

NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI – 15

Department of Metallurgical and Materials Engineering

Web: www.nitt.edu

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TENDER DOCUMENT

Tender Notification No.: NITT/ICSR/MME/TSR/DST-NM/2009-2010/37

Dated: 7.1.2010

Name of the component : Transmission Electron Microscope

Quantity required : 1 No.

EMD Amount : Rs.5,00,000/-

Delivery : 4 – 6 Months from the date of order

Last Date of submission of Tender : 19.02.2010 up to 3.00 p.m.

**Address for submission of Tender : The Director
National Institute of Technology
Tiruchirappalli – 620 015, Tamil Nadu, India**

**with Kind Attention to: Prof.T. Srinivasa Rao, Principal Investigator,
MME Department**

Date of opening of bid : 19.02.2010 at 3.30 p.m



NATIONAL INSTITUTE OF TECHNOLOGY

TIRUCHIRAPPALLI – 15

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING

Tender Notification No.: NITT/ICSR/MME/TSR/DST-NM/2009-2010/37

Dated: **7.1.2010**

NOTICE INVITING TENDER

The National Institute of Technology, Tiruchirappalli (NITT) is an autonomous body under MHRD, GOI, imparting Technical Education and engaged in Research Activities. It is proposed to procure the following component for the departmental academic/research activities.

Sealed Quotations under **two cover system** are invited for the following component subject to the following terms and conditions, from the reputed manufacturers or their authorized dealers so as to reach this office on or before scheduled date and time. The technical cover will be opened on the same day in the presence of bidders or their authorized agents who may choose to be present.

Name of the component : **Transmission Electron Microscope**

Quantity required : 1 No.

EMD Amount : **Rs.5,00,000/-**

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Last Date of submission of Tender : **19.02.2010** up to 3.00 p.m.

Address for submission of Tender : The Director
National Institute of Technology
Tiruchirappalli – 620 015, Tamil Nadu, India

with Kind Attention to: Prof.T. Srinivasa Rao, Principal Investigator,
MME Department

Place, Date and time of opening of bid:

Date: **19.02.2010**

Time: **3.30 p.m**

Venue : **Dean (IC&SR) office/Admin Block**

Note : The Institute shall not be responsible for any postal delay about non-receipt / non delivery of the bids or due to wrong addressee.

SECTION : 1 INSTRUCTIONS TO BIDDER

1. The bidder should give details of their technical soundness and provide list of customers of previous supply of similar items to Universities, Institutes or Government Departments/Undertakings/public sectors with contact details. The details of the agency/profile should be furnished along with the copy of all related documents.

1.1 *Bids are to be submitted under two cover system.*

Cover 1:

Cover 1 should contain the following:

- a. *EMD by Demand Draft drawn on any scheduled bank in favor of "The Director, NIT, Trichy" payable at Trichy should be submitted. EMD shall bear no interest. Any bid not accompanying with EMD is liable to be treated as non-responsive and rejected.*
 - b. *Technical pamphlets*
 - c. *Detailed technical specifications*
 - d. *The agency should furnish copy of license certificate for manufacture/supply of the item.*
 - e. *The agency should furnish Income Tax PAN number*
 - f. *Warranty period offered for the tendered item to be specified. If the warranty period is not conforming with the schedule of requirements given in section 3 of the document, the bid is liable to be treated as non-responsive and rejected.*
 - g. *Duly filled up technical questionnaire, if any*
 - h. *Duly filled up deviation schedules to technical specification*
 - i. *Copy of supply orders completed during the last three years ending 31-12-2008 along with the list of customers.*
 - j. *If the prices are revealed in the cover 1, the offer will be summarily rejected*
 - k. *Commitment for quick service in case of any break down.*
 - l. *List of spares and consumables to be supplied (preferably to cover 5 year requirement)*
 - m. *Details about service centers and number of service engineers available in each center in India.*
- 1.2 *The cover 1 shall be superscribed as 'Technical cover' duly indicating the Tender reference No. and the due date of opening.*

1.3 Cover 2:

Cover 2 should contain the following

Cover 2 shall contain Price only and shall be superscribed as 'Price Cover' duly indicating the Tender Reference No. and the due date of opening.

Each Cover shall be sent in a double sealed cover. The inner covers (Cover 1 and Cover 2) should be sealed individually with the sellers's distinctive seal and superscribed with the tender reference no. and due date of opening. Both the inner covers shall be placed in a common outer cover which shall also be sealed with seller's distinctive seal and superscribed with the tender reference no. and due date of opening.

Mention "Kind Attention: Prof.T. Srinivasa Rao, Principal Investigator, MME Dept. and submit at the address given in the Notice Inviting Tender.

Cover 1 will be opened on the scheduled date and time mentioned in the tender enquiry.

Cover 2 of the technically and commercially suitable offers alone will be opened on a date which will be intimated to the qualified bidders.

2. The agencies should submit their rate as per the format given in Section 4 of the Notice Inviting Tender in this cover. Rate should be quoted in Indian Rupee. The rate should be quoted both in words and figures. All the pages of the bid should be signed affixing the seal. All corrections and overwriting should be initialed.
3. The tender will be acceptable only from the manufacturers or its authorized supplier.
4. The bid shall be in the format of price schedule given in Section 4. The contract form as per format given in section 5 shall be submitted. Incomplete or conditional tender will be rejected.
5. Details of quantity and the specifications are mentioned in Section 3 appended to this Notice Inviting Tender.
6. The item to be used is strictly according to the specification and subject to test by the Institute/concerned authorities. It must be delivered and installed in good working condition.
7. The Institute reserves the right to cancel or reduce the quantity included in the schedule of requirements at any time after acceptance of the tender with a notice. The Contractor/Supplier shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work/supply in full but he did not derive in consequence of the foreclosure of the whole or part of the works.
8. Performance Security of 5% of the contract value in terms of Bank guarantee by scheduled banks shall be given by the successful bidder for the total period of warranty.
9. **Release of EMD:** The EMD shall be released after receipt of performance security from successful bidder.
10. **Validity of bids:** The rate quote should be valid for a minimum of 90 days. No claim for escalation of rate will be considered after opening the Tender.
11. **Imports:** In case, goods are to be imported, the Indian agent should furnish authorization certificate by the principles abroad for submission of the bid in response to this Notice Inviting Tender.
12. **Clarification of Tender Document:** A prospective bidder requiring any clarification of the Tender document may communicate to the contact person given in this notice inviting tender.
13. **Amendment of tender document:** At any time prior to the last date of receipt of bids, Institute may for any reason, whether at its own initiative or in response to a clarification requested by prospective bidder, modify the Tender document by an amendment.

14. ***The Institute may at its own discretion extend the last date for the receipt of bids.***
15. The bids shall be written in English language and any information printed in other language shall be accompanied by an English translation, in which case for the purpose of interpretation of the bid, the English translation shall govern.
16. The Institute reserves the right of accepting any bid other than the lowest or even rejecting all the bids without assigning any reasons therefore. The decision of the Institute Purchase Committee is final in all matters of tender and purchase.
17. The bidder should give the following declaration while submitting the Tender.

DECLARATION

I/we have not tampered/modified the tender forms in any manner. In case, if the same is found to be tampered/modified, I/we understand that my/our tender will be summarily rejected and full Earnest Money Deposit (EMD) will be forfeited and I/we am/are liable to be banned from doing business with NIT, Trichy and /or prosecuted.

Signature of the Bidder :

Name and Designation :

Business Address :

Place :

Date :

Seal of the Bidder's Firm

18. Any other details required may be obtained from the contact person given in the notice inviting tender during the office hours.

SECTION : 2 CONDITIONS OF CONTRACT

1. The rates should be quoted in Indian Rupee FOR NIT, Trichy for supply within India.
2. In case of import both CIF and / or FOB rate should be quoted. All components of expenditure to arrive at Chennai need to be explicitly specified.
3. The bidder shall indicate the excise duty exemption for the goods if applicable
4. The Institute is eligible for customs duty and excise duty exemption.
5. The rate quoted should be on unit basis. Taxes and other charges should be quoted separately, considering exemptions if any.
6. Rate quoted should be inclusive of Testing, commissioning and installation of equipment and training.
7. **Payment**: No advance payment will be made. Payment will be made only after the supply of the item in good and satisfactory condition and receipt of performance security by supplier. In case of imports, the payment will be made through LC after installation and performance security need to be submitted at the time of LC commitment.
8. Guarantee and Warrantee period should be specified for the complete period conforming to the section 3 of this tender document.
9. Period required for the supply and installation of item should be specified conforming to the section 3 of this tender document.
10. In case of dispute, the matter will be subject to Tiruchirappalli, Tamil Nadu Jurisdiction only.

SECTION : 3 SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS

Name of the Component to be procured : **Transmission Electron Microscope**

Specifications : **Attached**

Quantity : **1 No.**

Warranty period required : **3 years**

Delivery schedule expected after : **4 - 6 Months**

release of purchase order (in weeks)

EMD (in Rupees) : **Rs.5,00,000/-**

Performance Security to be given by : **5% of the cost of the equipment**
Successful bidder after release of
purchase order (in Rupees)

SECTION : 4 PRICE SCHEDULE

[To be used by the bidder for submission of the bid]

1. Component Name :

2. Specifications (confirming to Section 3 of Tender document-enclose additional sheets if necessary) :

3. Currency and Unit Price :

4. Quantity :

5. Item cost (Sl.No.3 & Sl.No.4) :
(in Indian Rupee) :

6. Taxes and other charges :
 - (i) Specify the type of taxes and duties in percentages and also in figures
 - (ii) Specify other charges in figures :

7. Warranty period (confirming to the Section 3 of Tender document. This should be mentioned in Technical bid also in order to get qualified for Financial bid) :

8. Delivery Schedule (confirming to the Section 3 of Tender document) :

9. Name and address of the firm for placing purchase order :

10. Name and address of Indian authorized agent (in case of imports only) :

Signature of the Bidder :

Name and Designation :

Business Address :

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Place :

Date :

Seal of the Bidder's Firm

SECTION : 5 CONTRACT FORM

[To be provided by the bidder in the business letter head]

1. {Name of the Supplier's Firm) hereby abide to deliver theby the delivery schedule mentioned in the Section 3 tender document for supply of the items if the purchase order is awarded.
2. The item will be supplied conforming to the specifications stated in the tender document without any defect and deviations.
3. Warranty will be given for the period mentioned in the tender document and service will be rendered to the satisfaction of NIT, Trichy during this period.

Signature of the Bidder :

Name and Designation :

Business Address :
.....
.....

Place :

Date :

Seal of the Bidder's Firm

SPECIFICATIONS FOR TRANSMISSION ELECTRON MICROSCOPE (TEM)

Digitally, software controlled **Transmission Electron Microscope** with STEM, EDS and CCD camera. All microscope components, like the electron gun, the optical elements, the vacuum system and the stage should be completely digitally controlled. The task-oriented user interface should allow users to automatically recall all optimized operating conditions including lens settings, gun parameters, optical alignments, for all the different techniques such as TEM, STEM, CBED, Diffraction and Analysis. The system should include all the accessories such as cooling water circulating system, vacuum pump system etc. required for its normal operation. All detectors such as CCD camera, STEM detector and EDS detector should be computer controlled and their software should be fully compatible in TEM software. The TEM should have the capability to add an Electron Energy Loss Spectrometer for elemental analysis with mapping at a later date.

Specifications:

1. **Electron Emitter** : LaB6
2. **Accelerating Voltage*** : i) Up to 200 kV and ii) Up to 300 kV
3. **Resolution**
 - Point to Point resolution : i) 0.25 nm or better for 200 kV TEM ii) 0.2 nm or better for 300 kV TEM
 - Lattice resolution : 0.15 nm or better

* Please submit separate technical and price bids for both [total 4 covers], however EMD can be for one

4. **Magnification** : 50X – 1,000,000X or higher
5. **TEM Modes of Operation**
 - a. High Magnification:
 - b. Diffraction:
 - c. Low Magnification:
 - d. Low Angle Diffraction:
 - e. Nano probe
 - f. Dark field
 - g. Low Dose Mode

6. Vacuum System:

Suitable vacuum system which can give 10^{-7} torr or better

7. Specimen Chamber and Goniometer

- Goniometer stage: Eccentric, side entry
- Tilting angle: $\pm 25^\circ$ or higher (motorized tilt with standard holder)
- Specimen movement: X, Y = 2 mm (fully computer controlled with specimen recall facility) and Z = ± 0.3 mm
- Goniometer stage should accept variety of specimen holders including heating, cooling and low-background double tilt holders

- Cold trap in specimen area should also be available as standard

8. Lens System

Lens Constants

Spherical aberration

Spherical aberration constant 1.2 mm Maximum

Chromatic aberration

Chromatic aberration constant 1.2 mm Maximum

9. Specimen Holders

Specimen Holders: Fast exchange single tilt specimen holder.

One double tilt holder **(Optional)**

10. Imaging System:

Slow scan retractable high resolution embedded CCD Camera (bottom mount; 2K x 2K, (4K x 2K - **Optional**) Software with external computer, Interface accessed with PC

11. Cooling system:

An efficient automatic temperature controlled closed circuit Water cooling system

12. Microscope Controlling Software

Electron microscope should be completely digitally controlled with capability of controlling basic microscope operation as well as EDS and STEM from one common platform. The embedded software should be built in irrespective of optional ordered software.

Software for ease-of-use and standardization: Automatic eccentric height, focus, astigmatism correction and gun alignments

The software to be supplied should include complete; (i) image processing of digital data, (ii) EDS analysis etc.

13. Integrated Computer Environment:

PC with latest configuration that can take all modes of TEM operations including EDAX.

Color desk jet printer

STEM Attachment

Digital STEM with Bright field and High Angle Annular Dark Field Imaging is needed. BF, DF detectors with relevant software for STEM mode; Selected Area Electron diffraction including microdiffraction; Convergent Beam Electron Diffraction with rocking angle 1.5 to 20 mrad

The STEM specifications are as follows:

Resolution STEM image : 1.0 nm

Accelerating voltage: i) Up to 200 kV and ii) Up to 300 kV

Magnification

Low Mag : 100X to 15,000X

Mag : 20,000X to 2,000,000X

Scanning system

Scanning method : Digital scan

Scanning modes : Image scan
Line scan
Spot
Externally controlled scan

The following accessories should be quoted with the system:

- A low background Beryllium holder

ENERGY DISPERSIVE SPECTROSCOPY (EDS)

Detector Thermal cycled SiLi detector; Detector range from Boron-Uranium; Detector resolution 127 eV or better; Softwares for qualitative and quantitative elemental analysis; X-ray mapping and line scanning. Capability for spectrum analysis; Digital control of the beam for composition profile.

LN₂ 50 mm² detector