



**NATIONAL INSTITUTE OF TECHNOLOGY  
ROURKELA-769008 (ODISHA)**

**NOTICE INVITING TENDER**

**Tender Notification No:NITR/TS/CH/31 Dt: 02.01.2014**

The National Institute of Technology, Rourkela invites sealed bids from eligible bidders for **High Resolution Transmission Electron**

**Microscope (HRTEM), – 1 no.**

**Last date for submission of Tender: 24.01.2014 at 3.00 P.M.**

**Opening date: 24.01.2014 at 3.30 P.M.**

For details please visit our Institute website:

**www.nitrkl.ac.in/Jobs & Tenders /Tenders for Equipment.**

Contact Person:H.O.D. Chemical Engineering, PhoneNo:0661-246/2260 /2262.

Email: sparia@nitrkl.ac.in

Sd/-  
Registrar

**An Institute where everyone strives to attain his Potential**



**National Institute of Technology, Rourkela-769 008, Odisha**

**Department of Chemical Engineering**

Tender Notification No.: **NITR/TS/CH/31**

Dated: 02/01/2014

Name of the component : **High Resolution Transmission Electron Microscope (HRTEM)**  
Quantity required : 1 No.  
EMD Amount : **Rs.5,00,000/-**  
Delivery : Within 12 months from the date of order  
Last Date of submission of Tender : 24/01/2014, 3.00 p.m.  
Address for submission of Tender : The Director  
National Institute of Technology  
Rourkela – 769 008, Odisha, India

**With Kind Attention to:** H.O.D, Department of Chemical Engineering

Date of opening of technical bid : 24/01/2014, 3.30 p.m  
Date of opening of price bid : *Technically and commercially qualified bidders will be intimated later.*



**National Institute of Technology, Rourkela 769 008, Odisha**

**Department of Chemical Engineering**

**Tender Notification No.: NITR/TS/CH/31**

**Dated: 02/01/2014**

### **NOTICE INVITING TENDER**

The National Institute of Technology, Rourkela (NITR) 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/-**

Delivery : Within 12 months from the date of order

Performance Security to be given by : Nil

Successful bidder after release of purchase order (in Rupees)

Warranty : Three years (1 + 2 years extended) from the date of installation, commissioning and acceptance by NITR.

Minimum numbers of orders within last 5 years (Jan 2009 to Dec. 2013) in Indian institutes: Minimum 10 of similar 300 kV (FEG) configuration, at least one of them with cryogenic attachment.

Last Date of submission of Tender : 24/01/2014; 3.00 p.m.

Address for submission of Tender : The Director, National Institute of Technology, Rourkela 769 008  
**With Kind Attention to: Prof. Santanu Paria**

**Place, Date and time of opening of technical bid:** Department of Chemical Engineering; 24/01/2014, 3.30 p.m

**Opening of price bid:** *Technically and commercially qualified bidders will be intimated later.*

**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 should be divided into two covers:**

#### **Cover 1:**

*Cover 1 should contain the following:*

- a. *EMD by Demand Draft drawn on any scheduled bank in favor of "The Director, NIT, Rourkela" payable at Rourkela 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 the bid 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 orders completed during the last five years (from Jan 2009-Dec. 2013) 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*
  - 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 Bid" 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 Bid" 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 seller'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. Santanu Paria", 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 **qualified bidders** alone will be opened on a date **which will be intimated later to those bidders only.***

2. The agencies should submit their rate as per the format given in Section 3 of the Notice Inviting Tender in this cover. Rate should be quoted in foreign currency for imported items and in Indian Rupee for indigenous items. 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 3. The contract form as per format given in section 4 shall be submitted. Incomplete or conditional tender will be rejected.
5. Details of quantity and the specifications are mentioned in technical specifications appended to this 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 nil of the contract value in terms of Bank guarantee of any scheduled banks shall be given by the successful bidder for the total period up to three months beyond the warranty period.
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. L. D. of the institute (Bank side of Pos)
15. This institute is liable to pay Customs Duty in concessional rate under Notification No. **39/96 dated 23<sup>rd</sup> Jul 1996 & Amended by 60/96 dt 22nd Aug 1996** and exempted of Excise Duty under Notification No. **10/97 Central Excise dated 01 Mar 1997**. However, prices should be quoted indicating clearly customs/Excise Duties. If agreed, the necessary exemptions certificate may be provided.
16. **The Institute may at its own discretion extend the last date for the receipt of bids.**
17. 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.
18. 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 Director is final in all matters of tender and purchase.
19. 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, Rourkela and /or prosecuted.

**Signature of the Bidder** : .....

**Name and Designation** : .....

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

**Place :**

**Date :**

**Seal of the Bidder's Firm**

20. 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

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1. The rates should be quoted in Indian Rupee FOR NIT, Rourkela for supply within India.
2. In case of import both CIF and / or FOB rate should be quoted.
3. The Institute is eligible for excise duty exemption and concession customs duty.
4. The rate quoted should be on unit basis. Taxes and other charges should be quoted separately, considering exemptions if any.
5. Rate quoted should be inclusive of Testing, commissioning and installation of equipment and training. In this bid the components should be shown categorically.
6. *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 (if applicable) by the supplier. In case of imports, the payment will be made through LC and performance security need to be submitted before LC commitment (if applicable).
8. Guarantee and Warrantee period should be specified for the complete period mentioned in this tender document.
9. Period required for the supply and installation of item should be mentioned in this tender document.
10. In case of dispute, the matter will be subject to Rourkela, Orissa Jurisdiction only.

**SECTION : 3 PRICE SCHEDULE**

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[ 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) :
  
- 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 should be mentioned in Technical and Financial bid)
  
- 8. Delivery Schedule :
  
- 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:** .....

.....  
.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**



**SECTION : 4 CONTRACT FORM**

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

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1. (Name of the Supplier's FDXZR[UO] firm) hereby abide to deliver the .....by the delivery schedule mentioned in the 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, Rourkela during this period.

**Signature of the Bidder** : .....

**Name and Designation** : .....

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

.....

.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**

## SECTION : 5 TECHNICAL SPECIFICATIONS

### Technical Specification of High Resolution 300 kV Transmission Electron Microscope (HRTEM) with accessories

1.	Electron Source	Field Emission electron gun
2.	Accelerating Voltage	~ 50-300 kV accelerating voltage, with step size not exceeding 0.1 kV. Condenser lens should be aligned at 300 kV, 200 kV and 100 kV (at least one should be aligned at factory).
3.	Filament Type	Schottky field emitter with beam current >100 nAmps; high probe current 0.5 nAmps or more in 1 nm spot, 15 nAmps in a 10 nm spot.
4.	Resolution	Point to Point: 0.20 nm or better, Lattice resolution: 0.14 nm or better
5.	Spot size	2-5 nm or less in TEM mode, 2 nm or less for EDS/CBED mode.
6.	Magnification	From 100x to 10,00,000x or higher (without CCD camera)
7.	Objective Lens	Spherical aberration ( $C_s$ ) less than 1.4 mm and Chromatic aberration ( $C_c$ ) constant 1.6 mm. Objective lens aperture and objective lens high contrast aperture to be included.
8.	Probe control	The optimum lens condition for different analytical modes achieved by touch of a single button
9.	Modes of operation	<ul style="list-style-type: none"> <li>i. Microprobe and nano-probe</li> <li>ii. Bright field imaging</li> <li>iii. Dark field imaging</li> <li>iv. Selected area diffraction including micro- and nano diffraction. Aperture size 10, 40 and 200 micron.</li> <li>v. Convergent Beam Electron Diffraction (with maximum convergence angle approx 100 mrad)</li> <li>vi. Camera length in Diffraction mode should be variable covering the range of 100 – 4000 mm.</li> <li>vii. CRYO – TEM for biological samples</li> </ul>
10.	Specimen holder and tilting angle	<p>Single-tilt and double-tilt low-background analytical holder for Specimen of normal 3 mm grid.</p> <p>Specimen tilting angle with double-tilt holder: <math>\alpha/\beta</math> minimum <math>\pm 30</math> deg./ <math>\pm 30</math> deg. or more.</p>
11.	Specimen Stage	Fully computer controlled eucentric five axis (X, Y, Z, $\alpha$ , $\beta$ ) with motorised drive mechanism to achieve specimen movement at nanometer scale allowing navigation at high magnification. Facility for recording specific specimen translation position as reference point in the memory. Specimen movement– max. possible X/Y translations to be specified.

12.	Specimen movement	X=Y= $\pm 1$ mm with Z=350 $\mu$ m or more.
13.	Networkable workstation	Fully embedded system, EDS, EELS, CCD, STEM, HAADF devices etc., embedded into single workstation, and it consists of key board, monitor, mouse etc. Another workstation with latest configuration for data storage and transfer with more Hard Disk capacity.
14.	Vacuum system	Fully automated microprocessor controlled vacuum system. Fully interlocked oil-free and differentially pumped system. Gun, column and specimen area are to be pumped by separate IGP backed by TMP. Diffusion Pump for viewing and camera chamber.
15.	Image recording system	Retractable high resolution CCD Camera square CCD chip and Software with the provision for external computer access. This must be embedded in the main TEM user interface system. Video recording facility desirable.
16.	Cooling system	Close circuit, automatic temperature and flow rate controlled water cooled chillers. Suitable to work under Indian (on average 25 -45 C, relative humidity 70 %) ambient conditions.
17.	PC and Software	Latest version of PC (Core i7/Xeon processor.); software with data acquisition, display, image rendering, manipulation, transfer via internet and embedding hardware for a multi-user environment. One extra PC of same specification (support PC).
18.	Uninterrupted power	Should be of adequate rating to support and its accessories and supporting systems, with dry fit batteries and plug-in connections and dialogue mode. (ONLINE UPS). Separate UPS for Chiller and microscope. For Microscope 10 kVA and for Chiller 7.5 kVA of 4 hr backup.
Accessories		
19.	Cryo system	Retractable Be shield holder and Liquid Nitrogen pumping system together with a suitable cryo sample holder.
20.	EDX	EDX detector (L-N <sub>2</sub> free) with large area (30 mm <sup>2</sup> ) vibration free detector with resolution < 135 eV or better @ MnK $\alpha$ , with detection range: Boron (B) to Uranium (U); Collection solid angle should be $\geq 0.13$ sr with high P/B Ratio > 4000.  Motorized insert-retract mechanism for quick retraction at excessive counts.(Mapping should be there.) EDX software will be installed in Microscope PC. One additional License for EDX analysis.
21.	STEM	STEM Magnification: 100 - 2,000,000x . BFI and DFI-HAADF detectors for STEM images and the image acquisition. Annular BF, annular DF detectors with relevant

		software for HRSTEM mode; STEM resolution 0.2 nm or, better
22.	Software	HRTEM, (ii) electron diffraction pattern analysis, (iii) image reconstructions, (iv) Image optimization, (v) 3D Tomography.
23.	Consumable and other items	<p>TEM grids: (i) Heavy carbon coated grids 300 mesh (500 Nos)</p> <p>(ii) Calibrator</p> <p>(a) rotational calibration, (b) Magnification calibration and (c) Resolution calibration)</p> <p>(iv) One set of all standard samples for alignment of TEM. (HR/SAD/EDS etc.)</p> <p>Suppliers requested to give a list of essential spares for at least one year.</p> <p>Standard tool kits for handling and maintenance</p> <p>A set of Stainless steel nonmagnetic tweezers set</p> <p>SF<sub>6</sub> refilling kit for gun chamber</p>
24.	Site Inspection and preparation	Site Inspection will be done by service engineer prior to supplying instrument. Supervision and certification of site preparation should be done by the vendor.
25.	Training	5 working days at NIT Rourkela after complete installation by factory trained engineers to Faculty, Technical assistants and students. In addition, training of 3 persons at manufacturer's site abroad for which Institute will bear the cost of travel and accommodation.
26.	Installation and commissioning	Free of cost by factory trained engineers.
27.	Guarantee/ Warranty	The complete supply must be guaranteed for free repairs/replacement 3 (1 + 2) years extended) from the date of installation, commissioning and acceptance by NITR. If any items are excluded from the warranty they must be exclusively mentioned.

- (i) Detail specification of all sub-items should be given in the tender.
- (ii) Include a separate list of all quoted items excluding price.

## **Additional Commercial Terms and Conditions**

- 1) Name and address of the vendor:
- 2) Model of the TEM offered:
- 3) Offered price:
- 4) Principal and the country of origin:
- 5) Warranty (3 years comprehensive warranty inclusive of spares and consumables) from the date of installation, commissioning and acceptance by NITR
- 6) Minimum numbers of orders within last 5 years (Jan. 2009 to Dec. 2013) in Indian institutes: Minimum 10 of similar 300 kV configuration (with FEG), at least one of them with cryogenic attachment.
- 7) Availability of spares (at least 10 years from the date of installation):
- 8) No. of installations of the offered model in India with the list of users (name of the end user, e-mail address etc.) should be furnished in details:
- 9) No. of trained engineers stationed at Kolkata:
- 10) Response Time to attend any breakdown (desirable: within 24 hours)
- 11) Mean Time to rectify the problem (desirable: within 5 working days)
- 12) Installation: Vendor to arrange for installation as per GLP/GMP specifications. NIT-R will provide empty laboratory with electrical points and air-conditioning. All the other infrastructural facilities to run the instrument, viz., UPS with 4 hours backup, Chilling Plant etc. have to be provided by the vendor. Installation of all the units as specified in the tender documents (e.g. 300kV TEM, EDX, HAADF etc.) should be completed by qualified experts from the manufacturers end and not by their representatives, within 30 days of arrival of the equipment at NIT-R. During installation those experts will also train few Faculty, technical assistant, and students of NIT-R.
- 13) Installation site preparatory works like site testing, necessary electrical & civil works (if any) have to be supervised by the vendor.
- 14) Installation certificate will be signed after satisfactory observation of the performance of the installed system after complete installation.
- 15) Up gradation of the software for the next 10 years free of cost.
- 16) All the necessary documents including operation manuals of TEM, EDX, HAADF, Chillers, UPS and other accessories as specified in the Tender have to be supplied in printed version and soft version.