NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008 (ODISHA)
An Institute of National Importance under Ministry of HRD, GOI

NOTICE INVITING TENDER

Tender Notification No: NITR/PW/CY/2019/125 **Dated: 14.06.2019**

The National Institute of Technology, Rourkela invites bids from the eligible bidders for procurement of **Single crystal X-ray diffractometer with accessories** at NIT Rourkela.

Last date of Submission of Bid **: 11/07/2019 at 11:00 AM**

Date of opening of bid(Cover I and II) **: 12/07/2019 at 11:00 AM**

For Details: http://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx
Contact: Dr. Rupam Dinda , PH; Ph: +91-661-2462657;
Email: rupamdinda@nitrkl.ac.in
Bidding through: https://eprocure.gov.in/eprocure/app

sd/-
REGISTRAR

NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008, ODISHA

(OPEN TENDER NOTICE NO.: NITR/PW/CY/2019/125 dated: - 14/06/2019)

(Procurement of Single crystal X-ray diffractometer with accessories)

Item No	DESCRIPTION	Quantity
1.	**Single crystal X-ray diffractometer with accessories**	**1 Unit**

1. Quantity required **: As mentioned above (All information regarding technical specification provided in the Annexure-I**)
2. Delivery **:** Within **90 days** from the date of purchase order
3. **Last Date of submission of Tender : 11/07/2019 at 11:00 AM**
4. **Date of opening of bid(Cover I and II) : 12/07/2019 at 11:00 AM**
5. The firm should not have been black listed at any time.
6. The submission of following bids by the tenderer should be through https://eprocure.gov.in/eprocure/app. Please follow the guidelines as per the portal.

Procurement of Single crystal X-ray diffractometer with accessories

(Open Tender Notice No.: NITR/PW/CY/2019/125 dated: 14/06/2019) Due on 11/07/2019 at 11:00 AM

7. **Liquidated damage clause** will be charged for any delay in supply of goods.
8. The validity of the tender shall be **90 days** from the date of opening of the bids.
9. Detailed advertisement including all tender documents is also available in our website at http://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx .
10. NIT reserves the right to qualify or deny prequalification of any or all applicants without assigning any reasons.

(REGISTRAR)
NIT, Rourkela
Fax No- 0661-2462022
Ph. No -0661-2462021

Annexure-I

Micro-focus Single crystal X-ray Diffractometer with accessories: Tender Specification

The single crystal X-ray diffractometer required for accurate determination of structures of organic, inorganic, organometallic, MOF, metal cluster and intermetallic compounds with X-ray generator (Micro-focus), state of the art Area detector, 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. The equipment should offer flexibility to study extremely small and/or weakly diffracting crystals. The details of the technical requirements and specifications of the system are given below.

Sl.No.	**Technical Specification for a Micro-focus Single Crystal X-ray Diffractometer with accessories**
1.	Floor mounted system for dedicated use in a laboratory with upgradeability features. Fully X-ray protected enclosure as per international safety norms with X-ray safe heavy duty main shutter. The X-ray diffractometer system should overall be air-cooled without any need for external chillers.
2.	**X-ray Source:** The system should be equipped with a single Mo k alpha micro-focus source with integrated cooling technology without any external chiller. The X-ray source should be highly stable with graded multi-layer double bounce focusing optics for augmentation of beam intensity with computer controlled technology and the power output in the range of 50 W or more and the beam diameter at the crystal should be optimum through use of suitable pinholes / collimators. The X-ray generator must be in-house designed and manufactured by the SCXRD manufacturer and should be repairable on component level at site. Maintenance: Any repair work or replacement of spares needs to be done on site, the manufacturer of the XRD must confirm this in their quotation. To minimize down-time the entire source shall maintain a minimum of 80% of the specified intensity for at least 3 years after installation. 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.The X-ray source must have warranty of 10 years irrespective of the system warranty and must maintain a minimum of 80% of the specified intensity during the warranty period.
3.	**X-ray detector and Optics:** The system should feature fully electronic state of the art detector with Hybrid Pixel Array detector (HPAD) or Charge-integrating Pixel Array Detector (CPAD) or HPC/MMPAD or any other advance or upgraded detector with no dead areas for detecting the diffracted X-rays and accurately measuring their intensities of diffraction pattern from single crystal. The detector should have high signal to noise ratio with virtually noise free readout electronics and should be capable of shutter-less operation, with auto air cooled facility. Preferably, the detector shall not require regular maintenance and feature low power sensors. The dynamic range of the detector should be very high 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 enhanced spatial resolution of the diffracted signal. In case of setup with a glass fiber optical taper is offered, the magnification ratio of the applied taper should be stated and loss of intensity due to taper must be specified. The Detector must have warranty of 5 years irrespective of the system warranty.

4.	**Goniometer:** 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 goniometer shall be equipped with stepper motors with optical encoders for optimum scanning speed and positioning precision. For best data quality the reproducibility of the omega and 2theta axes should be at least 0.0002 degrees, preferably certified/guaranteed; Goniometer speed shall be adjustable between 0 and 1200 degrees/min or better to ensure highest precision and minimized overhead time, with sphere of confusion less than seven micron. Detector movement should be motorized and the sample to the detector distance should be variable over a range of at least 40 – 145 mm or higher.
5.	**Application Software:** 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. 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, Twin Solve and Powder Data Collection and Analysis should be included with at least two licenses or more. 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. The offered data acquisition software package must be compatible with SHELX and WINGX
6.	**Computer and Printer:** Compatible PC for the Instrument has to be offered directly from the Manufacturer. Minimum configuration: 8 GB DDR RAM, Graphics Card, 24" Full HD (1920 x 1080 High resolution) monitor, 10/100 Fast Ethernet Controller, Keyboard and optical scroll mouse, Windows 7, or higher version, 64 bit compatible,RW DVD drive,2 TB HD Note: The PC must come from Manufacturer site with factory loaded Software. Two additional PCs with suitable configuration for data analysis should be offered. The vendor must offer a color laser jet printer
7.	**Temperature Control Unit:** Temperature attachment working from 90 K to 400K 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 stepwise fashion by the instrument control software to allow for easily creating variable temperature measurements. Additionally, an Imported Auto -Pressurized Dewar of 150L capacity or more has to be provided.

8.	**Video microscope & Illumination:** The system must include a color video microscope (inside the Instrument Cabinet) which records color images of the crystal mounted on the goniometer platform to assist alignment, monitoring, to capture screen frames of the sample, and to measure and index crystal faces, and face-absorption corrections. For numerical absorption correction the software should allow the indexing of crystal faces by interactive use of video pictures or movies of the crystal investigated
9.	**Warranty:** The system should be provided with a 5 years comprehensive warranty and 5 years AMC after completion of warranty period.
10.	**Power Back-up:** Compatible online UPS with minimum one hour back up has to be quoted (locally)
11.	**Crystal mounting and other accessories**: Capillaries and Cryo loops. Capillaries made of special glass with wall thickness of 0.01 mm and outer diameter of 0.2 mm, 0.3 mm, 0.5mm - 100 pcs. of each type and other necessary capillaries / accessories and Cryo-loops: 500 cryo-loops for cryo-mounting (all sizes). Necessary spares kit including 1 Additional Goniometer Head and 1 additional Test Crystal have to be offered.
12.	**ICSD**: Single user latest Inorganic Crystal Structure Database (ICSD) with three years license have to be offered
13.	**Microscope:** Polarising Optical Microscope (Make: OLYMPUS/LEICA or equivalent) with minimum following specification: Upright type with universal infinity corrected optical system with LED Light Source., Y – Shaped, providing wider work surface. Intensity control, LED light preset switch must be frame mounted. Coaxial coarse and fine focus controls with one fine focus extension knob. Z axis locking mechanism and tension adjustment lever has to be incorporated. Conoscopic & Orthoscopic. Bertrand lens – Separately focusable with 3.4mm field stop. Parfocal, Plan semi apochromat Polarising objectives 4X/0.10, W.D. 18mm, 10X/0.25, W.D. 6.0mm, 20X/0.40,W.D 3.0, 40X/0.65, W.D. 0.45mm,100X/1.25, W.D. 0.13mm (spring oil). Polarization accessories (rotation stage, transmitted-light illumination, polarizer, analyzer), Wide field eyepieces 10x (F.N.22) with cross lines.
14.	**Service facility in India:** Supplier should clearly demonstrate the service set up in India for prompt service support along with number of service engineers specially trained on the offered system. The service must be very prompt in case of any problem regarding the SCXRD.
15.	**Installation and Training:** Installation and demonstration at site with operational training for a period of one week. Additionally, one week dedicated application training by application specialist from the manufacturer facility has to be provided. One technically trained person is required continuously for one year for operating the instrument.
16.	**Air Condition:** Two 1.5 TON Split AC including installation has to be quoted (locally).
17.	**Installation in India**: Detailed lists of Indian users for SCXRD system and list of SCXRD machine installed in last financial year.

The bidders may be asked to deliver presentation and provide clarifications regarding technical aspects during the technical bid evaluation. They must come prepared.

A proper and detailed description regarding the quoted detector material and technology along with all other technical specifications must be provided in the technical bid.

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