

**KANNUR UNIVERSITY**  
THAVAKKARA, CIVIL STATION P.O.,  
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**NOTICE INVITING E-TENDER**

The Registrar, Kannur University invites e-tender(s) in **Two Bid System (Two cover)** for the Supply, Installation, Testing and Commissioning of **Field Emission Scanning Electron Microscope (FE-SEM)** at the Scientific Instrumentation Centre, Swami Ananda theertha Campus, Payyannur, Kannur (under PM USHA scheme), from **original equipment manufacturers (OEMs) or authorized distributors/dealers** as per the technical specifications and schedule given below. The rate quoted should be inclusive of all taxes, installation charges and other charges. **The Registrar, Kannur University reserves the right to accept or reject the tenders without assigning any reason thereof.** The list of equipment/accessories proposed to be purchased, including its quantity and specifications are furnished in the schedule of items given below. Since this is an e-tender, only those bidders who have enrolled in the **<http://etenders.kerala.gov.in>** portal with their own Digital Signature Certificate (DSC) can participate in the tender. E-Tender document and other details can be obtained from the above e-portal.

**TENDER SCHEDULE**

<b>E-tender I D</b>	<b>2025_KnrU_792303</b>
<b>Description of Work</b>	<b>Supply, Installation, Testing and Commissioning of Field Emission Scanning Electron Microscope (FE-SEM)</b>
<b>Pre-bid meeting</b> date, time and place	<b>16.09.2025, 3.00 PM</b> Kannur University Headquarters Thavakkara, Civil Station PO, Kannur, Kerala - 670002
<b>Start date and time</b> for online submission of e - Tender	<b>19.09.2025, 3.00 PM</b>
<b>Last date and time</b> for online submission of e - Tender	<b>15.10.2025, 11.00 AM</b>
<b>Date and time of tender opening</b>	<b>17.10.2025, 3.00 PM</b>
Tender fee ( <b>Excluding GST</b> )	<b>₹ 25,000</b>
Earnest Money Deposit (EMD)	<b>₹ 3,30,000</b>
Place of supply and installation	<b>Scientific Instrumentation Centre, Swami Ananda theertha Campus, Payyannur, Kannur, Kerala - 670327</b>

For further details, logon to <http://etenders.kerala.gov.in>

## SPECIFICATION OF THE EQUIPMENT

Sl No.	Name of the equipment	Required quantity
1	Field Emission Scanning Electron Microscope (FE-SEM) with EDS and Gold Coater	1

Sl. No.	Features	Requirement
1	Resolution Performance in high vacuum operation mode:	$\leq 1$ nm at 15kV - 20 kV in Secondary Electron Image. $\leq 3$ nm at 1 kV – 3 kV in Secondary Electron image.
2	Resolution Performance in low vacuum operation mode:	$\leq 1.8$ nm at 15kV - 20 kV or better.
3	Analysis Performance:	$\leq 3$ nm at 15 kV – 20kV with working distance 10 mm.
3	Electron Source:	FESEM should be equipped with Schottky type Field Emission Electron Source. FEGUN source should be warranted for five years.
4	Accelerating voltage:	It should be continuous and starting range from 500V - 30 kV or better should be offered.
5	Probe Current:	It should be continuous from a few $\leq 10$ pA to $\geq 200$ nA should be offered.
6	Operation Mode:	<ul style="list-style-type: none"> <li>Instruments should be capable of working in Both High Vacuum and Low Vacuum operating mode.</li> <li>Vacuum modes should be freely switchable between high vacuum and low-vacuum modes without any mechanical aperture or alignments.</li> </ul>
7	Image Magnification	Image magnification should be $\geq 5,00,000\times$ .
8	Imaging Detectors to be supplied with FESEM	<ul style="list-style-type: none"> <li>High Sensitivity E.T. Detector should be offered for surface morphology.</li> <li>Semi-conductor type Back Scattered Electron Detector capable of forming composition image, topographic image and shadow image with capability for digital signal manipulation through software. BSE should work for the entire working distance and should be capable of working both in HV and LV operating modes.</li> </ul>
		<ul style="list-style-type: none"> <li>Liquid nitrogen free Dry Silicon Drift Detector (SDD).</li> <li>Energy resolution <math>\leq 129</math> eV or better at Mn-K<math>\alpha</math>,</li> <li>Detection area should be <math>\geq 30</math> mm<sup>2</sup> for handling high count rates.</li> <li>Elemental analysis (point and line) and elemental mapping</li> </ul>

9	Analysis detector – EDS to be supplied with FESEM	<p>with imaging facility.</p> <ul style="list-style-type: none"> <li>• The EDS detector should be capable of elemental analysis from Boron (B) to Uranium (U).</li> <li>• EDS system should have function to confirm whether the constituent elements are correctly identified in the qualitative analysis result. A spectrum should be reconstructed based on the X-ray intensity of the elements identified.</li> <li>• For long data acquisitions, the EDS system should periodically compare the FESEM image at analysis start with the current image, so as to maintain the same analysis area. This is to monitor any change in a specimen or specimen drift during long acquisitions.</li> <li>• The system should allow for image processing during a map acquisition to signal to noise ratio. This feature provides fast confirmation of the elemental distribution.</li> <li>• Automatic serial analysis should be possible by specifying multiple areas in advance.</li> </ul>
10	Vacuum system	<ul style="list-style-type: none"> <li>• Turbo molecular pump backed up by rotary pump to provide ultraclean, fast vacuum. It Should be freely switch between high vacuum and low-vacuum modes without involving any mechanical aperture and alignments.</li> <li>• Dedicated battery back-up power supply with good battery backup should be supplied for field emission gun to manage full day power shut down if any. This is in addition to the below external UPS for whole system.</li> </ul>
11	Pressure Range	Pressure in Low Vacuum mode should be up to $\geq 150$ Pa.
12	Eucentric Specimen Stage control	<p>5-axes motorized mechanically fully Eucentric stage. The Stage should be Eucentric over entire working distance to allow specimen tilt without shift in focus or area of interest and auto Z focus to keep image focused even if stage Z position is altered.</p> <ul style="list-style-type: none"> <li>• X-axis: <math>\geq 100</math> mm should be offered.</li> <li>• Y-axis: <math>\geq 100</math> mm should be offered</li> <li>• Z-axis: <math>\geq 70</math> mm should be offered</li> <li>• Tilt-axis: <math>-10^{\circ}</math> to <math>+70^{\circ}</math> should be offered</li> <li>• Rotation: <math>360^{\circ}</math> continuous.</li> </ul>
13	Specimen Chamber Size	Specimen Chamber should be capable of accommodating sample $\geq 200$ mm diameter and $\geq 70$ mm in height or more with all 5 - axis stage movements.
14	Number of Ports	Sufficient ports should be available for future upgrades to therequired detectors. Total ports must be more than 5 numbers.
		Stage Navigation System must be supplied to move to an area of interest easily and quickly by locating the ROI from a colour image on the monitor.

15	Stage Navigation System	<p>The Stage Navigation system should have following features:</p> <ul style="list-style-type: none"> <li>• Seamless transition from optical to SEM image.</li> <li>• Pre-set multiple analysis positions across your specimen set.</li> <li>• Display the areas analysed for easy review or fast return for additional study.</li> </ul>
16	Montage	<ul style="list-style-type: none"> <li>• Automated large-area observation and analysis using Stage navigation system. Montage should allow to analyse materials over large areas (for foreign materials, ductile or brittle fracture, etc.).</li> <li>• Stage navigation system should allow to set up one or more montage areas for imaging and EDS analysis. All the functions such as tilt Correction, Field Overlap and Autofocus Point Setting functions should be performed automatically.</li> </ul>
17	Microscope Control	All microscope functions should be controlled by keyboard, mouse and touch screen monitor via windows-based software.
18	Auto functions (Operational Controls)	<ul style="list-style-type: none"> <li>• Vacuum control</li> <li>• Gun alignment, bias and saturation</li> <li>• Compensation for kV.</li> <li>• Probe current optimized for Spot size</li> <li>• Spot size optimized for magnification</li> <li>• Contrast and brightness</li> <li>• Focus and Stigmator</li> </ul>
19	Image display and processing	<ul style="list-style-type: none"> <li>• 23 inch or better monitor for image display (Display Resolution: 1920 x 1080 or better)</li> <li>• Up to 4k X 3k pixels or better, adjustable separately for live image (3 standard BMP, TIFF and JPEG formats) and for stored images</li> <li>• Graphical User Interface (GUI) of at least 4 live images in a split window for Simultaneous detection and viewing of SE, BSE,, etc. operable with touch screen monitor.</li> <li>• Multiple user login function for customized workspace and specimen condition settings</li> <li>• A full screen display of the live image should be possible.</li> <li>• Signal mixing of SE and BSE images to enhance image qualities.</li> <li>• Displaying generation depth of signal should be built in.</li> <li>• Software for effective understanding the element results generated.</li> <li>• Brightness and contrast correction, sharpening, etc.</li> <li>• Measurement: Phase Area, length, count.</li> <li>• Multi image calibrator &amp; Shape Factor</li> <li>• Noise reduction by average or integration method</li> </ul>

20	Workstation for FESEM and EDS System.	Windows-based work stations should be delivered with all required software installed at the factory on Windows 11 operating system or latest.
21	Sample Preparation equipment.	A fully automated gold coater unit inclusive of all the installations required vacuum pump should be supplied for trouble-free operation. One additional gold target should be supplied.
21	Accessories	1. Carbon tape 2 Nos. 2. Multi Specimen Holder 1 No. 3. Specimen Stubs – 50 Nos 4. Suitable UPS with 01 hr Backup. 5. Technician support for two years should be provided.
22	Guarantee/Warranty/Assurance	<b>Five-year OEM brand warranty</b> on all components & subcomponents should be provided. Dealer and distributor warranty will not be accepted.

### Terms and Conditions

1. The tender fee and EMD should be remitted online (SBI MOPS), as indicated on the e-tender website. **The 18% GST on the tender fee must be remitted directly to the GST department by the bidder.**

Sl. No	Equipment	Tender Fee in Rupees (₹)			EMD (₹)
		Excluding GST	GST (18 %)	Total (₹)	
1	Field Emission Scanning Electron Microscope (FE-SEM)	₹ 25000	₹ 4500	₹ 29500	₹ 330000

2. All the MSMEs with Udyog Aadhar Registration or any other body specified by the Ministry of Micro, Small and Medium Enterprises **working within the state of Kerala will be exempted from the payment of Tender Fee and EMD.** Only Manufactures for Goods and Service Providers for Services are eligible for EMD/Tender fee exemption under MSME category.

3. Custom Clearance of the consignment including all the stages of custom clearance will be under the purview of supplier.

4. The tender should be submitted in two cover system (Technical bid & Financial bid).

5. The successful bidder shall, before signing the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to **5 % of the value of the contract** by way of Demand Draft drawn in favour of the Finance Officer, Kannur University payable at SBI Kannur Branch or Kannur Branch of other Nationalized or Scheduled bank, **as performance security** for the satisfactory fulfilment of the contract.

6. The bidder should be registered company/firm. Certificate of incorporation/Company registration certificate/Memorandum and Articles of Associations/Valid GST registration certificate/Valid Income tax registration certificate/Valid Service tax registration certificate should be uploaded/submitted along with the tender.

7. The bidders shall keep their rate firm for a period of **120 days**.

8. Profile of Bidder as per Annexure 1 shall be provided.

9. The bidder should have the responsibility to attend the first level service if any complaint report. The bidder should provide minimum one preventive maintenance during warranty period. Relevant documents or undertaking signed by the personnel with address and contact person's name, phone no, and URL of complaint logging website to be submitted in case, if the bidder doesn't have their own service centre in Kerala and the bidder authorize another service centre/service engineers for attending service.
10. The earnest money deposit (EMD) of the unsuccessful bidders will be returned through ONLINE Transaction and the EMD of successful bidders will be discharged upon the bidder executing the contract and furnishing the security deposit that will have to be deposited for the satisfactory fulfilment of the contract.
11. Forfeiture of EMD:
- (i) If any bidder withdraws from his tender before the expiry of the bid validity period specified **or**
  - (ii) in case after being successful bidder, he/firm fails to sign the contract, and to furnish the performance security.
12. The bid shall contain detailed technical specifications, Brochures and pamphlets of the item/items quoted.
13. All the claimed specifications (make, model, year of manufacture, warranty etc.) should be mentioned in the Brochure or Catalogue of the equipment.
14. All charges, taxes, duties and levies should be clearly indicated and the rate tendered should be inclusive of all taxes and other charges.
15. The installation, commissioning and the initial operation will be the responsibility of the supplier.
16. In case of under performance during the warranty period, the item should be replaced and the period of warranty will recommence from the date of replacement.
- 17. The payment will be made after completion of supply, installation and commissioning.**
18. The final acceptance of the tenders rests entirely with the Kannur University who do not bind themselves to accept the lowest or any tender.
19. Communication of acceptance of the tender normally constitutes a concluded contract. Nevertheless, the successful bidder shall also execute an agreement for the due fulfilment of the contract within the period to be specified in the letter of acceptance. In cases where a successful bidder, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Registrar, be purchased by means of another tender/quotation or by negotiation or from the next higher bidder who had offered to supply already and the loss, if any, caused to the University shall thereby together with such sums as may be fixed by the University towards damages be recovered from the defaulting bidder.
20. The bidder shall undertake to supply materials according to the standard sample and /or specifications.
21. No representation for enhancement of rates once accepted will be considered.
22. The prices quoted should be inclusive of all taxes, duties, cess etc., which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during the course of execution of the contract.
23. Special conditions, if any, of the bidders attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.
24. The bidder shall quote their rate in the standard BOQ provided, indicating the break up details.
25. The provisions of Kerala Stores Purchase Manual are applicable to this Tender and further proceedings.
26. The University reserves all rights to accept or reject any or all the tenders without assigning any reason whatsoever at its discretion.
27. The bids shall be opened online at Kannur University on the date mentioned in Invitation Bid. If the date fixed for opening happens to be a holiday/due to net failure/ due to technical issue, the tenders will be opened on the next working day, at the same time.
28. Prices shall be quoted in Indian currency only.
29. Bidders must not be blacklisted by any Government or Public Sector Undertaking (PSU).
30. The bidder must have completed minimum of two such installations in any Government Organization/

Public Sector Undertakings/ Educational Institutions in India within last 5 years.

31. Spare/ accessory support for a minimum period of 10 years should be provided by the supplier.

32. If the date fixed for the pre-bid meeting happens to be a holiday or if it is postponed due to technical issues, the meeting will be convened on the next working day at the same time.

**GST No. of Kannur university : 32AAAGK0152J1ZT**

**DOCUMENTS TO BE SCANNED AND UPLOADED**

1. Bidder Profile (as per format mentioned in Annexure 1)
2. Bid Particulars (as per format mentioned in Annexure 2)
3. Scanned copy of valid registration certificate (GST) & PAN Card
4. Scanned copy of relevant Brochure of the equipment including make & model and copy of its certifications like ISO certification.
5. MSME Firms - Upload MSME certificate/ UDYAM registration certificates (Refer T&C No. 2).
6. Valid authorization certificate from OEM (in case of resellers)
7. Warranty certificate/details
8. Details of Service Centres in India
9. Non blacklisting declaration by the bidder
10. Details of previous installations in India within last 5 years. (Refer T&C No. 30)
11. Declaration regarding Spare/Accessory Support
12. Other certificates/declarations

Sd /-

Prof. (Dr.) Joby K Jose

Registrar

**ANNEXURE 1****BIDDER PROFILE**

Sl.No.	Particulars	
<b>Details of bidder (Firm/Company)</b>		
1	Name	
2	address	
3	Telephone & Mobile Number	
4	Email & website	
<b>Details of Authorized Person</b>		
5	Name	
6	Address	
7	Telephone & Email	
<b>Information about the company</b>		
8	Status of Company (Public Ltd. / Pvt. Ltd)	
9	Details of Registration of Firm (Provide Ref.)	
10	Number of Professionals	
11	Location and address of offices (in India & overseas)	
12	Service Tax Registration Number	
13	Income Tax Registration Number(PAN)	
14	GST Registration Number	

**Signature of the Bidder**

## ANNEXURE 2

### TECHNICAL BID (BID PARTICULARS)

1. Tender Number :-----
2. Name of the Bidder :-----
3. Full Address of the Bidder :-----
4. Name of the actual signatory of the  
product(s) offered :-----
5. Bidder's proposal number and date :-----
- 6 . Name & Address of the officer to  
whom all references shall be made  
regarding the Tender :-----

Telephone :-----  
Mobile :-----  
E-mail :-----

Bidder Signature Name -----  
Designation -----  
Company -----  
Date -----