Kharagpur’s research programs reach across the campus and beyond, linking together 19 departments, 16 academic centers and a large number of advanced R&D laboratories, stimulating the integration of inquiry, new knowledge, and education.

The year 2013-2014 has been a landmark for IIT Kharagpur in terms of its outreach towards ambitious science and technology missions of national importance. The new research portfolio includes the following missions:

- **Food Sustainability.** This includes technology for food production, processing and distribution logistics. This mission brings together researchers from agricultural engineering, biotechnology, operations research and industrial engineering.

- **Future of Cities.** Technology for the development and maintenance of our cities. This includes building technology, road and pavement technology, waste and hygiene management, traffic, and governance. This mission brings together researchers from civil engineering, architecture and city planning, industrial engineering, computer science, and law school.

- **Signals and Systems for Life Sciences.** Technology for leveraging biometric signal processing for analysis, prognostics, diagnostics and affordable healthcare. This mission brings together researchers from electrical, electronics and telecommunication engineering, school of medical science and technology, biochemical engineering, computer science and information technology and practicing medical professionals.

- **Artificial Intelligence for Societal Needs.** Technology for knowledge discovery and intelligent decision making for solving problems in the sectors of energy, climate, water, disaster management and traffic. This mission brings together researchers from Computer Science, electrical and energy engineering, environmental sciences, geology and geophysics, civil engineering, social sciences, and architecture.

- **SANDHI-Science-Heritage and Creative Economic Projects.** Technology for preservation, archival, development and scientific exploration of our heritage. This mission brings together researchers from architecture, social sciences, geophysical sciences, computer and information sciences, electrical sciences, and management.

- **Centre for Robotics.** Technology for robotics, unmanned intelligent vehicles, intelligent exploration and surveillance, biomedical and nano-robotics. This mission brings together researchers from mechanical engineering, mining engineering, electrical sciences, computer and information sciences, material science and architecture.
Centre for Microfluidics. Technology based on micro-fluidics for mechanical, biomedical, chemical and semiconductor processes. This Centre brings together researchers from mechanical and chemical engineering, biomedical engineering, material sciences, and, computer and electrical sciences.

The above initiatives have leapfrogged the intake of research students at IIT Kharagpur and have created new exciting brands of research and career building. In yet another iconic step having historic ramifications towards promoting research excellence, the institute launched the several types of challenge grants for developing individual and collaborative research infrastructure in the institute. Seed grants towards infrastructure development for departmental and collaborative research include:
- Setting up an advanced membrane separation facility in the department of chemical engineering
- Setting up an interdepartmental bio-informatics research facility combining wet labs and computational facilities
- Development of a facility for design, development and testing of next generation telecom gears at the school of telecommunications
- Setting up an automated servo-controlled direct shear-cum-triaxial testing machine with computer control system and power pack at the department of mining engineering

New research endeavors seeded under the new challenge grants include the following:
- Plant on a chip
- Next-generation secured internet of things (IOT)
- Design, synthesis, and advanced applications of new polymers and polymer composites
- Studies on ultrafast processes for electronic, spintronic, magnonic and photonic applications

In addition to the above projects awarded to groups of researchers, 19 individual seed grants were awarded on a competitive basis to individual faculty members in various areas, and 4 high-value research grants were awarded on a competitive basis for inter-departmental collaborative research problems of strategic significance. In order to promote social awareness and for the greater benefit of the institute and its neighborhood, 15 challenge grants were awarded for research and development leading to service to the society.

The total funding received by IIT Kharagpur in the last 5 years is more than 630 Crores, through 1513 Research and Consultancy Projects. During the year 2013-2014 the Institute received from the Government, private and international funding agencies/enterprises 193 research projects for a total value of Rs. 149.31 crores and 125 consultancy projects worth Rs. 12.83 crores aggregating a total of 318 projects for Rs. 162.14 crores.

Some of the noteworthy research initiatives and collaborative research facilities created in the recent past in the institute include:
- Centre for Railway Research
- K. Sinha Centre for Bioenergy
- Tea Engineering Research Center
- Centre of Excellence in Information Assurance
- National Program in Marine Hydrodynamics
- Vodafone-Essar-IIT Kharagpur Centre of Excellence in Telecommunications
- Rural Technology Action Group (RUTAG)
- Advanced VLSI Design Laboratory
- Intel Embedded Innovation Laboratory
- Synopsys CAD Laboratory
In the past year IIT Kharagpur has received a number of high-value and flagship projects from the government and the industry, such as:

- Connectivity and role of inhibitory neurons in auditory perception
- Evaluation of the applicability of a dominant nuclear male sterility system in rice for hybrid seed production
- Measurement to Management (M2M): Improvised water use efficiency and agricultural productivity through experimental sensor networks
- Stope design and stability, production and paste backfilling
- Improving groundwater levels and quality through enhanced water use efficiency
- Development of remote educational centers in Eastern India
- Post disaster situation analysis and resource management using delay tolerant peer to peer wireless networks
- Indigenous design methodologies for elliptic curve cryptography on FPGAs
- Generation of insect resistant sweet sorghum plant
- Requirements for delivering RISUG pre-loaded syringes
- Clinical decision support system and self-learning tool for radiologists for lung CT using content based image retrieval
- Design and synthesis of coordination polymers and coordination induced gelating materials exploration of gas absorption
- Fundamental studies on the reduction kinetics, heat and mass transfer during reduction of iron ore coal composite pellets in rotary hearth furnace
- Asymmetric catalysis TOS/DOS of nitrogen hetero-cycles
- A study of the operation and control of a proposed voltage source converter based HVDC transmission highway with offshore wind power integration
- A study of hybrid controllers for transmission and high voltage distribution applications
- Generation and applications of photo addressed surface gaps.
- Industrial scale investigation for the fabrication of wear resistant ceramic tiles using coal ash
- Engineered silk matrices for optimization of in-vitro 3D tumor model
- Evaporative drying assisted meso-patterning under lateral confinement
- Tuning of metal and metal oxide nanostructures for super-hydrophobicity
- High resolution Bay of Bengal circulation using adjacent point source river discharge
- Exploration of microbial diversity and function in acid mine drainage and mine tailings
- Extensional rheometer for microscale samples
- Synthesis of Al-based bulk metallic glasses composite with improved ductility via mechanical alloying and spark plasma sintering
- Study on mill tiling based composites as backfill material in uranium mines
- Improvement of energy recovery from waste water by dark fermentation followed by microbial fuel cells
- Development of membrane electrode based portable e-tongue device for rapid taste characterization of tea

The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the licensing and the transfer of technologies developed by researchers at IIT Kharagpur to the commercial sector. Till date, more than 400 patents were filed and more than 120 were granted and a total of 19 technologies were transferred. This year, the IPR&IR Cell under SRIC carried out a special patent drive, on the lines of the “100 Days 100 Patents” initiative of the previous year. The Institute Faculties, students and staff support and respond whole heartedly to this activity leading to submission of more than
200 abstracts. More than 100 patent applications have been sent out to patent attorneys for the filing applications to patent office under this drive.

The Entrepreneur Cell under SRIC supports a variety of incubation programs funded by the Government. Various student activities are encouraged and supported through SRIC. Notable activities include the following:

- **TeamKART** activity for design and implementation for single seat racing car. Formula Student (FS) is Europe's most established educational motorsport competition, run by the Institution of Mechanical Engineers. It seeks to challenge university students to conceive, design, build, cost, present and compete as a team with a small single-seat racing car in a series of static and dynamic competitions. Recently IIT Kharagpur team has participated in Silverstone track in UK.

- **RoboSoccer** activity for design and implementation of a team of soccer playing robots. The Federation of International Robo-soccer Association (FIRA) arranges the FIRA cup. The team from IIT Kharagpur participated in this competition last year under the MiroSot category, where participants need to devise artificial intelligence strategies, and develop sharp sensing and precise real-time control for the physical soccer-playing robots.

- **TeamAGV** activity for design and implementation of autonomous ground vehicles. The team has participated in the Intelligent Ground Vehicle Competition (IGVC).

- **TeamAUV** activity for design and implementation of autonomous underwater vehicle. The team participated in the 3rd National Students Autonomous Vehicle competition earlier this year.

In addition to the above, students participation is also taking place in several areas of innovation such as the green policy initiative that aims to reduce the carbon footprint of the campus through technology advances.
Technology Students Gymkhana

PRESIDENT: Prof. Joy Sen
TREASURER: Prof. Somesh Kumar
VICE PRESIDENT: Sri Punj Rajan

Rectors’ Nominee:

1. Prof. Kingshook Bhattacharya (Sports)
2. Prof. N. K. Goyel (Sports)
3. Prof. Bhargab Maitra (Technical)
4. Prof. Arindam Basu (Technical)
5. Prof. Priyadarshi Patnaik (Soc & Cult)
6. Prof. G. Harikrishnan (Soc & Cult)

NAMES OF THE PHYSICAL TRAINING INSTRUCTORS

Mondal S: B.A, B.P.Ed, M.P.Ed , Diploma in Sports Coaching in Basketball from NSNIS Patiala, Ph.D
Perusing, Qualified , (BFI) National Referee ‘A’

1. Kumar S: B.Sc in Physical Education, Master in Physical Education & Sports Science
   Patiala, Qualified National Referee
4. Adrib Mitra: B.Com (H), B.P.Ed, M.P. Ed, M. Phil
5. Samba Kar: B.P.Ed, M.P. Ed

DEVELOPMENTS

The development of all-round students’ activities centering TSG, IIT Kharagpur is based on the full utilization of its existing facilities; and evident in its activities in the year 2013-14:

Existing Facilities

- Modern Gymnasium
- Billiards
- Athletics Stadium
- Two Cricket Fields with two turf wickets with jogging track along with modern practice facilities in Tata Sports Complex
- Six Tennis Courts including four flood light Courts
- Three flood light Basketball (Cemented) Courts
- Three flood light Volleyball (Cemented) Courts
- Four wooden Indoor Badminton Courts
- Table Tennis room with four tables
- Yoga room
Activities

The activities of the students of IIT Kharagpur can be summarized as follows with the allied highlights.

Inter IIT Sports Meet

IIT Guwahati was host of 49th Inter IIT Sports Meet. The first phase of Sports Meet began with the Inter IIT Aquatic Meet held on **October 1st to 4th, 2013**. IIT Kharagpur Secured 2nd in Swimming and 3rd in water polo. Extra ordinary performance in swimming was forwarded by Sherays Mahajan, a final year UG student. Shreyas was declared as individual champion.

The second phase which includes all other games, started from December **16th to 23rd 2013**. The men section IIT Kharagpur secured in Badminton Third Position, **Basketball fetched First Position**; Cricket got Second Position; Football having Third Position; **Lawn Tennis securing Second Position**; Squash getting Fourth Position, Table Tennis having Third Position, and finally, Volleyball in Fourth Position.

Over all in 49th Inter IIT Championship IIT Kharagpur after six long years secured **overall Third Position** in men section. In Women Section, there were achievements with securing **First position in Lawn Tennis**; and Third in Badminton. Mr. Inter IIT position was secured by Nitish Balal of IIT KGP. TSG finally felicitated to the medal winners Teams of Inter IIT Sports Meet, 2013.

Out-station Participation

**Basketball**: Basketball Boys and Girls Team had participated and they stood First in IMG Reliance BFI Inter College Basketball League held at Kolkata. **IIT Kharagpur Boys Team Secured First Position** and Girls Team Secured Third Position. Boys basketball Team qualified and subsequently participated in National Inter College Basketball league held at New Delhi, which is **the first national level participation in the history of IIT Kharagpur**.

The Basketball Team of IIT Kharagpur also participated in the Senior State Basketball (Boys & Girls) Championship which was held at West Bengal Basketball Association, Kolkata. Subsequently, IIT Kharagpur Basketball team got an affiliation from West Bengal Basketball Association.

**Cricket**: The Cricket Team of IIT Kharagpur participated in the Inter University Cricket Tournament T-20 which organized by IIT Kharagpur.

**Football**: The football team of IIT Kharagpur participated in Kharagpur football league.

**Lawn Tennis**: Lawn Tennis (Boys’) Team participated in Midnapore open & Kharagpur open Tennis tournament and both the Tournament the team secured first position.
Inter Hall Competition in Sports & Games

During the Autumn Semester Inter hall competition was initiated with the 6.6 Km Run. In the Spring Semester, the Second Phase of inter Hall Competition was held in Athletics, Badminton ,Basketball ,Cricket, Football ,Hockey ,Volleyball ,Table Tennis, Lawn Tennis, Squash, Weightlifting and overall, Nehru Hall won General Championship with 75 Points, followed by R.P Hall arriving at Second position with 46 Points and finally, with the Third position going to MS Hall of Residence with 41 Points. The Inter Hall Competitions among the Girl’s hostels were conducted in Athletics, Basketball, Badminton, Table Tennis, Lawn Tennis, Swimming and Volleyball.

Inter Hall Competition in Social Culture Events

General Championship social & cultural 2013-14 awarded to Azad hall of residence

Spring Fest 2014

Spring Fest is the annual social cultural fest of IIT Kharagpur. It is conducted in the Spring Semester, during the month of January.

Highlights

• Edition: This was the 55th edition of Spring Fest edition of Spring Fest, held on 23rd-26th January 2014
• Theme: The Great Indian Carnival - 'Dil Se Desi"
• Performances: Agnee, Swarathma, Underground Authority, Salim-Sulaiman, Pentagram.
• International Carnival: Performers from various countries like Chris Cheong , a magician and mentalist from Malaysia, Jack Glatzer, a violinist from Portugal, Benny Prasad, a well travelled musician, Murray Molloy, a sword swallower from Ireland, Almost Trio, a juggling duo from Hungary and Jonathan Kay, an Indo- Jazz saxophonist from Canada.
• Footfall: 2400+ was the total footfall, the largest till date.
• Associations: Shiamak Davar Dance Academy, Anupam Kher’s Actor Prepares, Naujawan-e-hind, ZIMA, IFMA, International Institute of Photography.

Outstation participation and achievements by societies in Spring Fest

• Monkey cap: Finalists at channel V India fest, National competition ... Top 7 out of 2000 bands ...Played on the red Bull tour bus, an international initiative by red bull to showcase the top bands of the country ...Performed in the world music fusion fiesta, calcutta alongside motherjane, sivamani, trilok gurtu ... International turnover .
• Quizzing achievements: Sweden India nobel memorial quiz- won kolkata regionals and nationals team : Ajay Viswanathan; Somashish Ghosh; Saswat Panigrahi
• NDTV croma tech grandmasters: Won 1st round: team: Yogarshi Vyas and Anirudh Deb
• Tata Crucible: cleared zonal round - team : Yogarshi Vyas and Saswat Panigrahi
• Nihilanth : Rank 4India quiz Gold Team : Kanisk Samot; Yogarshi Vyas; Arijit Patra
• Sports Quiz: SilverTeam: Yogarshi Vyas; Ajay Viswanatha; and Mhilesh Gurujala
• Mela Quiz : Silver Team: Yogarshi Vyas; Ajay Viswanathan; Somashish Ghosh
• **HTDS:** 1st in rangmanch sf 2014, 2nd in rangmanch SF 2013; IIM cal 2014- 2nd in nukkad; IIM cal 2013- 2nd in nukkad
• **ETDS:** IIM Bangalore 2nd in stage play; IIT guwahati- 2nd in stage play
• **BTDS & TTDS:** no outstation
• **Technology dance society:** IIT guwahati 1st 2014
• **Technology Music Society:** ALL the monkey cap achievements no outstation other than that
• **Technology Literary Society:** Priyal Maheshwari won cash prize in thomso IIT R; -started Hindi e pulse the only Hindi literary newsletter; creative writing workshop by Sushmita Bhattacharya (writer from London)
• **Debsoc**
  • Teams or individuals from IIT Kharagpur achieved the following positions: 3 teams broke at KSOL '12 (KIT School of Law)
  • Two teams broke at VITDT"13, (VIT Debating Tournament) with one team reaching the finals.
  • Best adjudication at IITB' PD '13. (IIB parliamentary debate)
  • A team reached the semifinals at Mukherjee Memorial '14
  • Two teams broke at IITD PD '13
  • A team broke at INDC '14 (Indian National Debate Championship)
  • A team broke at NUJS '14 (National University of Juridical Sciences)
  • A team won NIT Rourkela PD '13

**Inter Hall Competition in Technology Events**

General Championship Technology 2013-14 was awarded to Azad hall of residence

**Kshitj 2013-14**

The Annual Tech Fest Kshitj 2013 was organized during 1st February to 4th February, 2013. The event occurred:

• Under the patronage of UNESCO
• As Asia’s biggest techno management fest
• With Footfall increased from 2400 00 (50% increase)
• With major state-of-the-art Scientific Events and certifications

**Key events were:**

• Race pulse - Institution of mechanical Engineers
• Delta Surge - Institution of mechanical Engineers
• Laws of motion- Institution of mechanical Engineers
• Overnite - Association for computing machinery (ACM)
• Eureka - IEEE
• ASME-STUDENT DESIGN EXPOSITION- ASME
• Speak Out for Engineering- Institution of mechanical Engineers
• IDP – GE
• Illuminate- E.B.A.I. , Drishti
Principal Guest lecturers were:

- Dougal Jerram, British geologist/earth scientist, television & media presenter/contributor, and author.
- Nawazuddin Siddiqui, Critically Acclaimed Actor
- Shazia Ilmi, Journalist, ex-anchor at Star News
- Jonathan Forman, Scientific Advisor- OPCW (Nobel Peace Prize 2013)
- Rajiv Malhotra, Author, Multi Millionaire and Philanthropist
- Amitabha Ghosh, Chairman-Mars Rover Mission
- Roel Vertegaal, Pioneer in Human-Computer Interaction

Key Workshops were: NVIDIA - Game Streaming, TECHNOPHILIA Accelero-Botix, PFI - State of City Finances, Simulating FSAE Vehicle with Adams/Car 2013, HONDA - Automotive Engineering, KLA Tencor - Semiconductor Fabrication, Investigative Journalism, MOZILLA - The Mozboot Camp, IFC - Rupee Depreciation, TERI - Green Technologies.

Exhibitions: PUZZLEBOX ORBIT, MINIATURE MODELS, FACE ANDROID, TOUCHWALL, TALKING ROBOT, NAO ROBOT, PAPER TAB, SWARM ROBOTICS, FACE VIDEO MAPPING

Megashows:

BMX Extreme Stunts, the Acrobatics Show for Basketball and EDM Night

Intrinsic Highlights:

- Application Cup LLR Hall Secured First Place.
- Innovation Cup RP Hall & Azad Hall (Joint) Secured First Place
- Knowledge Cup Azad Hall Secured First Place.

Some major highlights of Kshitij 2013-14 were:

- Largest techno-management symposium in Asia.
- More than 50,000 participants from all over world.
- First time IIT Kharagpur conducted Computer Programmer policy and IIT Delhi secured first position, Second position secured EEE, Hyderabad, IIT, KGP secured forth position.

Some of the flagship events of Kshitij were as follows:

- Quizzes
- Laws of Motion
- Nightshift
- Racepulse
- Overline
- BPlan

Technology General Championship won by Nehru Hall of Residence, 2nd LLR hall of Residence and 3rd AZ Hall of Residence.
Gymkhana Awards:

During the annual Prize Distribution Ceremony and farewell function, 21 Players received the Institute blues, 11 Order of Merit, 8 Honorable Mention and 7 Special Mention have been awarded to the students for their outstanding achievements in Sports & Games, Social & Cultural and Technology activities.

Other Highlights:

Technology Students Gymkhana is active in launching a few Students’ centric and participatory Cells in major Research and Development initiatives sponsored by the MHRD, Government of India. During the year 2013-14, few modules along this line of action has been opened to cater to ‘The Future of Cities’ initiative, projects under the Technology Robotics Society and the ‘Science-Heritage’ initiative called ‘SanDHI’.

Important partnerships or exchanges are in the way. To name a few, Technology Students Gymkhana has developed a potential collaboration with the Cricket Association of Bengal (CAB) and the two associations look forward to organizing non-profitable matches in IIT Kharagpur and also at the regional level to augment the spirit of ‘sports’ amongst the Youth; another event is that of Hockey organized by Central Reserve Police Force in association with TSG.

TSG also played a major initiative in mobilizing the youth spirit of the Campus by organizing the ‘Reach out week’; various adventure clubs and societies; and various spot based sports and arts activities like SPECTRA and many others.

The outgoing Students Governing body 2013-14 had rendered a significant contributive role under the leadership of past President Prof. Manish Bhattacharya and past Vice President Sri Apoorv Jain. A continued and perhaps, a greater role is expected from the new incoming flow under the governance of new Vice President elect Sri Punj Rajaan and his accompanying league of bright students. Let us wish all of them a great year of 2014-15 ahead!
Technology Telecom Centre

Prof-in-Charge: Prof. Raja Datta
Engineer: Mr. Pankaj Gupta

Work Carried Out

- A new facility to forward the calls coming to the office internal phones to the respective officer’s cell phones has been added.
- All the rooms of Visveswaraya Guest House (CEC) has been given telephone facility.
- The internal back bone cable of the Dept. of Chemical Engg has been restructured and replaced with new cables.
- The internal backbone cable of the Dept. of Geology and Geophysics has also been restructured and replaced with new cables.
- 500 new telephone instruments have been purchased for replacing old telephones as well as to provide the new connections.
- The internal backbone telephone cabling in the newly added floor of Dept. of Biotechnology is completed.

Ongoing Works:

- Restructuring and replacing of old internal telephone cables in the Dept. of Electrical Engg. and Dept. of Mathematics has been taken up.
- An Audio Bridging system for internal conference facility upto 30 participants will be installed in the existing exchange soon.
- Laying of cabling work is going on in the pilot project in the Dept. of Agriculture and Food Engineering.

New Planning:

- Telephone facility to all the class rooms of Nalanda Complex has been planned.
- Laying of telephone cabling in the newly built floor of the Dept. of Industrial and Systems Engg.
- A new Satellite Exchange has been planned in the upcoming building of JCB Complex Annex building so that telephone connections can be provided to the entire JC Bose laboratory Complex as well as in the upcoming Diamond Jubilee Tower.
CAREER DEVELOPMENT CENTRE

The Career Development Centre is responsible for arranging practical training for 3\textsuperscript{rd} year B. Tech/Dual Degree and 4\textsuperscript{th} year M.Sc. degree students and job placement of final year students graduating from the Institute. The Centre is actively engaged in forging synergistic relationships between the Institute and various industries and user systems of technical and scientific manpower. Based on these interactions, the CDC gives feedback to the Institute on the academic programmes.

**Summer Training Details**

Eight weeks of summer practical training at the end of 3\textsuperscript{rd} year B. Tech/Dual Degree and 4\textsuperscript{th} year M.Sc. degree is a compulsory part of the curriculum at IIT Kharagpur, carrying 2 credits. All efforts are made to place the concerned students in the best of organizations in India and abroad for summer training through Training and Placement section and various departmental supports. An emergent trend is that more and more students are seeking summer training abroad.

A total of 1250 companies/organizations in India were contacted for training facilities for the current summer vacations in May-July 2014. Among these 78 in India had offered training facilities, out of which 48 organizations had extended out-of-pocket allowances (covering 225 students) and many other extended subsidized transport, subsidized canteen, subsidized accommodation and to-and fro travel expenses (e.g. 3AC fare, air fare etc.) for our students. The highest out of pocket allowance of Rs. 60,000/- per month was paid by ITC Ltd. and Hindustan Unilever. Some other organizations such as Times Internet and American Express offered Rs. 50,000/- per month, Amazon and Adobe offered Rs. 30,000/- per month, Yahoo, Qualcomm, and Microsoft offered Rs. 20,000/- per month. There are about fifteen (15) companies offered stipend in the range Rs. 10,000/- to 20,000/- per month. In addition to the above some students arranged internship by themselves with good amount of stipend.

Out of 1282 third/fourth year B.Tech/Dual Degree/M. Sc. students, 86 students will be attending summer internship abroad in many Institutes/organizations likes EPFL, Switzerland, University of Warwick, National University of Singapore, University of Tokyo, Max Plank Institute for Software Systems, Germany University of Alberta, Biotechnology & Bio Chemical Engineering, Belgium, Rhinewall University, Germany Bremen University Dong A University, Busan, etc. and foreign companies like Finisar, Malaysia, Mitsubishi, Works Application, Japan, during May-July, 2014.

**Placement Details**

247 companies / organizations have considered our students for employment during 2013-2014. The details of number of students who had registered for placement and those actually placed through campus interviews including those who have opted either for higher studies or arranged job through off campus as on 30.04.2014 are as follows:

<table>
<thead>
<tr>
<th>Course/Degree</th>
<th>No. of students registered</th>
<th>No. of students placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses</td>
<td>Average Salary ( CTC) Rs. Lakhs per annum</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>B. Tech.&amp; B. Arch</td>
<td>10.98</td>
<td></td>
</tr>
<tr>
<td>Dual Degree</td>
<td>11.69</td>
<td></td>
</tr>
<tr>
<td>5yr. Integrated M.Sc.</td>
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<td>2yr. M.Sc.</td>
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<td>MS/ Ph.D</td>
<td>6.93</td>
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<tr>
<td>Average Salary for all UG &amp; PG Courses</td>
<td>9.81</td>
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<tr>
<td>VGSOM ( MBA )</td>
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The Overseas Highest salary received in 2013-14 is $125000 per annum and the second highest is $100000 per annum.

The Highest salary received in INR is Rs. 36.9lakh per annum and the second highest is Rs.28.5lakh per annum in 2013-14.

Average Salary for 2013-14 is as follows.

Some companies have offered pre placement offers like ITC Ltd., Schlumberger, Hindustan Unilever, Qualcomm, Barclay’s Capital, etc. Total numbers of Pre-Placement offers received are 113.

**Student Participation**
Career Development Centre at IIT Kharagpur has taken an initiative to harness the students’ management skills through a formal system during the placement season since 2005-2006. The system has progressed extremely well and from year 2010 onwards, the CDC has immensely benefitted from students participating in placement process. The organizational skill of students has helped CDC to conduct 12-15 companies’ placement interviews per day and round the clock. During the placement season students play an active role from contacting the companies to the final selection at campus by providing complete logistic support.
## WATER WORKS SECTION

**PROFESSOR –IN-CHARGE:** Prof. M M Ghangrekar  
**Officer:** B B Rai, Executive Engineer

**On-going works / Job:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
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<tr>
<td>Annual repair and maintenance in connection with plumbing and water supply at Academic Campus for the year 2014 -15.</td>
<td></td>
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<tr>
<td>Annual repair and maintenance in connection with plumbing and water supply at Old Residential Campus for the year 2014 -15.</td>
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</tr>
<tr>
<td>Annual repair and maintenance in connection with plumbing and water supply at New Residential Campus for the year 2014 -15.</td>
<td></td>
</tr>
<tr>
<td>Annual repair and maintenance in connection with plumbing and water supply at MMM, Patel, Azad, Nehru, HJB, JCB, LLR, ZH Halls for the year 2014 -15.</td>
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<tr>
<td>Annual maintenance of main water pipelines from Anicut &amp; Balarampur Pumphouse for the year 2014 -15.</td>
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<tr>
<td>Operation &amp; Maintenance of Balarampur Pump house for the year 2014 -15</td>
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<tr>
<td>Laying of 150 mm &amp; 100mm dia. DI main water pipeline from UGPH to JC Ghosh &amp; PC Roy Lab</td>
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</tr>
<tr>
<td>Surging of few existing deep tube wells inside campus &amp; Anicut Pump House</td>
<td></td>
</tr>
<tr>
<td>Construction of a Mini Deep tube well with main distribution water line at Tata Sports Complex</td>
<td></td>
</tr>
<tr>
<td>Construction of a Mini Deep tube well at Ambedkar Hostel including its inlet line</td>
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</tr>
<tr>
<td>Construction of one Deep tube well near Anicut Pump House No.- 1</td>
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</tr>
<tr>
<td>Installation of New Iron Removal Plant &amp; repair of existing plant at Deep tube wells near Gas Godown &amp; VSRC</td>
<td></td>
</tr>
<tr>
<td>Water line connection &amp; Sinks at all rooms of the newly constructed building of Metallurgical and Materials Engg. Dept.</td>
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Statistics
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<tr>
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<th>ACTUALLY REGISTERED</th>
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<td>6</td>
</tr>
<tr>
<td>15</td>
<td>Ocean Engg. &amp; N.A.</td>
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<td>5(1)</td>
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Table A-1
ADMISSION TO UNDERGRADUATE (B.TECH./B.ARCH./M.SC./DUAL DEGREE) COURSES IN THE SESSION 2013-2014
Table A-1 (Continued)

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<td>Total (C)</td>
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<td></td>
<td>115</td>
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<td>34</td>
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<p>|       |                      | 4     | 57  | 27 | 4  | 191   |
|       |                      | 4     | 57  | 27 | 4  | 191   |</p>
<table>
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<td>6</td>
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<td>6</td>
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<td>9</td>
<td>Industrial Engg. /IEM</td>
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<td>3</td>
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<td>10</td>
<td>5</td>
<td>3</td>
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<tr>
<td>14</td>
<td>Mining Engg. / Safety Engg. &amp; Disaster Mgt. in Mines</td>
<td>9</td>
<td>5</td>
<td>3</td>
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<td>15</td>
<td>Ocean Engg. &amp; naval Arch.</td>
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<td>5</td>
<td>4</td>
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<td>362(11)</td>
<td>201(6)</td>
<td>101(3)</td>
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(1)-Figures in () indicates PD candidate.  * Prepatory student
Table A2

ADMISSION TO 2-YEAR M.SC. COURSES, 2013-2014

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### DISCIPLINE-WISE BREAK-UP OF STUDENTS AWARDED M.C.M. SCHOLARSHIP 2013-2014

Rate of Scholarship: Rs.1000/- p.m. plus Free-tuitionship

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<th>2&lt;sup&gt;nd&lt;/sup&gt; yr.</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; yr.</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; yr.</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; yr.</th>
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**STUDENTS AWARDED ONLY FREE TUITIONSHIP 2013-14**

( Applicable to Genl. & OBC students only)

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#### 1. INSTITUTE GOLD MEDALS:

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<tr>
<th>Sl. No.</th>
<th>Name of Medal/Prize</th>
<th>Name of the winner</th>
<th>Instt.Roll No.</th>
<th>CGPA</th>
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<tbody>
<tr>
<td>1.</td>
<td>PRESIDENT OF INDIA GOLD MEDAL</td>
<td>Lakshya Jain</td>
<td>10ME10024</td>
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<td>2.</td>
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<td>DR. JNAN CHANDRA GHOSH MEMORIAL GOLD MEDAL</td>
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#### 2. ENDOWMENT GOLD MEDALS:

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#### 3. SILVER MEDALS:

**A. 4-YEAR B. TECH.(HONS.) COURSES:**

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5-YEAR B. ARCH.(HONS.) COURSE :

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5-YEAR DUAL DEGREE COURSES :

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   - Ahanjit Bhattacharya
   - Roll No: 09CY2001
   - CGPA: 9.64

2. **Exploration Geophysics**
   - Tripti Kumari
   - Roll No: 09EX2018
   - CGPA: 8.74

3. **Applied Geology**
   - Parinay Jain
   - Roll No: 09GG2010
   - CGPA: 8.98

4. **Economics**
   - Abhishek Jadon
   - Roll No: 09HS2010
   - CGPA: 9.22

5. **Mathematics & Computing**
   - Meghanath M Y
   - Roll No: 09MA2028
   - CGPA: 8.66

6. **Physics**
   - Sarthak Subhankar
   - Roll No: 09PH2028
   - CGPA: 8.95

### E. M. SC. (2-YEAR) COURSES

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### ENDOWMENT PRIZES - (UNDER GRADUATE)

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5. **J. C. GHOSH MEMORIAL PRIZE**

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5. **BEST PROJECT AWARD:**

A 4-YEAR B. TECH.(HONS.) COURSES:

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| 3 | MATHEMATICS | 26 | 1 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| 4 | PHYSICS | 39 | 3 | 46 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 89 |
| Total(C) | | 139 | 4 | 141 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 285 |

(D) M.Sc(5yr)

| 1 | CHEMISTRY | 15 | 3 | 19 | 5 | 18 | 3 | 14 | 1 | 15 | 1 | 94 |
| 2 | EXPLORATION GEOPHYSICS | 24 | 2 | 26 | 4 | 27 | 6 | 17 | 5 | 26 | 1 | 138 |
| 3 | GEOLOGY & GEOPHYSICS | 20 | 2 | 17 | 16 | 28 | 3 | 21 | 2 | 25 | 1 | 135 |
| 4 | HUMANITIES & SOCIAL SCIENCES | 36 | 1 | 38 | 10 | 30 | 6 | 27 | 3 | 22 | 0 | 173 |
| 5 | MATHEMATICS | 50 | 4 | 48 | 5 | 42 | 11 | 32 | 15 | 32 | 2 | 241 |
| 6 | PHYSICS | 23 | 3 | 26 | 9 | 18 | 8 | 20 | 1 | 20 | 1 | 129 |
| 7 | STATISTICS AND INFORMATICS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 4 |
| Total(D) | | 168 | 15 | 174 | 49 | 163 | 38 | 131 | 28 | 142 | 6 | 914 |

(E) Dual Degree

<p>| 1 | AEROSPACE ENGINEERING | 15 | 3 | 14 | 6 | 23 | 6 | 25 | 2 | 19 | 0 | 113 |
| 2 | AGRICULTURAL AND FOOD ENGINEERING | 25 | 3 | 25 | 7 | 33 | 7 | 25 | 4 | 25 | 0 | 154 |
| 3 | BIOTECHNOLOGY | 18 | 5 | 20 | 4 | 23 | 2 | 25 | 1 | 25 | 0 | 123 |
| 4 | CHEMICAL ENGINEERING | 29 | 1 | 24 | 5 | 33 | 3 | 34 | 3 | 26 | 4 | 162 |
| 5 | CIVIL ENGINEERING | 17 | 3 | 19 | 2 | 31 | 3 | 25 | 6 | 20 | 0 | 126 |
| 6 | COMPUTER SCIENCE &amp; ENGINEERING | 43 | 1 | 39 | 12 | 39 | 7 | 42 | 4 | 40 | 3 | 230 |
| 7 | ELECTRICAL ENGINEERING | 24 | 0 | 21 | 4 | 29 | 3 | 28 | 5 | 23 | 4 | 141 |</p>
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## Table A-10

### Students on Roll (Department wise) – Undergraduate (B.Tech/B.Arch./M.Sc./Dual Degree) Courses at the Beginning of the Session 2013 – 2014

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TABLE B-2 - POSTGRADUATE STUDENTS ON ROLL 2013-2014
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