

 IIT PALAKKAD	भारतीय प्रौद्योगिकी संस्थान पालक्काड Indian Institute of Technology Palakkad अहलिआ एकीकृत कैम्पस, कोज़िहपारा 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 : E-beam Deposition System
Date : 22.12.2017

Open Tender No: IITPKD/CIF/JB/089/2017

Due Date: 12.01.2018 @ 11 AM

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology, Temporary campus, Palakkad, Quotations are invited for “ E-beam Deposition System ”**. The Specifications are given in the Annexure.

Pre-bid meeting - The Pre-bid meeting is scheduled to be held on 28.12.2017 at 10.30 AM in the Conference Room, Academic Block, IIT Palakkad.

Technical bid Opening: The Technical bid will be opened on 12.01.2018 at 11.00 AM at Conference Room, 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:

The due date for the submission of the tender is [Due Date: 12.01.2018 @ 11 AM](#)

- 1) 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 **“E-beam Deposition System”** should be written on the left side of the Outer bigger cover and sealed.
- 2) **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.
- 3) **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.**
- 4) **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.
- 5) 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.

- 6) 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.
- 7) 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.
- 8) Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
- 9) **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
- 10) **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.
- 11) **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.
- 12) **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).**
- 13) **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.**
- 14) **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).
- 15) **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.
- 16) **Loading and unloading charges will be borne by the bidder/Supplier.**
- 17) **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.

18) Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.

19) 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.

20) 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**

Technical Specifications for Electron Beam with Thermal Evaporation Deposition System

(1) Vacuum Coating unit

- Chamber with water cooling of approx. 400mm (W) X 400mm (D) X 450mm (Ht) dimension made of non-magnetic SS 304 or better (please specify) material
- Front opening door for smooth loading and unloading of substrates
- Toughened glass view port on front door compatible with high vacuum
- Set of thin Stainless steel sheet liner to prevent the deposition on chamber wall
- Chamber should come with proper number of ports for Turbo and dry scroll pumps, gauges, evacuation (Vent), vacuum monitoring gauge heads, electrical feed throughs, Gas Inlet Outlet, Substrate Holder Assembly etc
- Chamber having all stainless steel components and sub-assemblies must be electro-chemically polished to achieve vacuum of 1×10^{-6} mbar or better
- Dry scroll vacuum pump with 250 lit/min or more giving vacuum of 10^{-3} mbar or better under no load condition better (Dry scroll pump should be of make Edward or Pfeiffer or Leybold or substantially equivalent and internationally reputed make the details of which needs to be submitted by the vendor in the tender document for technical evaluation)
- Turbo molecular pump (pumping speed at least 400 lit/sec or more) with controller and vent valve giving vacuum of 1×10^{-6} mbar or better (Turbo molecular pump should be of make Edward or Pfeiffer or Leybold or substantially equivalent and internationally reputed make the details of which needs to be submitted by the vendor in the tender document for technical evaluation)
- Stainless steel Plumbing lines with rigid lines and flexible hoses with appropriate couplings to connect all the components of the pumping system
- Pneumatically operated valve for backing and roughing operation
- Pneumatically operated High vacuum Gate valve to isolate Turbo pump
- Safety Interlocks: (1) Turbo should be interlocked with Dry scroll Pump. Automatic venting with delay should be provided for the Turbo in the event of power failure.
 - (2) During power failure High vacuum valve should close, turbo pump vented and dry scroll pump aired.
 - (3) All major components should be connected through circuit breaker/contactor
 - (4) All major electrical circuit should be provided with fuse.
- Appropriate gauge with digital display unit and controller should be provided for measuring the vacuum level from atmospheric pressure to 10^{-8} mbar
- Pneumatically operated source shutter to cover/uncover Thermal evaporation / E beam source
- Fine control needle valves for admittance of gas into the vacuum chamber
- Circular work holder of aluminum having min 300 mm or more diameter
- Digital panel meters for LT/HT primary current and LT secondary current
- Unit operation with 220 V A.C, 50 Hz, Single phase power supply, 15 amps supply
- Safety panel switches to cut off HT/LT/RH power supply, if doors open

2) Substrate Holder, Heater and Rotary Mechanism

- 4" substrate holder with sub assembly capable of holding various dimensions of substrate from 10 mm diameter or 10mm x 10mm substrate
- Appropriate mechanism with clamps for holding samples of various sizes like circular, square, rectangular etc.
- DC motor drive mechanism with speed control (or appropriate mechanism) for variable rotation speeds at least in the range of 5rpm to 20rpm for substrate rotation.

3) Housing Cabinet

- With a front panel for mounting gauges, controls for thermal and E beam deposition operation, Substrate heater control, Rotary drive control for comfortable operation, PLC, Mass flow controller
- Valve control knobs on front panel
- Mounted on a 4 castor wheels for mobility and easy maneuverability with jack bolt for keeping in specified location

- All the electrical switchgears like Control Transformer, Contactors, Relays, Fuses, Timers and Motor Starters etc. should be mounted on a plate and fitted and should be easily removable for servicing and maintenance. Necessary safety interlocks should be provided in the control console.
- A mimic diagram should be provided with the status indication to know the status of vacuum system.
- An emergency power shutdown switch on front panel is provided to switch off all the sub-systems in case of emergency.

(4) Thermal Evaporation electrical feed through and evaporation source made of electrolytic pure copper, (LT and HT Evaporations) 200 amps or more current capacity delivering different power supply

- Thyristor controller for output power.
- Separate digital panel meter for LT Secondary current
- Electron Beam Source and Power supply: E-beam source with Four pocket with upto 270° beam deflection E beam power supply: 3 KW or more with single phase power supply (E-beam source and power supply make should be of Temescal or Telemark or of substantially equivalent and internationally reputed make the details of which needs to be submitted by the vendor in the tender document for technical evaluation)
- Crucible indexer: Four pocket continuous or retrograde motion with speed control and remote PLC operation
- Remote control and display of high voltage and emission current
- Safety Devices
- Safety panel switches to cut off source power supply, if doors open
- Vacuum switch interlocked with source power supply for avoiding switching-ON of power sources without vacuum
- Electrical circuit breaker against Overload or Shorting
- Overload protection for Dry scroll pump and turbo molecular pumps

(5) Mass flow controller (MFC) for gas delivery system: MFC with shutoff valve for controlled admittance of gas into the chamber: Adequate number of MFC calibrated for Argon, Oxygen and Nitrogen for flow range of 0 – 100 sccm with 4 channel digital display and controller. The gas feeding lines should be made of SS material.

(6) Quartz control thickness monitor and controller:

- Appropriate quartz crystal sensors, feed throughs and necessary cable to be integrated to the system for measuring the coated thickness/uniformity .
- 10 numbers of spare crystals will be provided.

(7) System should be configured and operated from a touch screen human machine interface (HMI)

(8) One set of tool kit will be supplied along with the equipment for maintenance of the Electron Beam Thermal Evaporation System.

(9) A suitable capacity chiller will be provided with Re-circulating pump, Storage Tank, Valves, etc., for closed loop water cooling of various parts of the unit like vacuum system, electron gun, crucibles, etc., It has the following features.

- ON / OFF Control and indication
- Digital display controller
- Display of water temperature

(10) The vendor should quote the CDA pump of appropriate volume required, for the operation of pneumatic valves in the equipment.

(11) Warranty: The tender must be quoted with three years on-site comprehensive Warranty/Guarantee commencing from the date of complete and satisfactory installation of the equipment against the defect of any manufacturing, workmanship

and poor quality of the components. The bidder also must agree and issue a certificate stating that technical query will be responded within 2 working days and the support will be provided within 7 working days from the date of reporting of the technical failure for down time free operation of the instrument.

(12) Optional Accessories Required for Electron Beam with Thermal Evaporation Deposition System

- Quartz Film Thickness Monitor with water cooled Crystal holder
- 3 digits LED Rate display, Auto-ranging from 00.00 to 999 Ang./sec for rate display
- 4 digits LED Thickness display, Auto-ranging from 0.000 to 999.9 k Ang.
- Static thickness resolution of 1 Ang at minimum update rate
- Tungsten helicals
- Tungsten baskets
- Molybdenum boats, 200 amps or more
- Graphite crucibles
- 'O' Rings & Gaskets
- Substrate heater for varying substrate temperature upto 600 degree Celsius (or more) during deposition and stable under reactive oxygen and nitrogen gases. Temperature Measurement and controller: Thermocouple with PID controller to measure the temperature with digital display. Temperature will be controlled by PID controller
- Necessary Spares and Consumables for 5 years

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 **E-beam Deposition System** 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 **E-beam Deposition System** 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 **E-beam Deposition System** worth exceeding INR **20 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 2 No. of **E-beam Deposition System** 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.