

Department of Chemistry
Indian Institute of Technology Kanpur

Enquiry No. IITK/CHM/2016/FIST/SCXRD

Dated: 22-12-2016

Due date: 16/01/2017

Subject: Quotation for supply of Fully Automated Single Crystal X-ray Diffractometer system (SCXRD) and related accessories as mentioned below.

With reference to the subject mentioned above, you are invited to submit quotation in a sealed cover on or before **16/01/2017** to the address mentioned below.

The prospective suppliers are required to send quotation in two parts, both in sealed envelopes, clearly marked as "**Technical Bid**" and "**Financial Bid**". The Technical Bid should contain detailed technical specification of the product being offered and should not mention any prices. The Financial Bid should include the detailed price quotation clearly including the cost of the equipment, taxes, service charges if any, shipping and handling charges.

Features: Floor mounted Single crystal X-ray Diffractometer system for small molecule single crystal data collection and structure determination of inorganic, organic and organometallic compounds with X-ray generator, state of the art CMOS Technology, necessary goniometer with other accessories and peripherals required to fully integrate the system facilitating international publishing data quality with all hardware and software starting from mounting of crystal to crystallographic information file generation. Offered Models should completely free of water chillier which can operate in complete Dry Lab concept for Green Technology initiative to minimize Carbon emission, Space and Power Requirement.

Technical Specifications:

- 1. Mounting:** Floor mounted system for dedicated use in a laboratory.
- 2. Goniometer:** Manufacturer should offer a fully automated Goniometer with high precision controlled through system computer. The system shall employ a high-precision open geometry. The goniometer shall be equipped with stepper motors for optimum scanning speed and positioning precision. The various ranges of Goniometer should be as given below or better.
 - (a) Sphere of confusion – coincidence on all axes better than 7 μm
 - (b) Detector to sample distance variable in the range of 40 mm to 150 mm or better

(c) Mechanical Precision 0.001 deg for Omega and Theta

3. X-Ray Generator & source:

The vendor should offer Mo K α X-ray generator and should be computer controlled. The X-ray source should comply with the world's strictest safety regulations. The vendor should offer Microfocus Molybdenum (Mo K α) X-ray tubes. The micro-focus sources should have good power output and the beam diameter at the crystal should be optimum. To minimize down-time the entire source shall maintain a minimum of 80% of the specified intensity for at least 3 years after installation and warranty must cover Intensity Guarantee of the Tube over the 3 years period. As a major part of the system vendor should provide a three year warranty on the micro focus source covering the generator, HV-cable, tube shield, X-ray tube and the optics. X-ray Generator and X-Ray source operation should completely free of water chiller.

4. X-ray Detector & Optics:

a) The system should offer with high precision air-cooled CMOS detector for accurate single crystal frame data collection and high signal/noise ratio with virtually noise free readout electronics.

b) The detector must have an active area of more than 100 x 100 mm or better.

c) The Detector must carry a Guarantee of 3 years being a High Value component of the system irrespective of the Total system warranty.

d) Detector working should completely free of water chiller to cool the circulating air.

e) Detector should be working without any Gas purging.

5. Beam Optics: The sealed tube system shall be equipped with a graded multilayer optics. The optics shall be easy to align. For minimum technical complications a manual alignment shall be preferred over motorized solutions, provided the X-ray spot position remains all time stable after initial alignment. To achieve highest spectral purity a twofold monochromatization shall be applied using a double-bounce approach, preferably by mirrors arranged side by side with a 90° angle with respect to each other. The optics shall focus at the sample position.

Radiation enclosure: Fully X-ray protected enclosure as per international safety norms.

6. Video microscope & Illumination: The system must include a video microscope which records color images of the crystal mounted on the goniometer platform to assist alignment, monitoring, and face-absorption corrections. In addition, the images should also be transferred and stored on the control computer.

- 7. Cryo Crystallography Accessory:** The equipment should include a crystal temperature attachment to cover the temperature range of 80 – 400 K, with a stability of +/- 0.1 K equipped with liquid nitrogen Dewar of minimum 60 L Liters capacity, pressure regulator, transfer line and necessary accessories. The sample temperature should be set and varied by instrument control software to allow variable temperature measurements.
- 8. Computer and Printer-** The computer system delivered should have a minimum specification as below.

System rack mounted industrial PC with remote keyboard and monitor consisting of; Minimum configuration:

- 8 GB DDR RAM
- Graphics Card
- 250 Gb 7200 rpm Primary Hard Drive
- 250 Gb 7200 rpm Secondary Hard Drive
- 10/100 Fast Ethernet Controller
- Keyboard and optical scroll mouse
- Windows XPTM Professional or higher version
- RW DVD drive
- colour printer.

9. Application software-

- a) 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. The software package should comprise of a user friendly interface with extensive graphical feedback, on-line help and shall be available for high power personal computers (PC) running Windows7™ or Linux.
- b) Software for Auto Structure Solution to be included in the basic scope of supply.
- c) The software shall allow remote access to the instrument including diffractometer, goniometer and X-ray generator functions to setup the experiment,
- d) No public domain software is acceptable. Manufacturer must offer their licensed software developed by them.
- e) Powder sample Data package to be included in the Software package.

10. Crystal mounting accessories: Capillaries:

a) Capillaries made of special glass with wall thickness of 0.01 mm and outer diameter of 0.2mm, 0.3 mm, 0.5mm - 50 pcs. of each type and other necessary capillaries / accessories.

b) Cryo-loops: 50 cryo-loops for cryo-mounting (all sizes).

11. Test crystal: One test crystal to be included in the basic system

12. Goniometer Head: 1 Nos. of Goniometer head must be offered with the basic system scope of supply.

13. UPS:

Suitable online UPS for the whole system and SMF batteries with a backup of minimum 30 min. or better should quote.

14. Warranty and AMC:

Standard warranty must be quoted on the complete system and accessories are essential and must be clearly stated.

15. Buyback Option of Existing COBRA system: Vendors are requested to offer Buy Back option for a COBRA System (Oxford Cryosystems) already installed in Lab and offer an Oxford 800 cryostream system with accessories and setup against the same. IIT Kanpur might consider such an offer submitted directly by the OEM Supplier, alongside the procurement of the XRD.

Terms & Conditions

1. Maximum education discount should be offered, these equipments will be used for academic research purposes only.
2. Validity of quotation should be at least for 60 days.
3. Prices should be on CIF Kanpur, CIF New Delhi and FOB separately.
4. Prices should include the installation and training cost.
5. Normal payment terms for the Institute will be applicable (90% on delivery of the items and the remaining 10% after satisfactory installation/ inspection).
6. Quotation should carry proper certifications like agency certificate, proprietary certificate, etc.
7. The quoted instruments should be from reputed international companies, must be a model which has been launched within last 5 years and the Indian Representative should have at least 3 years association with the Principal company, It is also required that the Indian representative have supplied the quoted instrument to at least 3 research labs in IITs/IISc/IISERs/ Universities in last 3 years (Please provide documents).

8. Warranty period should be mentioned and whether after-sale services are available in India or not. **A minimum of 3 years of warranty is required.** Also, The vendor must be able to provide technical support throughout the warranty period and beyond.
9. Please mention tender notice number on top of envelope.
10. Delivery should be made within 3 months.

Please send your best offer on or before **16/01/2017** to the address given below.

Mail the quotation to:

Dr. Ashis K. Patra

Department of Chemistry

Indian Institute of Technology, Kanpur

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