Mahatma Gandhi University

School of Energy Materials

Priyadarsini Hills P.O., Kottayam – 686 560, Kerala, INDIA.

E-mail: sem@mgu.ac.in, *www.sem.mgu.ac.in*

SEM /01/NIT-4/2024 **Dated : 18/01/2024**

NOTICE INVITING TENDER

The Director, School of Energy Materials (SEM), Mahatma Gandhi University invites tenders (both technical and financial bid) for Supply , Installation, Testing and commissioning of Physical Vapour Deposition System in School of Energy Materials. The details are as given below.

1	Name of the Scientific Equipment	**Physical Vapour Deposition System (Detailed specifications given in Annexure-1)**
2	Earnest money deposit (EMD)	1% of the estimated value
3	Tender submission fee	0.2% of the cost of the equipment (PAC) rounded to the nearest multiple of 100, subject to a maximum of Rs.25,000/- + GST as applicable
4	Period of supply and Installation	Within 90 days from L/C opening date
5	Address	**Director School of Energy Materials Mahatma Gandhi University PD Hills Kottayam**
6	Date and time of Technical bid opening	**02/02/2024, 11.00 am**
7	Date and time of Financial bid opening	**02/02/2024, 2.00 pm**
8	Last date and Time of submission of tender with relevant documents.	**01/02/2024, 4.00pm**

Duly filled up and signed tender schedule along with relevant documents should be sent to **Director, School of Energy Materials, Mahatma Gandhi University, Kottayam** by speed post so as to reach before the date and time specified. The cover containing the document should be super scribed the **name of the scientific equipment, tender number and last date of submission** of the tender.

ELIGIBILITY CRIETERIA

1	Bidder should be a company registered in India or Registered Partnership /proprietary firms	Copy of valid registration certificate/Copy of Certificates of incorporation
2	Should not have been blacklisted by any of the Government entities under state / central government.	Self-Certificate
3	The bidder should have a registered number of (i) GST where his business is located (ii) Income Tax / PAN number.	Copies of relevant certificates of registration

Further details can be had from the office of **School of Energy Materials, Mahatma Gandhi University, Kottayam** Email: sem@mgu.ac.in on all working days during working hours.

If relevant documents through speed post are not submitted with in time, the tenders will not be considered. The undersigned reserves the right to reject any or all the tender without assigning any reason whatsoever.

Director

School of Energy Materials,

Mahatma Gandhi University

Director
School of Energy Materials
Mahatma Gandhi University
Kottayam - 686 560

Please see the Annexures

ANNEXURE-1

Technical Specification of the Physical Vapour Deposition System

Physical Vapour Deposition System:

It consists of the following.

1. Vacuum Chamber (Box Type): The Box Type Vacuum Chamber should be made out of SS304 materials with dimensions of 400mm (D) x 400mm (W) x 400mm (H) with suitable thickness. The chamber should be fabricated by TIG Argon Arc welding following ASME Code Sec. IX. Design follows ASME Code Sec. VIII. All the welding joints should be leak tested by Helium Mass Spectrometer Leak Detector to an individual leak rate of 1 x 10(-9) std. cc/sec. Finally, the chamber is buffed and polished for bright finish.
2. Base Plate & Gadgetry:
   - Base Plate is of 13" diameter, mounted above the pumping module made out of SS304 material, finely ground & electro chemically polished to achieve a fine surface. Chamber gadgetry is made out of SS304, conducting parts made out of electrolytic copper & insulating parts made out of Teflon.
3. Shutter Control: A manually operated source shutter will be provided to cover/uncover the evaporation source.
4. LT Electrodes: Two sets of LT Electrodes are provided with power supply for vacuum coating using boat, basket or filament.
5. L.T. Power Supply: It is derived from LT transformer of having capacity of 10 Volts, at 200 Amps and 20 V, 100 Amps, capable of delivering 200 Amp at 10V and 100 Amps at 20 V for evaporation purpose. The necessary connecting cables are provided.
6. HT Electrodes: One HT electrical feed through to carry power for Ion cleaning of the substrate will be provided. The ion bombardment gadget fixed on the feed through will provide a uniform glow discharge.
7. H.T. Power Supply: It comprises of an H.T. Transformers of 3.5 KV 50mA (5KV open circuit) and with H.T. cables connected to feed through in the base plate. The supply is controlled from the standard HT/LT switch fixed in the front panel.
8. L.T/H. T control: An 8 amps' dimmer stat in the input circuit of LT/HT selector should provide the output power variation.
9. Meters: Separate digital panel meters should be provided for LT/HT primary current and LT secondary current through current transformers.
10. Digital Thickness Monitor:

    - Thickness maximum: Transducer limited typically 5000 micro Gm/sq.cm. As Much as 20,000 Microgram/sq. for well behaved Materials. (1.0micrgram/Sq.=37Ang.A).
    - Rate display: 3digits LED.
    - Thickness display: Automatically varied 0.4 to 5 update/sec.
    - Static thickness resolution: 1 Ang. At minimum update rate

- Input parameter: Tooling factor, density and acoustic impedance inputs allow readout directly in Angstroms.
- Films No. : Allows input parameter for 1 to 100 films to be entered.
- Tooling factor: 1.0 to 999.9%.
- Film acoustic impedance : 5.000 to 99.99 x 10(-5) gm/cm. Sec
- Shutter control: Dedicated relay.
- Thickness set point: 0.000 to 990.9% K. Ang. Shutter relay closed when displayed thickness equals or exceed set point.
- Start Control: Zeros thickness and open shutter relay.
- Stop control: Zeros thickness and close shutter relay.
- Shutter position indicator: LED on indicates shutter relay activated.
- Crystal compatibility : 5 or 6 MHz, Jumper selectable
- Crystal Holder: Water cooled.
- Crystal test display : Type of crystal being used (5 or 6 MHz)
- Crystal Health: % of crystal life remaining 0% of life referenced to a film thickness of 925 K.A of aluminum.
- Crystal Frequency: 5 or 6 MHz (selectable).
- Output Control: Rate of thickness select. Full scale and zero scale Output useful in calibration recording equipment.
- Self-test: Automatic detection and indication of oscillator Failure, power line failure, internal failure.
- Power Requirement : 230V AC, 50 Hz, 5 Amps.

11. Control Console with Stand: It will be made of mild steel neatly powder coated & placed by the side of chamber frame structure. All the power supplies, power drives, controllers, vacuum measuring gauges, etc. are mounted. The control switch houses the following.
    - Vacuum Gauges
    - Mains Control with RYB indications & isolator switch
    - ON/OFF Status of Diffusion Pump & Rotary Vacuum Pump. LT, HT & other Accessories, DTM,
    - Power Connection to connect the power to the system.
12. Mounting Stand: A compact mounting stand is provided for mounting the chamber above the stand and pumping system can be accommodated bottom side of it. The mounting stand is made out of mild steel neatly powder coated. It will have jack bolts with vibration arresting pads and castor wheels for easy movement.
13. Electrical Wiring: All components are wired internally with interlock logics and only a mains power cable with plug is taken out.
14. Electrical: Mains Supply: 230V AC, 50 Hz. Single Phase.
15. Materials: All the material used for fabrication is SS304 material and MS (neatly painted) frame is used for support structure.
16. 'O' - Rings: All 'O' Rings used are Neoprene only.

17. Welding: All weldings are done by TIG Argon Arc welding by qualified welder following ASME Code Section IX.
18. Buffing: All SS items are buffed to bright finish

Stamp and Signature of the Tenderer

ANNEXURE-2

Terms and Conditions

1. **Tenders must accompany a copy of the "Annexure II and Annexure III" section of this document, signed and stamped on each page indicating that they agree to these.**
2. **The non-refundable application fee of 0.2% of cost with the chalan of 5% of it as GST must be accompanied with tender for each instrument. The application fee must be as D.D. drawn infavour of Director, School of Energy Materials, Mahatma Gandhi University, Kottayam**
3. **The DD/Cheque for EMD or any other must be drawn in of favour of Director, School of Energy Materials, Mahatma Gandhi University, Kottayam payable at SBI Mahatma Gandhi University CampusBranch.**
4. **The tenders received late,without tender fee, without EMD, without required documents or incomplete in any respect / misleading will rightly be rejected.**
5. **Instrument should have a warrantee of at least oneyear and should have at least one year and two years extended warranty and should have at least oneService engineer and one application scientist based in India with onsite training facilityon the same quoted equipment. Training should include operation, handling and maintenance of system.**
6. **A good record in supply and service to other research institutes will be considered as a positive point for a particular company. User list of similar equipment supplied recentlyin India should be provided.**
7. **Laboratory floor space, electrical power requirements, earthing, room temperature/ humidity requirements etc. should be mentioned appropriately.**
8. **All necessary accessories should be supplied with the instrument, as per standard package offered, including complete set of service and operation manuals for diagnosis, trouble shooting, maintenance and electronic circuitry (hard and soft copies). The prices quoted must be inclusive of all accessories and installation charges etc if any and should be clearly mentioned , otherwise , it will be presumed that the rates quoted are inclusive of all these charges and will not be paid.**
9. **The Delivery Schedule, Payment Terms & Warranty/Guarantee etc must be clearly indicated in the technical bid. The charges for extended warranty and/or Annual Maintenance Contract after the expiry of offered warranty period should also be specified in the financial bid.**
10. **The price of the equipment should be quoted in Indian rupee. The total price of the equipment quoted should be inclusive of GST & other taxes if any; material cost; transportation cost; loading and unloading cost; installation cost; labour charges and allother expenses in whatsoever means.Other wise it will be presumed that the rates quoted are inclusive of all the charges and will not be paid.**
11. **Payment process will be initiated only after supply of items as per tender specificationsand satisfactory installation of the items.**
12. **It will be the responsibility of the supplier to deliver the ordered materials at School of Energy Materials, Mahatma Gandhi University, Kottayam. All required materials for satisfactoryinstallation are to be provided by the supplier at their own cost.**

13. For ensuring the guarantee relating to the quality of the articles supplied, a written agreement must be submitted by the firm.
14. Certificate from the vendor must be attached stating that they have not been blacklisted by any of the Government entities under State/ Central Govt.
15. The validity of the tenders shall be 6 months from the last date of submission of the tenders.
16. A qualified bidder should submit 5% of PAC as Security Deposit
17. If the date of opening of the tender happens to be a Public Holiday, then the tender will be opened, next working day at the same time.
18. The Purchase committee of the School of Energy Materials reserves the right to accept/ reject any or all of the tenders at any time without assigning any reason.

Stamp and Signature of the Tenderer

ANNEXURE 3

TENDER FORM PART-I (TECHNICAL BID)

Date:

From,

M/s. .....

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To,

Director,
School of Energy Materials
M.G. University, Kottayam, Pin-686560
Kerala, India.

Dear Sir,

I/We have gone through the tendering conditions pertaining to the Tender and General Terms and Conditions of Contract and other requirement for delivery and complete Installation and Special Conditions of Contract contained herein with this tender document. I/we hereby agree to supply the stores conforming to the tender specifications incorporated in ANNEXURE 1 of the tender document and also agree to abide by your General Conditions of all Contracts and Special Conditions of Contract contained in the ANNEXURE 2 of the Tender document.

You will be at liberty to accept any or more of the items of stores offered by us and I/we shall be bound to supply you the stores as may be specified in the Purchase Order/Contract.

I/We hereby agree to keep the price valid for your acceptance for a period of 30 days from the date of opening of Part-II (Financial bid) of the tender. Deviations to Technical specifications contained in ANNEXURE 1 of the tender documents are detailed in ANNEXURE-A to the tender form while deviations proposed to the General Special Conditions of Contract contained in ANNEXURE 2 are detailed in Annexure-B to this tender. Price applicable for the stores are indicated separately in a sealed envelope marked as financial bid of the tender.

I/We are also enclosing herewith all the leaflets catalogue etc. pertaining to the stores offered.

Yours faithfully

Stamp and Signature of the Tenderer

ANNEXURE 4

TENDER FORM PART-II (FINANCIAL BID)

Date:

From,

M/s. .....

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To,

Director,
School of Energy Materials
M.G. University, Kottayam, Pin-686560
Kerala, India.

Dear Sir,

In response to your invitation and as per your tendering and contracting conditions, the prices applicable for the scope of supply contained in ANNEXURE-3 (TECHNICAL BID) of our tender are indicated in the format at annexure "A" to this tender.

We hereby agree to keep the price valid for your acceptance for a period of 30 days from the date of actual opening of Part-II (FINANCIAL BID) of the tender.

Yours faithfully,

Stamp and Signature of the Tenderer