

 IIT PALAKKAD	भारतीय प्रौद्योगिकी संस्थान पालक्काड Indian Institute of Technology Palakkad अहलिया एकीकृत कैम्पस, कोज़िपारा Ahalia Integrated Campus, Kozhipara पालक्काड- 678557 Palakkad – 678 557	दूरभाषसंख्या/ Phone no: 04923 – 226 300/590/586 ईमेल/ Email : purchase@iitpkd.ac.in
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Prof. Job Kurian
Registrar i/c

Ref : **Scanning Electron Microscopy Facility**
Date : **22.12.2017**

Open Tender No: IITPKD/CIF/KESA/090/2017

Due Date: 12.01.2018 AT 11.30 AM

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology, Temporary campus, Palakkad, Quotations are invited for “Scanning Electron Microscopy with Field Emission Source”** . The Specifications are given in the Annexure.

Pre-bid meeting – The pre-bid meeting is scheduled to be held on 28.12.2017 at 11.30 AM at Conference Room, Academic Block, IIT Palakkad.

Technical bid Opening: The Technical bid will be opened on 12.01.2018 at 11.30 AM at Academic Block, IIT Palakkad.

Instructions to the Bidder

- (i) **Preparation of Bids:** - The tenders should be submitted **under two-bid system (i.e.) Technical bid and Financial bid in separate envelopes.** The technical bid should consist of all technical details along with commercial terms and conditions. No prices should be included in technical bid. Financial Bid should indicate item – wise prices for the items mentioned in the technical bid. The technical and the financial bids should be put in separate covers and sealed. Both sealed covers should be put into a bigger cover. **Bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**
- (ii) The Quotations duly sealed and superscribed on the envelope **with the reference No. and due date, should be addressed to the undersigned so as to reach on or before the due date stipulated above.**
- (iii) **Delivery of the tender:** - The tender shall be sent to the below-mentioned address either by post or by courier so as to reach this office before the due date and time specified in the Schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. **The tender box is kept in the office of the Academic Block, IIT Palakkad, Ahalia Integrated Campus, Kozhipara, Palakkad-678 557.**

- (iv) **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The bidders will be invited for opening of Technical bids. **The Bidder's representative should carry authorization letter from their company empowering them to participate in the Pre-bid and tender opening meetings.** In respect of opening of financial bid, those bidders who are technically qualified only will be called.
- (v) **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges indicated separately for each item. **The price indicated should be CIF/CIP Kochi.** The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. The price should be quoted without custom duty. **The custom duty will be paid at concessional rate against duty exemption certificate.**
- (vi) **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. **Terms of Delivery:** - The item should be supplied to our Institute as per Purchase order. The installation and commissioning should be completed as specified **by us in the attached schedule.**
- (vii) **Acceptance & Rejection:** IIT Palakkad reserves the full right to accept / reject any tender at **any** stage without assigning any reason.

Yours sincerely,

Registrar, IIT Palakkad

SCHEDULE

Important Conditions:

- 1) The due date for the submission of the tender is **12.01.2018 AT 11.30 AM**
- 2) The offers / bids should be submitted in two-bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes (separately), transportation, packing & forwarding charges, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers **superscribed clearly as "Technical Bid" and "Financial bid"** and sealed. Both the sealed covers should be put in a bigger cover. Open Tender for **"Scanning Electron Microscopy with Field Emission Source"** should be written on the left side of the Outer bigger cover and sealed.
- 3) **EMD: -EMD should be at 2% (two percent) of the tender value quoted by the bidder.** The EMD should be enclosed with the financial bid which will not be opened for Technical evaluation. Enclosing the EMD in the Technical bid will automatically DISQUALIFY the tenderer. EMD should be in the form of DD in favour of **"Indian Institute of Technology Palakkad" and payable at Palakkad"**. The tender without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD will be refunded to the successful bidder on receipt of Performance Security.
- 4) **Performance Security:-** The successful bidder will be asked to submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD or FD Receipt from the commercial bank or Bank Guarantee from any nationalized bank of India. **Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.**
- 5) **Performance Security in the form of Bank Guarantee:-** In case the successful bidder is a foreign company and wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee from a Nationalized Bank of India.
- 6) The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

If an Indian agent is involved, the following documents must be enclosed:

- Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
 - Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
- 7) The offer/bids should be sent only for a system or equipment that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
 - 8) Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
 - 9) Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
- 10) Validity:** Validity of Quotation not less than 90 days from the due date of tender.
- 11) Delivery Schedule:-** The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
- 12) Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
- 13) Payment:-** No Advance payment will be made for Indigenous purchase. 100% Payment after supply and successful installation and commissioning and certification by the end user. In case of import supplies the payment will be made only through **100% Letter of Credit i.e. (50% payment will be released against shipping documents and 50% after successful installation and meeting acceptance criteria wherever the installation is being done).** Advance payment may be considered on submission of Bank Guarantee equal to the amount of advance payment.
- 14) On-site Installation:** - The equipment or machinery has to be installed and commissioned by the successful bidder within 15 to 20 days from the date of receipt of the **item at site of IIT Palakkad.**

- 15) Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately. (For more details please refer our Technical Specifications).
- 16) Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
- 17) Loading and unloading charges will be borne by the bidder/Supplier.**
- 18) Acceptance and Rejection:** - I.I.T. Palakkad has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
- 19) Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**
- 20) 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 Palakkad in Kerala.
- 21) All Amendments, time extension, clarifications etc., will be uploaded on the institute website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.**

Acknowledgement:- It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

Tender Specifications For The Scanning Electron Microscopy Indian Institute of Technology - Palakkad

Detailed Specifications of Scanning Electron Microscopy facility with Field Emission source

High resolution FESEM with latest technology must have following minimum specs.

- The electron gun shall be of field emission source. Detectors for secondary electron imaging, back scattered electron imaging, optical imaging (for live monitoring of sample motion) are part of the basic unit. Detectors for Energy dispersive spectroscopy, wavelength dispersive spectroscopy for composition mapping, Electron Back Scattered electron Diffraction for orientation imaging and electron beam lithography are optional modules. A complete solution with necessary accessories, software and requisite licenses is being proposed for procurement.
- The scanning electron microscope with field emission source, secondary and back scattered electron detectors, energy dispersive spectroscopy and optical imaging to view sample chamber live, accessories, software and requisite licenses to demonstrate successful operation are part of the basic facility.
- The following detectors can be listed as optional modules so that a decision on including them for price bid comparison can be taken at a later stage depending on constraints from the buyer's side:
 - (a) EBSD (b) Lithography (c) WDS
- The bidders are required to quote for all items including each of the optional modules.
- The bidders are free to add additional items as part of the basic facility that could enhance the quality of microscopy.
- Buyer is free to choose one or more or none of the optional modules. Technical bid shall include items necessary for commissioning of any combination of the basic facility + optional modules.
- The bill of materials for each optional module should be such that it is self sufficient to account for necessary accessories, software and requisite licenses for integration with the basic facility.
- For each optional module, variants available from the vendor should be quoted along with a demonstrable specification to ascertain during the installation and commissioning process. Attention is drawn in particular to the detectors where the parameters that distinguish different variants of the model being quoted should be clearly listed. Documentation on the commissioning and ascertaining of the performance metrics of each detector should be provided along with the technical bid.
- Calibration samples and documentation of the calibration process for each detector shall be part of the respective modules.
- Limitation on assembly or commissioning or operation of any particular combination of basic facility with any combination of modules shall be documented and highlighted as part of the technical bid. Vendor is responsible to resolve any incompatibilities between different variants of the modules with the basic facility as part of the installation and commissioning process.

Modular Accessories:

1. Plasma Cleaning and Etching Unit
2. Sputter Coating facility
3. Benchttop sample storage facility
4. Cryo ultramicrotome facility + Cryostorage

Specifications:

- Schottky type field emitter system
- Resolution: 0.8nm at 15 kV; 1.3 nm at 1 kV
- Accelerating voltage: 0.1 to 30 kV
- Beam current configurations: 100 nA
- Electromagnetic beam alignment
- Magnetic/electrostatic objective lens assembly with 80° cone angle
- Work distance 0.1 – 50 mm
- Automatic compensation for accelerating voltage and working distance
- Seven or Six hole aperture with compensated alignment dependent on probe current settings
- Mu-metal shielding of electron column
- Focus wobbler with variable amplitude
- Adjustable octopole stigmator
- User positioned adjustable reduced scan and spot mode
- Scan rotation, dynamic focus, tilt correction
- Oil-free pumping
- Auto pendulum anti vibration system
- Specimen current monitor with touch alarm feature

Detectors

- High efficiency annular In-lens SE-detector system
- Everhart-Thornley SE-detector
- Chamber mounted SE detector for SE2 detection
- Real-time automatic contrast/brightness and manual override for all detectors
- Chamber scope with IR-illumination
- BSD Detector

Magnification

- Range: 12 – 2000000x

System Control

- Microsoft® Windows operating system and software for total system control, including EHT, lens supplies, scanning conditions, imaging, chamber pressure control, and image recording
- Macro generator for system automation
- Automatic or manual control of a large number of functions including: Auto emitter system run-up, auto brightness, auto contrast, auto stigmator, and auto focus

Digital Image Store and Image Processor

- 4:3 Format with 16bit dynamic range: 1024x768 pixels, 2048x1536 pixels, 3072x2304 pixels, 4096x3072 pixels, 6144x4608 pixels, 8192x6144 pixels, 12288x9216 pixels, 24576x18432 pixels, 32768x24576 pixels

Image Display

- 23" high end LED monitor
- Standard data zone includes magnification, working distance, EHT, scale bar and date
- SmartCustom data zone
- Comprehensive image annotation facilities with definable fonts and colours
- Multiple point-to-point and line width measurement systems freely adjustable for orientation
- Line profile display
- Graticule overlay with adjustable spacing
- Cross hairs overlay

Computer Control System

- Microsoft® Windows operating system, 64 Bit
- Microscope control software
- Minimum PC specification: Vendor to decide
- RAM: minimum 16 GB
- Hard disk: 128 GB SSD for operating system; 2 TB HDD for data storage:

- SATA 3
- Optical drive: DVD+/-R/RW Rewriter
- 3 button optical cordless mouse with scroll wheel
- 2x Gigabit Ethernet on board. First port for communication to 3rd party systems second port connects to customer network
- Serial and USB ports
- Storage of grey images in industry standard TIFF, BMP or JPG format

5-Axes Motorised Eucentric Stage

- Drawer mounted to front face of specimen chamber
- Movements X/Y = 130 mm
 - Z = 50 mm
 - T = -3° to 70°
 - R = 360° continuous
- Dual joystick stage controller
- Quick-fit carousel 9x sample holder for 13 mm diameter pin-type stubs

Large Specimen Chamber

- 330 mm inner diameter and 270 mm height
- 7 free accessory ports on the chamber are provided, two of them for EDS with a takeoff angle of 35°
- Two free accessory ports on the door

Fail-safe Vacuum System

- Computer controlled fail-safe differential pumping vacuum system
- Ion getter pump for ultra-high vacuum condition in field emission gun head
- Turbo molecular pump for high vacuum condition in microscope chamber
- Dry scroll pump is standard
- Automatic venting with dry nitrogen connection
- Ventilation interlock to protect optional windowless X-ray detector
- Penning gauge measurement of chamber vacuum

Included Essential Software

Advanced measurement functions, adjustable reduced raster scanning, dynamic focus, high current DoF mode, scan rotation, signal inversion, signal mixing, split screen, dual channel operation, dual magnification operation, spot mode, stage co-ordinate storage and recall, stage registration, stage scan for multi-image acquisition, stage center point feature, tilt compensation, user accounting, image math for manipulating image buffers with basic mathematical functions, compucentric stage, remote control interface, 16-bit TIFF image transfer, random scan patterns, drift corrected frame averaging and integration, improved image navigation.

Accessories : Spares & consumables for 1 year smooth operation
 Warranty & AMC : Minimum 3 years warranty + AMC

Who can participate in the bid?

Only those bidders fulfilling the following criteria should respond to the tender.

1. The bidder should be either an Original Equipment Manufacturer (OEM) of Scanning electron microscopy facility with field emission source with accessories or should be an authorized representative (provide documentary proof) of an OEM.
2. The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration incorporation certificate must be submitted.
3. The bidder must have a registered office in Karnataka/Tamil Nadu/Telangana/Andhra Pradesh/Maharashtra or Kerala. Certificate of registration for the offices to be provided.
4. The bidder must also have a service center in Karnataka/Tamil Nadu/ Telangana/Andhra Pradesh or Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centres must be provided. The contact details of the service engineers must be provided.
5. The bidder must be in existence in the business of supplying Scanning electron microscopy facility with field emission source with accessories for a minimum period of 5 previous financial years (before or since 01 April 2012). Documentary evidences of experience must be provided.
6. The bidder should have implemented orders of Scanning electron microscopy facility with field emission source with accessories worth exceeding INR **500 Lakhs** during previous three financial years (01 April 2014 – 31 March 2017). Copies of the most recent purchase orders and certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished.
7. The bidder should have documentary evidence of having supplied at least 1 No. of Scanning electron microscopy facility with field emission source with accessories to a Centrally Funded Technical Institution (e.g., IIT, NIT, IISc, IISER, etc.) in the recent past. The bidder must provide a certificate of satisfactory performance of the supplied equipment from the institute to which they have recently supplied. Contact details of the faculty-in-charge of the installed setup must also be provided.
8. Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.
9. The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for all equipment quoted, system and all accessories. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.
10. Service and warranty for a minimum period of three years for the equipment must be provided. AMC for additional three years must be quoted separately.