

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Plot No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District.
Hyderabad - 500 107, Telangana, India.

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Date: 16-12-2019

Notice Inviting Tender cum Tender Document (Two Part Public Tender) for the following items:

Supply, Installation, Commissioning of High Resolution X-Ray Diffractionmeter of Thin Film Analysis for TIFR Hyderabad.

As per our technical specifications: Qty. - 1 No.

Public Tender No.	TFR/PD/IC19-19/19019
Published on	17-12-2019
Tender Fees	For Indian Supplier - Rs. 700/-
	For Foreign Supplier-USD 100
EMD	For Indian Supplier - Rs. 5,00,000/-
	For Foreign Supplier - USD 6980
Estimated Cost (Estimated cost upto TIFR, Hyderabad inclusive of all applicable charges)	Rs. 2,50,00,000/-
Last Date for Submission of Bid	20-01-2020 upto 13.00 Hrs.
Date of Opening Bids(Part A)	20-01-2020 at 15.30 Hrs.

Both Technical Bid (Part A) and Financial Bid (Part B) to be submitted within the due date and time in separate envelopes and marked on top as Part A and Part B. These two sealed envelopes should be further put in one Master Envelope super scribed with the Tender No., Due Date in Bold Letters.

Please see attached sheet for conditions of tender.

Note: All future corrigendum/addendum will be published in TIFR Hyderabad website only. All prospective bidders are requested to visit our website regularly for any such updates/Corrigendum/Addendum.

**ADMINISTRATIVE OFFICER
(PURCHASE SECTION)
TIFR, HYDERABAD**

SCOPE OF SUPPLY – Annexure A

Technical Specifications for Supply, Installation, Commissioning of High Resolution X-Ray Diffractometer of Thin Film Analysis for TIFR Hyderabad.

Technical Requirements and Specifications

Diffractometer:

Capable of performing high resolution structural characterization on thin films: polycrystalline, single crystal and epitaxial films with following specifications:

1. X-ray Generator:

- i) Output Power $\geq 6\text{kW}$
- ii) Maximum voltage $\geq 40\text{kV}$
- iii) Voltage increment $\leq 1\text{kV}$
- iv) Maximum current $\geq 150\text{mA}$
- v) Current increment $\leq 1\text{mA}$
- vi) Stability: $\pm 0.01\%$ or better against $\pm 10\%$ voltage fluctuation
- vii) Mode of operation: Automatic and software controlled
- viii) Safety: 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.
- ix) door interlock safety mechanism
- x) Water Cooled Chiller of reputed make and safety interlock for the same

2. X-ray Target:

Cu (Rotating Anode) with appropriate filter and Parabolic Multi-graded mirror in the incident beam for making the beam parallel

3. Goniometer

The goniometer should be vertically or horizontally mounted. It should have the capability of carrying out the complete analysis of thin films (4 circle geometry or similar) samples. All accessories required for reciprocal space mapping with appropriate software should be quoted. The system should allow residual stress and pole figure analysis. Should have automatic alignment when the mode of operation is changed using optical encoders.

- i) Type: Theta – Theta ($\theta - \theta$) or Theta- 2 Theta ($\theta - 2\theta$)
- ii) 2θ range – 0 to 160 degrees (deg.) or better
- iii) Minimum step size: 0.0001 deg. Or smaller
- iv) Angle reproducibility: 0.0001 deg. Or smaller
- v) Resolution: 0.05 deg. Or better
- vi) 4-axis attachment for analysis of thin/textured and epitaxial films
- vii) Sample height alignment unit with Sample Up/down mechanism

4. In-plane arrangement for RSM/GID ingoniometer

- i) Scanning axis (driving method): Horizontal 2θ - χ (Two-theta-Chi) perpendicular to the θ/θ diffraction plane (Pulse motordrive)
- ii) Scanning speed: 2θ - χ independent 0.01 ~ 20 deg./min or more
- iii) Step width: 2θ - χ independent- 0.002 deg. Orless
- iv) Scanning range: 0 – 100 deg. (2θ - χ) or more

5. Thin film characterization

- i) Should allow XRD of multilayer thin films. Should work in both reflection and transmissionmode.
- ii) Phi (ϕ) Axis- Operating range -10 to +370 deg. with minimum 0.005 deg. step or better
- iii) Kai (χ) Axis-Operating range -5 to 92 deg. with minimum 0.002 deg. step or better
- iv) Z Axis- Operational Range -6 to +1 mm range with minimum 0.001 mm step or better
- v) Thin FilmSlit
- vi) Should allow high resolution and high intensity X-ray reflectivity, in-plane GID, and WAXS measurements.
- vii) Appropriate thin film acquisition and analysis software for Reflectivity, RSM, In Plane analysis.
- viii) Rocking curve measurement along with Ge 2 bounds monochromators in the incident and the diffracted beam should be quoted. For the Rx & Ry motion appropriate attachment should be quoted.

6. Detector

One Dimensional (1D) Linear Detector: Additionally a multi-strip solid state 1D detector which can work in both 0D and 1D model. The pixel size here should be equal to or less than 75 microns. The detector should have Fluorescence suppression mode built-in.

7. Slits

- i) Computer controlled automatic Slits: Should include 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) All the relevant slits including slits for high resolution focusing method (all slits used in incident beam optics and diffracted beam optics including Incident and receiving slits) should be mentioned
- iii) Two bounce monochromators, both at primary and secondary beam sides. For parallel beamoptics: Ge (220) two bounce crystal for Cu K_{α} in the incident path with the divergence of the exitbeam should be below 0.01 degree. All crystals should have motor controlled rotation adjustments.

8. Accessories

- i) **Automatic Attenuators:** Automatic attenuators should be available to protect the detector from direct beam
- ii) **Sample holders:** Flat sample stage for solid, powder and polycrystalline thin film sample with 20 numbers of rectangular sample holders, Zero Background sample holder (at least 2 in number).

9. Standard measurement, data processing and analysis software and database

The software should be able to perform

- i) X-Ray Generator Operation.
- ii) Manual Measurement.
- iii) Auto setting
- 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.
- ix) Data processing software: Academic License should be clearly specified in the tender document.
- x) Software for thin film analysis: XRR, Rocking, Reciprocal Space Mapping should be provided.
- xi) Analysis Software: Should allow both qualitative and comprehensive analysis like **Rietveld refinement for structure determination**, Should include (but not limited to) lattice constants, Crystallinity, Indexing. The details of the software functionalities should be clearly specified in the tender document
- xii) Free upgrades to the software should be included

10. Computers and Printer

Computer with following specification or better should be quoted: Intel core i7 processor, DVD-RW drive, 32GB or better RAM, 2TB HDD, 24 inch LED monitor, Windows 10 Software.

Laser jet Branded Printer (color): automatic double sided print

11. Water Chiller and UPS

- i) Quote for appropriate reputed brand compact chiller with adequate capacity for the XRD system.
- ii) A 40 kVA UPS of reputed brand capable of providing minimum 30 minutes back-up along with isolation transformer of reputed make.

12. The vendor should have at least 5 installations in India.

13 Warranty period: 36 months from the day of installation.

Optional Items:

1. Co (Rotating Anode) with appropriate filter and Parabolic Multi-graded mirror in the incident beam for making the beam parallel
2. GISAXS with 2D detector with required software and hardware should be quoted.
3. High Temperature sample stage at least 1100°C
4. Low temperature sample stage (CCR): 10K

NOTE:

1. **The bidder should attach the point by point technical specification provided in the tender in a tabulation format and fill the technical compliance (with additional remarks if any) along with the bid.**
2. **The bidder should ensure the following:**
 - A. **Earnest Money Deposit (EMD), tender fee submission.**
 - B. **Attachment of Annexure - B (Audited Annual Turnover Certified by CA).**
 - C. **Attachment of Annexure - C (Supplier order details with copy document) along with the bid as per tender terms & conditions.**

Audited Annual Turnover

Annexure - B

S.No.	Financial/ Accounting Year	Profit (Rs.)	Loss (Rs.)	Annual Turnover (in INR)
1.				
2.				
3.				

Authorized Signatory with Seal

Note:

This Audited Annual Turnover (Annexure - B) for the last 3 years should be certified by Chartered Accountant (CA) as per the format given above duly signed and stamped by the CA on their letterhead.

Supply Order Details of High Resolution X-ray Diffractometer of Thin Film Analysis to Other Firms.

Annexure - C

S.No.	Name of the company with full address	Name of the Project	Purchase Order No. & Date	Brief Item Description with Model No.	Item Value in Currency
Signature					
Name					
Designation					
Name of the Company					
Date					
Seal of the Company					

NOTE:

Please attach the copy documents / purchase order copy for the above mentioned details.

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
Centre for Interdisciplinary Sciences

Plot No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District.
Hyderabad - 500 107, Telangana, India.
(PURCHASE SECTION)

1. **PART "A" (Technical Bid) consisting of Technical Bid with Commercial Terms and PART "B" (Financial Bid) consisting of only Price** shall be submitted in **separate** sealed envelopes duly superscribed with the tender enquiry number, and the due date in bold letters, addressed to the Administrative Officer, Tata Institute of Fundamental Research, Plot No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District. Hyderabad-500 107, Telangana, India. The envelopes should be clearly marked on top as either PART "A" or PART "B".

The two sealed covers should be further put in a master cover superscribed with the Tender Enquiry No., Due Date in bold letters, addressed to the Purchase Officer, Tata Institute of Fundamental Research, Plot No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District. Hyderabad-500 107, Telangana, India. The sealed master envelop has to be delivered by hand/courier at the security Gate Office of TIFR-TCIS on or before 13.00 hrs. on the due date specified. The technical bid will be opened in the presence of attending tenderers at 15.30 hrs. on the due date at Purchase Section, TIFR-TCIS, Hyderabad. Tenders submitted after 13.00 hrs. on due date will not be considered.

2. **In case the PART "A" and Part "B" bids are not sealed in separate envelopes the tender will be rejected.**
3. The technical bid should not contain any indication of the price. The bidder should take special care not to mention anything related to pricing and costing aspect of whatsoever nature. The technical bid should include/contain only technical specifications, technical literature, drawing, quantity, manufacturing and delivery schedule, mode and terms of payment, mode of dispatch, the quantum and percentage of statutory levies payable by the purchaser as extra and all related commercial terms and conditions for the supply and for the services like erection and commissioning to be rendered by the tenderer. The details of the validity of the tender should also be indicated along with the commercial details.
4. After scrutiny of Technical Bids, Financial bids of only those bidders who are shortlisted on technical basis will be opened at on later date. The opening date, time and venue will be intimated to the technically successful bidder.
5. **All the bidders/contractors should provide Company Authorization Letter duly signed and stamped by Competent Authority to participate in the tender related meetings at TIFR Hyderabad.**

6. Tender Document Fee:

- a. For Indian Supplier: Tender fee for Rs. 700/- (Non-refundable) in the form of D.D. in favour of "TIFR Centre for Interdisciplinary Sciences", payable at Hyderabad to be enclosed with the Technical Bid (Part - A).
- b. For Foreign Supplier: Tender fee of USD 100 (Non-refundable) in the form of advance cheque in favour of "TIFR Centre for Interdisciplinary Sciences", payable at Hyderabad to be enclosed with the Technical Bid (Part A).

7. Earnest Money Deposit (EMD):

- a. For Indian Supplier: Earnest Money Deposit (EMD) for Rs. 5,00,000/-in the form of D.D. in favour of "TIFR Centre for Interdisciplinary Sciences", payable at Hyderabad to be enclosed along with the technical Bid (Part - A).
- b. For Foreign Supplier: Earnest Money (EMD) for USD 6980 in the form of advance cheque in favour of "TIFR Centre for Interdisciplinary Sciences", payable at Hyderabad to be enclosed with the Technical Bid (Part - A).

EMD shall be interest free and it will be refunded to the unsuccessful bidder without any interest. EMD will be forfeited if the bidder withdraws or amend impairs orderogates from the tender in any respect.

8. Bidders who have not accepted the job/order awarded to them or withdrawn from the tender process OR whose EMD/Security deposit has been forfeited in the past, their bids will not be considered and treated as ineligible / disqualified.

9. After downloading the documents please inform your company details such as name, address, telephone nos., contact person and email address etc. by email to us (purchasegroup@tifrh.res.in , jrathna@tifrh.res.in) to enable us to inform prospective bidder for any corrigendum/changes if any; in the Tender document before due date.
10. Quotations must be valid for a period of 180 days from the due date.
11. Tenders containing correction, overwriting will not be considered. Late or delayed/Unsolicited quotations/offers shall not be considered at all. These will be returned to the firms as it is. Post tender revisions/corrections shall also not be considered.
12. Tenderer should sign on all the pages of the technical bid and the price bid.

13. The price quoted for Import item must be on following basis:
- Ex-Work/factory duly packed airworthy/seaworthy and of international standard
 - FOB/FCA
 - CIF Hyderabad, Airport Port (all-inclusive i.e. Cost of Goods, Packing, Insurance, Inland transportation, freight etc.)

For local item /supply, offer should be on FOR basis (i.e. total landed cost for delivery at TIFR-TCIS, Hyderabad).

The dimension of the item (viz. H, W, L, weight etc.) shall be specifically stated and also mention whether the mode of shipping the item is Airworthiness / Seaworthiness or both. Accordingly the mode of shipment will be decided by TIFR-TCIS.

Price must be quoted in the Price Bid Format attached herewith as “Part -B” (Financial Bid).

14. If equipment offered is to be imported, arrangements for import will be made by us.
15. Tenders who do not comply with any of the condition are liable to be rejected.
16. The Institute shall be under no obligation to accept the lowest or any other tender received in response to this tender notice and shall be entitled to reject any tender without assigning any reason whatsoever.
17. TIFR reserves the right to place the order for part/reduced quantity than what is specified in the tender.
18. **Performance Security:** The Successful bidders should deposit @ 10% of Purchase Order value as Performance Security against issue of order/contract to be submitted within 15 days against issue of order/contract. The performance security shall be in the form of Demand Draft in favour of “TIFR Centre for Interdisciplinary Sciences, Hyderabad” payable at Hyderabad (or) Bank Guarantee from State Bank of India & Associates (or) any one of the Nationalized Banks.

The Performance Security will be returned back to the successful supplier on receipt of the Performance Bank Guarantee (or) The 10% Performance Security Deposit may be extended as Performance Bank Guarantee valid for 60 days beyond the date of completion of all contractual obligations of the supplier including warranty period. Vendor should clearly mention their acceptance to this effect in their quote.

Performance Bank Guarantee: Performance Bank Guarantee for 10% of the value of supply should be provided and it should be valid for 60 days beyond the date of completion of all contractual obligations of the supplier including warranty period. Performance Bank Guarantee should be from Nationalised Bank. In case Performance Bank Guarantee is not provided, 90% payment only would be released and balance after 60 days beyond the date of completion of all contractual obligations of the supplier including warranty period. Vendor should clearly mention their acceptance to this effect in their quote.

19. **PAYMENT TERMS:** 80% payment shall be made through irrevocable L/C on presentation and receipt of complete, clear shipping documents, against confirmation from TIFR, Hyderabad and balance 20% of the amount shall be released after successful installation, commissioning and acceptance of the equipment certified by purchaser and on submission of "Performance Bank Guarantee (PBG)" or "Standby Letter of Credit" for an amount equivalent to 10% of the Purchase Order Value. The PBG or "Standby Letter of Credit" shall be valid for a period of 60 days beyond the date of warranty period. The PBG should be from State Bank of India & Associates (or) any one of the Nationalized Banks.
20. PAYMENT TERMS FOR INDIGENOUS ITEMS: 100% payment shall be released after receipt, installation, commissioning and acceptance of the equipment.
21. Repair / replacement if required any during the warranty period, necessary customs clearance charges / customs duty charges, freight charges for sending back the repair material to supplier and import freight charges of replacement should be borne by the supplier.
22. For Import cases: No Agency commission will be paid as per Govt. of India rules.
23. All bank charges outside India to supplier's account only.
24. TIFR is exempted from paying of Custom Duty under the notification No.51/96 dated 23.07.1996, Excise Duty under the notification No.10/97 dated 01.03.1997, for all procurements/supply meant exclusively for Educational, scientific and research purpose. Whenever the exemption certificate not honored by the authorities, the applicable duty will have to be paid. Hence Excise & Custom duties, if any, should be shown separately.

TIFR is a public funded research institute and is entitled to concessional rate of GST @ 5% for certain items supplied for research purpose vide notification no. 45/2017 (CGST) and 45/2017 (IGST) dated 14th Nov, 2017. The offer should be submitted after fully considering the above notification.

25. **TAXES:** TIFR does not have any exemption/concession on payment of Sales Tax and we are not authorized to issue any Sales Tax Form 'C' & 'D'.

Deduction of Indian Income Tax Deduction at Source: The Deduction of Indian Income Tax Deduction at source (TDS) will be deducted as per IT Act. The taxes at the time of actual utilization of service etc. will be deducted if applicable any.

GST rule will be applicable with effect from 01.07.2017. The applicable TDS /other charges if any as per GST rule will be deducted as per new GST regime.

TIFR-Hyderabad GST NO: 36AAATT3951F2ZG.

26. Bidders, please provide the PAN No., Bank Details, email ID, Contact person details, GST No etc.

27. The Supplier shall arrange to ship the ordered materials within the mutually agreed delivery period mentioned in the order unless extended with/without penalty. Please mention the Delivery Period Clearly in the Bid, however effort to be taken to deliver the materials at the earliest.

- a. In case of delay in supply on part of the supplier, a penalty @0.5% per week of order value will be charged for delayed period subject to a maximum of 10% order value.
- b. If the delay in the shipment of the ordered materials attributable to the supplier exceeds agreed time period from the date of original agreed upon date of shipment and extended with/without penalty, the TIFR-TCIS, Hyderabad shall have the right to cancel the contract / purchase order and recover the liquidated damages from other dues of the party or by legal means. It will also affect the other/future business dealings with such suppliers.
- c. The same rate of penalty shall be applicable for late installation of the equipment/instrument also.

28. COMMENCEMENT OF WARRANTY PERIOD: The warranty period of an item shall commence from the date of receipt of the item in good working condition and satisfactory installation/commissioning/demonstration at the project site.

29. ANNUAL MAINTENANCE CHARGES: The bidder must mention in the quotation, the rate/amount of annual maintenance charges, if we opt for maintenance contract after expiry of the warranty period.

30. Specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with the printed technical leaflet/literature of the quoted model of the item by the quoting party/manufacturer.

31. OBSERVANCE OF LOCAL LAWS: Wherever applicable (particularly for Local vendors), the vendor / contractor shall comply with all law, statutory rules & regulations etc. The vendor/ contractor shall obtain all necessary permits / approval from the local Governing Body, Police, and other concerned Authorities as may be required under law. The vendor /contractor shall pay all types of taxes, fees, license charges, deposits, duties, tolls, royalty or other charges that may be leviable account of any of the operations connected with the execution of this work/ contract.

32. In case of any interpretational issues arises in this tender, the interpretation/decision of TIFR Hyderabad shall be final and binding on the bidder.

33. It is the responsibility of the vendor to make sure that the system being proposed can be exported to India with TIFR Hyderabad as the end user. All clarificatory documentation must be submitted with the Bid.
34. TIFR TCIS reserves the right to ask for or to provide any clarification, changes after the release of this tender. Any changes or clarifications provided by TIFR-TCIS, Hyderabad may be checked at TIFR-TCIS website: <https://www.tifrh.res.in/index.php/commercial-tenders>

**ADMINISTRATIVE OFFICER
(PURCHASE SECTION)
TIFR, HYDERABAD**

**Financial Bid for Supply, Installation, Commissioning of High Resolution
X-Ray Diffractometer of Thin Film Analysis for TIFR Hyderabad
(Part - B)**

Annexure - D

TIFR Hyderabad Enquiry No & Date: _____

Due date: _____

Bidder's Quotation Ref No. & Date: _____

Financial Bid (Bidders must quote their rates using this Format)

S.No.	Item Description as per tender	Make/Brand/ Type	Qty.	Rate per unit (Currency)	Basic Cost of main item (In Currency)
A.					
B.	Ex-Works cost (Duly packed Airworthy/Seaworthy of international standard)				
C.	FOB /FCA Cost (Name of Airport_____)				
D.	CIP/CIF Cost (Upto Hyderabad Airport)(all inclusive i.e. Cost of Goods, Packing, Insurance, Inland transportation, freight etc.)				

Note:

1. All the column should be appropriately filled and not left blank.
2. Do not include any other charges, taxes, duties etc. in the Basic Cost of the item.
3. Any accessories, optional items should be shown separately using above format.
4. Use separate sheet for detail description, specification of the item, but prices should be quoted in same format.
5. Prices quoted in Indian Currency should be on F.O.R. basis and mentioned separately using different table format showing all the applicable taxes/Duties like GST , Freight & Transportation charges and installation charges etc.
6. TIFR Hyderabad being educational & research institute, discounted price shall be offered.

Signature of the Bidder

Name, Address contact no _____

& email id of the bidder/ _____

Company with company's Stamp or Seal _____

Date: _____

Place: _____