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**SUB : FINAL AND FROZEN TECHNICAL SPECIFICATION FOR
DISPLAY ON NIC'S CPP PORTAL & CSIR-IICB'S WEBSITE.**

**REF : PRE-BID CONFERENCE HELD ON 06.02.2018 AT 03:00PM
(IST) AT CSIR-IICB, KOLKATA.**

Sl. No.	Name of the Item/Description	Qty	Earnest Money Deposit (EMD) to be submitted along with Technical Bid		
			INR ₹	US \$	Euro €
1.	Enq No. IICB/PUR/536/584/448/2017-18 "Single Crystal X-Ray Diffractometer for Macromolecules alongwith crystallographic accessories"	01 Unit	12,00,000-00	18,800.00	15,354.00
Last date and time of Submission of bids/quotations by the prospective bidders in Two-Bid format as per tender document against final/frozen technical specifications by CSIR-IICB after Pre-Bid Conference		28.02.2018 upto 01:00 PM (IST)			
Date and Time of Opening of Technical Bids		01.03.2018 at 03:30 PM (IST) onwards			
Venue of Opening of Technical Bids		NIC's CPP Portal			
Tenders to be submitted at		NIC's CPP Portal			

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Final/Frozen Specifications for Single Crystal XRD System for Macromolecular Crystallography

1. **X-Ray Source:** Computer controlled X-ray generator (CuK α) that provides X-rays with high flux (6×10^{10} X-rays/sec/mm² or better at the sample position) with high emission stability, small focal spot, high position stability and minimal beam divergence. Suitable compact refrigerated water chiller, if necessary, with the following minimum features: Refrigerated water recirculating system with air cooled condenser, Cooling capacity 3150 Watts or better.

If chiller is required and include, it must be compatible with the X-ray generator and Detector

Temperature control: plus/minus 0.1 degree

Adequate amount of DI water for the installation must be supplied. Accessories, kits and tools to install and repair the water chiller must be included.

The entire system should be easy to maintain and appropriate spares (such as a spare anode etc.) should be provided with the system to ensure minimum downtime. Accessories and tools to install and repair the generator must be Included.

2. **Detector:** The state-of-the-art detector should be either Hybrid photon-counting (HPC) or Charge Integrating Pixel Array Detector detecting (CPAD) the diffracted X-rays (CuK α) and accurately measuring their intensities from diffraction pattern of single crystal.

The active area of the detector should be, at least 200 mm x 135 mm or better (if CPAD type detector) or 80 mm x 105mm or better (if HPC type of detector). The detector should be capable of shutter-less data acquisition, which will help in reducing data collection time.

Accessories and tools to install and repair the detector must be included

3. **Goniometer:** The diffractometer should be equipped with a fully automated high precision 4-circle Goniometer. The design should be such that the crystal can be set to any and all required orientations with respect to the incident X-ray beam and the

area detector employed. The overall results should be the highest maximum system flexibility and fastest data-collection strategies. The diffractometer system should be automatically controlled by the system software. Any diffractometer damage through 'collisions' should be prevented by provisions taken in software and/or hardware.

Accessories, kits and tools to install, align and repair the goniometer must be included.

4. Automated in-situ **crystallization plate screening mount** for the goniometer should be included. The screening mount must be motorized, software controlled and compatible with the offered goniometer.

Accessories, kits and tools to install, and repair the system must be included.

5. **Crystal viewing video:** Appropriate crystal viewing video system to enable mounting and centering of crystals (video with LCD monitor, Color CCD camera, LED illumination, HD Video quality and 10X magnification) should be included. Accessories, kits and tools to install, and repair the system must be included.

6. **Cryo cooling:** A low temperature (LT-) device using non-liquid nitrogen Cryostream including all necessary electronics and a stand should be supplied with the system. Cryosystems should be supplied with a separate compact generator unit, which produces dry high quality nitrogen gas from the air. The necessary accompanying chiller should be provided. The system should employ following features:

- 1) Broad temperature range of 80 – 400 K
- 2) Fast cooldown time (40 mins to 100 K)
- 3) Superior stability of 0.1 K
- 4) Remote control and monitoring

Accessories, kits and tools to install and repair the system must be included.

6. **Integrated software:** Two latest independent and fully integrated softwares, for macromolecule and small molecule crystallography, should be provided for Data collection strategy determination, complete data collection, integration, structure determination and refinement. In addition, further minimum five licenses of the both software should be provided for independent data processing computers. The original software CD/DVD containing the entire installation kit should be provided.

7. **Computer and peripherals:**

- a) Minimum specifications of the Computers are: Windows or Linux based

operating system. INTEL® XEON® E5-1650 v4 processor -6 cores or better , 3.6 GHz speed or better, 64-bit Operating System, ~two numbers of 2TB HDD each with 7200 rpm, ~128 GB RAM, compatible Intel mother board, NVIDIA QuadroM20004GB Graphics or better, 24 x DVD RW, Full HD LED monitor 27 inch with 3 Years warranty.

b) Three Nos of computers with above configurations should be quoted

c) Three 2TB external HDD for data back-up.

9. **UPS:** Suitable reputed make On-Line UPS with built-in isolation transformer and event logging facility to run the above mention system including external water chiller and computer for uninterrupted data collection for at least 3 hours back-up.

10. **Safety enclosure:** The system should be housed in a factory in-built safety enclosure providing easy access to a well lit interior, with appropriate safety interlocks and dehumidifiers for proper maintenances of humidity during data collection process.

11. **Microscope:** Polarizing optical stereomicroscope with 10x/0.25, 20x/0.35, 40x/0.55, 100x/1.32 objectives to facilitate the mounting of micron level crystals. LED LAMP without Shutter and 10X eyepiece. A HD color camera with 20megapixel resolution compatible with Fluorescence should be integrated to this microscope. This camera should directly connected to Laptop to be supplied separately.

12. **Cooled Crystallization Incubator, High Capacity Dewar, Dry Shippers and Shipping case:** Precise and constant temperature with 400 liter internal volume cooled crystallization incubator (Temperature range 0 to 50C). High Capacity Dewar with roller base (20L or higher of liquid Nitrogen, Versatile storage system, convenient canister numbered index location, Superior vacuum performance with super insulation, 87 day static holding time, 54 days working time) Dry Shipper should meet IATA requirements and design to safely transport samples at cryogenic temperatures. Should be supplied with a shipping case and with one canister (suitable for ESRF baskets or any other synchrotron facility). 4.4 L capacity, Compact, lightweight design. Shipping case should provide shock resistant foam liner for protection in transit. Lockable hinged lid.

14. **Crystal Mounting Accessories:**

I. **Test crystals:** Necessary test crystals should be included

II. Goniometer Heads: 3nos of Goniometer head

III. CryoMount set (magnetic bases with cryovials) **Loops** of different aperture sizes; 0.02mm, 0.04mm, 0.06mm, 0.08mm, 0.1mm, 0.2mm, 0.3mm, 0.5mm, (box of 20 × 1 each).

IV. Sample pin storage and shipping container for use with the majority of automated sample mounting systems worldwide.

V. Crystal mounting plate: 9 Well Glass Plate & Sandwich Box Setup: six per pack X 2

VI. Cryotong, 1L Dewar Flask (two) with cover.

VII. Siliconized Cover slips 18mm diameter (Quantity-10000)

VIII. Uni-Puck starter Kit(Quantity-1)

IX. Seed Bead Ceramic kit(Quantity-1)

X. Pre greased VDX 24 well plate with 18mm diameter (Quantity-400)

XI. 96 well, 2 drop chamber clear polystyrene plates (sitting drop)(Quantity-400)

XII. 96 well clear polystyrene plates (sitting drop) (Quantity-400)

XIII. Crystal clear sealing tape (Quantity-12)

XIV. Crystal picking tool set, with micro-manuplator and other accessories in a box

Other conditions

1. Spares: Supply of spares for at least ten years from the date of installation, to be committed by the manufacturer. The separate price list of all spares and accessories and consumables, if any, (Including minor) required for maintenance and repairs in future after guarantee/warrantee period must be attached/enclosed along with the sealed quotation. If any spares & accessories other than the price list attached/enclosed by the firm are required for future repair it will be borne by the firm only.

2. Warranty: The equipment (including all spares and accessories) and all accompanying components (cryosystem, chiller, UPS & battery) should have 5 years warranty from the date of handing over of the fully functional unit to the Institute.

The post- warranty (after 5 years) comprehensive maintenance contract (CMC) should be quoted for spares and labor for the complete system which includes all the accessories supplied. All local items should be quoted in Indian Rupees.

3. Installation and Commissioning: Installation and training should take place at CSIR-IICB. The expenditure involved in it will be borne by the supplier. Minimum 10 working days for a group of students/ technical staff must be provided to operate the instrument and complete structure determination/solution.

4. Down-time call attendance should be within 48 hrs. During downtime of machine if Indian engineer is unable to resolve the problem within 15 days' time, foreign engineer should be deputed to resolve the issues at no cost to us.

5. Supply of all the relevant manuals and documents in printed format.

6. List of current users of XRD, manufactured by the bidder, to be provided.

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