

# NATIONAL INSTITUTE OF TECHNOLOGY

## TIRUCHIRAPPALLI – 15

Department of CECASE

Web : [www.nitt.edu](http://www.nitt.edu)

Mobile No: 9486001136



# TENDER DOCUMENT

Tender Notification No.: NITT/F.NO: SIF 003A / PLAN2013-14

Dated:06.03.2014

- Name of the component : **Field Emission Scanning Electron Microscope**
- Quantity required : **One**
- EMD Amount : **Rs. 6,00,000**
- Cost of the Tender Document : **Rs. 1,000**
- Delivery : **24 Weeks**
- Last Date of submission of Tender : **07.04.2014 - 2.30 pm**
- Address for submission of Tender : The Director,  
National Institute of Technology- Tiruchirappalli,  
Tiruchirappalli – 620015, Tamilnadu, India  
**Kind ATTN to: Prof.S.Natarajan**  
Chairman - CECASE.  
Phone: 9486001136  
Email: [cecase@nitt.edu](mailto:cecase@nitt.edu)
- Date of opening of technical bid : **07.04.2014 – 3.00 pm**



**NATIONAL INSTITUTE OF TECHNOLOGY  
TIRUCHIRAPPALLI – 15**

**DEPARTMENT OF CECASE**

**Tender Notification No.: NITT/F.NO:SIF003A / PLAN2013-14**

**Dated: 06.03.2014**

**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 bids under **two bid systems** 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	: <b>Field Emission Scanning Electron Microscope</b>
Quantity required	: <b>One</b>
EMD	: <b>Rs. 6,00,000</b>
Cost of the Tender Document	: <b>Rs. 1,000</b>
Time for completion of supply after placing purchase order	: <b>24 Weeks</b>
Last Date of submission of Tender	: <b>07.04.2014 - 2.30 pm</b>

Address for submission of Tender : The Director,  
National Institute of Technology- Tiruchirappalli,  
Tiruchirappalli – 620015, Tamilnadu, India  
**Kind ATTN to: Prof.S.Natarajan**  
Chairman - CECASE.  
Phone: 9486001136  
Email: cecase@nitt.edu

***Place, Date and time of opening of bid*** :

Date: **07.04.2014**

Time: **3.00 pm**

Venue: **Central Stores, NITT**

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

**INSTRUCTIONS TO BIDDERS**

1. This document set contains the following:
  - a) Terms and conditions of the Tender
  - b) Details of the Firm offering this Quote
  - c) Technical Compliance Form
  - d) Quotation form (Price Bid)
  - e) Currency Form (quoted on behalf of the foreign suppliers)
  - f) NIT-T's check list copy
2. The bidder's copy is for your future records. Please fill in and return only NIT-T's copy.
3. 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.
4. Read through the terms and conditions given and affix your signature and seal if you find them acceptable. Any deviations may be recorded. Read carefully list of specifications that we have enclosed.
5. Fill in the questionnaire regarding the Firm.
6. The downloaded documents '**Technical Compliance Form**' and '**Quotation Form (Price Bid)**' should be **TYPE WRITTEN USING CAPITAL LETTERS ONLY**. At the time of filling the "**Quotation Form (Price Bid)**" make sure that you have not missed anything. Specify the model number & specification for each item. The form should be filled item-wise. Do not leave blank fields. If you are not quoting for a specific item, you should specify "**NOT QUOTING**".
7. **Do not use** ambiguous terms like "**yes**", "**complied**" or "**available**". Specifically mention the matching specification of the product offered by you. Make sure that you have affixed your signature with date and seal on all the documents.
8. Please send the tenders in a sealed envelope superscribed as "**QUOTATIONS AGAINST TENDER NOTIFICATION NO: NITT/F.NO:SIF003A / PLAN2013-14**" so as to reach "The Director, National Institute of Technology, Tiruchirappalli - 620 015, India" on or before **07.04.2014 at 2.30 pm along with a Softcopy of the Technical Compliance form (along with cover-2) and Quotation Forms (along with cover-3) in MS-Excel file format in a CD/DVD or USB drive.**
9. For any further clarifications, contact by E-Mail: [cecace@nitt.edu](mailto:cecace@nitt.edu) or by written request to "The Registrar, National Institute of Technology, Tiruchirappalli - 620 015, India"
10. Pre-bid conference will be held on **21.03.2014 at 10.00 am**

**Last Date for receipt of tender at NIT-T : 07.04.2014 up to 2.30 pm**

**Opening Date for technical bid : 07.04.2014 up to 3.00 pm**

<b>CHECKLIST TO BE FILLED IN BY BIDDER</b>	
List of documents to be enclosed	Completed & Signed
1. Terms and Conditions form	YES / NO
2. Details of the Firm offering this Quote	YES / NO
3. NIT-T's Quotation form (Technical & Price Bid)	YES / NO
4. Currency Form(quoted on behalf of the foreign suppliers)	YES / NO
5. Other technical specifications & pamphlets	YES / NO

**Note:** 1. "Cover" should contain the following:

- a. Form of "**Acceptance of Terms and Conditions**".
- b. Form of "**Firm details**"
- c. Pamphlets, if any (in a separate sealed cover)
- d. Quotation Form (Technical, Price Bid and Currency Form)

**Please retain this page with you for your future reference.**

**SECTION : 1 – TWO BID TENDER**

**Cover 1: EMD and Tender cost**

(should be superscribed as 'EMD and tender cost cover' duly indicating the Tender reference No. and the due date of opening)

Earnest Money Deposit (EMD) and tender cost are to be submitted by way of Demand Draft/FDR drawn on any Nationalized bank in India in favor of "The Director, NIT, Trichy" payable at Trichy. The bids submitted without EMD or tender cost will be treated as non-responsive and will be rejected. EMD shall bear no interest. The EMD can be submitted in the form of bank guarantee as per the prescribed format given by NITT.

**Cover 2: Technical Bid**

(should be superscribed as 'Technical Bid' duly indicating the Tender reference No. and the due date of opening)

Should contain:

- a. Technical pamphlets
- b. Detailed technical specification
- c. Copy of license certificate for manufacture/supply of the item\*
- d. Income Tax PAN number & TIN number.\*
- e. Last three years balance sheet approved by the CA and the IT clearance certificate.\*
- 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 Tender document, the bid is liable to be treated as non-responsive and will be rejected.
- g. Duly filled up technical questionnaire, if any
- h. Duly filled up deviation schedules to technical specifications, if any
- i. Copy of supply orders completed during the last three years

\* Appropriately pertaining to the country of origin.

**Cover 3: Price Bid**

(should be superscribed as 'Price Bid' duly indicating the Tender reference No. and the due date of opening)

Should contain:

- a. Price bid as per the format in Section-4 of the tender document
- b. Break-up price as per the format in Annexure-A

**Note:**

- a. If the prices are revealed in cover 1 or in cover 2, the offer will be summarily rejected.
- b. Each Cover shall be sent in a double sealed cover. The inner covers (Cover 1, Cover 2 and Cover 3) should be sealed individually with the Sellers's distinctive seal and superscribed with the tender reference No. and due date of opening. All 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.
- c. Mention "Kind Attention: Prof.S.Natarajan, Chairman - CECASE," and submit at the address given in the Notice Inviting Tender.
- d. Cover 1 & 2 will be opened on the scheduled date and time mentioned in the tender enquiry.
- e. Cover 3 of the technically and commercially suitable offers alone will be opened on a date which will be intimated to the qualified bidders.

**SECTION : 2 – TERMS AND CONDITIONS FORM**

**IMPORTANT: READ THE FOLLOWING TERMS AND CONDITIONS AND  
SIGN THE ACCEPTANCE CLAUSE FOLLOWING IT**

1. The offers should be addressed to “The Director, National Institute of Technology, Tiruchirappalli 620015, India” and should be sent in a sealed envelope superscribed **BID AGAINST TENDER NOTIFICATION No.: NITT/F.NO:SIF003A / PLAN2013-14**” so as to reach us **on or before 07.04.2014**.
2. Each offer should be sent in a sealed cover with the tender documents. Tenders received through email or FAX will not be considered. **Softcopy of the Technical Compliance form and Quotation Forms should be submitted along with the tender in MS-Excel file format in a CD/DVD or USB drive. However, if there is any dispute between Hard copy and Soft copy, Hard copy will be taken.**
3. The tenders will be opened on **07.04.2014 at 3.00 pm** in the presence of the vendors present with authorization letter from the respective companies / firms. Suppliers intending to attend the tender opening should intimate us in advance.
4. Full technical specifications and pamphlets should be sent along with the tenders. **Offers without proper technical specifications will be rejected.**
5. The rate quoted should be on unit basis excluding Taxes. Taxes and other charges should be quoted separately, considering exemptions if any.
6. All offers should indicate unit price (excluding taxes and duties applicable), Taxes and other charges should be mentioned separately, if any. Additional charges for packing, forwarding, freight, insurance etc., if any, should be clearly mentioned. Clearance at Customs will be arranged by us.
7. NIT-T is paying concessional Customs & Excise duty under Government of India Notification No.51/96for Central Customs and 10/97 for Central Excise Duty vide Certificate No.TU/V/RG-CDE(183)/2011 dt.10.10.11. Currently the purchaser is paying 5% Basic Customs Duty, 2% Educational Cess on Basic Customs Duty, 1% Higher Education Cess on Educational Cess, and 4% Import Additional Duty. **This institute is exempted from payment of service tax as per Sl.no. 9 of Government notification No25/2012-ST dated 20<sup>th</sup> june, 2012.**The Institute is not authorized to issue C and D forms of Sales tax certificate.
8. In case the offered items are to be imported, the rates should be quoted in foreign currency on C.I.F. Chennai Airport basis, and it should include the Freight up to Chennai airport and the insurance cover should be up to National Institute of Technology, Tiruchirappalli. NIT-T shall pay Customs duty if any.
9. If the price quoted is in foreign currency and if the order value is more than US\$10,000 and requested by the bidder then 100% payment will be made through **Letter of Credit (LC) at sight on acceptance. The bank charges outside India should be borne by the Supplier / Beneficiary. Part shipment not allowed.**
10. If the price quoted is in Indian Rupees, then 100% payment will be made only after installation and commissioning. **No advance payment will be made.**
11. No revision of the price bid will be allowed once the price bids are opened. In case of foreign currency, the agency should mention the % of currency fluctuations they can bear.
12. No increase in price will be allowed after our firm orders are placed.
13. **Payment of excise duty and sales tax / VAT (on ultimate products)** as applicable on the closing date of tender will be to the supplier's / contractor's account. Any statutory variation (both plus and minus) in the rate of excise duty/sales tax/VAT after closing date of tender/revised price bid but before the expiry of the contractual delivery / completion period will be to the account of the office.  
The bidder(s) should indicate, in their bid, the amount with exact rate of the Excise and Sales tax/VAT on ultimate finished product, as applicable at tendering stage, separately in the bid.

In case the above information subsequently proves wrong, incorrect or misleading (a) this Institute will have no liability to reimburse the excess in the difference in rates of the item under which the duty/tax assessed finally (b) this Institute will have the right to recover the difference in case the rate of duty / tax finally assessed is on the lower side. Any increase in excise duty, sales tax / VAT during extended period of the contract / supply order will be to supplier's / contractor's account where such extension in delivery of the materials/completion of the project was on the request of supplier / contractor. However, any decrease in excise duty/sales tax/ VAT during extended period of the contract / supply order, will be to the account of this Institute.

14. **This institute is exempted from payment of service tax as per Sl.no. 9 of Government notification No25/2012-ST dated 20<sup>th</sup> June, 2012. The tenderer should verify the excise duty exemption certificates of this institution and service tax rules before submission of the Bid. It will be assumed on the submission of bid that excise duty exemption will be provided and no other conditions after the issue of purchase order will be accepted. No service tax will be paid by this institute.**
15. The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned.
16. Quote should come from authorized dealer or distributor or reseller for each of the product quoted. An authorization letter should accompany your quote for each product quoted; otherwise it may lead to rejection.
17. The delivery period and other terms should be clearly mentioned.
18. **Eligibility:** Quotation from registered firms/company's / manufacturer under TNGST/CST / other statutory bodies alone will be considered. Any Manufacturer / Supplier / Dealer who has been declared ineligible by World Bank/Government of India shall not be eligible to participate in this bid. Any fraudulent practices including concealing of facts at the time of submission of bid and there after shall lead to disqualification. List of beneficiaries especially from Educational Institutions / R & D Institutions should also be enclosed with the quotations.
19. For those instruments Cost exceeding Rs. 5,00,000/- the company should have (i) Three similar works, each of value not less than 40% of the estimated cost put to tender, or (ii) Two similar works, each of value not less than 50% of the estimated cost, or (iii) One similar work of value not less than 80% of the estimated cost, all amounts rounded off to a convenient full figure, in the last 7 years ending on the last day of the month previous to the one in which the tenders are invited.
20. Complete user, technical and service documentation and spare parts catalogue are to be provided along with the supply of the item.
21. The vendors are informed that they should not call us over phone or contact us in person. All clarifications can be obtained through E-Mail/FAX/Post. Vendors shall not make attempts to establish unsolicited and un-authorized contact with us after the opening of the offers and prior to the notification of the award. Any attempt by any vendor to bring to bear extraneous pressures on us shall be sufficient reason to disqualify the vendor.
22. Delay / loss in postal transit or due to other reasons will not be NIT-T's responsibility.
23. We are not responsible for accidental opening of the covers that are not properly superscribed and sealed before the time scheduled for opening.
24. The tender should be made only on the FORM which is available in our website, otherwise it shall lead to rejection. The FORM should be duly filled up (preferably **TYPE WRITTEN IN CAPITAL LETTERS**) and should clearly mention the features offered by the bidder against each specification.
25. Authorized signatory should sign on all the pages. Bids without authorized signatures or seal of the firm will be rejected.
26. The manufacturers of the quoted make of the product must be of National / International repute and having ISO /BIS certificate.
27. **Liquidated damages:** If the bidder/supplier, after accepting the Purchase Order, fails to deliver any or all of the Goods within the period specified in the Order, NIT-T shall, without prejudice to its other remedies under the Rules of Purchase, proceed to cancel the order or agree to accept a delayed delivery on the condition of payment of liquidated damages by the

bidder / supplier a sum equivalent to 0.50% of the total cost as indicated in the Purchase Order (which will be deemed as agreed price) for each week or part thereof of delay until actual delivery or performance is completed and such penal charges shall be limited to a maximum of 5% of the total cost. Once the maximum is reached NIT-T may proceed on its own to consider the termination / cancellation of the order.

28. **The vendors are informed that they should sign a stamp paper agreement with us, for Warranty, AMC, etc. before placing the final purchase order as per our terms & conditions and 10% of purchase order value in the form of bank guarantee towards performance security. The bank guarantee will be returned to the supplier after the successful completion of supply, installation, and the warranty period.**
29. Failure to comply with all the terms and conditions mentioned herein would result in the tender being summarily rejected.
30. Vendors are informed that once the companies are shortlisted based on the technical specification, only then the price bids of the firms that meet NIT-T's Technical specification / requirements would be compared.
31. The order will be based on the actual requirement at the time of ordering, optional items may also be ordered based on the actual requirements at the time of ordering. Not quoting for this may result in disqualification.
32. NIT-T reserves the right to modify or alter the specifications after short listing of tenderers.
33. NIT-T reserves the right to change the order quantity or split the orders among multiple vendors without assigning any reason(s) whatsoever.
34. NIT-T reserves the right to reject any or all the tenders without assigning any reasons whatsoever.
35. NIT-T reserves the right to purchase decreased number of quantity of the item to be purchased.
36. The agencies should submit their rate as per the format given in Section 4 of the Notice Inviting Tender in this cover. All the pages of the bid should be signed affixing the seal. All corrections and overwriting should be initialed.
37. The tender will be acceptable only from the manufacturers or its authorized supplier.
38. 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.
39. Details of quantity and the specifications are mentioned in Section 3 appended to this Notice Inviting Tender.
40. 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.
41. 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.
42. In case of dispute, the matter will be subject to Tiruchirappalli, Tamil Nadu Jurisdiction only.

**Release of EMD:** The EMD will be released after receipt of performance security from successful bidder.

**Validity of bids:** The rate quote should be valid for a minimum of 120 days. No claim for escalation of rate will be considered after opening the Tender.

**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.

**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.

**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 in the NIT-T website only.

***The Institute may at its own discretion extend the last date for the receipt of bids.***

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.

The Institute reserves the right of accepting any bid other than the lowest or even rejecting all the bids without assigning any reasons therefor. The decision of the Institute Purchase Committee is final in all matters of tender and purchase.

**The bidder should give the following declaration while submitting the Tender.**

### **ACCEPTANCE**

We accept the above terms and conditions and shall comply with them strictly.

**NAME OF THE VENDOR:**

**ADDRESS :**

**Signature and seal**



**“DETAILS OF THE FIRM OFFERING THIS QUOTE”**  
**(Write or print or type in block letters)**

1. Name of the firm: \_\_\_\_\_ 2. Date of incorporation: \_\_\_\_\_
2. Nature of the company (tick one): Government / Public / Private Company / Partnership / Proprietorship
3. Specify the number of years in this line of activity by the Company: .:
4. Quantity of sales in the last three years for the “**Field Emission Scanning Electron Microscope**” (same model that you have quoted):

2010-2011	2011-2012	2012-2013

5. Turnover in the last three years (Lakh Indian Rupees):

2010-2011	2011-2012	2012-2013

6. Provide the postal address, telephone & fax numbers, and email address of the nearest service center.
7. Number of service engineers in the above location trained on the product quoted along with their educational qualification, certification and designation (applicable only for instruments):
8. Assured response time for service calls in hours:
9. Delivery period from the date an official purchase order placed (in weeks):
10. Enclose the list of customers to whom you have supplied “**Field Emission Scanning Electron Microscope**” during the last 3 years ending 31/03/2014 with full postal address and name of the contact person with phone, FAX numbers, and E-Mail id. Certificate regarding satisfactory performance of the “**Field Emission Scanning Electron Microscope**” from the minimum three end users should be furnished.
11. Are you the authorized dealer or distributor or reseller for the products quoted?
12. Have you supplied “**Field Emission Scanning Electron Microscope**” to National Institute of Technology, Tiruchirappalli in the last 3 years? If yes, specify the quantity supplied in the last 3 years and last PO reference:
13. Was there any elapse or delay in supplying the goods ordered or any service related issue during the warranty period for the products ordered by NIT-T with your firm? If yes, provide details.
14. On Manufacturer’s Side to whom NITT have to contact in case of delayed in supply and other issues committed by the authorized dealer / distributor / reseller :

Contact Person Name :	
Address :	
E-mail ID :	Telephone / Cell Phone :

**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**

**SECTION : 3 – SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS**

**Specification for Field Emission Scanning Electron Microscope**

Name of the Component to be procured : **Field Emission Scanning Electron Microscope**

**Specifications:**

**FESEM should be capable of the following applications nano characterization of all kinds of materials and alloys, polymers, ceramics, composites, films/coatings, minerals. Plant materials, porous materials and fibers etc.,**

Sl. No	Tender specification	
1.	Electron gun	Field emission electron source Schottky FEG
2.	Resolution	1 nm or below at 15 kV and 1.5 nm or below at 1 kV The definition of resolution and the method used to determine the same should be specified. Resolution claimed must be supported by printed literature.
3.	Acceleration voltage	≤ 0.1 to 30 kV continuously adjustable
4.	Magnification	≤25X to 1,000,000X or more. Minimum and maximum magnification should be specified
5.	Probe current	Suitable for all applications, and should be up to 200 nA or higher.
6.	Specimen stage	PC controlled fully eucentric 5 axis motorized stage movements equivalent to X ≥100 mm Y ≥80 mm Z ≥20 mm Tilt = ≥ -3° to ≥ 50° or higher, R = 360° and higher Stage movement should be controllable through both computer and manually with joystick/trackball.
7.	Multi Specimen holder	Suitable for loading many specimens (≥ 5); 70 degrees pre-tilt holders-5 nos; Cross sectional sample holders – 1 No STEM holder-1 No.; Stubs-50 Nos.
8.	Detectors	In-chamber SED (Everhart-Thornley). In lens/In column Secondary Electron Detector (SED) or equivalent. In-lens/In-column Backscattered Electron (BSE) Detector or equivalent. Angle Selective BSE/ Directional backscattered detector or Equivalent Technology. Pneumatically Retractable STEM with bright field and dark field detectors should have capability of high sensitivity for low kV analysis. Specify built-in automatic/ manual control for contrast and brightness. Option for viewing images from SE and BSE detectors simultaneously on the screen. WDS detector (Optional) FIB (optional), SIMS(Optional)
9.	Camera	Camera (IR-CCD) or suitable device to view the samples and stage inside the chamber.
10.	Non conductive	Should be capable of imaging non-conducting samples without conductive coatings.

	samples/Magnetic samples	Should be capable of imaging magnetic samples at higher magnifications similar to the non-magnetic samples (details are of magnification and resolution to be provided) System should possess a state of art hybrid lens or equivalent technology to image magnetic materials.
11.	Vacuum system	Fully automated advanced controlled vacuum system comprising of Ion-Pump (for Field-emission SEM), Turbo-Molecular Pump (TMP) (along with water chiller if water-cooled TMP) backed by oil-free rotary pump, pneumatic valves (clarify if any in-built proper safety measures against failure of power supply, vacuum, water-flow, etc. are provided). This system should be compatible for gun and filament in order to protect both Gun/filament against air-exposure of specimen chamber during specimen loading/unloading.
12.	Scanning/Display	system - High definition dual display system with 23" LED (1920 X1080) pixel (or )better for high quality image in real time under graphical user interface; Color Laser printer
13.	Sample preparation Accessory	Carbon and gold deposition sputtering unit, Along with the coater, 2 Nos. of extra Gold-Palladium targets and 2 meter of carbon fiber should be provided. Mag. calibration grid; STEM grid, Carbon tapes-50 meters; Holey carbon coated copper grids -200 Nos. and Plasma cleaner to be provided. Silver paste-50 grams should be provided. The power requirements and gas requirements of sputter coater must be mentioned in the bid/offer..
14.	Local charge compensation facility (Optional Item)	Imaging and analysis of non-conductive sample without conductive coating.
15.	Control system for FESEM	Latest processor, 2 TB HDD, 8 GB RAM, 2 Gb Nvidia graphics card, three year warranty including parts and labor. Windows compatible OS to operate FESEM and all attachments. All the control system for FESEM, EDS-EBSD must be imported /factory fitted and tested with pre-loaded software's for operating these systems.
16.	Software	pre-loaded licensed software for total system control, including EHT, lens supplies, scanning conditions, imaging, chamber pressure control, and image. Complete software for image analysis like particle size analysis, 3D imaging, super position of images etc. Image file in JPEG, TIFF and BMP formats. EBSD, STEM, WDS and EDS should be assessed simultaneously using a single user interface.
17.	User Interface	Operational keyboard with control and adjustment knobs for frequently used SEM parameters (focus, magnification, etc.)
18.	Energy dispersive X- ray Detector	Latest Integrated FET technology based Peltier Cooled Silicon Drift Detector with a sensor size of 30 mm <sup>2</sup> or higher detector area and resolution of $\leq 124$ eV or better Mn K $\alpha$ @100,000 cps . At the installation site, the detector should also show $\leq 70$ eV at F-K $\alpha$ and 60 eV $\leq$ C-K $\alpha$ at 100,000 cps, as per established ISO norms. The detector should have a Super Ultra-Thin Window for better light element performance and capability to detect from Be to U. The software should have capability to do Qualitative & Quantitative Analysis, Peak and Auto ID routine, Spectral Match Analysis, Database management and reporting, Elemental Mapping, Point Analysis, Line Scanning, Real time Phase

		<p>mapping, Phase to Element and Element to Phase maps with specimen drift correction. Pile up correction and background noise reduction, simultaneous imaging and analysis should be possible.</p> <p>Provision should be there to integrate the quoted EDS system with the EBSD for simultaneous acquisition of EDS-EBSD.</p> <p>The supplier should arrange for seamless interfacing, software, installation and commission for EDS and EBSD systems.</p> <p>Data acquisition facility in the form of ASCII values of the EDS spectra</p> <p>Separate PC and Monitor for EDS should be provided. Specifications for the computer as per the Sl. No 18.</p>
19.	Electron Backscatter Diffraction (EBSD) Detector	<p>Forward Scattering Detector (FSD) should be provided.</p> <p>Versatile camera with Integrated forward Scatter detector fulfilling the requirement for both high speed and high sensitivity applications, indexing speed of 860 patterns/sec at 5 nA with 99% indexing success, 99% indexing at 5 KV and 99% indexing at 100 pA to generate high quality data for non conductive and beam sensitive samples also.</p> <p>The high speed EBSD camera should be able to perform scan at a speed greater than 860 fps (frame per second). The EBSD camera should be capable of providing a high pixel resolution, minimum resolution of 640×480 pixels. The EBSD camera should have a high contrast ratio, which is the ratio of the luminance of the brightest color (white) to that of the darkest color (black) that the system is capable of producing.</p> <p>The EBSD system should be capable to pick up minimum angular deviation (i.e. angular resolution) down to 0.1 degree. Orientation precision measurement should be less than 0.1 degree which shows true sample deformation structure to allow understanding of process/property relationship.</p> <p>The camera should be retractable with digital slide control and have a touch sensor alarm, which is audible. The camera should also have a bellow assembly to avoid any vacuum leakage, circular/rectangular phosphor screen for better sensitivity at edges.</p> <p>The EBSD camera should have a mechanism of protection from any kind of damage by contact with specimen or specimen stage.</p> <p>An alarm facility/indicator may be provided to alert the user if the specimen is about to touch the phosphor screen. -Fully integrated EDS-EBSD set-up in one interface, facility for automatic optimization of camera settings, automatic background collection and subtraction, camera setting match to EDS conditions. EBSD should have highest indexing accuracy and quantified measurement of data quality.</p> <p>Software should include (i) camera optimization for data collection (binning, brightness and gain), (ii) background collection and subtraction, (iii) point analysis (for collection of patterns from multiple spots in a given area.</p> <p>The EBSD software should be able to index all seven crystal systems (metallic, ceramic, semiconductor, minerals and rock samples) , and should include multiple Hough Transform routines as well as ability to optimize parameters for high speed or high resolution indexing requirements.</p> <p>The EBSD software should also have capabilities for dynamic mapping (for producing orientation and phase maps with SEM image with pie charts showing phase and structural information) to ensure data collected matches data needed.</p> <p>The EBSD software should have the ability to collect data from a selected point continuously using the mouse in a manner that each data point is time stamped, allowing the user to go back to any frame collected to select the optimal data point in case of beam sensitive /contamination problems.</p> <p>The EBSD should be able to dynamically adjust the drift correction frequency based on the changes occurring during collection.</p> <p>Beam control and data acquisition software should be included for providing</p>

		<p>digital control of the electron microscope beam and acquisition of up to two simultaneous videos signals with 16-bit resolution.</p> <p>User-selectable processing times should be possible for allowing collection tailored to application-specific needs. The software should have options for pile-up rejection and reduction of sum peaks. There should be option for choice of 5 or 10 eV/channel resolution for spectral collection to improve overlap deconvolution</p> <p>EBSD off-line Software License (5 Nos.) should include all applications for use on another workstation.</p> <p>The analysis software should have the capabilities for advanced texture analysis (example: ODF calculations by both series expansion and binning), in-grain misorientation analysis, misorientation distribution function (MDF's), Taylor and elastic stiffness analysis at any strain tensor.</p> <p>Software should support analysis of thin films and coatings along with bulk materials.</p> <p>The EBSD camera should have a mechanism of protection from any kind of damage by contact with specimen or specimen stage. An alarm facility/ indicator may be provided to alert the user if the specimen is about to touch the phosphor screen.</p>
20.	Control panel	Control panel for entire operation of FESEM
21.	Chiller & compressor	<p>High quality chiller and compressor for FESEM unit;</p> <p>Specify the manufacturer and model.</p> <p>Warranty applicable to chiller and compressor for 3 years for both parts and labor</p>
22.	Calibration	Standard samples to check system calibration i.e., magnification etc. should be supplied along with the system.
23.	Standards	Standard samples for day to day analysis and calibration
24.	Expandability	Provision for attaching additional detectors
25.	Tools, spares and consumables	Recommended spare kit for the system (complete list should be provided) along with one spare FE-electron emitter sources (to be provided whenever it is necessary within three weeks) and 5 sets of aperture strips.
26.	Diagnostic support	Remote diagnostics with internet connectivity with the manufacturer to solve hardware and software issues at site (NIT Trichy).
27.	Power Backup	15 kVA UPS with 10 hours backup for FESEM, chiller and other accessories
28.	Environmental control accessories	System to maintain the humidity, room temperature and other necessary parameters for optimum performance of FE-SEM system
29.	Electron Optics	Beam Deceleration/Gentle Beam/Beam Booster technology or equivalent for high resolution imaging at low kV.
30.	Chamber	<p>Chamber design should allow changing of the specimens quickly.</p> <p>Chamber should allow up-gradation to in-situ tensile/heating experiments.</p>
31.	Protection system	WDS, EDS, EBSD, BSE and SE detector s should have a mechanism of protection from any kind of damage by contact with specimen or specimen stage.
32.	Spares and undertaking for spares	An undertaking that the vendor will supply all the spares and services for the equipment for at least 10 years from the date of commissioning
33.	Pre-installation requirements	Pre-installation requirements such as room size, tolerable limits of EM field and vibration (mechanical), required power rating; utility requirements are to be stated clearly, and to be verified/ surveyed by the supplier at the installation site. It is the supplier's responsibility to clearly provide details of the above mentioned requirements before 120 days of delivery of the equipment.
34.	Warranty Training and Service Support	Three years comprehensive on-site warranty should be offered for entire offered configuration (after successful commissioning of the equipment). Service response time, turn-around time & up-time of the equipment should be clearly specified. Service response time must be less than 72 hours. Additional two years AMC (with out any cost) should be provided after the expiry of three years

		warranty period. The supplier must provide a highly skilled full time Engineer with suitable expertise for training to designated users and providing technical assistance and routine maintenance of the proposed FESEM for a period of 2-years from the date of installation of the system in the institute. The institute shall have no responsibility for his/her service liabilities. The expenses for such services must be quoted separately along with the technical bid.
35.	Compliance Statement	The supplier must submit a table indicating the compliance of the features of the model of the equipment being quoted with those given in the indent. Features not matching – must be clearly indicated. Additional features and features in the quoted equipment which are better than those in the indent – may be clearly explained. The supplier must submit technical brochures and proper application notes adequately explaining and confirming the availability of the features in the model of the equipment being quoted
36.	Required Documents along with technical specifications	The supplier must provide a comprehensive list of users of FESEM (Schottky Field Emission SEM) in India. They should also submit the name(s) of the service engineer(s) employed by them who is/are competent to service the equipment being quoted with their locations in India.
37.	Terms and conditions	(a) A single order will be processed for the entire configuration. (b) The firm has to guarantee support for both system and spares for a minimum period of 10 years. (c) Provision for on-line remote diagnosis of faults. (d) The firm must have at least 5 installations of Schottky Field Emission SEMs within India for desired experience of maintenance. (e) Free training on different applications to selected users. (f) Compliance of all listed specifications/terms and conditions sheet should be indicated by the vendors in tabular form. (g) Date of manufacturing of the equipment should be after the placement of order. (h) Break up of price for optional items should be shown separately in the price bid.
46.	Warranty period	Three years

**Note:** Any other accessories apart from the mandatory accessories and systems mentioned above may be quoted separately. Pre-installation/post-installation training expenses (including travel, boarding and lodging) should be born by the supplier. Supplier should offer price of optional items separately.

Quantity : One

Any other details/requirement : Any other accessories apart from the mandatory accessories and systems mentioned above may be quoted separately.

Warranty period required (years) : Three years

Delivery schedule expected after release of purchase order (in weeks) : 24 weeks

EMD (in Rupees) : Rs. 6,00,000/-

Performance Security to be given by the successful bidder after release of purchase order (in Rupees) : **10** % of the total order cost

**SECTION : 4 – PRICE SCHEDULE**

**To be used by the bidder for submission of the price bid**

1. Component Name :
2. Specifications (confirming to Section 3 of Tender document-enclose additional sheets if necessary) :
3. Currency and Unit cost (excluding Taxes) :
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. Total cost (Inclusive of all taxes) :  
(Both in figures and words)
8. Warranty period (confirming to the Section 3 of Tender document. This should be mentioned in Technical bid also in order to get qualified for price bid) :
9. Delivery Schedule (confirming to the Section 3 of Tender document) :
10. Name and address of the firm for placing purchase order :
11. 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**

(Note: All column should be filled. No column should be left blank. If any column is not filled-in properly or left empty then the bid will be rejected.)



**SECTION : 5 – CONTRACT FORM**

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**To be provided by the bidder in their business letter head**

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[Name of the Supplier's Firm] hereby abide to deliver the **Field Emission Scanning Electron Microscope** by the delivery schedule mentioned in the Section 3 of the Tender document for supply of the items if the purchase order is awarded.

The item will be supplied conforming to the specifications stated in the tender document without any defect and deviations.

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**

**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPALLI**

**Annexure-A**

**MODEL PRICE BID FORMAT FOR INDIAN BIDDERS**

Tender No. & Date: **NITT/F.NO:SIF003A / PLAN2013-14**

**Dt: 06.04.2014**

Bidder's Offer No. & Date:

S. No.	Description of item	Unit (SET /No)	QTY	Rate /Qty in Rs. (excluding of all taxes)	ED in %	VAT/ CST In %	Service Tax in %	Total Value in Rs. (inclusive of all taxes)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	<b>Supply portion</b> (The price indicated shall be exclusive of all accessories, spares etc. as given in the scope of supply)							
2	Other accessories /spares etc as given in scope of supply (Individual item-wise break-up price shall be attached as an annexure to this price bid format.)							
3	Installation & Commissioning (extra, if any)							
4	Packing & Forwarding charges (extra, if any)							
5	FOR Dispatching station value in Rs.							
6	Freight & Transit insurance charges, extra, if any							
7	Total all inclusive price delivered, installed and commissioned at NITT							
8	Value of Annual Maintenance Contract for 5 years							
9	<b>Net cost to be paid by NITT</b>							

**Signature & Seal of Vendor**

**Note: The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "Not Applicable". If this format is not used or any column is left blank, then the bid will be rejected.**