SOPHISTICATED ANALYTICAL INSTRUMENTATION FACILITY (SAIF) &

CENTRAL INSTRUMENTATION LABORATORY (CIL)

PANJAB UNIVERSITY, CHANDIGARH

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TENDER DOCUMENT FOR THE PURCHASE OF RF & DC Sputter Coater setup

Last Date for Receipt of Tender: 10 October, 2016 4:00 PM

DATE & TIME OF OPENING: To be notified later

PRICE Rs. 500/-

SECTION - I

PROCEDURE FOR SUBMISSION OF BIDS

- 1. There will be Two bid system for this Tender: Techno-Commercial bid and Financial bid
- 2. The Techno-Commercial Bid of the Tender should be covered in one sealed cover superscribing the words "Techno-Commercial Bid".

Likewise, the Financial Bid should also be covered in a **separate** sealed cover superscribing the words "Financial Bid".

The two documents viz., Techno-Commercial bid and Financial bid covers prepared as above should be enclosed in a single sealed cover marked as under:

Tender for the supply of RF & DC Sputter Coater setup

Due on	(last date for submission).
Name & Address of the Tenderer	

Note: Price should not be indicated in the Techno-Commercial bid otherwise the Tender will be rejected

- 3. Tenders received after the due date will not be accepted. If the last date for submission of Tender falls on any declared holiday in the University, the next working day will be considered as the last date for the same.
- 4. The bids prepared by the Tenderer and all correspondence and documents relating to the bids, shall be written in English language
- 5. The contract for the supply of the items is non-transferable.
- 6. Tender/Offer should be type written, other wise the same will be rejected
- 7. Each page of the tender document should be signed by the authorized signatory.
- 8. Each offer should be complete in all respects.
- 9. Telegraphic/electronic/conditional offers will not be accepted.

SECTION - II

TERMS AND CONDITIONS

- 1. **Opening of bids:** Techno-Commercial bids will be opened by the Committee after the closing date and studied. The Tenderers will be invited for presentation and clarifications if needed. Financial bids of the Tenderers complying with the prescribed Techno-commercial specifications will be opened by the Committee. Tenderers or their authorized agents may be present if they so desire during opening of the Tenders.
- 2. **Rejection of bids:** The Committee reserves the right to reject any or all offers without assigning any reason.
- 3. **EMD:** The Tender bid should accompany an EMD of minimum 2% of total value. The EMD should be made by means of an A/c payee DD in favour of the *Director CIL*, *Panjab University*, *Chandigarh-160014* payable at Chandigarh. No interest is payable on EMD.
- 4. **Refund of EMD:** The EMD will be returned to unsuccessful Tenderer only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
- 5. **CIF value and comparison of Financial bids:** FOR value upto CIL, Panjab University, Chandigarh (*shipment by air upto Delhi and insured up to the installation site*) should be quoted. and will be considered for comparison of bids. Bids quoted in foreign currency will be converted into Indian Currency at the exchange rate applicable on the day of opening of the financial bids for comparison purposes.
- 6. **Warranty Period:** The warranty period should be *one year (with spares)* from the date of installation with satisfactory performance as per specifications.
- 7. **PBG:** Tenderer selected for supply of equipment, will have to provide Performance Bank Guarantee (PBG) on any *scheduled bank situated in India, equivalent to 10 percent of the cost of the equipment* which should be valid until the expiry of the Warranty period. The PBG will be provided by the Company along with the letter of acceptance of the order by the Principals. In case of import, LC will be opened in favour of the Principals only after obtaining the PBG.

8. Terms of Payment:

- **a.** In case of import, LC will be opened for the 100% value of the equipment, 90% of the amount will be released after the shipment and remaining 10% after the installation of the equipment.
- **b.** In case of Indian supplier, 90 % payment will be released on dispatch of full equipment and 10% will be released on satisfactory installation of equipment.

- 9. **Delivery period**: Delivery should be made within 4 to 6 weeks from confirmed order.
- 10. **Delayed delivery:** If the delivery is not made within the due date for any reason, the Committee will have the right to impose penalty as under::
 - i First extension for one month or part thereof @ 2%.
 - ii Second extension for an additional month or part thereof @ 3%

Non delivery beyond extended period: If the Tenderer fails to execute the order within the second extension mentioned above or mutually agreed time frame, the order will be cancelled and EMD forfeited by the Dept. He will also be liable for all damages imposed by CIL for non supply of equipment including the liability to pay the difference between the price accepted by him and those ultimately paid by the CIL for the equipment, Such damages will be assessed by the Committee for the purchase of RF & DC Sputter Coater setup.

- 11. Increased statutory levies and duties above the rate quoted in the offer will not be an excuse for the Tenderer to delay the supply beyond the date specified in the Tender.
- 12. **Validity of rates:** Rates quoted should be valid for at least *4 months* from the closing date of the tenders.
- 13. **Consistent pricing**: The rates quoted for the Equipments by the supplier shall in no case exceed the lowest price at which the supplier of this Equipments of identical description made to any other person/organization/Institution during the above said period and should attach an undertaking in this regard
- 14. **Installation requirements**: The Supplier will clearly mention installation requirements on our part in the *Techno-Commercial bid*.
- 15. **Installation time**: The company must install the equipment *within a period of one month* of the date of delivery of the equipment at CIL. Chandigarh.
- 16. **Free Installation:** The equipment should be installed and tested to the specifications *free of cost*.
- 17. **Supporting Equipment**: The Tenderer will provide all requisite supporting equipments like isolation transformer, step down transformer, chiller *if needed*. We need the complete installed system.
- 18. Tenderers are advised to study all technical aspects and terms & Conditions, of the Tender documents. Submission of Tender shall be deemed to have been done after careful study and examination of the Tender Document with understanding of its implications.

- 19. Only Manufacturers or Authorized dealers to bid: The offering firm should clearly mention whether they are the manufacturer or authorized agent/dealer of the manufacturer. In case of agent for overseas manufacturer, a letter of authorization from the manufacturer should be submitted along with the offer. The Tenderer can also enclose the rates on the letterhead of the manufacturer if he has been authorized to do so by the manufacturer.
- 20. **Descriptive literature**: A set of specifications, description and illustrated literature of the equipment and related peripherals *should accompany the Techno-Commercial bid*.
- 21. **User and Service Manuals:** A set of User's manuals and Service manuals of the main instrument, attachments and related equipment (water chiller etc.) should be supplied with the equipment
- 22. **Equipment must be new**: The Tenderer must ensure that the equipment being offered is a new one and not refurbished or repaired one.
- 23. **Defective Equipment:** If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, unmerchantable or not in a accordance with the description /specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payments for such equipment has already been made to him.
- 24. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 30 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges.
- 25. **Damage during transit:** In case of any mishappening/damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. The CIL will not be liable to any type of losses in any form.
- 26. **Legal jurisdiction:** Any dispute in this regard of any term of the offer and on the supply of equipment is subject to *Chandigarh jurisdiction* only.
- 27. **Training** one week training on equipment usage & maintenance.should be provided free of charge at the premises of CIL.
- 28. **Availability of Spares:** The Tenderer must assure the availability of spares for servicing of equipment *for at least 10 years*. Supplier should give an undertaking that spares parts will be supplied within the specified periods as and when ordered.

- 29. **CIL Infrastructure**: CIL will provide required air conditioned space, *single phase power supply* with required electricity outlets.
- 30. **Clearance:** In case of import, the Principals will do all types of clearance work to deliver the equipment at the site of installation. Department will provide all types of documentary support including Customs Duty Clearance. Principals will themselves have to procure any requisite permission from the Govt. of country of origin of equipment.
- 31. **Bank Charges:** Bank charges in India will be borne by the Panjab University and Bank charges abroad will be borne by the suppliers.
- 32. **Similar Models installed:** The Tenderer must mention in the *Techno-Commercial bid* the similar model of equipment installed in India *during the last three years* and the *addresses of contact persons at these places*.
- 33. **Application Specialist:** The Tenderer should mention in the *Techno-Commercial bid* the availability and *names* of *Application Specialist* and *Service Engineers* in the nearest regional office.
- 34. **Response Time:** The Tenderer should mention in the *Techno-Commercial bid* the response time for attending to a complaint about the equipment.
- 35. Change of Indian Representatives: In case of imported equipment, the original manufacturer/Principals should give an undertaking that the aforementioned warranty and availability of spares clauses will be valid even in the case of change of their representatives in India.

TECHNICAL SPECIFICATIONS FOR RF & DC SPUTTERING UNIT

We are intending to procure a RF/DC sputtering unit for various applications related to thin films depositions of metals, metal alloys, composites, semiconductors, insulators, polymers on substrates of 2 inch diameter or smaller size with arbitrary shape in cosputtering and multilayer configuration. Broad technical specifications of proposed unit are mentioned as under.

Complete unit should contain following:

- 1. Vacuum Chamber
- 2. Substrate holder
- 3. Substrate heating system
- 4. Magnetron Cathode assembly
- 5. Vacuum System
- 6. Gas Flow manifold
- 7. Power supplies
- 8. Film Thickness Uniformity Digital thickness monitor
- 9. Control electronics
- 10. Cooling System
- 11.LT Thermal evaporation assembly
- 12. Spares and upgradation
- 13. Service and support
- 14. UPS
- 15. additional Warrantee
- 16. Documentation

All utilities chiller, air compressor, piping etc should be quoted as the part of system. The manufacturers /suppliers should also mention about the spare part requirements for five years. At the time of installation /commissioning/demonstration at CIL/SAIF/UCIM department, Panjab University, Chandigarh, single phase electricity connection and physical space for keeping the unit will only be provided by us.

Point wise detailed technical specifications for all above mentioned items.

1. Vacuum Chamber:

- a. Sputtering system having box type geometry with front door opening chamber, made out of non magnetic quality SS- 304 stainless steel.
- b. Chamber Size should be 380mm (W) x 380mm (H) x 420mm (D) or Higher.
- c. The vacuum chamber should be made of electro-polished material with optical view port for plasma viewing of shutter arrangement to avoid material deposition on the view port.
- d. Chamber having 11 or more ports for substrate assembly, substrate rotation mechanics, fixing mechanical and electrical feed through. Extra ports with dummy blanks should be provided in the system for future up gradation. Removable stainless steel liners should be provided with chamber.
- e. Should have two viewports, 1 No. viewport of toughened glass on front and another view port on side of chamber.
- f. Provision to carry out reactive sputtering in oxygen, nitrogen and reducing atmosphere

2. Substrate movement and holder

Substrate holder should be made up of horizontal and vertical motorized movement with holding. A substrate holder to accommodate substrates of size 2"x2" or smaller size with arbitrary shape with rotation up to 10 rpm. Provision for water cooling should also be there

3. Substrate heating system:

Substrate heating up to 700° C with temperature uniformity of $\pm 2^{\circ}$ C over the 2"x2" substrate. The heating element used for substrate heating should be compatible with vacuum, plasma and/or reactive environment controlled with PID controller.

4. Magnetron Cathode assembly

- **a.** System should have 2 Nos. magnetron fitted into the chamber in confocal arrangement for codeposition as well as for multilayer deposition without breaking the vacuum & provision to connect additional 2 Nos. in future.
- **b.** Magnetron Should accommodate targets of 2" (inch) diameter.
- **c.** The shutter should be provided with a shaft seal and a shutter plate to cover and uncover the Magnetron Sources.
- **d.** Should be able to deposit any combination of metals, metal alloys, composites, semiconductors, insulators, polymers on semiconductor/glass/metal/alloy substrates in single run.
- **e.** The System should have water cooling arrangement for the magnetron sources to ensure uniform cooling of the target during sputter deposition.
- **f.**The quoted magnetron sources should be compatible with any of the DC, pulsed DC and RF power supply. The system should be field upgradable to four guns.

5. Vacuum System:

- a. Rotary vacuum pump(Edwards/Pfeiffer or equivalent) with a minimum capacity of 250 Lit/Minute.
- b. Quote diffusion pump having capacity of 700 LPS with liquid nitrogen trap of reputed & renowned make separate price to be mentioned..
- c. High vacuum valve & roughing backing valve and liquid nitrogen trap should be provided.
- d. Digital pirani gauge with two pirani gauge heads to independently monitor the roughing (chamber) & backing pressure on the separate pirani meters in the 999 to 0.001 m.bar range, through independent display. Digital penning gauge with one metal penning gauge head to monitor high vacuum from 1 x 10⁻³ to 1 x 10⁻⁶ mbar. All the three gauge heads to be located appropriately to read respective vacuum of roughing, backing and high vacuum
- e. System should have provision to purge gas from Fine control needle valve and vent valve to break vacuum
- f. Ultimate chamber pressure of 1×10^{-6} mbar to be achieved in less than 1 hour of pumping time from atmosphere.
- g. Demonstrable leak rates better than $1x10^{-9}$ std cc/sec for the quoted sputtering unit by using Helium mass spectrometer Leak detector.

6. Gas Flow manifold

Three line gas manifold should be provided. Mass Flow Controllers to be quoted optionally.

7. Power supplies:

- a. RF Power Supply: Imported RF Generator minimum 300 Watt at frequency of 13.56 MHz with auto matching network to be provided.
- b. DC Power supply: System should have 1Kw or better DC power supply for sputtering application.
- c. The instrument should have field upgradability to connect any of the two magnetron sources to DC and/or pulsed DC power supply.

8. Film Thickness Uniformity Digital thickness monitor

- a. Should provide thickness uniformity of \leq 5% over a substrate area of 1.5" or more diameter for the sputter deposition of any one or combination of metal/metal alloy/ composite/semiconductor/insulator.
- b. Compatible Digital thickness monitor with water cooled feed through, crystal holder, 2 Nos. of crystal for the above unit.

9. Control Electronics and safety

Safety interlocks should include water flow switch, Safety switches on cabinet to cut off RF/DC power when doors are open, vacuum switch to cut RF/DC power in case of poor vacuum, electrical overload circuit for RF/DC supply.

10. Cooling System

Suitable single phase water chillier with suitable pipe line should Integral part of system.

11. LT Thermal evaporation assembly

LT Thermal evaporation assembly to be quoted optionally.

12. Spares and upgradation

- a. Spare parts such as `O` rings, vacuum pump oil, DP heater, suggested sputtering targets to be quoted optionally.
- b. Magnetron (2 Nos.) to be quoted optionally

13. Service and support

- a. Vendor should have local service support in Chandigarh or Delhi/NCR.
- b. Vendor should submit service credential certificate from customers from Punjab, Haryana, Himachal and Delhi to justify their Service Support Claim.

14. UPS

Suitable UPS to be quoted optionally.

15. Additional Warrantee

Additional three years warranty with spares to be quoted as option

16. Documentation:

Operating manuals, maintenance and safety instructions, service manuals and soft copies of all manuals are required.