



INDIAN INSTITUTE OF TECHNOLOGY MADRAS
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Ref: EQPT/1102/MEE

Date: 15.04.2013

Tender No.: MME/MKAM/010/2013

N.E. Nagaraj
Special Officer (Project Purchase)
IC&SR, I.I.T. Madras

Due Date: 06.05.2013, 3:30pm

Dear Sirs,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of "200kV Transmission Electron Microscope" on buyback basis, conforming to the specifications given in Annexure.

Specification of the buyback item is mentioned in the Annexure – I.

I) Instructions to the Bidder

(i) **Preparation of Bids:-** The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.

(ii) **Pre-Bid Meeting will be held on 22nd April 2013 (Monday) at 11.30 a.m.**

Venue: Chamber of HOD, Metallurgical & Material Engineering

(iii) **Delivery of the tender:-** The tender shall be sent to the below-mentioned addresses either by post or by courier so as to reach our office before the due date and time specified in our Schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. The tender box is kept in the office of the "Special Officer, Project Purchase" IC & SR Building 2nd floor, I.I.T. Madras, Chennai – 600 036.

(iv) **Opening of the tender:-** The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and it will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The financial offer/bid will be opened only for the offer/bids which technically meet all our requirements as per the specification. The bidders, if interested, may be present on the financial tender opening Day which will be communicated to you.

- (v) **Prices:-** The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges to Various Institutions. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of tax & duties should be clearly indicated.

The price should be quoted without custom duty and excise duty, since I.I.T. Madras is exempt from payment of excise duty, and the custom duty will be paid at concessional rate against duty exemption certificate.

In case of import supply, the price should be quoted on FOB and CIF basis indicating the mode of shipment.

- (v) **Agency Commission:-** Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent.
- (vi) **Terms of Delivery:-** The item should be supplied to our Various Institutions as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.

Yours faithfully,



N.E. Nagaraj
Special Officer (Project Purchase)
IC&SR, I.I.T. Madras.

SCHEDULE

I) Important Conditions of the tender

1. The due date for the submission of the tender is **06.05.2013, 3:30pm.**
2. The offer/bids should be submitted in two bid systems (i.e.) Technical bid and Financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item-wise price for the items mentioned in the technical bid. The Technical bid and the Financial bid should be put in separate covers and sealed. Both the sealed covers should be put into a bigger cover. The limited tender for supply of **“200kV Transmission Electron Microscope”** should be written on the left side of the outer cover.
3. (i) EMD:- Two percent (2%) of the tender value quoted by the company. The EMD should be included in the Financial bid which will not be opened for Technical evaluation. **Enclosing the EMD in the Technical bid will automatically disqualify the tenderer.** EMD should be in the form of DD in favour of “The Registrar, Indian Institute of Technology Madras” and payable at Chennai. The tender without EMD would be considered as UNRESPONSIVE and REJECTED. Photo/FAX copies of the Demand Draft/Banker’s pay orders will not be accepted. The EMD will not be paid any interest and EMD shall be converted as a security deposit of the successful bidder and the same will be returned after the completion of the warranty period.

(ii) The Successful bidder should submit Performance Security an amount of 5% of the value of the contract. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from commercial bank will be an acceptable.

(iii) The Performance Security should be valid for the period of 12 months from the date of Installation.

(iv) The EMD (Bid Security) will be refunded to the Successful bidder on receipt of Performance Security.

4. If an Indian agent is involved, the following documents must be enclosed:
 - i) Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
 - ii) Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
 - iii) The enlistment of the Indian agent with Director General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.
5. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
6. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
7. Documentary proof for the claimed position and repetition accuracies must be obtained from the principals and submitted along with the relevant pages of the standards.
8. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
9. **Delivery Schedule:-** The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.

10. **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
11. **Payment:-** No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation is agreed to wherever the installation is involved. In case of import supplies the payment will be made only through Letter of Credit and 90% payment will be released against delivery and 10% after installation wherever the installation is being done.
12. **On-site Installation:-** The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at Institution of IIT Madras.
13. **Warranty/Guarantee:-** The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately.
14. **Late offer:-** The offers received after the due date and time will not be considered.
15. **Acceptance and Rejection:-** I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
16. **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 Chennai in Tamil Nadu.
17. **Acknowledgement:-** It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE.**

Technical Specifications for 200 kV Transmission Electron Microscope

Background:

We would like to purchase a state of the art 200 kV high resolution transmission electron microscope (TEM), as a buy-back offer for our existing CM20 TEM of FEI (1991 installed model), which is currently out of order. All components except the HT tank are functional in the CM20. The TEM also has a Gatan CCD Camera (4k x 2k) and EDAX attachments, which are both in good working condition. The TEM that is quoted against this buy-back offer should be compatible with the Gatan CCD Camera (4k x 2k) and EDAX attachments, so that these two attachments can be integrated into the new TEM at the time of its installation. It should be noted that the buy-back offer includes only the CM20 TEM and not the CCD Camera and EDAX.

You are requested to quote your minimum offer for such a buy-back purchase wherein the existing CM20 (excluding the Gatan CCD Camera (4k x 2k) and EDAX attachments) will be replaced with a new 200kV high resolution TEM. The following minimum instrument specifications are required including installation:

Essential specifications:

Electron source and accelerating voltage:

- Flexible high tension 20 to 200 kV, step & continuously variable, high tension stability better than 1 ppm/10 min
- The pre-set accelerating voltages must be accessible by a push button action, without the need for switching off high tension or microscope. Action must be completed in seconds.
- Schottky field emitter with high maximum beam current (> 100 nA)
- High probe current (0.6 nA or more in 1 nm spot, 15 nA in a 10 nm spot)
- Small energy spread (0.8 eV or less)
- Spot drift < 1 nm/minute

Imaging:

- High resolution objective lens or equivalent continuous focus type
- Cc: 2.2 mm, Cs: 2.2 mm (minimum)
- Constant focus over the entire range of magnification
- Coma-free alignment for high resolution objective lens centering
- Rotation-free imaging and diffraction series
- Magnification reproducible within $\pm 1.5\%$

Resolution and magnification:

- Point resolution (nm): 0.29 or better
- Line resolution (nm): 0.20 or better
- Magnification range: 10x - 600kx or better
- Maximum tilt angle with double tilt holder with 3.0 mm grid: $\pm 70^\circ$ or better

Diffraction:

- Wide range of diffraction techniques, from coherent illumination for selected area diffraction or micro-diffraction to highly convergent (large angle) beam diffraction
- Maximum diffraction angle up to $\pm 15^\circ$

Specimen stage:

- Fully computer-controlled, eucentric side-entry, high stability specimen stage
- Capable for accommodating a variety of specimen holders: The offer should include one single-tilt holder and one low-background double-tilt holder
- X, Y movement ± 1 mm or better, Z movement ± 0.2 mm or better; specimen size 3 mm
- Drift ≤ 1 nm/minute with a standard holder

Vacuum:

- Fully interlocked differentially pumped column
- Gun, specimen chamber and column area pumped by separate Ion getter pumps or TMPs
- Vacuum levels of specimen chamber and electron gun $< 2.7 \times 10^{-5}$ Pa
- Fast specimen exchange

Software and control:

- Operating and control software of the main instrument must include options
 - to bring a user defined feature of the diffraction pattern into alignment with the optical axis
 - to reduce non-eucentric motions when using a double tilt-holder
 - to create stereographic projection of crystal's zone axes and simulate electron diffraction patterns and Kikuchi lines that would be seen in the microscope when tilting a crystal to various orientations
 - to allow ease of use of diffraction experiments.

Essential Accessories:

- One single-tilt holder
- One low-background double-tilt holder
- Support PC with latest configuration & dual monitors at (at least 20" size)

Other Essential Items:

- Compressor
- All required precision forceps and tools for sample handling
- Warranty for 3 year
- AMC for 2 years after warranty
- Information on number of installations of the same base model in last three years in India
- Commitment on downtime not more than 48 hours before a service engineer is deputed for attending to the unit after receiving the information about malfunctioning of the unit.
- All other standard accessories

Specifications of CM20 Transmission Electron Microscope

Electron Source	200kV - Continuously adjustable (minimum step size 50V)									
Emission Current	2.5 to 100uA									
Emitter	LaB ₆ or Tungsten									
Illumination System	4 Illumination Lenses: Condenser 1, Condenser 2, Mini condenser, Objective – Condenser.									
Apertures	Holder for 4 Condenser apertures, with click-stop mechanism for aperture selection									
Functions	<ul style="list-style-type: none"> • INTENSITY ZOOM and INTENSITY LIMIT for constant intensity on fluorescent screen or TV system. • Fully integrated Low Dose function for TEM 									
Imaging System	5 imaging lenses: Objective, Diffraction, Intermediate, Projector 1, Projector 2. Imaging system corrected for achromatic magnification with energy losses up to 1/1000 of primary energy.									
Objective Lens, Resolution and Goniometer <ul style="list-style-type: none"> ✓ Objective ✓ Lens parameters (mm) ✓ Objective-Condenser lens (Probe forming) ✓ Objective Imaging lens ✓ TEM Point resolution ✓ TEM Line resolution ✓ Minimum TEM probe size ✓ Smallest focus stem size ✓ Dark field tilt ✓ Goniometer eucentric tilt 	<p style="text-align: center;">Twin Lens</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">F</td> <td style="padding-right: 20px;">cs</td> <td>cc</td> </tr> <tr> <td style="padding-right: 20px;">2.7</td> <td style="padding-right: 20px;">2.0</td> <td>2.0</td> </tr> <tr> <td style="padding-right: 20px;">2.7</td> <td style="padding-right: 20px;">2.0</td> <td>2.0</td> </tr> </table> <p style="margin-top: 20px;">0.27nm</p> <p>0.14nm</p> <p>2.0nm</p> <p>3nm</p> <p><u>+5°</u></p> <p><u>+60°</u></p>	F	cs	cc	2.7	2.0	2.0	2.7	2.0	2.0
F	cs	cc								
2.7	2.0	2.0								
2.7	2.0	2.0								
Magnification and Camera Length (Recording) <ul style="list-style-type: none"> ✓ TEM Imaging at 200KV ✓ Below 160 KV ✓ SA Rang at 200KV ✓ SA Diffraction and uuD ✓ Low Angle Diffraction 	<p>25 - 750000X</p> <p>25 - 820000X</p> <p>3800 – 390000X</p> <p>50 – 7000mm</p> <p>4 – 1050m</p>									
Functions	<ul style="list-style-type: none"> • ZOOM HREM (200KV) and STEREO (<200kV) Lens Programs • Coma-free High-resolution objective lens alignment in addition to current and voltage centering • Continuous defocus read-out and Scherzer defocus selection. 									