

Supply and Installation of Field Emission Scanning Electron  
Microscope with Energy Dispersive Spectroscopy

**NOTICE INVITING DOMESTIC TENDER**



Materials Engineering,  
Indian Institute of Science, Bangalore

March 06, 2026

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# 1. Bid Schedule

1	Tender No	MTE/PD/2026/FESEM
2	Tender Date	06-March-2026
3	Item Description	Supply and Installation of Field Emission Scanning Electron Microscope with Energy Dispersive Spectroscopy
	Tender Type	Two bid system (i) Technical Bid (Part A) (ii) Commercial Bid (Part B)
5	Place of tender submission	Chairperson Office Materials Engineering Indian Institute of Science, Bangalore 560012, India
6	Last Date & Time for submission of tender	31-March-2026, 5 PM.
7	For further clarification	Dr. Prosenjit Das Room No: A111 Materials Engineering Indian Institute of Science, Bangalore 560012 Email: prosenjitdas@iisc.ac.in Phone: +91-8022933776

## 2. Eligibility Criteria

### Prequalification criteria:

1. MSME can seek exemption to some qualification criteria. IISc follows GFR2017 for such details
2. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per - Annexure 4.
3. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.
4. Original Invoice, Original Warranty Certificate, Original Test Reports should be produced for all imported items from OEM (Original Equipment Manufacturer) at the time of supply of the equipment.
5. System Catalogue should be produced with the Technical Bid.
6. Manufacturers should have ISO or equivalent international standard certificate. Please attach the required certificate with the bid.
7. Supplier will support the user with all the spares for a minimum period of 3 years.
8. Bidder shall have to submit audited accounts (Balance sheet profit and loss account) of last three financial years. Audited statements must be signed and stamped by a qualified chartered accountant.
9. Bidder must submit Income Tax return for last three financial assessment years.
10. Bidder must submit up to date sales tax or GST clearance certificate.
11. **CE Certification must be provided for the proposed system. The CE certificate should be provided with the Unit.**

### Vendor Eligibility Criteria:

1. Sales Confirmation: Vendor company should provide comprehensive detail regarding their sales of the similar equipment in last 5 years in India to multinational companies/ PSUs/ government organisations. The vendor should have sold at least 5 equipment in last 5 years in India. Furthermore, they must substantiate their claims by furnishing relevant supporting documents
2. Machine operation confirmation: Vendor should facilitate an in-person visit of IISc personals, allowing the specified machine to be observed in operational condition, prior to the issuance of the purchase order.

# 3. Terms and Conditions

## A) Submission of Tender:

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
  - a. Technical Bid (Part-A) – Technical bid consisting of all technical details and check list for conformance to technical specifications.

The technical proposal should contain a technical compliance table with 5 columns.

    - I. The first column must list the technical requirements, in the order that they are given in the technical requirement below.
    - II. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible with technical details in annexure.
    - III. The third column should describe your compliance with a “Yes” or “No” only. Ensure that the entries in column 2 and column 3 are consistent.
    - IV. The fourth column should state the reasons/explanations/context for deviations, if any.
    - V. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify response of previous columns, or provide additional details.
  - b. Commercial Bid (Part-B) – Indicating item wise price for the items mentioned in the technical bid, **as per the format of quotation provided in tender**, and other commercial terms and conditions.
3. The technical bid and price bid should each be placed in separate sealed covers, superscripting on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscripted with the Tender No, Tender Description& Due Date.
4. The SEALED COVER superscripting tender number / due date & should reach Chairperson Office, Materials Engineering, Indian Institute of Science, Bangalore – 560012, India on or before due date mentioned in the tender notice. In case due date happens to be holiday the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.

All queries are to be addressed to the person identified in “Section 1 – Bid Schedule” of the tender notice.
5. The price must be quoted in INR (Indian Rupee). Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor. The quotations should be on FOR-IISc Bangalore basis in INR only.
6. The Institute reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to the award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.
7. Incomplete bids will be summarily rejected.

## B) Cancellation of Tender:

Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights: a. To accept OR reject lowest tender or any other tender or all the tenders.

- b. To accept any tender in full or in part.
- c. To reject the tender, offer not confirming to the tender terms.

## C) Validity of the Offer:

The offer shall be valid at least 90 Days from the date of opening of the commercial bid.

#### D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.
2. Bidders meeting the required eligibility criteria as stated in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
3. Pre-qualification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical evaluation or during commercial evaluation. The decision in regard to acceptance and / or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and decision in this regard shall be binding on the bidders.
4. The award of contract will be subject to acceptance of the terms and conditions stated in this tender.
5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:
  - a. Non-submission of complete offers.
  - b. Receipt of bids after due date and time and or by email / fax (unless specified otherwise) c. Receipt of bids in open conditions.
6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall consider that the BIDDER had accepted the clauses as of the tender and no further claim will be entertained. Further if the BIDDER is silent or does not give detail justification of their claim regarding those mentioned in technical specifications, IISc Bangalore reserves the full right to reject the tender due to non-compliance without any further discussion.
7. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.
8. Lowest bid will be calculated based on the total price of all items tendered for Basic equipment along with accessories selected for installation, operation, preprocessing and post processing, optional items, recommended spares, warranty.

#### E) Pre-requisites:

The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.

#### F) Warranty:

The complete system is to be under warranty period of minimum 1 year-including free supply of consumables, spare parts and data analysis software from the date of functional installation. If the instrument is found to be defective, it has to be replaced or rectified at the cost of the bidder within 30 days from the date of receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended.

#### G) Purchase Order:

1. The order will be placed on the bidder whose bid is accepted by IISc based on the terms & conditions mentioned in the tender document.

2. The quantity of the items in tender is only indicative. IISc, Bangalore reserves the right to increase / decrease the quantity of the items depending on the requirement.
3. If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

#### H) Delivery, Installation and Training:

The bidder shall provide the lead time to delivery, installation and made functional at IISc, Bangalore from the date of receipt of purchase order. The system should be delivered, installed and made functional **within 180 days** from the date of receipt of purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and inspection of all the items and features/capabilities tested by the IISc, Bangalore. After successful installation and inspection, the date of taking over of entire system by the IISc, Bangalore shall be taken as the start of the warranty period. No partial shipment is allowed. The bidder should also arrange for technical training to the local facility technologists and users.

#### I) Payment Terms:

100% payments will be released after completion of delivery and satisfactory installation subject to TDS as per rules. AMC cost (if ordered), after completion of warranty period) will be released on half - yearly basis at the end of each six months subject to satisfactory services. The AMC will be comprehensive. Price basis must be on FOR-IISc Bangalore basis only. As per GFR, no advance payment can be made to domestic vendors unless an equal amount of bank guarantee is provided.

#### J) Statutory Variation:

Any statutory increase in the taxes and duties subsequent to bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc Bangalore subject to the claim being supported by documentary evidence. However, if any decrease takes place the advantage will have to be passed onto IISc, Bangalore.

#### K) Disputes and Jurisdiction:

Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Bangalore, India.

#### L) General:

1. All amendments, time extension, clarifications etc., within the period of submission of the tender will be communicated electronically. No extension in the bid due date/time shall be considered on account of delay in receipt of any document(s) by mail.
2. The bidder may furnish any additional information, which is necessary to establish capabilities to successfully complete the envisaged work. It is however, advised not to furnish superfluous information.
3. The bidder may visit the installation site before submission of tender, with prior intimation.
4. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from tendering/ taking up of work in IISc, Bangalore.

## 4. Technical Specifications

Specifications for Field Emission Scanning Electron Microscope with Energy Dispersive Spectroscopy

### 1. Specification

Item	
<b>Resolution in high vacuum mode</b>	<p>0.9 nm or better @ 15 kV</p> <p>1.3 nm or better @ 1 kV</p> <p>All specified resolutions should be achievable without relying on techniques such as sample or stage bias, ensuring that the intrinsic properties and characteristics of the sample remain unaltered and undamaged.</p>
<b>Electron Gun</b>	High Stability Schottky Field Emission-based Electron Source with Automated Filament Cutoff Safety Device <b>and long emitter lifetime (≥ 5000 hours)</b>
<b>Magnification</b>	12x to x10,00,000x or <b>higher</b>
<b>Acceleration Voltage</b>	<p>Lower limit :20V or less, Higher limit: 30KV or higher variable in 10 Volt steps to set-up the AV to any value requested for the various applications. The voltage setting is as accurate to ± 10 V.</p> <p>Imaging at beam energies down to 40V or below without sample or stage biasing should be possible.</p>
<b>Chamber</b>	Large chamber 360 mm inner diameter and 270 mm height for large specimens with at least 10 accessory ports for future upgradation.
<b>Stage</b>	<p>5 axis motorized stage with stage movements</p> <p>X= 120 mm or more</p> <p>Y= 120 mm or more</p> <p>Z= 50 mm or more</p> <p>Tilt= -10-90°</p> <p>R= 360° continuous</p>
<b>Probe Current</b>	<p>At least 20nA or higher with a current stability 0.2%/h or better. Probe current selection must be via mechanical apertures with electromagnetic selection and precise alignment.</p> <p>Continuously adjustable probe current suitable for both high-resolution imaging and analytical applications, ranging from <b>pA level to ≥100 nA</b>, with a current stability 0.2%/h or better. Probe current selection must be via mechanical apertures with electromagnetic selection and precise alignment.</p>

<p style="text-align: center;"><b>Electron Optics</b></p>	<ul style="list-style-type: none"> <li>• Non-immersion objective lens or hybrid type with combination of electromagnetic and electrostatic lenses</li> <li>• Beam Deceleration/Beam Booster technology/Gentle Beam technology or equivalent for high resolution imaging at low KV.</li> <li>• The FESEM beam path should be designed to be crossover-free to minimize statistical Coulomb interactions between beam electrons (Boersch effect).</li> <li>• High-resolution imaging of dia-, para-, or ferromagnetic samples – regardless of composition or when combined with other materials – should be achievable even at short working distances and low accelerating voltages.</li> <li>• High resolution imaging of ferromagnetic steel @ WD = 3 mm; AV = 1 kV @ 100.000x Mag must be possible.</li> <li>• The FESEM should feature a compact column design with integrated Mu-metal shielding to limit sensitivity to stray magnetic fields and reduce susceptibility to vibrations.</li> </ul>
<p style="text-align: center;"><b>Auto Functions</b></p>	<p>Automatic Focus Wobble: For automatic assistance in aperture alignment, with adjustable amplitude and speed.</p> <p>Automatic contrast &amp; brightness control</p> <p>Automatic correction of image compression on tilted samples</p> <p>Auto-compensation: Automatic magnification correction for change in working distance or acceleration voltage</p>
<p style="text-align: center;"><b>Detectors</b></p>	<ol style="list-style-type: none"> <li>a) Chamber SEI detector. Everhart-Thornley secondary electron detector with optically coupled photomultiplier</li> <li>b) In column SEI detector for high resolution imaging in High Vacuum.</li> <li>c) Multi segment BSE detector for compositional imaging.</li> <li>d) A coloured CCD-camera with illumination to allow an overview of the internal chamber.</li> </ol> <p>Provision for future integration of additional detectors such as EBSD should be available.</p>
<p style="text-align: center;"><b>EDS Detector</b></p>	<ul style="list-style-type: none"> <li>• Peltier cooled Liquid Nitrogen (LN2)-free SDD type X-ray detector</li> <li>• Must be compatible with the FESEM system</li> <li>• Typical energy resolution of 129 eV or better, measured at Mn K<math>\alpha</math></li> <li>• The EDS should detect the energy of the element starting from Be (4) to Am (95).</li> <li>• Detector window should be made of robust material structure (Si<sub>3</sub>N<sub>4</sub>).</li> <li>• Input Count Rate (ICPS) - Up to 1,000,000 CPS or more</li> <li>• Output count rate: up-to 3,00,000 CPS or more</li> <li>• A software package for fast and accurate elemental analysis with an easy to-use user interface for EDS data collection and analysis, software functions like Point ID, Elemental Mapping, Line Scan, Multi-point analysis and reporting should be provided.</li> <li>• Detector area of 30 mm<sup>2</sup> or more.</li> </ul>

<b>User Interface</b>	Keyboard, Mouse, Control Panel with multifunction for the control and adjustment of frequently used FESEM parameters, Manual Joystick control for stage axis.
<b>Display</b>	24" Monitor with suitable computer workstation for FESEM
<b>Image Store</b>	32K x 24K pixel or better in a single frame
<b>Display Modes</b>	<p><b>Dual Channel:</b> An option that displays live from two detectors onto separate monitors</p> <p><b>Split Screen:</b> Side by side live display with most scan-rates and image resolutions of the same image using the input from any combination of installed detectors. Image halves may be selectively processed and frozen.</p> <p><b>Quad mode:</b> Side by side live display, on a single monitor, of the same field of view using input from up to four detector channels. Images may be selectively processed and frozen.</p>
<b>Scanning System</b>	<p>The system provides different noise reducing acquisition methods.</p> <ul style="list-style-type: none"> <li>• Pixel averaging acquisition</li> <li>• Frame/Line averaging acquisition</li> <li>• Drift corrected frame averaging acquisition</li> </ul>
<b>Vacuum System</b>	<ul style="list-style-type: none"> <li>• Suitable vacuum system having ion pump, Turbo Pump &amp; Rotary Pump (R.P).</li> <li>• The FESEM will have a fully automatic control of its vacuum system and High vacuum in the chamber has to be better than <math>10^{-4}</math> Pa.</li> <li>• <b>Oil free Pump type</b></li> </ul>
<b>Accessories</b>	<ol style="list-style-type: none"> <li>a) Chiller.</li> <li>b) Compressor.</li> <li>c) Integrated Control panel for adjustment of various FESEM functions like focus, mag etc.</li> <li>d) Joystick for stage motor control</li> <li>e) Desiccator Kit</li> <li>f) Specimen Current Monitor with integrated Touch Alarm</li> <li>g) Consumables: Carbon tape, Specimen stubs and multi Specimen holder</li> </ol>
<b>Computer</b>	The FESEM should be controlled by a high-grade factory tested PC. External communications and networking should be provided.
<b>UPS</b>	A 10 KVA online UPS to be supplied with the system for power back up.
<b>Warranty</b>	12 months from the date of successful installation and commissioning
<b>Installation, Commissioning &amp; Training</b>	The installation, commissioning and demonstration of complete system to be carried out by the supplier at free of cost. After successful installation and commissioning, on-site operational training for the deputed personnel to be provided for required days at no additional cost.

<b>Other requirements.</b>	All technical literature pertaining to the instrument such as the catalogues and other documents providing the claimed technical specification should be furnished along with the bid document and must be available in the website/public domain.
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## **5. Training and demonstration**

1. Training for users by the company personnel present 'on site' immediately after the installation.
2. All pre-installation requirements should be included in the quote.

## **6. Others**

- 1 The system with similar specifications must submit references from previous installations.
- 2 The names and contact addresses of the referees must be submitted with the proposal, so the purchase committee can contact them independently.
- 3 The system should require minimal maintenance.
- 4 CE Certification must be provided for the proposed system. The CE certificate should be provided with the Unit.
- 5 Operation Manual to be given after installation and acceptance of equipment
- 6 The system should be supported by a trained local representative and should have a minimum of 72-hour window of response.
- 7 Site requirements should be provided as two-dimensional drawings.

## 5. Technical Bid

The technical bid should furnish all requirements of the tender along with all annexures in this section and submitted to

The Chairperson,  
Attn: Dr. Prosenjit Das  
Materials Engineering,  
Indian Institute of Science  
Bangalore - 560012, India

### Annexure-1

#### Details of the Bidder

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

#### Details of the Bidder

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name  
Designation, Seal

Date:

## Annexure-2

Declaration regarding experience

To,  
The Chairperson,  
Materials Engineering,  
Indian Institute of Science Bangalore  
- 560012, India

Ref: Tender No: XXXXXXXXX  
Dated: XXXXX

Supply and installation of Field Emission Scanning Electron Microscope with Energy Dispersive Spectroscopy

Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has XXXXXX years of experience in supplying and installing High Pressure Die Casting machine system

(Signature of the Bidder)  
Printed Name  
Designation, Seal Date:

Annexure-3

Declaration regarding track record

To,  
The Chairperson,  
Materials Engineering,  
Indian Institute of Science  
Bangalore - 560012, India

Ref: Tender No: XXXXXXXX

Dated: XXXXX

Supply and installation of Field Emission Scanning Electron Microscope with Energy Dispersive Spectroscopy

Dear Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred /blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I'm competent officer in my company / firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long
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(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully  
(Signature of the Bidder)

Name  
Designation, Seal

Date:

Annexure-4

Declaration for acceptance of terms and conditions

To,  
The Chairperson,  
Materials Engineering,  
Indian Institute of Science  
Bangalore - 560012, India

Ref: Tender No: XXXXXX  
Dated: XXXX

Supply and installation of Field Emission Scanning Electron Microscope with Energy Dispersive Spectroscopy

Dear Sir,

I've carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I'm an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)

Name

Designation, Seal

Date:

#### Annexure-5

Details of items quoted:

a. Company Name	
b. Product Name	
c. Part / Catalogue number	
d. Product description / main features	
e. Detailed technical specifications	
f. Remarks	

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

## 6. Commercial bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
1.a	... (details of essential items)				
1.b	...				
2.	Optional items noted in the technical specification				
2.a	... (details of Optional items)				
2.b	...				
3.	Accessories for operation and installation				
4.	All Consumables, spares and software to be supplied locally				
5.	Warranty (1 year)				
6.	AMC 2 years beyond warranty				
Any additional items					
S.No	Description	Cat. Number	Quantity	Unit Price	Sub total

Addressed to

The Chairperson,  
 Attn: Dr. Prosenjit Das  
 Materials Engineering,  
 Indian Institute of Science  
 Bangalore - 560012, India

# 7. Checklist

**(This should be enclosed with technical bid- Part A)**

**The following items must be checked before the Bid is submitted:**

1. Sealed Envelope "A": Technical Bid
  1. Section 5- Technical Bid (each page signed by the authorized signatory and sealed) with the below annexures:
    - a. Annexure 1: Bidders details
    - b. Annexure 2: Declaration regarding experience
    - c. Annexure 3: Declaration regarding clean track record
    - d. Annexure 4: Declaration for acceptance of terms and conditions
    - e. Annexure 5: Details of items quoted
  2. Copy of this tender document duly signed by the authorized signatory on every page and sealed.

## 2. Sealed Envelope "B": Commercial Bid Section

### 6: Commercial Bid

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date and both of these in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.