

GLOBAL INITIATIVE FOR ACADEMIC NETWORKS



National Coordinating Institute
INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

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NOVEL AND EMERGING TECHNOLOGIES FOR FOOD PROCESSING APPLICATIONS

Overview

By the turn of the century, consumers have been more demanding, sophisticated and discretionary. They will want much safer, high-quality, and convenience foods. The food processor will need to get the best from his existing processing technology in addition to looking for newer ones. New and alternative food processing methods &/or novel combinations of existing methods are continually being investigated by the industry in pursuit of producing better quality foods more economically. Innovative and novel concepts are continuously evolving in every area of food processing. Food industry constantly strives to revise or adjust its manufacturing practices to the changing needs of the consumers to be able to stay competitive in the marketplace, and academic institutions play a major role in highlighting the recent advances in processing techniques. In order to get the best, it is essential to have a good understanding of the basic principles and underlying mechanisms such that these processes can be successfully optimized for industrial applications.

There are novel thermal processing methods such as agitation/aseptic/thin-profile processing or product acidification to reduce thermal processing severity, and there are novel thermal processing media such as microwave, RF and ohmic heating to promote better quality retention. Further, to protect the quality even better, there are non-thermal or minimal processing techniques through the use of high pressures, pulsed electric field and pulsed light. Advances in conventional drying techniques are also influenced by novel heating techniques such as MW/RF, combinations of MW and Vacuum, and modified spray or adsorption drying; spiral freezing, twin screw extrusion, ozone treatment etc. are a few examples of successful emerging technologies.

This short course addresses most of these aspects and helps to provide the participants the needed knowledge and tool for successful implementation of a number of commercial concepts. The course will be delivered by pooling the combined expertise of the Foreign and National Experts, by a combination of lectures, laboratory tutorials, some hands on exercise and industry visits.

Course participants will

- 1) Get familiarized with fundamentals of novel methods of food processing.
- 2) Understand the concepts in thermal, MW/RF, high pressure processing, dehydration and extrusion processing
- 3) Be able to establish and optimise novel food processing techniques based on sound scientific principles.
- 4) Be exposed to practical problems and their solutions, through case studies and lab sessions.
- 5) Be prompted for creative thinking.

Modules

Duration: December 12 - December 16, 2016
Number of participants for the course will be limited to fifty.

Who Should Attend

- Food professionals including engineers & technologists from manufacturing, service and government organizations
- Faculty and researchers from universities, colleges and R&D laboratories.
- M Tech and Ph.D research students

Fees

The participation fees for taking the course is as follows:

Participants from abroad	:	\$ 500
Industry/ Research Organizations	:	₹ 30000/-
Academic Institutions	:	₹ 10000/-

The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hrs free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty



Dr. Hosahalli Ramaswamy is a Professor of Food Processing at McGill University, Montreal Canada. During the 25 years at McGill University, he has established a very strong research program in several areas of postharvest technology and food processing: thermal processing (conventional canning, agitation processing, microwave processing), aseptic processing, ohmic heating, ultra high pressure processing, computer simulation and modeling, and use of artificial neural network for process calculation, characterization, kinetics, optimization and control. He is a professional member of several societies: Canadian Inst. Food Science and Technology (Canada); Inst. Food Technologists, USA; American Society of Agricultural Engineering (USA); Canadian Society of Agricultural Engineering; Institute For Thermal Processing Specialists (USA); Assoc. of Food Science & Tech. (India). He is the current President of Canadian Food Science and Technology.

Dr. Ramaswamy has been conferred the several prestigious awards: *W.J. Eva Award* by the *Canadian Institute of Food Science and Technology John Clark Award* of Canadian Society of Agricultural Engineering; Fellow of the Association of Food Scientists and Technologists; CIFST President's Award; Fellowship of the Canadian Society of Bioresource Engineering; Merit Pin of IFTPS, Fellow of the International Union of Food Science and Technology (IUFOST); Life Time Achievement Award of International Association of Food Engineers. He is an Editor of Journal of Food Engineering and editorial board members of several international journals.



Dr. Hari Niwas Mishra, a Professor of Food Technology at the Agricultural and Food Engineering Department of Indian Institute of Technology Kharagpur, is the former President of the Association of Food Scientists and Technologists (India). He has over 30 years of teaching & research experience and has written more than 270 research papers in peer reviewed international/national journals, conference proceedings and popular articles. He has 8 Indian patents and 4 e-books to his credit. He has supervised more than 190 student research projects including 8 Post- Doctoral and 30 Ph. D research scholars. Professor Mishra has worked in different capacities on various academic and administrative committees of IIT Kharagpur and many other institutions in the country. He is an Expert Member on the National Mission Steering Group, Integrated Child Development Services (ICDS), Ministry of Women & Child Development, Government of India. Professor Mishra has many laurels and awards to his credit. To name a few are All India Food Processors' Association Presidents award for his outstanding contribution to growth and development of food processing industry, Dr. JS Pruthi award for new product & process development, Best paper award of the Association of Food Scientists & Technologists (India), and other professional bodies.

Professor Mishra has made remarkable contributions in the growth of knowledge in the field of food science & technology. He has developed several novel food products and process technologies such as iron-fortified health rice, nutri dal; gluten free bread & pasta; low-cholesterol cream powder, synbiotic non-dairy yoghurt, probiotic vegetable beverage, dahi & yoghurt powder, instant tea, edible coating of tomato & mushroom; active packaging of tomato, banana & guava; extraction of bioactives from algal biomass, mushroom, etc. to name a few. Two pilot scale facilities (i) RTE Food Pilot Scale Unit, and (ii) Multi Product CA & MA storage Unit, have been established at IIT Kharagpur under the guidance of Professor Mishra; work on the establishment of another pilot scale unit for production of 'Iron Fortified Health Rice' is going on.

Course Co-ordinator

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Registration Process

Registration for GIAN courses is not automatic because of the constraints on maximum number of participants allowed to register for a course. In order to register for one or multiple non-overlapping courses, you have to apply online using the following steps:

1. **Create login and password at www.cep.iitkgp.ac.in/gian**
2. **Login and complete the registration form.**
3. **Select courses**
4. **Confirm your application and payment information.**
5. **Pay ₹ 500 (non-refundable) through online payment gateway.**

The course coordinators of the selected courses will go through your application and confirm your selection as a participant one month before the starting date of the courses. Once you are selected you will be informed and requested to pay the full fees through online payment gateway service.



<http://www.gian.iitkgp.ac.in/GREGN>