

Field Emission Scanning Electron Microscope (FESEM) - Tender Notification

Name of the Equipment: Field Emission Scanning Electron Microscope (FESEM)

Date of Publishing: 16 July 2026

Last Date and Time for Receipt of Queries/Clarifications: 24 July 2026

Last Date and Time for Submission of Bid: 31 July 2026

Eligibility Criteria:

- Tenderer should be the manufacturer/ authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) specific to the tender should be enclosed.
- An undertaking from the OEM is required stating that they would facilitate the tenderer on a regular basis with technology/product updates and extend support for the warranty as well.
- OEM should be a Nationally/Internationally reputed company.

Notice Inviting Quotation (E-Procurement Mode)

Sub: Notice Inviting Tenders for procurement of Field Emission Scanning Electron Microscope (FESEM) for microstructural, elemental, and crystallographic analysis of metals, ceramics, polymers, composites, thin films, and nanomaterials.

SRM University-AP invites tenders from reputed Manufacturers/Authorized Dealers/Tenderer for procurement of above-mentioned item. All interested vendors are requested to send their bid for supply of the above item as per details technical specification given below and as per the Bid Submission table given. No manual bids will be accepted. All quotation (both Technical and Financial should be submitted in the SRM-AP E-procurement portal). The Important information related to tender are as follows:

Date of Publishing	16 July 2026
Last date and Time for receipt queries	24 July 2026
Last date for submitting of Bids	31 July 2026
Technical queries	pranab.m@srmap.edu.in
Commercial queries / Bids submitting to	SRM University – AP, Andhra Pradesh Portal
Bid validity Days	90 Days (From the last date of opening of Tender)
Number of Quantity	01 Nos
Warranty	Warranty for Three years and should cover overall hardware / software

Annexure:

Detailed Specifications.

Essential Specifications:

Field Emission Scanning Electron Microscope instrument must be of high resolution with Schottky Field Emission type electron source. The instrument with latest technology and must have the computer-controlled user-friendly system for high resolution imaging of oxide ceramics (insulating), polymer composite, nanomaterials, metallic, non-metallic, alloys, magnetic, and nonmagnetic crystals, thin films metal oxides, cements etc. of micro to nano scale dimensions, which will be either coated/uncoated while imaging. The FESEM should have EDS and EBSD capability.

The instrument must have the following minimum technical specifications:

IMPORTANT NOTICE TO VENDORS:

This document defines the MINIMUM mandatory technical requirements for the Field Emission Scanning Electron Microscope (FESEM) System with integrated EDS and EBSD to be procured for SRM University-AP under the DST-FIST program. Vendors must confirm in writing (as a point-by-point compliance statement) that their offered system meets or exceeds each specification below. Any specification marked MANDATORY must be fully complied with. Non-compliance with any MANDATORY specification will result in technical disqualification.

Sl. No	Parameter	Minimum Requirement	Unit	Notes/ Compliance
PART – A: Field Emission Scanning Electron Microscope (FESEM) with Accessories				
A. ELECTRON SOURCE & OPTICS				
1	Electron Source	Field emission gun with continuous Schottky field emitter source or equivalent advanced field emission technology	--	MANDATORY
2	Accelerating Voltage Range	0.1 kV or lower to 30 kV or higher Continuously adjustable.	kV	MANDATORY
3	Resolution (High Vacuum, Secondary Electron Mode)	0.7 nm or better at 15 kV 1.2 nm or better at 1 kV <i>Specified resolution shall be achievable using the standard supplied configuration without optional hardware and shall be demonstrated during Site Acceptance Testing (SAT) in accordance with ISO/TS 24597 or an equivalent internationally accepted methodology.</i>	nm	MANDATORY
4	Low-kV imaging	Support advanced low-kV imaging (Beam Deceleration, Gentle Beam, or equivalent technology) to minimize charging, improve surface sensitivity, and enable high-quality imaging of conductive, non-conductive, magnetic, polymeric, and composite materials.	--	MANDATORY
5	Lense system	Advanced hybrid electron optical system (or equivalent) with optimized objective lens design for high-resolution imaging of magnetic and non-magnetic materials. Single condenser lens with cross-over free beam path is preferable.	--	MANDATORY DESIRABLE

6	Probe / Beam Current Range	10 pA or lower to 100 nA or higher; continuously variable. Current stability 0.2% per hour, or better 300 nA or higher as an option. Several beam defining apertures is preferable.	pA – nA	MANDATORY MANDATORY DESIRABLE DESIRABLE
7	Magnification Range	Minimum 20x to 2,000,000x or better	--	MANDATORY
B. VACUUM SYSTEM				
8	Vacuum Type	Entirely oil-free differential vacuum system. Turbomolecular pump (TMP) backed by a dry (oil-free) roughing pump. Ion Getter Pump (IGP) or equivalent UHV pump dedicated to the Field Emission Gun (FEG). Automatic isolation valves and safety interlocks for electron source protection during specimen exchange and abnormal operating conditions. - Chamber pressure better than 10⁻⁴ Pa / 4 x 10⁻⁶ mbar - Computer controlled automated differential vacuum/ monitoring system. - Automatically operated pneumatic column isolation valve.	--	MANDATORY
C. CHAMBER & SPECIMEN STAGE				
9	Chamber Ports	Minimum 8 available accessory ports for installation of EDS, EBSD and future analytical accessories.	--	MANDATORY
10	Stage Type	Fully motorized 5-axis eucentric specimen stage (X, Y, Z, Tilt and Rotation) with software-readable and reproducible stage coordinates.	--	MANDATORY
11	Stage control	Computerized and manual with joystick	--	MANDATORY
12	XYZ Travel Range	Minimum X = 100 mm; Y = 80 mm; Z = 40 mm	mm	MANDATORY
13	Tilt Range	-5° or lower to +70° or higher	degrees	MANDATORY
14	Rotation	360° continuous	degrees	MANDATORY
15	Sample holder & Specimen size	Multi-specimen holder capable of accommodating at least eight standard specimens or equivalent. Specimen chamber shall accommodate specimens of at least 175 mm diameter and 50 mm height while permitting installation of the specified analytical detectors.	--	MANDATORY
17	Working distance	Working distance shall support all imaging and analytical modes (including EDS and EBSD) over the specified accelerating voltage range, with a minimum range of 4 mm (or lower) to 40 mm (or higher). Automatic compensation for accelerating voltage and working distance shall be provided.	--	MANDATORY
18	Integrated Plasma Cleaner	Fully integrated in-situ RF or equivalent plasma cleaner with automatic chamber cleaning.	--	MANDATORY
19	Load Lock	Integrated load-lock chamber for rapid specimen exchange while maintaining high vacuum in the electron column and minimizing chamber contamination.	--	MANDATORY
D. DETECTORS				
20	Secondary Electron (SE) Detector	Chamber-mounted Everhart-Thornley type secondary electron (SE) detector	--	MANDATORY
21	In-Lens, In-Column Detectors	High-efficiency in-lens or in-column secondary electron detector (or equivalent technology) high-resolution surface imaging at low kV.	--	MANDATORY
22	In-lens Backscattered Electron (BSE) Detector	Backscattered Electron (BSE) detector (solid-state, in-column, in-lens or equivalent technology) for compositional and crystallographic contrast imaging.	--	MANDATORY
23	Chamber / Navigation Camera	Integrated CCD camera with IR illumination for in-chamber sample viewing	--	MANDATORY

24	Specimen Current Monitor / Touch Alarm	Integrated probe-current measurement and touch-alarm safety feature	--	Desirable
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E. FUTURE UPGRADES

25	Future Upgrades	The specimen chamber and electron column shall be compatible with future field-installable analytical accessories, including WDS, cathodoluminescence (CL), and other commercially available analytical modules. Future upgrades shall be field-installable by the OEM without replacement of the FESEM column or specimen chamber. Stage and chamber shall be compatible with commercially available in-situ heating stages.	--	Desirable
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F. SAMPLE PREPARATION KIT & ESSENTIAL ACCESSORIES

26	Sputter Coater	Fully automatic sputter coater capable of continuous operation. Planetary rotation and tilting of stage. All necessary accessories including vacuum pump, and sputter targets (Gold and Pt-Pd targets 1 each)		MANDATORY
27	Chiller System	OEM-approved recirculating chiller with adequate cooling capacity and low-vibration operation, if required for the quoted system.		Air Cooled DESIRABLE
28	Air Compressor	OEM-approved oil-free air compressor with dryer and accessories, if required for the quoted system.		DESIRABLE
29	Standard Specimen Holders	Standard specimen holders for bulk, pin-stub. Cross-sectional sample holders.		Mandatory
30	Multi-specimen Holder	Multi-specimen holder accommodating at least 8 standard pin stubs.		DESIRABLE
31	FESEM Calibration Standard	Certified SEM calibration standard for resolution, magnification and dimensional calibration.		Mandatory
32	Consumables	50 aluminium stubs and 200 conductive carbon tabs or equivalent		DESIRABLE
33	Maintenance Tool Kit	Complete OEM-recommended maintenance and alignment toolkit for routine user maintenance.		Mandatory
34	Utilities & Interface Accessories	All pumps, controllers, interface electronics, power supplies, cables, connectors and accessories required for complete installation, commissioning and operation of the supplied system shall be provided.		Mandatory
35	User Manuals	Complete operation, maintenance and service manuals (electronic and/or printed) for FESEM, EDS and EBSD.		Mandatory
36	Spare filaments	One Spare Filament (These filaments should be supplied without any additional cost as and when they are required. It is the responsibility of the supplier to store the filaments and provide it within a short period time.		Mandatory

PART – B: ENERGY-DISPERSIVE X-RAY SPECTROSCOPY (EDS) & ELECTRON BACKSCATTER DIFFRACTION (EBSD)

G. ENERGY DISPERSIVE X-RAY SPECTROSCOPY (EDS)

37	EDS Detector Type	Silicon Drift Detector (SDD), LN2-free (Peltier-cooled), Fully integrated with the supplied FESEM control software.		MANDATORY
38	EDS Active Area	60 mm ² or higher	mm ²	MANDATORY
39	EDS Energy Resolution	≤129 eV at Mn-K α at an input count rate of 100,000 cps.	eV	MANDATORY
40	Count rate	Input count rate ≥ 1,000,000 cps.	cps	MANDATORY
41	EDS Peak Stability	Peak position and energy resolution drift ≤ 1 eV over the count rate range of 5,000 to 100,000 cps.	eV	MANDATORY
42	Low-kV EDS Analysis	Support qualitative and quantitative EDS analysis at accelerating voltages ≤5 kV.		Desirable

43	EDS Elemental Range	Beryllium (Be) to at least Americium (Am) or higher.		MANDATORY
44	EDS Software Features	Live imaging, live spectrum, live auto peak labelling, live elemental mapping, point/line/area analysis, spectral imaging, automatic background correction, peak deconvolution, quantitative correction using XPP, ZAF or equivalent algorithm, and built-in reporting.		MANDATORY
45	EDS Mapping Resolution	Minimum 4K × 4K X-ray map resolution; line scan with minimum 8,000 points		Desirable
46	EDS-FESEM Integration	EDS system shall be fully integrated with the proposed FESEM, with automatic exchange of microscope parameters and support for simultaneous SEM imaging and EDS acquisition/analysis.		MANDATORY
47	EDS Calibration Standard	Certified multi-element EDS calibration standard (preferably NIST-traceable or equivalent) suitable for energy calibration, quantitative analysis and detector performance verification shall be supplied.		MANDATORY

H. ELECTRON BACKSCATTER DIFFRACTION (EBSD)

48	EBSD Detector Type	Integrated, high-speed CMOS based EBSD detector (or direct-electron-detection based)	--	MANDATORY
49	EBSD Indexing Speed	Minimum 2,000 indexed patterns per second (real-time indexing).	pps	MANDATORY
50	Orientation Precision	Orientation precision $\leq 0.1^\circ$ using standard indexing routines	$^\circ$	MANDATORY
51	EBSD Integration	Fully integrated with the supplied FESEM and EDS system on a common software platform, supporting simultaneous SEM imaging, EDS and EBSD acquisition.	--	MANDATORY
52	EBSD Collision Avoidance	Integrated proximity sensor or collision-avoidance system.	--	MANDATORY
53	EBSD Calibration Standard	Certified EBSD calibration standard for system calibration and performance verification.		MANDATORY
54	EBSD Software Capability	Phase mapping, grain reconstruction, grain size analysis, grain boundary characterization, texture analysis, pole figures, inverse pole figures, orientation mapping, and ICSD or equivalent crystallographic database.	--	MANDATORY
55	Software License	Additional Offline software license for user analysis		MANDATORY
56	Future TKD Capability	Provision for future TKD analysis using the same EBSD detector.	--	DESIRABLE

PART – C: MISCELLANEOUS

I. CONTROL COMPUTER & SOFTWARE

57	Control Software	Manufacturer's standard fully integrated SEM control & imaging software (current version) <i>The FESEM control software shall support OEM-approved integration with the specified EDS and EBSD systems for simultaneous imaging and analytical data acquisition, wherever supplied.</i>		MANDATORY
58	Operating System	Latest OEM-supported 64-bit operating system.		MANDATORY
59	Processor, RAM, STORAGE	As per OEM recommendations e.g., Intel Core i7 processor or equivalent/higher; Minimum 32 GB, Minimum 2Tb SSD		MANDATORY
60	Monitor	Minimum 27-inch high-resolution LCD/LED monitor.		MANDATORY
61	Image and data Formats	Support for standard image export formats (TIFF, BMP, JPEG, PNG) with minimum 16-bit image depth where applicable. AVI capture facility for in-situ video recording.		MANDATORY
62	Softwares and Upgrades	All future upgrades to control and analysis softwares should be provided free of cost unless mentioned. Additional user analysis software license should be provided. Perpetual licenses for all supplied softwares. Updates during warranty and AMC/CMC shall be included. Minimum one offline analysis license for SEM, EDS and EBSD shall be provided.		MANDATORY

J. DOCUMENTATION, INSTALLATION, TRAINING, & WARRANTY				
63	Documentation	Quoted model shall be the manufacturer's current production model listed on its global website. Product brochure and complete technical specifications shall be publicly available and submitted with the bid.		MANDATORY
64	Delivery	execute the order successfully i.e. Supply, Installation of ordered items within 6 months at SRM University AP campus from the date of issue of the purchase order.		MANDATORY
65	Installation	On-site installation, testing, commissioning and acceptance by factory-trained engineer(s) at SRM University-AP, Andhra Pradesh.		MANDATORY
66	Acceptance Test	The system shall successfully complete Site Acceptance Testing (SAT) after installation and commissioning by demonstrating compliance with all measurable quoted technical specifications including resolutions. Where on-site verification is impractical, compliance shall be established through OEM factory test reports and published technical documentation.		MANDATORY
67	Software License	All software licenses, including FESEM, EDS and EBSD software, shall be perpetual and supplied with the instrument unless otherwise specified.		MANDATORY
68	Training	Minimum 5 working days of on-site training covering instrument operation, sample preparation, preventive maintenance, imaging, EDS, EBSD, software and routine troubleshooting. Yearly refresher training (1 - 2 days) is desirable.	days	MANDATORY Desirable
69	Warranty – System	Minimum 3 years comprehensive onsite warranty from the date of successful installation and acceptance, covering all parts, labour, travel and software updates, excluding consumables.	Years	MANDATORY
70	Warranty – EDS/EBSD	Minimum 3 years comprehensive onsite warranty from the date of successful installation and acceptance covering all EDS and EBSD hardware and software.	Years	MANDATORY
71	AMC/CMC	Quotation shall include year-wise charges for an additional 2 year Comprehensive Maintenance Contract (CMC) after completion of warranty.	Years	MANDATORY
72	Preventive maintenance visits	Warranty/CMC shall include a minimum of two preventive maintenance visits per year as recommended by the OEM, including system calibration, performance verification and software updates, wherever applicable.		Desirable
73	After-Sales Service	OEM or OEM-authorized service support shall be available in India with on-site response within 3 working days.	--	MANDATORY
74	Remote Support	Remote diagnostics, software updates and technical support shall be provided during warranty and AMC/CMC, wherever applicable.	--	Desirable
75	Spare Parts Availability	Spare parts and service support shall be available for a minimum of 10 years from the date of installation and acceptance.	years	MANDATORY
76	Power & Site Requirements	Bidder shall conduct a pre-installation site survey or obtain the necessary site information and submit detailed site requirements along with the bid.	--	MANDATORY — to be furnished after bid

K. VENDOR COMPLIANCE STATEMENT (to be filled by each vendor) Vendors must attach a point-by-point compliance statement against each specification above using the following format: VENDOR SHOULD SUBMIT THE OFFER FOR PART A, B & C SEPARATELY FOR VALIDATION. ✓ COMPLIES — Offered specification: [State actual value] X DOES NOT COMPLY — Reason: [State reason] ~ PARTIAL / ALTERNATE OFFERED — Description: [State what is offered instead] Vendors who do not submit a compliance statement along with their technical bid will be considered non-responsive. Key Comments for Supply, Installation, Testing and Commissioning:
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1.1 Eligibility Criteria:

- (i) Tenderer should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) specific to the tender should be enclosed.
- (ii) An undertaking from the OEM is required stating that they would facilitate the tenderer on a regular basis with technology/product updates and extend support for the warranty as well.
- (iii) OEM should be Nationally/Internationally reputed Company.
- (iv) Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between tenderer specification and supporting documents etc. may lead to rejection of the bid.
- (v) In the tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.
- (vi) If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal / OEM in the same tender for the same item/product.

1.2 Installation & Demonstration

The supplier is required to do the installation and demonstration of the equipment within two weeks of the arrival of materials at the SRM University-AP, site of installation, otherwise the penalty clause will be the same as per the supply of materials.

In case of any damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier must replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. SRM University-AP will not be liable to any type of losses in any form.

1.3 Insurance

For delivery of goods at the purchaser's premises, the insurance shall be obtained by the supplier in an amount equal to the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes. The insurance shall be valid for a period of not less than 3 months after installation and commissioning.

VENDOR DECLARATION SHEET

We, _____, hereby certify that all the information and data furnished by our organization about these tender specifications are true and complete to the best of our knowledge. I have gone through the specifications, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

This is certified that our organization has been authorized (Copy attached) by the OEM to participate in the Tender. We further certify that our organization meets all the conditions of eligibility criteria laid down in this Tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

We, further specifically certify that our organization has not been Blacklisted/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.

NAME & ADDRESS OF THE Vendor/ Manufacturer / Agent	
Phone	
Fax	
E-mail	
Contact Person Name	
Mobile Number	
GST Number	
PAN Number	