

Global Tender

This is a Request for Quote (RFQ) from the Indian Institute of Science (IISc), Bangalore, for the supply and installation of a ROTATING ANODE BASED X-RAY POWDER DIFFRACTOMETER at the Materials Engineering department, IISc Bangalore.

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Statutory condition: The committee can cancel the tender at any time.

Section 1 - Bid Schedule

1	Tender No	
2	Tender Date	29 th May 2024
3	Item Description	A ROTATING ANODE BASED X-RAY POWDER DIFFRACTOMETER
4	Tender Type	Two bid system (i) Technical Bid (Part A) (ii) Commercial Bid (Part B)
5	Place of tender submission	Chairperson Office Materials Engineering Department Indian Institute of Science, Bangalore 560012
6	Last Date & Time for submission of tender	19 th June 2024
7	For further clarification	Dr. Bhagwati Prasad Room No: C201, Materials Engineering Department Indian Institute of Science, Bangalore 560012 Email: bpjoshi@iisc.ac.in Phone: +91 80 22932679

Section 2 – Eligibility Criteria

Prequalification criteria:

1. The Bidder's firm should have existence for a minimum of 3 years. (Enclose Company Registration Certificate)
2. The Bidder should have qualified technical service personnel for the instrument(s) based in India.
3. If the Bidder is a local distributor/dealer/Agent, it is mandatory to attach authorization certificate along with the technical bid from the original equipment manufacturer.
4. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per -Annexure 4.
5. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3 – Terms and Conditions

A) Submission of Tender:

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
 - a. Technical Bid (Part-A) – Technical bid consisting of all technical details and check list for conformance to technical specifications.

The technical proposal should contain a technical compliance table with 5 columns.

- i. The first column must list the technical requirements, in the order that they are given in the technical requirement below.
 - ii. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible.
 - iii. The third column should describe your compliance with a “Yes” or “No” only. Ensure that the entries in column 2 and column 3 are consistent.
 - iv. The fourth column should state the reasons/explanations/context for deviations, if any.
 - v. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify response of previous columns, or provide additional details, compare your solution with that of your competitors or provide details as requested in the technical requirements table below.
- b. Commercial Bid (Part-B) – Indicating item wise price for the items mentioned in the technical bid, **as per the format of quotation provided in tender**, and other commercial terms and conditions.

3. The technical bid and price bid should each be placed in separate sealed covers, superscripting on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscripted with the Tender No, Tender Description & Due Date.
4. The SEALED COVER superscripting tender number / due date & should reach Chairperson Office, Centre for Nanoscience and Engineering, Indian Institute of Science, Bangalore – 560012, India on or before due date mentioned in the tender notice. In case due date happens to be holiday the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.
5. All queries are to be addressed to the person identified in “Section 1 – Bid Schedule” of the tender notice.
6. The items are required for research purposes, and IISc is a DSIR registered institution, hence eligible for GST exemption (i.e. GST @ 5%). While submitting the price quote, this

point must be taken care. For getting GST exemption certificate, successful bidders must submit, a formal request together with Invoice copy and Purchase order copy.

7. GST/other taxes, levies etc., are to be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document (Indian Bidders only).
8. If price is not quoted in Commercial Bid as per the format provided in tender document the bid is liable to be rejected.
9. The Institute reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to the award of contract, without there by incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.
10. Incomplete bids will be summarily rejected.

B) Cancellation of Tender:

Notwithstanding anything specified in this tender document, the purchase committee, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

- a. To accept OR reject lowest tender or any other tender or all the tenders.
- b. To accept any tender in full or in part.
- c. To reject the tender, offer not confirming to the tender terms.

C) Validity of the Offer:

The offer shall be valid 90 Days from the date of opening of the commercial bid.

D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.
2. Bidders meeting the required eligibility criteria as stated in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
3. Pre- qualification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical evaluation or during commercial evaluation. The decision in regard to acceptance and / or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and decision in this regard shall be binding on the bidders.
4. The award of contract will be subject to acceptance of the terms and conditions stated in this tender.
5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:

- a. Non-submission of complete offers.
 - b. Receipt of bids after due date and time and or by email / fax (unless specified otherwise).
 - c. Receipt of bids in open conditions.
6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER had accepted the clauses as of the tender and no further claim will be entertained.
 7. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.
 8. Lowest bid will be calculated based on the total price of all items tendered for Basic equipment along with accessories selected for installation, operation, preprocessing and post processing, optional items, recommended spares, warranty, annual maintenance contract. Also see section G.

E) Pre-requisites:

The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.

F) Warranty:

The complete system is to be under warranty period of minimum 3 years (year wise breakup value should be shown in the commercial bid) including free supply of consumables, spare parts and data analysis software from the date of functional installation. If the instrument is found to be defective, it has to be replaced or rectified at the cost of the bidder within 30 days from the date of receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended.

G) Annual Maintenance Contract:

An annual maintenance contract for a period of atleast 2 years post warranty should be provided on completion of warranty period. If the equipment cost is A, AMC is B, the lowest bid will be calculated as $L1=A+5*B$.

H) Purchase Order:

1. The order will be placed on the bidder whose bid is accepted by IISc based on the terms & conditions mentioned in the tender document.
2. The quantity of the items in tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.

3. If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

I) Delivery, Installation and Training:

The bidder shall provide the lead time to delivery, installation and made functional at IISc, Bangalore from the date of receipt of purchase order. The system should be delivered, installed and made functional within 90 days from the date of receipt of purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and inspection of all the items and features/capabilities tested by the IISc, Bangalore. After successful installation and inspection, the date of taking over of entire system by the IISc, Bangalore shall be taken as the start of the warranty period. No partial shipment is allowed.

The bidder should also arrange for technical training to the local facility technologists and users.

J) Payment Terms:

The payments to non domestic vendors will be through a Letter of Credit and milestone of the payment will be determined after the mutual discussions with the successful bidder. As per GFR no advance payment can be made to domestic vendors, unless an equal amount of bank guarantee is provided.

K) Statutory Variation:

Any statutory increase in the taxes and duties subsequent to bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore subject to the claim being supported by documentary evidence. However, if any decrease takes place the advantage will have to be passed on to IISc, Bangalore.

L) Disputes and Jurisdiction:

Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Bangalore, India.

M) General:

1. All amendments, time extension, clarifications etc., within the period of submission of the tender will be communicated electronically. No extension in the bid due date/time shall be considered on account of delay in receipt of any document(s) by mail.
2. The bidder may furnish any additional information, which is necessary to establish capabilities to successfully complete the envisaged work. It is however, advised not to furnish superfluous information.
3. The bidder may visit the installation site before submission of tender, with prior intimation.
4. All imported equipment should be quoted in the currency of the country of origin, and all locally sourced items should be quoted in Indian Rupees.

5. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from tendering/taking up of work in IISc, Bangalore.

Section 4 – Technical Specifications

A. ROTATING ANODE BASED X-RAY POWDER DIFFRACTOMETER.

Quotations are invited for the supply, installation and commissioning of the following instrument: Computer controlled X-ray Diffractometer System with the minimum features listed below:

High resolution X-ray diffractometer (XRD) fully software controlled and capable of carrying out structural characterization on bulk, powder, thin films and nanomaterials, with the following specifications:

X-ray Generator:

- i) Output Power: 6 kW or higher
 - ii) Maximum voltage: 40 kV or Higher
 - iii) Voltage Step width = 1 kV
 - iv) Maximum current: 150 mA or higher
 - v) Current step width = 1mA
 - vi) Stability: ± 0.01 % or better against ± 10 % voltage fluctuation
 - vii) Control: Fully controlled by software
 - viii) Overload limit setting, Automatic ageing of X-ray tube and X-ray tube protection against under voltage, over load, over voltage, over current and/or failure of water supply. Should have door interlock safety mechanism which allows the generation of x-rays only when the door is closed.
- Water Cooled Chiller for the above.

X-ray Target:

Cu (Rotating Anode) with appropriate filter and Parabolic Multigraded mirror in the incident beam for making the beam parallel.

Goniometer:

The goniometer should be a vertically mounted.

It should have the capability of carrying out the complete analysis of bulk, powder and thin films (4 circle geometry or similar) samples. All accessories required for reciprocal space mapping and Rocking Curve with appropriate software should be quoted. The system should allow residual stress and pole figure analysis of metallic/superalloys. Should have Automatic alignment when the mode of operation is changed.

- i. Type: Theta – Theta (θ - θ)
- ii. 2θ range – 0 to 160 degrees or better

- iii. Minimum step size: 0.0001 degree or smaller
 - iv. Angle reproducibility: 0.0001 degree or smaller
 - v. Sample height alignment unit with Sample Up/down mechanism
 - vi. Scanning range: 0~ 100deg. (2 θ Chi) or more
- Standard measurement software:

The software should be able to perform:

- i. X-Ray Generator Operation.
 - ii. Manual Measurement.
 - iii. Auto setting (with counting loss correction Function).
 - iv. Standard measurement.
 - v. Automatic Alignment.
 - vi. System Conditioning setting (Change configurations).
 - vii. Measuring Monitor and ASCII Output.
 - viii. Determine which optical modules are best for an application, and perform automatic alignment, setup and measurement. Should deliver a completely automated measurement sequence.
- (d) Data processing software (Academic License). The details of the software functionalities should be clearly specified in the tender document
- (e) Analysis Software that allows both qualitative and comprehensive analysis. Should include (but not limited to) lattice constants, Crystallinity, Indexing. The details of the software functionalities should be clearly specified in the tender document
- (f) Software for Rietveld refinement. The details of the software functionalities should be clearly specified in the tender document

Thin film attachment with appropriate software for thin film analysis:

- i. should allow XRD of multilayer thin films. Should work in both reflection and transmission mode.
 - ii. Phi Axis- Operating range -360 to +360deg with minimum 0.005 degree Step or better
 - iii. Kai Axis-Operating range -5 to 92 deg with minimum 0.002 degree Step or better
 - iv. Z Axis- Operational Range -6 to +1mm range with minimum 0.01mm Step or better
 - v. Thin Film Slit
 - vi. Appropriate stage for rocking curve measurement with range of 5 deg in X and Y angle with a step of 0.005 deg or less.
 - vii. Should allow high resolution and high intensity X-ray reflectivity studies
- Appropriate thin film analysis software and other software for Reflectivity, RSM, In Plane analysis, Pole Figure analysis and Residual Stress analysis should be quoted.

Detector- multistrip solid state 1D detector which can work in both 0D and 1D model. The pixel size here should be equal to or less than 75microns.

The detector should have Fluorescence suppression mode built in. This detector should be air cooled and solid state in nature without needing any gases.

Optionally quote for Direct Photon Counting 2D detector with minimum active area of 350mm square or more. This detector should work in 2D, 1D or 0D mode.

This detector should be air cooled and should have Fluorescence Suppression mode built in.

Slits and Crystal Monochromators:

- i) Computer controlled automatic Slits (divergence, scattering, receiving and height slits) and Slit Exchanger system with automatic alignment and control with automatic systematic error correction. The arrangement should facilitate small angle (~0.5 degree) measurements.
- ii) The vendor should include all the relevant slits including slits for high resolution focusing method (Incident and receiving sollar slits) to ensure FWHM of 0.04 degree or smaller on standard specimens.
- iii) Two bounce monochromators both at primary and secondary beam sides. For parallel beam optics: (i) Ge(220) two bounce crystal for Cu α in the incident path with the divergence of the exit beam should be below 0.01 degree. All crystals should have motor controlled rotation adjustments.

(Optionally Quote for Ge(220) 4 bounce crystal monochromator for the incident Beam.)

ICDD Latest PDF2 data base should be quoted with Academic License valid for 5 years.

All the Application software quoted above should have at least 5 Academic Licenses

Two computers with following specification or better should be quoted

I7, 16GB RAM, 1TB HDD, 27 inch LED monitor, Windows 11 Software.

Color Printer should also be quoted.

Required sample holder for Powder (Including Low Background sample holder) should be quoted.

NIST Standard or equivalent should be quoted (Si and Al₂O₃).

High Temperature Attachment.

A furnace based (not strip heating) heating high temperature attachment of reputed make is to be quoted with following minimum specifications

Temperature range ambient to 1200 deg C or higher

Angular range of atleast 5 to 150° 2 θ

Accessories such as vacuum system, connecting cables, etc. if required should be quoted.

Branded 40KV UPS with 30 minutes back up should be quoted.

Chiller for the above

Warranty on the system should be 3 years.

Other Requirements:

1. The system should have a user-friendly design for easy serviceability and troubleshooting. Components if not available under the consumables should be easily accessible for maintenance as and when needed.
2. The system should incorporate the necessary safety interlock to permit the safe operation of the equipment.
3. All utilities for the installation of the system should be clearly stated.
4. The supplier and/or their representative should undertake to install and commission the system at the purchaser's laboratory in the event of order and demonstrate satisfactory performance. The installation and commissioning should be provided by the supplier or their representative. The supplier or their representative should have well-proven service capability on a similar system.
5. All the technical literature/catalogs of various sub-systems in English must accompany the quotation. In the event of an order, the manufacturer should undertake to supply all the documents including a complete system description, operation and service manuals, and full description of hardware and software used. A hard copy of all manuals including operations, maintenance, and service manual along with a drawing of main equipment and all its accessories should be provided.
6. The company should have a minimum of 3 nos. of supply reference of the similar system installed in India in government-funded institutions. The detailed Indian User reference list should be provided with contact details etc. The Company should provide 3 satisfactory certificates from the users in India that have 2 or more years of usage experience. Please note that the successful installation certificate is not considered a satisfactory certificate. The past service and satisfactory feedback of the manufacturer shall be one of the main criteria for decision making.
7. The company should have Trained Service engineers to provide after-sales support. Certificates of the trained engineers should be included with the quotation.

B. Training and demonstration

Training on the usage of the machine (hardware and software) must be demonstrated by the successful bidder at the bidder's cost to the end-users at IISc, Bangalore.

Section 5- Technical Bid

The technical bid should furnish all requirements of the tender along with all annexure in this section and submitted to

The Chairperson,
Attn: Dr. Bhagwati Prasad
Materials Engineering Department
Indian Institute of Science
Bangalore – 560012, India

Annexure-1:

Details of the Bidder

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Details of the Bidder

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name
Designation, Seal

Date:

Annexure-2:

Declaration regarding experience

To,
The Chairperson,
Attn: Dr. Bhagwati Prasad
Materials Engineering Department
Indian Institute of Science
Bangalore – 560012, India

Ref: Tender No: XXXXXXXXX

Dated: XXXXX

Supply and installation of A ROTATING ANODE BASED X-RAY POWDER DIFFRACTOMETER at
Materials Engineering Department, IISc Bangalore.

Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ---- years of experience in supplying and installing Confocal systems.

(Signature of the Bidder)

Printed Name

Designation, Seal Date:

Annexure-3:

Declaration regarding track record

To,
The Chairperson,
Attn: Dr. Bhagwati Prasad
Materials Engineering Department
Indian Institute of Science
Bangalore – 560012, India

Ref: Tender No: XXXXXXX

Dated: XXXXX

Supply and installation of A ROTATING ANODE BASED X-RAY POWDER DIFFRACTOMETER at
Materials Engineering Department, IISc Bangalore.

Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred / blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I'm competent officer in my company / firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long

(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully
(Signature of the Bidder)

Name
Designation, Seal

Date:

Annexure – 4:

Declaration for acceptance of terms and conditions

To,
The Chairperson,
Attn: Dr. Bhagwati Prasad
Materials Engineering Department
Indian Institute of Science
Bangalore – 560012, India

Ref: Tender No: XXXXXX
Dated: XXXX

Supply and installation of a ROTATING ANODE BASED X-RAY POWDER DIFFRACTOMETER at
Materials Engineering Department, IISc Bangalore.

Sir,

I've carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I'm an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)
Name
Designation, Seal

Date:

Annexure – 5:

Details of items quoted:

- a. Company Name
- b. Product Name
- c. Part / Catalogue number
- d. Product description / main features
- e. Detailed technical specifications
- f. Remarks

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Section 6 – Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
1.a	... (details of essential items)				
1.b	...				
2.	Optional items noted in the technical specification				
2.a	... (details of essential items)				
2.b	...				
3.	Accessories for operation and installation				
4.	All Consumables, spares and software to be supplied locally				
5.	Warranty (3 years)				
6.	AMC 2 years beyond warranty				
7.	Cost of Insurance and Airfreight				
8.	CIP/CIF IISc, Bengaluru				

Any additional items

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
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Addressed to

The Chairperson,
Attn: Dr. Bhagwati Prasad
Materials Engineering Department
Indian Institute of Science
Bangalore – 560012, India

Section 7 – Checklist

(This should be enclosed with technical bid- Part A)

The following items must be checked before the Bid is submitted:

1. Sealed Envelope “A”: Technical Bid

1. **Section 5- Technical Bid** (each page signed by the authorized signatory and sealed) with the below annexures:
 - a. **Annexure 1: Bidders details**
 - b. **Annexure 2: Declaration regarding experience**
 - c. **Annexure 3: Declaration regarding clean track record**
 - d. **Annexure 4: Declaration for acceptance of terms and conditions**
 - e. **Annexure 5: Details of items quoted**
2. **Copy of this tender document duly signed by the authorized signatory on every page and sealed.**

2. Sealed Envelop “B”: Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date and both of these in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.