



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA**

Advertised Tender Enquiry

Department: Ceramic Engineering

Tender Notification No: NITR/PW/CR/2020/204

Date: 06/11/2020

To

Important Dates

Bidding
Through
e-Procurement module
of CPP Portal

(<https://eprocure.gov.in/eprocure/app>)

Event	Date	Time
Pre-bid Conference	20/11/2020	11:00 AM
Last Date of submission of bid	07/12/2020	11:00 AM
Date of opening of techno-commercial bid	08/12/2020	11:00 AM

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

For any clarification, you may contact to:

Attention:

Prof. S. Bhattacharyya
Professor
Department of Ceramic Engineering
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA, India
Phone: (0661) – 2462205/2201 and 9437343058
E-mail: santanub@nitrkl.ac.in

Yours sincerely,

Prof. S. Bhattacharyya

Encl:

- (1) Schedule of requirement, specifications, dates etc.**
- (2) Bid document containing detail terms and conditions.**

1. Schedule of requirements

Item No	DESCRIPTION	Quantity
1	X-RAY DIFFRACTOMETER(XRD) SYSTEM FOR MATERIALS CHARACTERIZATION (as per detailed Annexure-I)	1 Unit

2. Specifications and allied Technical Details

As per Annexure - I

* Attach User list along with the bid

3. Format of Quotation (tick appropriate box)

It is a two-part bid with separate covers, **Cover-I:** EMD, Tender cost, techno-commercial bid and **Cover-II:** Price bid, (BOQ). Please see e-Procurement Portal of Ministry of Education Portal <https://eprocure.gov.in/eprocure/app> for instructions for the method of bidding.

4. The bid should be submitted through <https://eprocure.gov.in/eprocure/app>

5. Quotations should be valid for a period of **120 days** from the date of opening of techno-commercial bid.

6. Some important dates:

i. Pre-bid Conference	Date: 20/11/2020	Time: 11:00 AM
ii. Last date for submission of Bid:	Date: 07/12/2020	Time: 11:00 AM
iii. Date of opening of Technical bid:	Date: 08/12/2020	Time: 11:00 AM

7. The Pre-bid Conference will be held through offline or online mode in the "**Dept. of Ceramic Engineering, NIT Rourkela- 769008**" as per the schedule date & time given above for clarifying issues and clearing doubts, if any, about the specification & other allied technical details. The prospective bidders may attend the pre-bid conference on scheduled date, time and place as mentioned above.

8. Warranty 3 years comprehensive onsite warranty must be provided.

9. GST: GST should be charge according to applicable rates.

10. Bid Security and Tender Cost: Bid Security in shape of Bank Guarantee/DD (Demand Draft) for **INR 3,00,000/- (Rupees Three lakh Only)** and Tender Cost (Non- refundable) in the form of DD for **INR 500/- (Rupees Five Hundred Only)** in favor of **Director, NIT Rourkela** Payable at Rourkela from any Scheduled Commercial Bank **except Co-operative and Gramin bank**. And Bank Guarantee/DD for the Bid-Security should remain valid for a period of **45 days** beyond the bid validity period from the date of opening of bids. Bid security of unsuccessful bidders will be returned to them at the earliest and latest on or before **30 days** after the award of the contract. **EMD (Earnest Money deposit)** and **Tender Cost** should reach physically through speed post/ register post/courier, containing in an envelope & superscripted with subject, tender reference number addressed to the **Registrar, NIT Rourkela- 769008, Odisha;** on or before **08/12/2020 at 11:00 AM.**

11. **Performance Security: 5% of contract value** in the form of Demand Draft (DD)/Bank Guarantee drawn in favour of Director, NIT Rourkela and payable at Rourkela. The Performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the suppliers including warranty obligations. The Earnest Money Deposit (EMD) amount of the successful bidder will be returned to the bidder receipt of performance security after the award of contract.
12. Please go through the enclosed "bid document" carefully for other bidding instructions.
13. Please send your quotations through <https://eprocure.gov.in/eprocure/app>
14. **Technical Bid Evaluation Criteria:** The evaluation of the Technical Bid will be as per the detailed technical specifications given in Annexure-I. If required, the bidder(s) may be asked to provide additional clarification regarding the technical aspects.

Other Qualification criteria:

- i. Scanned copies of the technical brochure of the above equipment and accessories as per the Annexure-I must be included in the technical bid. Pointwise technical compliance along with any deviation of the mentioned specifications (Annexure-I) must be indicated along with technical documents.
 - ii. The bidder must also assure in writing that (a) after sales regular maintenance service as well as (b) emergency breakdown service will be attended at the regular time interval for (a) and within 72 hours for (b).
 - iii. Web references must be provided along with the technical bid.
 - iv. Customized equipment and accessories (as per Annexure-I) will not be accepted. The standard equipment and accessories (as per Annexure-I) will only be accepted.
 - v. Make and model no. should be mentioned in the technical bid.
 - vi. Scan copies of the ten purchase orders of the quoted equipment model and accessories within last three years must be enclosed along with the technical bid.
 - vii. The firm must provide the list of well reputed national and international organizations/Universities, where the quoted system is installed.
 - viii. The firm must provide at least 10 performance certificates (in English language) of the particular model of the system mentioned in the quotation.
 - ix. The bidder must have valid authorization from the OEM specific to this tender. Documentary proof regarding this must be attached
15. **Financial Bid Evaluation Criteria:** Financial Bid will be evaluated based on the basic X-RAY DIFFRACTOMETER (XRD) unit, Chiller, Computer, UPS system, Printer and 3 year comprehensive warranty on DDP basis. Optional items as mentioned in BOQ will be procured subject to the availability of the fund from the same L1 bidder in the basic unit.
16. For technical details, you may contact

<p>Prof. S. Bhattacharyya Professor Department of Ceramic Engineering NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA, India Phone: (0661) – 2462205/2201 and 9437343058 E-mail: santanub@nitrkl.ac.in</p>
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NB: ***Please furnish your Dealership Certificate (must) and Proprietary Nature Certificate (If applicable)***



NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

BID DOCUMENT

1. Instructions to the bidders

- 1.1 Bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela – 769 008, Odisha, from the intending bidders for supply of the goods/stores/ equipment for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote their offer/rates following the list provided in **BOQ** in clear terms without any ambiguity.
- 1.3 In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.
- 1.4 The last date for receipt of the bid is marked in the enquiry.
- 1.5 The bids should be uploaded in <https://eprocure.gov.in/eprocure/app> Please follow the guidelines of the site.
- 1.6 If a prospective bidder requires any clarification in regard to the bidding documents, he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.
- 1.7 Bids received after the deadline of receipt indicated in para 1.4 above, shall not be taken in to consideration.
- 1.8 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and will be considered non-responsive.
- 1.9 The bids will be submitted in two parts, viz., technical bid and financial bid.
- 1.10 The bidder has to put his full signature in full in all the pages of the scanned part of the bidding document. No over-writing in those pages is acceptable.
- 1.11 If any bidder does not fulfil technical specification, his/her eligibility will be cancelled even if his/her price got L1 status.
- 1.12 Bidders registered with any of the following agencies/ bodies as per Public procurement policy for Micro & Small Enterprises (MSE) order 2012 are exempted categories from payment of EMD provided that the registration Certificate issued by any one of these below mentioned agencies must be valid as on close date of tender. Micro small or medium enterprises who have applied for registration or renewal of registration with any of these agencies/bodies but have not obtained the valid Certificate as on close date of tender are not eligible for exemption.
 - i) Khadi and Village Industries Commission (KVIC)
 - ii) National Small Industries Corporation (NSIC)
 - iii) Any other body specified by Ministry of MSME/GOI

2. Conditions of the bid

- 2.1 The rates quoted should preferably be net, inclusive of packing, forwarding, freight, Insurance and all other incidental charges including taxes. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or Ad Valorem rate must be specified. Packing, forwarding, freight, entry tax etc., when quotes separately are reimbursable at actual. If external agencies are employed, their receipts must be enclosed with the invoice.

2.2 Duties and Taxes are to be quoted separately. Ad Valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

It may be noted that the Institute is availing custom duty exemption in terms of Notification No. 51/96 – Customs dt. 23.07.1996, Notification No. - 47/2017- Integrated Tax (Rate) dt. 14.11.2017 and Notification No- 45/2017 – Integrated tax (Rate) dt. 14/11/2017 & Notification No. - 45/2017- Central tax (Rate) dt. 14.11.2017, Notification No. - 45/2017- Union Territory Tax (Rate) dt. 14/11/2017 [Vide DSIR, Ministry of Science and Technology, Government of India, Registration No.: TU/V/RG- CDE (227)/2016, dated: 13.11.2018]

2.3 The goods are required to be delivered at the indenting Department of NIT, Rourkela, and must be reached within **120 days or earlier** from the date of placement of the supply of order under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the bid.

2.4 The bid should remain valid for a period of **120 days** from the date of opening. In case the bid offer has a different validity period, the same should be clearly mentioned in the bid.

2.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.

2.6 The goods offered should strictly conform to the specification and technical details as mentioned in **Annexure-I**.

2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.

2.8 Period of guarantee/warranty, where ever applicable, should be specified in the bid.

2.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the discretion of Director, NIT Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.

2.10 The successful bidder may be required to execute a contract, where applicable.

2.11 The bidder has to furnish up to date GST and Income Tax Clearance Certificate along with the bid.

2.12 Purchase order / Work order shall be placed on the bidding firm(s). In case of deviation to this, if any, the bidding firm should produce any such sufficient documents/credentials i.e, Agreements, MOUs, Arrangements etc. with the third party/ OEM to satisfy the buyer. A consent letter from the third party/ OEM to that effect must be enclosed along with the bidding documents.

2.13 70% payment will be paid through LC against shipping documents, balance 20% payment will be through wire transfer on receipt of the consignment in good condition in the Department of Ceramic Engineering, NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA. Remaining 10% payment will be released through wire transfer within 30 days after commissioning of the equipment, installation, demonstration and on site training.

2.14 State Bank of India is the sole Banking partner for NIT Rourkela for operation of LC (Letter of Credit).

2.15 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, Rourkela shall be final and binding.

2.16 The bid document/resultant contract will be interpreted under Indian Laws.

Specifications for X-RAY DIFFRACTOMETER (XRD) SYSTEM FOR MATERIALS CHARACTERIZATION

The Department of Ceramic Engineering, National Institute of Technology Rourkela, wishes to purchase state of the art X-ray diffractometer (XRD) for the academic research and development purpose with latest hardware and software system required for analysis of polycrystalline materials as well as Nano-sized and/or mesoporous/porous materials with regards to phase identification, quantification, and crystal structure determination. The XRD system should be equipped with automatic software recognition system in real time mode for any malfunctioning of any of the components in the beam path including X-ray tube, both in primary and secondary beam optics, detector. The XRD unit should have the following components:

a) X-ray Generator:

Fully Microprocessor controlled, Continuous power output: 3.0 kW or higher, Operating voltage should be continuously variable from the minimum voltage to 50 KV or higher with 1 KV increment, tube current should be continuously variable from a minimum value to 50 mA or higher with 1 mA increment. The Operating power supply should either be 220 V (+/- 10%), 50Hz, single phase, or 440V (+/-10%), 50Hz, three phase

b) X-ray tube:

The X-ray tube shall be Ceramic tubes with Copper anode (power 2 KW or higher) and should be compatible with x-ray generator. The primary beam optics shall have curved mirror monochromator for effective suppression of $K\alpha_2$ as well as $K\beta$ radiation. Additionally, secondary beam optics may contain beta filter compatible with generator. The tube should support easily interchangeable long line focus as well as point focus.

c) Goniometer:

The Goniometer should be vertically mounted and should have either theta-theta geometry or theta two theta geometry. The goniometer motor should be driven through stepper motor /dc motor for better accuracy and fast step scan. Two Theta range -10 to 160 degree or better, angular reproducibility should be minimum +/- 0.0001 deg. The smallest addressable step size should be 0.001 degree or better step size. Goniometer diameter 450 mm or higher. Scanning mode/ Position reading should be continuous scan, step scan, theta or 2 theta scan, fast scan. The theta – two theta position reading should be controlled by digital optical encoders. Scan Speed range should be 0.001 to 1.25 deg/sec or better. Slew speed should be 8 deg / sec or higher.

d) Beam Optics

The beam optics should have programmable divergent and anti-scatter slits, primary beam optics must include suitable divergent slits, mask, soller slits and multi-layer mirror and should have automatic change over feature from Bragg Brentano to Parallel Beam Geometry. The beam optics control should permit smooth switch over from wide angle to low angle without any loss of beam optics alignment and without any manual intervention in the beam optics. The combination of all optics should permit scanning in the reflection mode from 0.5 degree to 165 degree or better.

e) Detectors/ Counters:

The system should be equipped with solid state ultra-fast detector for powder XRD to work both in 0 and 1 D mode (without the use of any gas) both in fixed and scanning mode. The count per second (cps) of the detector should be 10^7 or better. All the detector channels /strips should be functional, free of defect, allow ultrafast detection and provide high-quality data with high multiplicity to achieve the highest detector sensitivity and superior resolution without losing any information. The detector should have additional hardware and software backup for reducing the fluorescence in the secondary beam.

f) Sample Holder:

Minimum 20 numbers of normal sample holders to be provided. Additionally, 2 numbers Si –Low/Zero Background sample holders to permit analysis of small sample quantity (150 mg) – flat and cavity type or equivalent sample holder should also be provided.

g) Computer:

Processor: Intel® Core™ i5-2600 Processor (3.40 GHz, 8 MB cache), Motherboard: OEM Motherboard, Memory: 4 GB DDR3, Optical Drive: DVD Writer Drive, Monitor: 23" Flat Panel TFT LCD with Minimum 1280 x 1024@60Hz (native) resolution with Adjustable height. The preferable make of computers are: HP, Dell. To be pre-loaded with Windows 10 and necessary software from the manufacturer of XRD.

h) Printer:

Colour laser printer for A4 size paper or better. Make of printer: HP/ EPSON

i) Software:

Necessary Software to be provided for

- a. XRD data collection and data evaluation.
- b. Phase identifications, Phase Analysis and Phase Quantification including crystalline & amorphous powders using Rietveld technique, crystallinity determination and crystal structure refinement.
- c. Latest PDF 2 or ICDD XRD database should be offered for ten users for five Years for XRD data interpretation for phase identification and quantification.
- d. Data collected from the XRD must be compatible with offered PDF 2 or ICDD database. In addition the data could be analysed using open access online Rietveld software.

- e. All the features of the Data interpretation software must be active for various applications e.g., calculation of micro structural parameters like cell dimension, cell volume, crystallite size, lattice strain etc.
- f. The data acquisition and analysis software supplied by the XRD manufacturer or bidder may have the additional and/or optional feature of carrying out structure solution based on Rietveld Analysis without the need of any additional supporting software at an additional cost.

j) Calibration Standard

One NIST sample (with 5 years warranty on the data accuracy) is to be provided.

Demonstration of data quality by using same NIST sample for thin film and powder applications to be provided during installation. **Manufacturer must submit data quality guarantee certificate of NIST sample from the factory on the angular position.**

k) Radiation Control:

The Equipment should have Full Radiation protection chamber as per the latest international safety norms including AERB norms. Necessary Certificate for the same to be provided at the time of installation.

l) Documentation:

Two sets of Complete User manual and service manual (in English language) to be provided with the equipment. Additionally, one set of soft copy (PDF) should be also be provided

m) Installation & Commissioning:

- At N.I.T-Rourkela site by the supplier.
- Pre-installation Civil / Electrical/ Water/Radiation safety requirement/ instructions should be mentioned well in advance along with Bid.
- Satisfactory performance of the installed instrument should be demonstrated.

n) Training:

The supplier should provide necessary training free of cost at the site of installation for operation, data acquisition and data interpretation software as well as urgent and minor trouble shooting issues

o) Chiller

Suitable Re-circulating water chiller for the system should be offered with capability to work at an ambient temperature of 48 deg C or more. The Chiller unit control unit should monitor Water flow and temperature of the water as per the requirement. The Chiller unit should have Noise free operation in ambient temperature. The Chiller unit should be compatible for in-house installation.

- p) **UPS: 1No's 15KVA or higher** on-line UPS of three phases input and single or three phase output as per requirement with SMF battery with 30 minutes back up time. The UPS should be able to run both the chiller and the XRD unit for 30 minutes

Additional Clause

A. OPTIONAL:

- a. Combination of all optics should also to facilitate scanning from 0.05° onwards in transmission mode and parallel beam modes. Multilayer mirror optics and slits to be provided for SAXS and Transmission geometry. Suitable slit for SAXS application to be included
- b. Suitable optics for Thin Film sample (GIXRD) must be offered.
- c. Suitable Sample stage for sample analysis in transmission geometry for SAXS nano materials and pore size distribution with 3 numbers of transmission holders.

B. MANDATORY

1. **Comprehensive Warranty for XRD system, UPS, Chiller, Computers & Printer: Three** years from the date of commissioning. During this Comprehensive Warranty period, all components of the XRD including X-ray tube, X-ray generator, HV cable, electronics, mechanical components, Chiller components- both mechanical and electronic component etc. should be covered and in case of failure, same to be replaced on DDP basis at the site of installation. The quotation should clearly state the comprehensive warranty cost in terms of percentage of machine cost (per year basis) for additional 2 years comprehensive warranty.

2. Certification:

- A. Certification of Satisfaction for after sales service support from at least **ten users (for orders executed in the last three years) with contact no. and address (reputed govt. or private organisation) in India for supply of same model which vendor is quoting against the present bid.**

The bidder must also assure in writing that (i) after sales regular maintenance service as well as (ii) emergency breakdown service will be attended at the regular time interval for (i) and within 72 hours for (ii)

- B. Certification from the OEM that all the necessary spares for smooth and trouble free operation of XRD machine must be available for at least 10 years from the date of commissioning

It is also mandatory for the Vendor to quote for the recent and advanced model for the configuration to suit all the above applications duly certified by Original Equipment Manufacturer (OEM).

GENERAL CLAUSES TO BE FOLLOWED BY THE BIDDER

1. Bidders are requested to carefully go through the bid document, including tender specifications. It will be the responsibility of the bidders to ensure that all required documents, data, information, undertaking, certificates etc. are provided as per the bid document. Bids which fail to provide the required documents, data and information, as mentioned in the bid document, may be declared non-responsive and rejected.
2. All goods and materials should be new, unused, and of the most recent or current models, and should incorporate all recent improvements in design and materials unless provided for otherwise in the specifications below. Bidders may offer higher/better specifications but not the lower ones.
3. The bidder should provide the access to all genuine, original and licensed Software along with their update releases during the warranty period and the validity period of contract.
4. The bid must specify the pre-requirements (such as electrical power requirements, flooring etc.) for installation.
5. All bids must be accompanied by a bid security as specified in the bid document and must be delivered to the above office at the date and time indicated above
6. Bids will be opened in the presence of Bidders' representatives who choose to attend on the specified date and time.
7. In the event of the date specified for bid receipt and opening being declared as a closed holiday for purchaser's office, the due date for submission of bids and opening of bids will be the following working day at the appointed times

Amendment of Bidding Documents:

8. At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, Modify the bidding documents by amendment.
9. All prospective bidders who have received the bidding documents will be notified of the Amendment in writing or by cable or by fax or through uploading in the website (URL: <https://www.nitrkl.ac.in>), and will be binding on them.
10. In order to allow prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.
11. It is to be noted that in the case of a Bidder offering to supply goods under the contract which the Bidder did not manufacture or otherwise produce, the Bidder has to provide documentary evidence that the Bidder has been duly authorized (as per authorization form in Section XII) by the goods' Manufacturer or producer to supply the goods in India.

12. The bid should include item wise detailed description of the technical specification of all the components of the XRD unit.
13. If all or any of the components (e.g. **X-ray Generator, X-ray tube, Goniometer, Beam Optics, Detectors/ Counters, etc...**) in the quoted XRD unit are not manufactured by OEM, then the OEM has to provide sufficient information about the manufacturer and detailed description of those components along with their bid document. Moreover, the OEM of the component manufacturer need to certify that their components will seamlessly integrate with the XRD unit for smooth and trouble free operation. The bidder needs to provide supporting documents/literature/website information in support of their claim.
