

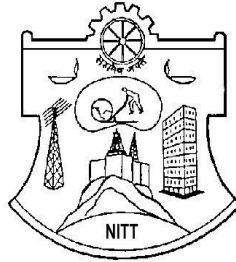
NATIONAL INSTITUTE OF TECHNOLOGY

TIRUCHIRAPPALLI – 15

Sophisticated Instrument Facility

Web : www.nitt.edu

Phone : +91-9944932221



TENDER DOCUMENT

Tender Notification No.: NITT/F.No: SIF-001/PLAN/2016-17/MME

Dated : **30-11-2016**

Name of the component : **FESEM with EDS and EBSD attachments**

Quantity required : One unit with all accessories and spares (for details refer Section 3)

EMD Amount : Rs. 6,00,000/-

Cost of the Tender Document : Rs. 1000/-

Delivery : 12 Weeks from the date of purchase order

Last Date of submission of Tender : **30/12/2016 by 1.00 p.m**

Address for submission of Tender : The Director,
National Institute of Technology- Tiruchirappalli,
Tiruchirappalli, Tamilnadu, India, Pin Code– 620015
Kind Attention to: Dr. N. Ramesh Babu
Assistant Professor,
Department of Metallurgical and Materials Engineering,
Email: rameshrohith@gmail.com (or) nrb@nitt.edu
Mobile: 09944932221

KIND ATTENTIONDETAILS ARE COMPULSORY

Date of opening of technical bid : **30/12/2016 at 2.00 pm**
The Date of opening for Commercial Bid will be communicated through E-mail.



NATIONAL INSTITUTE OF TECHNOLOGY
TIRUCHIRAPPALLI – 15

Department of Metallurgical and Materials Engineering

Tender Notification No.: NITT/F.No: SIF-001/PLAN/2016-17/MME

Dated: **30-11-2016**

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 : FESEM with EDS and EBSD attachments
Quantity required : One unit with all accessories and spares (for details refer Section 3)
EMD : **Rs. 6, 00,000/-**
Cost of the Tender Document : **Rs. 1,000/-**
Time for completion of supply after placing purchase order : 12 Weeks
Last Date of submission of Tender : **30/12/2016 by 1.00 p.m**

Tender to be submitted at the following address: The Director,
National Institute of Technology- Tiruchirappalli,
Tiruchirappalli, Tamilnadu, India, Pin Code– 620015

Kind Attention to: Dr. N. Ramesh Babu

Assistant Professor,

Department of Metallurgical and Materials Engineering,

Email: rameshrohith@gmail.com (or) nrb@nitt.edu

Mobile: 09944932221

KIND ATTENTION DETAILS ARE COMPULSORY

Place, Date and time of opening of bid :

Date: 30/12/2016 **Time:** 2.00 pm **Venue:** NIT Central Store Room

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

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
 - c) Quotation form (Price Bid)
 - d) Currency Form (quoted on behalf of the foreign suppliers)
 - d) 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 super scribed as "**QUOTATIONS AGAINST TENDER NOTIFICATION NO: NITT/F.No: SIF-001/PLAN/2016-17/MME, FESEM with EDS and EBSD attachments**" so as to reach "The Director, National Institute of Technology, Tiruchirappalli - 620 015, India" (KIND ATTENTION DETAILS ARE COMPULSORY) on or before **30/12/2016 by 1.00 p.m along with a Softcopy of the Technical Compliance form and Quotation Forms in MS-Excel file format in a CD/DVD or USB drive**.
9. For any further clarifications, contact by E-Mail: nrb@nitt.edu (or) rameshrohith@gmail.com (or) by written request to "The Registrar, National Institute of Technology, Tiruchirappalli - 620 015, India".
10. **The Prebid meeting will be held on 19-12-2016 at 9.00 am (submit your bid after Prebid meeting decisions uploaded to the NIT website)**

Last Date for receipt of tender at NIT-T

: **30/12/2016 by 1.00 p.m**

Opening Date for Tender

: **30/12/2016 by 2.00 p.m**

CHECKLIST TO BE FILLED IN BY BIDDER

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 "**Firms details**"
 - c. Pamphlets, if any (in a separate sealed cover)
2. Quotation Form (Technical, Price Bid and Currency Form)

Please retain this page with you for your future reference.

Section 1. IN THE CASE OF TWO BID TENDERS

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

1.2 Cover 1:

Cover 1 should contain the following:

- a. *EMD - Earnest Money Deposit (EMD) is to be remitted by way of Demand Draft/FDR/BANK Guarantee drawn on any Nationalised bank in India by Demand Draft drawn on any scheduled bank in favour 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. If EMD is more than 1Lakh and less than 5 lakhs FDR (Fixed Deposit Receipt) is acceptable. If EMD more than 5Lakhs bank guarantee is also accepted.*
- b. *Technical pamphlets*
- c. *Detailed technical specification*
- d. *The agency should furnish copy of license certificate for manufacture/supply of the item**
- e. *The agency should furnish Income Tax PAN number & TIN number.**
- f. *The agency should furnish the last three years balance sheet approved by the CA and the IT clearance certificate.**
- g. *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.*
- h. *Duly filled up technical questionnaire, if any*
- i. *Duly filled up deviation schedules to technical specification*
- j. *Copy of supply orders completed during the last three years*
- k. *If the prices are revealed in the cover 1, the offer will be summarily rejected*

1.3 *The cover 1 shall be super scribed as ‘Technical cover’ duly indicating the Tender reference No. and the due date of opening.*

** Appropriately pertaining to the country of origin.*

1.3 Cover 2:

Cover 2 should contain the following

Cover 2 shall contain Price only and shall be super scribed 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 super scribed 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 super scribed with the tender reference no. and due date of opening.

Mention “Kind Attention: Dr.N.Ramesh Babu, Department of Metallurgical and Materials Engineering” 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 by email.

Section 2. “TERMS AND CONDITIONS FORM”

IMPORTANT: READ ALL 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 super scribed “**QUOTATIONS AGAINST TENDER NOTIFICATION No.: NITT/F.No: SIF-001/PLAN/2016-17/MME, . Item: FESEM with EDS and EBSD attachments**” so as to reach us **on or before 30/12/2016 by 1.00 p.m**
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 **30/12/2016 at 2.00 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 the taxes and duties applicable, 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.51/96 for 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.
8. The Institute is not authorized to issue C and D forms of Sales tax certificate.
9. 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.
10. If the price quoted is in foreign currency and if the order value is more than US\$10,000 then 100% payment will be made through **Letter of Credit (LC) at sight on acceptance.** If the order value is less than US\$10,000 , then 100% payment will be through a Telegraphic Transfer (TT). **The bank charges outside India should be borne by the Supplier / Beneficiary. Part shipment not allowed.** 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) will 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. The warranty period should be clearly mentioned. **The maintenance charges (AMC) under different schemes after the expiry of the warranty period should also be mentioned for 3 years.**
15. 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.
16. The delivery period and other terms should be clearly mentioned.
17. Eligibility: Quotation from registered firms/company's / manufacturer under TNGST/CST / other statutory bodies alone 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.
18. **The firm must have at least 5 installations of Schottky Field Emission SEMs within India for the desired experience of maintenance.**
19. Complete user, technical and service documentation, and spare parts catalogue are to be provided along with the supply of the item.
20. The vendors are informed that they should not call us over the 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.
21. Delay / loss in postal transit or due to other reasons will not be NIT-T's responsibility.
22. We are not responsible for accidental opening of the covers that are not properly super scribed and sealed before the time scheduled for opening.
23. The tender should be made only on the "Technical compliance form" & "Quotation form" which is available in our website, otherwise it shall lead to rejection. **The technical compliance form & PRICE BID 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.**
24. Authorized signatory should sign on all the pages. **Bids without authorized signatures will be rejected.**
25. The manufacturers of the quoted make of the product must be of national / international repute and having ISO /BIS certificate.
26. **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.
27. **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.**
28. Failure to comply with all the terms and conditions mentioned herein would result in the tender being summarily rejected.
29. 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.
30. **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 and funds availability at the time of ordering. Not quoting for optional items may result in disqualification.**
31. NIT-T reserves the right to modify or alter the specifications after short listing of tenderers.

32. NIT-T reserves the right to change the order quantity or split the orders among multiple vendors without assigning any reason(s) whatsoever.
33. NIT-T reserves the right to reject any or all the tenders without assigning any reasons whatsoever.
34. NIT-T reserves the right to purchase decreased number of quantity of the item to be purchased
35. 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.
36. The tender will be acceptable only from the manufacturers or its authorized supplier.
37. 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.
38. Details of quantity and the specifications are mentioned in Section 3 appended to this Notice Inviting Tender
39. 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.
40. 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.
41. In case of dispute, the matter will be subject to Tiruchirappalli, Tamil Nadu Jurisdiction only.

Release of EMD: The EMD shall 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.

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 :

“DETAILS OF THE FIRM OFFERING THIS QUOTE”

(Write or print or type in block letters and please answer all the questions)

- 1. Name of the firm?
- 2. Date of incorporation?
- 3. Nature of the company - Government / Public / Private Company / Partnership / Proprietorship:
- 4. Specify the number of years in this line of activity by the Company ::

5. Quantity of sales in the last three years for the “.....” (same model that you have quoted)?

2013-2014	2014-2015	2015-2016
<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Turn over in the last three years (Figures should be in Indian Rupees in Lakhs):

2013-2014	2014-2015	2015-2016
<input type="text"/>	<input type="text"/>	<input type="text"/>

7. Provide the postal address, telephone & fax numbers, and email address of the nearest service center.

8. A) 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) and B) Assured response time for service calls in hours:

A)

B)

9. What would be the delivery period in days from the date we place an official purchase order.

2. Enclose the list of customers to whom you have supplied “.....” during the last 3 years ending 23/03/2012 with full postal address and name of the contact person with phone, FAX numbers, and E-Mail id. Certificate regarding satisfactory performance of the “.....” from the minimum three end users should be furnished.

3. Are you the authorized dealer or distributor or reseller for the products quoted:

4. Have you supplied “.....” 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

5. 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.

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6. On Manufacturer's Side to whom NITT have to contact in case of delayed 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

Name of the Component to be procured	: FESEM with EDS and EBSD attachments
Specifications	: Refer Annexure I
Quantity	: One unit with all attachments, accessories and spares as per Annexure 1.
Any other details/requirement	: Refer Annexure I
Warranty period required	: Minimum 3 years warranty should be provided for a continuous operation of the machine, attachments and accessories from the date of acceptance and inspection at NIT, Trichy
Delivery schedule expected after release of purchase order (in weeks)	: 12 Weeks from the date of receipt of purchase order, the order are to be dispatched to NIT, Tiruchirappalli.
EMD (in Rupees)	: Rs. 6,00,000/-
Performance Security to be given by Successful bidder after release of purchase order (in Rupees)	: 10 % of the equipment Cost

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(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. 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) :

- 11. **Submit the Price bid format as given in Annexure II**

Signature of the Bidder :

Name and Designation :

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

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

Annexure I

Specification for Field Emission Scanning Electron Microscope:

Sl. No	Specification	
1.	Essential scope of the supply and Specifications	FESEM instrument must be the state of art, computer controlled user friendly system for high resolution imaging of metallic, non-metallic, ceramics, crystals, thin films, polymers, metal oxides etc. of micro to nano scale dimensions, which will be either coated/uncoated while imaging. The FESEM should have STEM, EDS and EBSD capability. The FESEM, STEM, EDS and EBSD must have the following technical specification:
2.	Electron gun	Field emission electron source Schottky FEG
3.	Resolution	0.8 nm or better at 15 kV and 1.2 nm or better 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.
4.	Acceleration voltage	≤ 0.2 kV to 30 kV continuously adjustable
5.	Chamber	Large chamber with at least 7 accessory ports. Anti-vibration table must be inbuilt.
6.	Magnification	≤25X to 1,000,000X or more. Minimum and maximum magnification should be specified
7.	Probe current	Suitable for all applications, and should be up to 100 nA or higher.
8.	Specimen stage	PC controlled fully eucentric 5 axis motorized stage movements equivalent to X ≥ 110 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. Store and recall of sample position functions to select features, centre and zoom selected feature, multidirectional stage drive, compucentric rotation.
9.	Multi Specimen holder	Suitable for loading many specimens (≥ 5); 70 degrees pre-tilt holders-5 nos; Cross sectional sample holders – 1 No Stubs-50 Nos.; STEM Holder-1 No
10.	Removal of sample contamination	Plasma cleaner to be provided
11.	Detectors	In-chamber SED (Everhart-Thornley). Independent In lens/In column Secondary Electron Detector (SED) or equivalent.; Independent 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. EBSD detector. WDS detector (Optional)
12.	Camera	Camera (IR-CCD) or suitable device to view the samples and stage inside the chamber.

13.	Non conductive samples/Magnetic samples	Should be capable of imaging non-conducting samples without conductive coatings. Should be capable of imaging magnetic samples at higher magnifications Provide the details of magnification and resolution.
14.	User Interface	Keyboard, Mouse, Control Panel with multifunction for the control and adjustment of frequently used SEM parameters, Manual Joystick control for stage axis.
15.	Electron Optics	Beam deceleration technology or equivalent for high resolution imaging at low kV. Ease of operation is desired.
16.	Vacuum system	Fully automated microprocessor 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. Suitable vacuum system equipped with ion pumps, turbo-molecular pump & rotary pump. Pump down time should be less than 5 min
17.	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; Laser printer with duplex printing at 20 ppm It should have the following capabilities: a. Design of the imaging and processing should be optimized for field emission scanning electron microscopy b. Image Frame Size: Selectable up to pixel density of 4096 x 3536 or better c. Frame averaging for up to at least 250 frames d. Line averaging for up to at least 250 lines e. Combination of Pixel and Frame averaging f. Combination of Pixel and Line averaging g. Image post-processing h. 4 detector inputs and signal mixing or above, extendable up to 8 detector inputs Image Display a. 23" high end LED screen or better b. Standard data zone includes magnification, working distance, EHT, scalebar and date Custom data zone c. Multiple point-to-point and line width measurement systems freelyadjustable for orientation d. Line profile display e. Images can be viewed live, averaged or integrated Image Storage a. 2 TB hard disk or better b. Front panel USB ports. CD/DVD recorder c. Storage of SEM images on hard disk in standard TIFF, BMP, orJPEG Formats and in 8-bit or 16-bit depth d. Operating conditions easily stored and file management through Microsoft® Windows operating system
18.	Sample Exchange	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.
19.	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.

		<p>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.</p>
20.	Computer	<p>Intel i7 processor, 2 TB HDD, 16 GB RAM, 2 Gb Nvidia graphics card, three year warranty including parts and labor. Windows 7 or higher compatible OS to operate FESEM and all attachments. All the computers for FESEM, EDS-EBSD must be imported /factory fitted and tested with pre-loaded softwares for operating these systems.</p>
21.	Software	<p>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. Software for controlling and analyzing the detectors chosen along with the FESEM should be provided.</p>
22.	User Interface	<p>Operational keyboard to control and adjustment knobs for frequently used SEM parameters (focus, magnification, etc.)</p>
23.	Energy Dispersive X-ray Detector	<p>Latest Integrated FET technology based Peltier Cooled Silicon Drift Detector with Ultra dry detector with 30 mm² crystal area or higher detector area and with a resolution of ≤ 125 eV or better Mn Kα @100,000 cps .</p> <p>At the installation site, the detector should also show ≤ 70 eV at F-Kα and 60 eV \leq C-Kα at 100,000 cps, as per established ISO norms.</p> <p>The detector should have a Super Ultra-Thin Window for better light element performance and capability to detect from (Be) to Uranium (U)..</p> <p>Supplied EDS server & analysis 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 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>All these capabilities should be applicable for polished flat specimens, fractured samples and nanostructured particulate systems.</p> <p>User interactive qualitative and standard less/ standards based quantification with K, L, M, N line database. Real time elemental mapping with auto elemental identification, quantification based on ZAF, PhiZAF.</p> <p>Should have quantification algorithm for uneven surfaces and under tilted conditions</p> <p>Pile up correction and background noise reduction, simultaneous imaging and analysis should be possible.</p> <p>Thin film analysis software with nanometer scale resolution in both space and depth capabilities should be quoted.</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 SI. No 20.</p>
24.	Wavelength Dispersive Spectrometer (WDS) (Optional)	<p>Data acquisition facility in the form of ASCII values of the WDS spectra.</p> <p>Appropriate crystals should be incorporated in the given configuration to cover the elemental range from Be to U□</p> <p>Automatic and fast crystal change should be possible Rowland circle of diameter 100 mm or greater</p> <p>The WDS detector should have a mechanism of protection from any kind of damage by contact with specimen or specimen stage.</p> <p>P10 gas filled cylinders (2 Nos.) to be supplied.</p>
25.	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 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 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. 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>
26.	STEM Detector	<p>The scanning transmission electron microscope (STEM) detector should be capable of detecting bright-field (BF) and dark-field (DF) signals generated by a thin specimen.</p> <p>b. The detector must be automatically inserted into the chamber by a pneumatically driven mechanism.</p> <p>c. The device should consist of a multi hole sample holder, and separate diodes for the BF and DF detection.</p> <p>d. Switching between BF and DF detection mode must be possible at any position of the sample.</p>

		e. The generated signals should be mixed using the GUI.
27.	Essential Accessories	<ul style="list-style-type: none"> • Chiller. Specify the manufacturer and model for chiller. • Compressor. Specify the manufacturer and model for compressor. • Chiller and compressor to be supplied from a reputed manufacturer. • Interface among FESEM, STEM, EDS and EBSD. • Filaments should be supplied and installed without any additional cost as and when they are required up to warranty period of 3 years. It is the responsibility of the supplier to store the filaments and provide it within a short period time. • Cost of the 3 additional filaments (coupons/vouchers valid for ten years) to be quoted for using after the warranty period. • Tools necessary for emitter exchange to be supplied. • 50 number of single stubs and 10 number of multiple sample holders • 5 sets of aperture strips of 10, 20,30,40,50 microns.
28.	Calibration	Standard samples to check system calibration i.e., magnification etc. should be supplied along with the system.
29.	Diagnostic support	Remote diagnostics with internet connectivity with the manufacturer to solve hardware and software issues at site (NIT Trichy).
30.	Power Backup	15 kVA UPS with 2 hour backup for FESEM, chiller and other accessories.
31.	Electron Optics	Beam Deceleration/Gentle Beam/Beam Booster technology or equivalent for high resolution imaging at low kV.
32.	Accessories	The year warranty (not including the down time) including parts and labor
33.	Chamber visualization system	There should be provision to see live positions of detectors and sample.
34.	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
35.	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.
36.	Environmental requirements	Necessary environmental requirements, i.e., temperature, humidity etc during the operation of FESEM/EDS system should be specified clearly. .
37.	Warranty Training and Service Support	<p>Three years comprehensive on-site warranty should be offered for entire offered configuration of FESEM, all attachments and accessories.(after successful commissioning and installation of the equipment).</p> <p>3 years warranty includes for both parts and labor (not including the down time) for FESEM and all attachments and accessories also. Warranty applicable to chiller and compressor for 3 years (not including the down time) for both parts and labor.</p> <p>Warranty should start from date of installation.</p>

		<p>Service response time, turn-around time & up-time of the equipment should be clearly specified.</p> <p>Necessary on-site training must be provided.</p> <p>Service response time must be less than 72 hours</p> <p>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 1-year 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 service are to be included in the quote. The on-site engineer should be not only trained in operating, he should be as well as capable of installation and maintenance requirements for smooth uninterrupted functioning of the FESEM</p> <p>The FESEM must have provision for on-line diagnosis of faults. Suitable service facility for computer hardware or software related problems should also be provided.</p>
38.	Compliance Statement	<p>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.</p> <p>Features not matching – must be clearly indicated.</p> <p>Additional features and features in the quoted equipment which are better than those in the tender – may be clearly explained.</p> <p>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</p> <p>Compliance statement needs to be provided by vendors clearly specifying COMPLY/DO NOT COMPLY for all items with REMARKS.</p>
39.	Required Documents along with technical specifications	<p>For the equipment quoted, the supplier must provide:</p> <p>a. List of at least 5 users in India, with (exactly) similar systems installed preferably in last 5 years.</p> <p>b. 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.</p> <p>c. The supplier should provide calibration/traceability certificate of the equipment as per National institute of Standards & Technology (NIST)/National Physical Laboratory (NPL) UK / United Kingdom Accreditation System (UKAS) preferably.</p>
40.	Terms and conditions	<p>(a) A single order will be processed for the entire configuration.</p> <p>(b) The firm has to guarantee support for both system and spares for a minimum period of 10 years.</p> <p>(c) Provision for on-line remote diagnosis of faults.</p> <p>(d) The firm must have at least 5 installations of Schottky Field Emission SEMs within India for desired experience of maintenance.</p> <p>(e) Free training on different applications to selected users.</p> <p>(f) Compliance of all listed specifications/terms and conditions sheet should be indicated by the vendors in tabular form.</p> <p>(g) Date of manufacturing of the equipment should be after the placement of order.</p> <p>(h) Break up of price for optional items should be shown separately in the price bid.</p>

41.	Installation and training	<p>Pre-installation/post-installation and training expenses (including travel, boarding and lodging) should be born by the supplier.</p> <p>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.</p> <p>It is the supplier's responsibility to clearly provide details of the above mentioned requirements before 120 days of delivery of the equipment.</p> <p>Consumables for 3 years</p>
42.	Note to the bidders regarding technical bid:	<p>Price related information to be given only in price bid cover, not in the technical bid cover.</p> <p>If any feature not mentioned/left over in the technical bid by the bidder, the same will be presumed to be absent without any further references to the bidder/vendor. No further discussion with the bidder can be entertained.</p> <p>All the quoted technical features must be demonstrated after installation with quoted precision. Otherwise, the equipment must be returned to factory with suppliers cost and the money paid, if any, for the equipment by NITT should be paid back.</p> <p>Mention clearly the service, installation and personnel training. Provide sufficient information about your after-sale service capabilities/man power and a list of customers possessing similar equipment, preferably in south India.</p> <p>Equipment Model and make to be mentioned; brochures must be provided along with the technical bid.</p> <p>All technical features must be equal to the given NITT specification or higher and better than the given specifications. NITT specification committee decision will be final for technical specifications.</p>
46.	Warranty period required (Years)	Three years

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Annexure-B

PRICE BID FORMAT FOR INDIAN BIDDERS

Tender No. & Date:

Sl 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	Supply portion (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) in percentage (or) Lumpsum							
5	FOR Dispatching station value in Rs.							
6	Freight & Transit insurance charges, extra, if any (Lumpsum or %)							
7	Total all inclusive price delivered, installed and commissioned at NITT							

Signature & Seal of Vendor

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" The price bid will be rejected if any column is left empty.