

UNIVERSITY OF HYDERABAD

(A Central University established by an Act of Parliament, 1974)

Prof. C. R. Rao Road, P.O. Central University Campus, Gachibowli,
Hyderabad - 500 046, Telangana, INDIA website: www.uohyd.ac.in

School: IoE (SEST) Telephone: 9621059857(M). Email: jaiprakashgautam@uohyd.ac.in.

Global Tender Enquiry No. UoH/IoE/HR-ATEM/1

Revised Date: 08/05/2023

Corrigendum “Extended Submission date”

Sealed tenders are invited for the supply of the following items under **two bid systems** from the reputed manufacturers or their authorized dealers across the world to the University of Hyderabad, Hyderabad. **Sealed bids should reach the office of the School of Engineering Sciences and Technology, University of Hyderabad, Hyderabad on or before 31/05/2023 (date) 5:00 PM (time)**. The details of items, expected quantity, and their technical specifications are given below:

Sealed tenders are invited by the University of Hyderabad for the supply and installations of the **Complete Field Emission Gun Analytical Transmission Electron Microscope System along with necessary accessories** from the manufacturers or authorized dealers in Two Bid Patterns (*i.e.* technical & price bid in separate envelopes) as per the Terms & Conditions stated in this Tender Enquiry. The tenders must reach Prof. Jaiprakash Gautam on or before **5:00 PM on 31/05/2023**.

Tender Specifications

The Field Emission Gun Analytical Transmission Electron Microscope System must be capable of the following functions:

- Conventional TEM analysis
- High-resolution TEM and S/TEM analysis
- Combined with analytical capabilities using EDS

Technical specifications (Essential features)

| Sl. No | Particulars | Required specifications | Your specs* |
|--------|---------------------|--|-------------|
| 1 | Basic Configuration | <ul style="list-style-type: none"> • Acceleration voltage should be 30 kV to 200 kV (variable either in steps or continuously), with pre-alignments for at least three of 200, 120, and 80 kV with no additional charges. The HV variation should be quick and with auto-alignment. • The electron source should be a cold field emitter with a minimum lifetime of 5 years or more. A certificate from the manufacturer should be attached for the 5 years guarantee on the Cold FEG. • The probe current for a 1 nm probe should be higher than 1 nA | |
| 2 | Resolution | <ul style="list-style-type: none"> • Point Resolution should be at least 0.24 nm or lower. • Line resolution should be at least 0.10 nm or lower. • Information Limit at least 0.14 nm or lower • STEM (HAADF) resolution should be 0.14 or lower for the uncorrected system and 78 pm or lower for probe corrected system. • Pole piece gap should be compatible for EDS system for simultaneous operations | |
| 3 | Sample chamber | <ul style="list-style-type: none"> • Computerized 5-axis ultrastable stage with piezo-driven motors. • This should have: <ul style="list-style-type: none"> • Tilt angle at least ± 45 deg with standard single tilt holder • X movement range – ± 1 mm (in total or more) • Y movement range – ± 1 mm (in total or more) • Z movement range – ± 0.20 mm (in total or more) • The stage should accept a variety of specimen holders including heating, cooling, and low background double tilt holders. The Drift should be ≤ 0.5 nm/minute with standard holders (single tilt) • Tilt angles should be $\pm 25^\circ$ or more with motorized specimen tilting about two perpendicular axes for crystallographic analysis. • Image fine shift: Electromagnetic shift mechanism for X-Y translation should be possible | |
| 4 | Operation modes | <ul style="list-style-type: none"> • The TEM should be fully digital microprocessor controlled with the following modes as standard: HRTEM, STEM, EDS, BF, DF, HAADF, Diffraction, CBED, SAED and NBD • TEM should be supported with Lorentz mode. • STEM detector should be at least four channels, allowing differential phase contrast imaging. • The TEM Magnification should range from 50x to 1M x or higher • The STEM Magnification should range from 200x to 150 Mx or higher | |

| | | | |
|---|---|--|--|
| 5 | Data Acquisition (Quote the camera brand and its capability with future upgrades) | <ul style="list-style-type: none"> • High Resolution bottom-mounted, CMOS camera of minimum 16 MP with full frame with near 100 % fill factor and a minimum frame rate of 25 fps or higher. • Camera must be compatible with retrofitting and retractable post column EELS/EFTEM • Camera Length for Diffraction should be at least ≤ 80 mm to ≥ 2000 mm. • Camera should be configured and calibrated to use at the aligned operating voltages. • The camera should have a CMOS sensor with a built-in shutter. • Recording modes should include both “image” and “video”. • Should be possible to do in-line data processing with real-time drift correction. • Real-time FFT with spatial and temporal filtering • Fluorescent screen camera should be configured as a standard. • User-friendly software integrated with TEM system software along with image analysis, measurement and diffraction analysis package as a standard feature. • In the case of the third-party offer the vendor must take full responsibility for deliverables. | |
| 6 | Vacuum system | <ul style="list-style-type: none"> • Fully automatic, clean ultrahigh vacuum system compatible with the FEG and any detectors that shall be mounted (current/retrofit). • Pumping time from start to ultimate vacuum should be less than 60 minutes • Vacuum recovery time after specimen exchange should be less than 10 minutes | |
| 7 | Lens system | <ul style="list-style-type: none"> • System should consist of standard lens systems with condenser lens, objective lens, diffraction, and intermediate/projection lenses resulting in a system with spherical and chromatic aberrations ≤ 1.5 mm. • The lens system should be image rotation-free at least within 10,000x -450, 000x or higher. • Variable objective lens aperture, Selected area and Condenser apertures with at least ≥ 3 sizes should be provided. • The apertures must be motorized | |
| 8 | Analytical features (EDS) | <ul style="list-style-type: none"> • The EDS system should be liquid nitrogen free, windowless Silicon Drift Detector. • The EDS detector size should be 100 mm² or larger. • The EDS should be capable of detecting elements from B to U onwards | |
| 9 | Probe corrector | <ul style="list-style-type: none"> • Atomic characterization <ul style="list-style-type: none"> (a)The microscope design should have a probe corrector. (b)Probe Corrector should give sub-Angstrom STEM imaging resolution from 60 kV to 200 kV or 30 kV to 300 kV. Control of the corrector should be embedded in the TEM software (including routines for aligning the corrector). (c) It should provide an order-of-magnitude improvement in optical stability of low-order aberrations for collecting meaningful data and | |

| | | | |
|----|--|--|--|
| | | <p>also be capable of correcting A5 or equivalent aberrations (resolution limitation) for all accelerating voltages.</p> <ul style="list-style-type: none"> • (d) The Corrector should be delivered with the fully automated correction of high-order aberrations. | |
| 10 | Specimen Holders | <ul style="list-style-type: none"> • Low-background Double-tilt Holder- 1 No. • Single-tilt Holder - 1 No. | |
| 11 | Power Supply and computers | <ul style="list-style-type: none"> • All power supplies must conform to the mains supply: 230 ±10 volts, 50Hz. • ONLINE UPS of adequate rating to support the TEM and all its accessories and supporting systems, with dry fit batteries and plug-in connections and dialogue mode. Separate UPS for Chiller and microscope. For Microscope minimum 10 kVA and Chiller minimum 10 kVA with 1 hr backup should be quoted. • All the computers for HRTEM must be imported /factory fitted and tested with pre-loaded, licensed software's for operating these systems. • All software's offered should be licensed software's only. | |
| 11 | Installation warranty, training and services | <ul style="list-style-type: none"> • Pre-installation requirements such as room size, required power rating, utility requirements –chiller, gases (argon, N2), AC etc. are to be clearly mentioned. • Vendor's authorized representative, well in advance of system delivery, must perform a site inspection and qualification. • Installation, complete interfacing of the system with its subsystems, and commissioning are to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction • The complete system, including computers and accessories, must be properly shielded from EM interference if necessary. • The instrument and accessories should have 5 years of Comprehensive Warranty from the date of installation on the complete system, including all the subsystems. The comprehensive Warranty should cover: <ul style="list-style-type: none"> • All parts including accessories and labour • Free maintenance and service • Regular up-gradation of software • Onsite training: A training program of at least 2 weeks should be arranged by the vendor (Factory Trained Service engineers) at the customer site free of cost, after the satisfactory installation and commissioning. • Compliance statement for each item of this document to be provided along with the technical bid. | |
| | Consumables | <ul style="list-style-type: none"> • Standard samples must be provided to check the system calibration, resolution, sensitivity, etc. | |
| 12 | Safety devices | <ul style="list-style-type: none"> • Devices to protect against vacuum, water, power, gas pressure & leakage should be incorporated. • The UPS Battery for the Ion pump shall be equipped against the unanticipated situation. | |

| | | | |
|----|-------------------------------|--|--|
| 13 | Optional upgrades/accessories | Submit quotations for: <ol style="list-style-type: none"> 1. Post column EELS/EFTEM system compatible with the configuration specified above. 2. Specimen preparation facility (ion-milling, if available) 3. In situ MEMS-based heating-holder 4. In situ MEMS-based liquid cell holder 5. Any other relevant upgrades as per the upcoming developments. 6. Option for in-person on-site maintenance cum operator (minimum 3 years) | |
|----|-------------------------------|--|--|

Price quote (Essential features/items)

| Sl.No. | Particulars | Best offer price (Indian Rupees) |
|--------|---|----------------------------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | Option for in-person on-site maintenance cum operator (minimum 3 years) | |
| 9 | Other accessories (Chiller, compressor, UPS, PC/Printer etc.) | |
| 10 | Consumables required to run the system for at least 5 years. | |
| 11 | Manuals | |
| 12 | Installation/training | |
| 13 | Packing/Shipping | |
| 14 | Educational discount | |
| 15 | Packing (if any) | |
| 16 | Final price (FOB) | |
| 17 | Freight | |
| 18 | Insurance (if any) | |
| 19 | Final price (CIP, Hyderabad) | |

*If included in the basic model, indicate this clearly

Warranty

- Comprehensive Warranty for 5 years for entire system including all the attachments (such as UPS, chiller and compressor or any other third-party component) of the system from the date of installation and commissioning.
- Service response must be within 48 hr. If service engineer fails to attend the complaint within 10 days, the warranty of the machine will automatically be extended for same number of days
- The cost for additional TWO years of warranty and/or AMC after five years of warranty should be Mentioned

Manuals

A complete set of instruction and service manual must be provided along with the system. The wiring and circuit diagrams should also be provided.

Installation and training

- After installation by the engineers of supplier, the system performance must be demonstrated to the customer's satisfaction as per the specification detailed here.
- The supplier must provide basic training to the users for at least five days after completion of installation.
- A follow-up training must be provided by the supplier's engineer after six to nine months of installation.

Pre-installation Requirements

Pre-installation requirements such as room size, EM tolerance limits, and vibration limits should be mentioned and verified by the supplier at the installation site as soon as PO is issued

Additional Terms

The firm has to guarantee technical support for the entire system and supply of spares for a minimum period of 10 years from the date of installation.

- Service response time must be <48 hours.
- Provision for on-line remote diagnosis of faults.
- The firm must have at least **three** installations of similar equipment within India to establish desired competence for maintenance.
- List of users with copies of installation report and contact details (address and phone number) of the users, where instrument has been supplied in last three years should be provided.
- Date of manufacturing of the equipment should be after the placement of order.
- Original documents from the manufacturer supporting the specifications should be provided.
- A detailed compliance statement indicating point-wise response of the vendor to every item in the specifications, optional items as well as terms should be provided.
- Price-bid should have every item mentioned in technical bid.

Further information that should be provided

1. Warranty on the main equipment and accessories; **minimum 5 years is essential** from the date of installation. If any component of the equipment quoted is not covered by the warranty, the same must be specified.

2. Spare parts / calibration samples supplied with the equipment
3. Training provided at the time of installation
4. Utility and installation requirements
5. Support for on-site service of equipment
6. List of current users (with contact numbers) of the quoted model in India
7. Quotation validity (should be at least 90 days)
8. Time required for delivery of equipment after firm order; should be <90 days

Terms & conditions

| S. No. | Clause | Description |
|--------|---|---|
| 1 | Reference Number | The Reference No. <u>UoH/loE/HR-ATEM/1</u> of the Notice Inviting Tender dated 08/5/2023 should be clearly mentioned on all envelopes and any correspondence including e-mails with the University. |
| 2 | Mode of submission | Hand-written (manuscript) bids and bids submitted through e-mail shall not be accepted. All pages of the tender document must be signed by the authorised representatives of bidder, in token of having accepted the terms and conditions incorporated in the tender notice. |
| 3 | Two Bid System | <p>As the purchase is a high value plant, machinery, etc., of a complex and technical nature, bids are required to be submitted in two parts as under:</p> <p><i>(i) Technical bid consisting of all technical details along with commercial terms and conditions; and</i></p> <p><i>(ii) Financial bid indicating item-wise price for the items mentioned in the technical bid.</i></p> <p>The technical bid and the financial bid should be sealed by the bidder in separate covers duly super-scribed and both these sealed covers are to be put in a bigger cover which should also be sealed and super-scribed. The technical bids are to be opened by the Purchasing Department / Centre at the first instance and evaluated by a duly constituted Purchase Committee. After such evaluation of technical bids, financial bids of only those firms/suppliers which are found technically suitable will be opened, for determining the lowest bid.</p> |
| 4 | Certificate from original manufacturers | <p>If the bid is not from the original equipment manufacturer, the suppliers/ dealers should submit an 'authorized agency certificate' from the manufacturer. Tenders received without Authorization Certificate from the original manufacturer will summarily be rejected.</p> <p>Imported purchases should normally be made directly from the foreign principal manufacturers. In the event of purchase made through an Indian agent of the foreign company, authorization letter issued by the foreign company / manufacturer should be submitted along with technical bid. No commission shall be payable to Indian Agent.</p> |
| 5 | Make and Model | The Vendor/Supplier is required to clearly mention the make, model, size and other specifications along with the unit price. Items with better specifications may also be offered / quoted and the decision of the University in this regard is final. Appropriate brochures / pamphlets / literature (original and not photo copies) for |

| | | |
|----|--|--|
| | | each item providing full technical details must be attached to enable their verification. |
| 6 | Bidder Details | The bidder's complete correspondence address, phone numbers and e-mail ids, and website details (if any), must be clearly mentioned in the technical bid documents. (Pamphlet / Brochure depicting the profile and organisation structure may be enclosed.) The details of PAN, GSTIN, EPF, ESIC, Registered License Certificate, Labour License etc., may be mentioned and supporting documents shall be enclosed along with the technical bid. |
| 7 | Validity of bids | Prices quoted in the bid (financial bid) shall be valid for a minimum period of 90 days from the date of opening of the financial bids. No upward revision of the prices will be permitted during the said validity period. |
| 8 | Basic Price | The bidder should clearly indicate price per unit on FOR, UoH, Hyderabad basis. In respect of imported items, the prices should be quoted on the basis of CIP / CIF Hyderabad. |
| 9 | Taxes: GST & Customs Duty | As per Government of India rules. |
| 10 | Other costs / charges | The bidder should clearly indicate all applicable other charges, if any, separately viz., transportation, packing, loading, unloading, insurance, installation, commissioning, testing, training, etc., |
| 11 | EMD | The bidders may note they are required to submit Earnest Money Deposit EMD @ 3.5 % the basic cost of the instrument /equipment excluding insurance and freight charges. The amount of EMD may be submitted along with the technical bid in the form of an account payee demand draft, Fixed deposit receipt, Banker's cheque or bank guarantee from any commercial bank drawn in the favor of the Finance officer, UoH payable at Hyderabad, and shall be valid for a period of 135 days from the date of offering the technical bid. |
| 12 | Warranty | The bidders should offer a minimum period of 5 years warranty for all the quoted items from the date of successful installation of the equipment/ item. The quoted price shall be inclusive of warranty costs. AMC/FMC charges for fourth and fifth year shall be quoted separately, if applicable. |
| 13 | Comprehensive Annual Maintenance Contract (CAMC) | Bidders shall quote Comprehensive Annual Maintenance (CAMC) charges for a period of 2 years after expiry of the initial warranty period of 5 years. In all other cases, rate for at least three years' CAMC be quoted. |
| 14 | Agreement | An Agreement in the format prescribed by the University of Hyderabad is required to be entered into by the Suppliers or their authorized Representative with the University in respect of purchase of Goods / Services valuing Rs. 10 lakh and |

| | | |
|----|---|---|
| | | <p>above, within a period of 21 days from the date of issue of Purchase Order / Work Order.</p> <p>In cases of CAMC, agreements are to be entered into on case-to-case basis duly customizing the format of agreement.</p> <p>In cases of works awarded by University Works Department, template of agreement finalised by Internal Audit Office, UoH is to be adopted.</p> |
| 15 | Performance Security / Performance Bank Guarantee | <p>Successful bidder should submit a Performance Security (in all cases of purchases valuing above Rs. 10 lakhs in the form of Performance Bank Guarantee for an amount equivalent to 3% of the total basic price of the Goods / Services (exclusive of taxes and duties) within a period of 15 days from the date of issue of Purchase Order/ Work Order.</p> <p>Performance Security should remain valid for the entire warranty period plus additional (grace) period of 60 days, from the date of successful installation of the equipment/item.</p> <p>Performance Security shall be submitted in the form of Account Payee Demand Draft / Fixed Deposit Receipt / Banker's Cheque / Bank Guarantee from any of the Commercial Banks in an acceptable form, drawn in favour of Finance Officer, University of Hyderabad, payable at Hyderabad.</p> |
| 16 | Payment | <p>In case of purchases from foreign manufacturers/suppliers, Letter of Credit (LC) will be opened for 100% of the purchase value and 97 % shall be released after signing the Agreement and shipment / submission of documents. As regards balance payment 3%, it will be released on submission of PBG for equivalent amount (in Indian currency) or completion of the warranty period as per the terms included in the NIT and Purchase Order.</p> |
| 17 | Delivery Location | <p>The items shall be delivered to:</p> <p>Department / Centre: IoE Instrument Cluster School: IoE -SEST. University of Hyderabad, Gachibowli, Hyderabad - 500 046, India</p> |
| 18 | Delivery Period | <p>The supplier should be able to deliver the items within 10-12 months (<i>mention the required delivery period by the proposer</i>) from the date of issue of the purchase order.</p> |
| 19 | Liquidated damages for late Delivery | <p>In the event of delay in delivery beyond stipulated period indicated in the Purchase Order, liquidated damages @ 1% per each week of delay subject to a maximum of 5% of the cost of the order will be levied and collected by the University, by way of deduction from the payments due to the vendor/supplier.</p> |
| 20 | Risk Purchase Clause | <p>If the Supplier fails to deliver the ordered materials within the stipulated delivery period specified in the Purchase Order, the University may resort to procure such items and in such a manner as deemed appropriate, goods or services similar to those undelivered, and the Supplier will be liable to reimburse the University for any excess costs for such similar goods or services.</p> |
| 21 | Right to reject | <p>The University reserves the right to reject any or all the bids or accept a part of the quotation without assigning any reasons therefor. The decision of the University in this regard is final and binding on all the suppliers.</p> |

| | | |
|----|--------------------------------|--|
| 22 | Resolution of Disputes | Any disputes arising out of this contract shall be referred to the University, and if any of the parties hereto is dissatisfied with the decision, the dispute shall be referred to the decision of the Arbitrator, who should be acceptable to both the parties, to be appointed by the Vice-Chancellor of the University. The decision of such Arbitrator shall be final and binding on both the parties. |
| 23 | Jurisdiction of Courts | Disputes, if any, arising during course of execution of the order are to be settled within the jurisdiction of Hyderabad / Ranga Reddy District Courts only. |
| 24 | Opening of tenders/bids | The bids will be opened in the office of IoE finance committee, University of Hyderabad, Hyderabad on 2/6/2023 at 4:00PM in the presence of bidders or their authorized representatives. The authorized representative shall bring the authorization letter and submit the same to the University before the opening of bids. Failure to do so means the Representative loses the right to participate in the bid opening process. |
| 25 | Delay in submission | The University will not in any way be responsible for any postal / courier delay. Bids received beyond the stipulated date and time of submission are summarily rejected. Tenders incomplete in any respect will be summarily rejected. |
| 26 | Due date of submission of bids | Sealed Bids should be submitted to the office of SEST, University of Hyderabad, Gachibowli, Hyderabad - 500 046 on or before 31/5/2023 at 5 PM . Bids received thereafter shall not be considered. |

Signature of Faculty In-charge
Prof. Jaiprakash Gautam
School of Engineering Sciences and Technology
University of Hyderabad, Prof. C. R. Rao Road, Gachibowli,
Hyderabad 500 046, Telangana, India
Mobile:9621059857
E-mail ID: jaiprakashgautam@uohyd.ac.in