



INDIAN INSTITUTE OF TECHNOLOGY
KHARAGPUR – 721 302

No. IIT/CY/PLAN/EQ-12/2018-19

Date: 30th August, 2018

TENDER NOTICE

Sub: Purchase of Single Crystal XRD Instrument.

Indian Institute of Technology Kharagpur, an Institute of National Importance, invites sealed bid from reputed Original Equipment Manufacturer (OEM) or their authorized Distributors/Dealers/Sub Dealers/Agents/Vendors, for procurement of one "Single Crystal XRD instrument" in the Department of Chemistry.

Sealed bids may be submitted under **Two-cover system** as per **Technical Specifications** given at **Annexure I**, and **General Terms & Conditions** given at **Annexure II**. Bidders are required to submit their **Details** in the format given at **Annexure III** along with their technical bids. They are also required to submit a signed **Declaration** in the format given at **Annexure IV**. A **Check list** and **Compliance statement** against each item of Annexure I & III thereon severally & individually shall also be submitted. Kindly refer to the Institute website www.iitkgp.ac.in [link: tenders & quotations] for complete tender details. Bidders who are not enlisted with the Institute are also required to submit **Form R1** along with the tender.

The procedure for submission of sealed bid are detailed under the **General Terms & Conditions** of the tender notice.

The last date for submission of tender is 24.09.2018 by 5.00 p.m. and NO tender will be received after the specified period.

Technical bids will be opened and evaluated on 25.09.2018 at 4.00 p.m. in the Chemistry Department of the Institute. Attendance of the Bidder or one representative with proper authorization letter on behalf of the bidder is a **MUST**. In case the due date for opening tender happens to be a holiday, the same will be opened on the next working day. The timings will however remain unchanged. Please Note that the Institute remains closed on Saturday & Sunday.

Price bids will be opened only in respect of those bidders, who are found technically qualified after evaluation of Technical bids.

The **date and time for opening of the Price Bid** will be intimated through email/phone to the technically qualified bidders. Bidders are requested to provide a valid email address.

Head, Department of Chemistry
IIT Kharagpur

Copy to:

1. Prof. in Charge, Inst. Inf. Cell – with a request to kindly display the same in the Institute website
2. Joint Registrar (S&P) – with the request to kindly upload the same in the CPPP.
3. Department Notice Board.

Technical Specification of Single Crystal XRD

No.	Technical Specification for a Micro-focus Single Source (Mo) Single Crystal XRD system for Small molecule Crystallography:
1.	Floor mounted system for dedicated use in a laboratory with full future upgradeability paths on sources and detectors at site. Preference given to systems with a minimal footprint utilizing only single phase power.
2.	The X-ray diffractometer system should overall be air-cooled without any need for external chillers or need for in-house chilled water facilities.
3.	Goniometer: <ul style="list-style-type: none"> The instrument should include a fully automated high precision 4-circle kappa goniometer with all axes and detector distance controlled through the system computer. The sample to the detector distance should be variable over a range of at least 40 – 145 mm or better. The goniometer's sphere of confusion should be less than 7 microns and must not be greater than 20 microns even when the detector is at its farthest distance.
4.	X-ray Source: <ul style="list-style-type: none"> Single source configuration: Mo Kα micro-focus source with graded multi-layer double bounce focusing optics have to be quoted. The X-ray source should be computer controlled, air cooled with appropriate integrated cooling device in order to provide the highest stability in beam position and beam intensity. The micro-focus sources should have good power output of 50 W, or better, and the beam diameter at the crystal should be optimum through use of suitable pinholes / collimators. The X-ray source should comply with statutory safety regulations. Fully X-ray protected enclosure as per international safety norms.
5.	X-ray detector: <ul style="list-style-type: none"> State of the art latest technology HPAD/HPC/CPAD/MMPAD X-ray detector to be offered. The detector should be capable of detecting the diffracted X-rays with no dead areas and accurately measuring their intensities of diffraction pattern from single crystal. Active area of the detector: ~ minimum 30 cm² for HPAD/HPC detector and minimum 100cm² for CMOS/CPAD/MMPAD detector The detector should have high signal to noise ratio with virtually noise free readout electronics and should be capable of true shutter-less operation, with auto air cooled facility. The dynamic range of the detector should be very high (ideally more than 20 bits/pixel) to be able to capture very weak as well as very strong reflections on a single frame. Ideally The X-ray detector has to avoid losses due to fiber-optic stubs / tapers in its construction and should have a point spread function of 1 pixel or less for enhanced spatial resolution of the diffracted signal.
6.	Software: <ul style="list-style-type: none"> The software suite provided with the system shall consist of a complete suite of well tested and user proven routines for the collection and integration of frame data on single crystals, and for solving, refining, and displaying single crystal structures. Software shall allow remote access to the instrument including diffractometer, goniometer, and X-ray generator functions to set up the experiment, view data as collected, process the data, and solve and refine the structures remotely or off-line. Software for Auto Structure Solution and Twin Solve should be included No public domain software is acceptable. Manufacturer must offer their latest version of licensed software developed by them. There must be an undertaking that updates to the instrument control/data collection and automated structure solution and refinement software

	will be provided as available free of charge and in perpetuity.
7.	<p>Computer: Compatible PC for the Instrument has to be offered directly from the Manufacturer. Control Computer (Make DELL /HP equivalent) with the following minimum specification or better:</p> <ul style="list-style-type: none"> • CPU : Intel Core i7 • Operating System: Windows 7 Pro 64-bit compatible. • RAM: 8 GB DDR4 • Hard drive configuration : • 500 GB SSD system disk and 1 TB data disk • DVD RW drive • Monitor: 24" Full HD (1920 x 1080 High resolution)
8.	<p>Video microscope & Illumination: The system must include a video microscope (inside the Instrument Cabinet) which records color images, magnified 120 times (or better), of the crystal mounted on the goniometer platform to assist alignment, monitoring, and face-absorption corrections.</p>
9.	<p>Warranty: The system should be provided with one (01) year comprehensive warranty from date of Installation. Offer for additional two (02) years warranty may be provided as an OPTION.</p>
10.	<p>Power Back-up: Double conversion IGBT based online UPS system with appropriate rating and with built-in isolation transformer on the inverter output along with SMF battery bank to provide 30 mins back-up (upgradable to 1 hour)</p>
11.	<p>Crystal mounting accessories: Test Crystal: 2 Goniometre head: 2 Capillaries: thickness of 0.01 mm and outer diameter of 0.2 mm, 0.3 mm, 0.5 mm (made of special glass)-100 pcs. Cryo-loop: 5 Glass fibres: 15 pcs. Paratonre oil: 100 ml</p>
12.	<p>Installation, commissioning and Application Training: Free of cost at site days for a group of technical staff/students from operating the instrument to complete structure determination/solution.</p>
13.	<p>Optional: Temperature Control Unit:</p> <ul style="list-style-type: none"> • Temperature attachment working from 90 K to 400 K range or better range with a stability of +/- 0.5 K or better over the whole temperature range should be quoted • Low temperature attachment should be with very low liquid N₂ consumption, no icing effect, equipped with a liquid N₂ Dewar of minimum 60 liters capacity or more • The required pressure regulators, valves, transfer line, line heater and other necessary accessories should be quoted. Auto transfer facility for the Dewars should be quoted • The sample temperature should be set and varied in a step wise fashion by the instrument control software to allow for easily creating variable temperature measurements. • Additionally, an Imported Auto-Pressurized Dewar of 150 L capacity or more has to be provided along with an appropriate four-wheeled cart.
14.	<p>Microscope</p> <ul style="list-style-type: none"> • General system : Stereozoom Microscope with minimum 7:1 Zoom ratio. System accompanied with fine focus unit. Built-in Adjustable Aperture Diaphragm should be provided in the zoom body.

- **Optics:** Eco- friendly LEAD (Pb) free Galilean Parallel optical axis with Distortion free Plan Achromat objective 1X (Working Distance minimum 90mm.) & ESD capable Eyepieces 10X (F.No. 22mm), focusable.
- **Magnification:** 8X to 56X with 1X Objective & 10X Eye piece combination. Actual Field of view (FOV) should be $\geq \varnothing 27.5\text{mm}$ (at 8X Mag.) to $\varnothing 3.9\text{mm}$ (at 56X mag.) or better.
- **Observation tube:** Binocular tube having inclination angle 30 degree, with inter-pupillary distance adjustment from 50 - 76 mm. variable.
- **Focus:** Fine focus unit with 120 mm. Travel facility along with knob rotation tension adjustment. Max. Loading capacity ≤ 12 kg.
- **Stage:** Stand with Base & Pillar. Pillar Height 220mm (maximum) , Base Dimension 194mm x 253mm with mountable Stage clips. Black & White reversible Stage Plate with anti- ESD design.
- **Illuminator:** Double Interlock Goose neck Multi component quartz Fiber Optic light guide with 0.56 Numerical Aperture & 12Volt 22Watt Halogen bulb with mirror, Light intensity Control Unit with 3 Steps Voltage Adjustment (Low, Medium, High). Tube length 500 mm with Input Diameter 5.65mm & Output Diameter 4mm.
- **Warranty:** 12 months from the date of installation or 15 months from the date of shipment whichever is earlier.

GENERAL TERMS AND CONDITIONS

- (1) **Last Date of Submission of Sealed Bids: 24.09.2018 up to 5:00 pm.**

The Technical bids will be opened on 25.09.2018 at 4:00 pm in the Department of Chemistry, Indian Institute of Technology Kharagpur.

- (2) **Payment Terms: As per existing rules of the Institute. No advance/mobilization support, is payable against supply of stores.**

Liquidated Damages : The stores should be delivered/dispatched to destination and ready for operation **NOT** later than the delivery date specified. In the event of failure to deliver the stores beyond the specified date, liquidated damages @ 1% per month or part thereof in respect of the value of stores will be deducted, subject to a maximum of 5%; alternately the order will be cancelled and the undelivered stores purchased from elsewhere at the risk and expense of the vendor.

- (3) **Delivery of Stores:** The ordered item be supplied within 120 days from the date of receipt of the purchase order.

- (4) **Tender Fee:** An amount of **Rs. 5,000/-** (Rupees five thousand only) as tender fee (**non refundable**) is to be paid. The payment shall have to be made by Demand Draft **ONLY** from any Nationalized Bank in favour of "Indian Institute of Technology Kharagpur", payable at Kharagpur.

- (5) **Earnest Money Deposit (EMD):** An amount of **Rs. 2,50,000/-** (Rupees two lakh fifty thousand only) is to be paid. The payment shall have to be made by Demand Draft **ONLY** drawn in favour of "**Indian Institute of Technology Kharagpur**", payable at Kharagpur. The validity of the EMD should be 6 (six) months from the date of issue. EMD will be refunded to the unsuccessful bidder, after finalization of the tender process. The EMD of the bidder awarded with the order shall be treated as part of security deposit towards Performance Guarantee. **No** interest is payable on Security Deposit. Security Deposit shall be forfeited if the selected bidder after award of order fails to execute the same.

The Demand Draft of Tender Fee & EMD should be put in a separate envelope and stapled with the Technical Bid document super-scribing Tender fee. Any bid without Tender Fee & EMD will be summarily rejected. No interest is payable on EMD.

- (6) **Price Bid: (A) For Foreign Firms :** The price are to be quoted on 'EX-WORKS' duly packed or on "FCA/FOB" "International Port Basis" and also including Agency Commission payable to the Indian Agent, if any showing the following break up clearly:

- I) Ex-Works Price
- II) Packing & Forwarding
- III) Freight
- IV) Any other relevant expenses
- V) Taxes, if any payable by the Institute
- VI) Agency Commission, if any

IMPORTANT:

- Insurance will be paid by the Institute separately and should not form a part of the quoted price.

