



PONDICHERRYUNIVERSITY

(A Central University)
(www.pondiuni.edu.in)
Kalapet, R.V.Nagar
Puducherry-605 014

Tender Notice for Major Laboratory Equipment

The Department of Physics, Pondicherry University invites sealed tenders under Two Bid systems (Technical and Commercial) for the purchase of 1) **RF Magnetron Sputtering unit** under DST-SERB scheme and 2) **Closed cycle cryostat system** (350 K – 10 K) under DAE-BRNS project. 3) **Source meter** under DAE-BRNS project. The complete details regarding Specifications, Technical details, Eligibility, Tender Document Fee, EMD, address and Method for submission of Bid Documents, etc. are available on the

University website: www.pondiuni.edu.in.

The last date and time for submission of Tenders is
13th December 2013, 3.00 pm.

<i>S.No.</i>	<i>Name of Item</i>
1.	RF Magnetron Sputtering unit
2.	Closed Cycle Cryostat System (350 K – 10K)
3.	Source meter

Last Date of Submission of Tender: 13th December 2013 at 3:00 pm.

**Pondicherry University
Department of Physics**

Tender Document

The Department of Physics, Pondicherry University invites sealed tenders under two-bid system for the supply and installation of 1) **RF Magnetron Sputtering unit** under DST- SERB scheme and 2) **Closed cycle cryostat system** (350 K – 10 K)) under DAE-BRNS project. 3) **Source meter** under DAE-BRNS project to Dr. G. Ramesh Babu, Assistant Professor. The technical specifications for the equipment's are given below. All tenders should be sent to the address given below. The last date for the submission of tender is **13th December 2013, 3.00 PM.**

Name and List of the Equipment's:

Equipment No.1

RF Magnetron Sputtering unit

DETAILED TECHNICAL SPECIFICATIONS

S. No	Technical Specifications for ' <u>RF Magnetron Sputtering unit</u> '	
	Detailed Specifications: "Magnetron sputtering unit for depositing the Metals, Ferromagnetic metals, Oxide Insulators with RF / DC & Pulsed DC with serial sputtering compatibility"	
	Details	Description
I	Vacuum Assembly	
1.	Chamber Details	<ul style="list-style-type: none"> • Cylindrical chamber with minimum dimension of 350 mm (dia) * 350 mm (height). Mainly, it should be able to accommodate three targets. • RF / DC and Pulsed DC compatible • Double walled water cooled chamber • Chamber should be compatible for serial Sputtering • Chamber design should be suitable for an upward Sputtering.
2.	Chamber material	Stainless steel 304 or better grade
3.	Vacuum	1 E-6 mbar
4.	Vacuum Valves	Compatible with the high vacuum
5.		<ul style="list-style-type: none"> • Diffusion pump (capacity of 600 lit per sec or better) with liquid nitrogen trap and rotary pump.

		<ul style="list-style-type: none"> Diffusion pump should be planned to attach at the back side of the chamber
6.	Vacuum gauges	<ul style="list-style-type: none"> Active Digital Penning and Pirani gauges with accurate reading down to 1 E-6 mbar
7.	Gas inlet system & Mass Flow Controller	<ul style="list-style-type: none"> 2 No.s of Needle valves required 1 No. Mass flow controller for Oxygen (0-100 sccm) - Control Electronics with set point control and digital display of Flow rate in sccm Should provide the provision to connect 2 No.s Mass flow controllers in later up gradation
8.	View Ports	<ul style="list-style-type: none"> 4 No.s or greater The port should contain SS flange with toughened glass as view port. HV Compatible Glass View port with RF Shield and Shutter for Plasma Viewing High temperature compatibility
II	Substrate Assembly	
1.	Substrate size	<ul style="list-style-type: none"> Circular shape with 2 – 3 inch in size. Fixture should be able to accommodate smaller sizes of irregular shapes. Substrate holder isolated from ground for bias facility.
2.	Substrate rotation facility	0 – 20 rpm
3.	Substrate ion cleaning facility	Glow discharge plasma cleaning is Required
4.	Substrate Tilt for wedge shape coating	Required with a min. angle of 20 degrees.
5.	Capability to change substrate to target (cathode) distance	Required
6.	Substrate heater	<ul style="list-style-type: none"> Temperature measurement & control through PID controller up to 800 ± 2 Deg. Cen. Rotation should be possible during heating
III	Sputtering Assembly	
1.	RF Source	<ul style="list-style-type: none"> 600 W, 13.56 MHz Make: Dressler / Huttinger / Comdel / Seren / any other company with good track record RF Match box (Automatic) Incident Power and Reflected Power Indication Suitable switching arrangement should be provided to switch and connect the RF Magnetron power supply unit to the desire target in the chamber
2.	Pulsed DC source	<ul style="list-style-type: none"> DC and pulsed DC modes of operation Voltage ~ 800 V (max) Current ~ 3A (max) Frequency (0 – 30 KHz) or better Remote indication of Voltage, current, Frequency and duty cycle

		<ul style="list-style-type: none"> Should be Protected against overload, short-circuit and arc
3.	Magnetron Sources	<ul style="list-style-type: none"> Magnetron sputtering cathode assemblies should be with rare earth magnets and compatible to RF/DC & Pulsed DC 2 No.s of 2 inch size are required Suitable Geometry for sequential sputtering of three targets without breaking the vacuum. Source shutter should be provided for pre ionizing / shielding magnetron. Cross Contamination Shields to avoid deposition in between cathodes Water Flow Switch Interlock for each target.
4.	Special magnetics	Required for uniform sputtering and to give higher target utilization
5.	Sputtering target	System should accommodate 3 targets at a time
6.	Sputtering mode	Multi targets operate in alternate mode
7.	Service gas	Argon/Nitrogen/Oxygen
IV	Power Supply	
1	The whole Sputtering system should operate on 230 V AC, 50 Hz and Single Phase Input Power Supply	Required
2	Additional Power Supplies:	<ul style="list-style-type: none"> Power supplies for magnetron, RF mode, Pulsed DC mode, Temperature controller and any other sputtering mode should provide with system
V	Structure	
1.	Main Frame	<ul style="list-style-type: none"> Chamber Support Frame of epoxy powder coated mild steel material All interlocks for safety operation Electrical overload protection Chamber closed interlock Emergency stop Single Phasing Preventer
VI	Spare parts	
1.	Set of Essential tools	1 Set of Viton O' rings & Gaskets & 1 extra substrate holder
2.	Rotary pump oil & Diffusion Pump oil	1 bottle with minimum 5 litres & with one charge of Diffusion (Santovac) pump oil.
3.	Backing plates for mounting sputtering targets	2 Nos.
VII	Manuals	
1.	Operational manual, service manual, Troubleshooting manual	Hard copy as well as softcopy & one number each
VIII	Note	
1.	Installing and Commissioning at Department of Physics, Pondicherry University	
	The supplier should integrate magnetron sputtering with its accessories and demonstrate the operation on the available substrates. The supplier shall issue a test certificate for successful installation and commissioning.	
	Training of Research Scholars	

2.	The supplier should provide training at Department of Physics to at least three Scholars for operational & maintenance of the system.	
3.	The system should be upgradable to automatic handling in future	
4.	The schematic Mechanical drawing and Electrical circuit of the sputtering unit should be submitted along with the quotation.	
5.	The quotation should provide breakup with the individual component prices.	
6.	All critical electrical components should be certified	
7.	All the gas inter locks should be of Swagelok switches.	
IX	Optional Accessories	
1.	Additional Target holders	1 No.
2.	Mass flow controller (0 – 100 sccm)	<ul style="list-style-type: none"> • 2 No. • Control Electronics with set point control and digital display of Flow rate in sccm
3.	Digital Thickness Monitor	<ul style="list-style-type: none"> • Should be RF compatible • GPIB & RS 232 Interface option
4.	External cooling system for chamber as well as magnetron sources including pumps.	<ul style="list-style-type: none"> • 380 L storage capacity • Water Chiller with Flow rate: 30 liters/min, Inlet Temperature: 15 °C, Outlet Temperature: 20 °C.
5.	Suitable Computer, UPS, and other essential requirement for the instrument	1 No.

Equipment No.2

Closed Cycle Cryostat

DETAILED TECHNICAL SPECIFICATIONS

I	Specifications
1.	Closed Cycle refrigerator for optical and magnetic property testing
2.	Cryo-cooler with base temperature < 10 K
3.	Temperature Range: 10K - 350K
4.	Cooling capacity: 0.5W @ 10 K or better
5.	Electrical feed through: 10 (with Cu and Coax cables)
6.	Sample holder for electrical Measurements for a substrate size of 1 cm ² with radiation shield
7.	Optical ports: >=2 with optical windows
8.	1 No. set of Helium hoses
9.	Cryocable: from CCR to controller
10.	Temperature controller with Instrumentation for controlling temperature: Model 335 of Lake Shore or equivalent, with RS232/USB and GPIB cable for connectivity
11.	The CCR should be compatible to the GMW 3470 magnet for magneto transport experiments.
12.	The system should include the vacuum pumping system.
13.	Compressor: air or water cooled, 220V single phase or 3phase, 50Hz
14.	Thermometer: Calibrated Cernox Provision of additional sensors like Si-diode, Ga-Al-As sensors
15.	Please provide users list of the quoted cryostat in India.
16.	Installation kit should be provided with CCR
17.	Power: 220 VAC, 1 Phase, 50/60 Hz, 3.0/2.6 kW
II	Optional Accessories
1.	A compatible Water chiller for operating the Closed Cycle Cryostat.
2.	Suitable Computer, UPS, and other essential requirement for the instrument
3.	Cryogenic varnish
4.	Stycast epoxy
5.	3 No.s of Double Shielded Premium GPIB 2m Cable.
III	Manuals
	- Operational manual, service manual, Troubleshooting manual
	- Hard copy as well as softcopy & one number each
IV	Note
1.	Installing and Commissioning at Department of Physics, Pondicherry University
	- The supplier should integrate the Closed Cycle Refrigerator with its accessories and demonstrate the operation. The supplier shall issue a test certificate for successful installation and commissioning.
2.	Training of Research Scholars
	- The supplier should provide training at Department of Physics to at least three Scholars for operational & maintenance of the system.
	- The system should be upgradable to automatic handling in future
	- The quotation should provide breakup with the individual component prices.
	- All critical electrical components should be certified

Equipment no. 3

Dual (Current and voltage) Source Meter:

I	Specifications
1.	Current range: 10pA to 10A (max).
2.	Voltage range: 1 μ V to 1100V (max).
3.	6-wire measurement with programmable I source and V clamp.
4.	5.5 digit resolution.
5.	Option for GPIB, RS-232, and Trigger Link interfaces must
6.	Contact check option.
II	Optional Accessories
6.	3 No.s of Double Shielded Premium GPIB 2m Cable.
7.	Suitable Computer, UPS, and other essential requirement for the instrument
III	Manuals
	- Operational manual, service manual, Troubleshooting manual
	- Hard copy as well as softcopy & one number each
IV	Note
3.	Installing and Commissioning at Department of Physics, Pondicherry University
	- The supplier should install the Dual (Current and voltage) Source Meter with its accessories and demonstrate the operation. The supplier shall issue a test certificate for successful installation and commissioning.
4.	Training of Research Scholars
	- The supplier should provide training at Department of Physics to at least three Scholars for operational & maintenance of the system.
	- The quotation should provide breakup with the individual component prices.
	- All critical electrical components should be certified

TERMS AND CONDITIONS

General Information:

- a) Last date and time of receipt of the Quotations: 13th December 2013, 03.00 PM.
- b) Date and Time of Opening of the Quotations: 13th December 2013, 03.30 PM.
- b) Quotation / Tender Document fee Rs. 500/-
- c) EMD rates: 2.5% of the Total Equipment Cost
- d) Two bid systems have to be strictly followed. One for Technical bid and another for commercial bid and each bid should be submitted in separate sealed covers.
- e) However, the tender document fee and EMD as specified above should be remitted by each firm / bidder, collectively for all their bids advertised under this tender.
- f) Quoting merely the lowest price does not confer any right to any bidder for award of supply order. The University's Purchase Committee, reserves the right to select the equipment any bid under the grounds of specification compliance, technologically advanced quality, proven performance track record, brand reputation, service backup support & training, offer of additional / special features, compatibility with the existing System, etc.
- g) The Tender Document Fee and EMD should be submitted in a separate cover super scribing Bank Demand Draft and which should be enclosed with the technical bid. *Tenders received without the appropriate fees will not be entertained.*
- h). The Photo Copies of the Bank Instruments on payment of EMD should be attached with each bidding covers.
- i) The tender / quotation must be submitted along with the stipulated tender document fee and EMD in the sealed cover, super-scribing the name of the Department for whose equipment's the tender is quoted for.
- j) The cover should also contain the information like, Name of the Equipment and Serial Number of Equipment's for which the bids are submitted. The name and address of the bidder should also be mentioned at the from address space.
- k). The tenders should be addressed to ***Dr. G. Ramesh Babu, Principal Investigator and Assistant Professor, Department of Physics, Pondicherry University, Puducherry – 605 014.*** The examples for super-scribing the envelopes of the different categories of tenders are given below: -

Tender Submitted under Double bid system for the Centre for Department of Physics

Name of the Equipment: _____

To

Dr. G. Ramesh Babu,
Principal Investigator and Assistant Professor,
Department of Physics,
Pondicherry University,
Puducherry – 605 014.

From

Supplier's Address

In case of local delivery, all tenders are to be dropped in the tender box placed at the Information Facilitation Counter, Bharat Ratna Dr. B. R. Ambedkar Administrative Block, Pondicherry University, R.V. Nagar, Kalapet, Puducherry – 605 014.

I) Quotations will not be accepted through fax / e-mail.

II. Common Conditions (Import or Indigenous)

1. Purchase of Quotation Document:

The Quotation / Tender document can be downloaded from the University website www.pondiuni.edu.in or procured from the Pondicherry University on payment of fee as specified above, by means of a D.D, drawn in favor of **The Finance Officer, Pondicherry University, payable at Puducherry**. The downloaded application should be accompanied with the quotation document fee, in the form of a Demand Draft.

2. Price Schedule

The rates should be quoted for a single unit and also for the total quantity required by the University. The price should include the delivery, installation, training charges, etc. at the respective Department, Pondicherry University. The prices quoted shall remain firm until the equipment is supplied to the respective Department, Pondicherry University.

3. Quoting the Core price & Tax, Duties, Discount etc.

The taxes / duties / discounts, if applicable, are to be explicitly and separately shown in the bid.

4. Eligibility:

The firm must have the requisite domain expertise with regard to supply, installation and post-sale service of the items they are quoting. The firm should have been in existence for at least six years as on the date of this quotation and must have executed at least three orders for this kind of equipment during the last three years.

5. Duty Exemption

The University has been granted the benefit of exemption from the payment of the Central Excise Duty and Customs Duty by the Department of Scientific and Industrial Research (DSIR), India, vide their Notification No.10/97 dt. 01-03-1997 and 51/96 dated 23.07.96 respectively, in respect of

- a) Scientific and technical instruments, apparatus, equipment, Software including computers.
- b) Accessories and spare parts of goods specified in (a) above and consumables.
- c) Computer software, compact disks, CD ROM, Recording magnetic tapes, microfilms, microchips etc.
- d) Prototypes.

Customs duties at Indian port, if any, will be to the account of the University.

6. WARRANTY:

- i) The equipment's covered under the purchase order, when installed, shall be warranted for the quality, workmanship, trouble free operation and performance for a period of at least 36 months from the date of putting the system into operation at the Department of Physics, Pondicherry University, or at least 42 months from the date of receipt of the last lot of the consignment in India.
- ii) If any item covered under warranty fails, the same shall be replaced free of cost including all the applicable charges including shipping cost both ways. The information pertaining to infra-structural, power and any other requirement for satisfactory installation and commissioning of the whole system must be provided by the bidder, at least 120 days in advance of the installation to be commenced if purchase order is issued. All drawing for electrical connections, electrical safety items piping work etc. must be provided in detail.
- iii) Complete technical specifications to be included in the Technical bid. Complete technical specifications and literature, including process flow, to be included with the quotation. Manufacturers of various major parts/equipment must be mentioned explicitly.
- iv) The necessary service support should be provided by Bidder during the agreement period.
- v) The training should be provided by the supplying companies for a minimum period of two days from the date of installation with an expert team.
- vi) Technical post sale support by email and telephone will be provided during the period.
- vii) Detailed service and operating manuals in English with necessary electronic circuitry shall be provided along with the system.
- viii) A clear statement regarding availability of after-sales service and availability of spare-parts for next 5 to 10 years should be included.

ix) A recent customer list (within last five years) with contact details including email address is to be submitted with technical bids / bids as the case may be.

x) If the equipment is proprietary a product, a proprietary product certificate should be enclosed.

xi) The information pertaining to infrastructural, power and any other requirement for satisfactory installation and commissioning of the whole system must be provided by the bidder, at least 30 days in advance of the installation to be commenced if purchase order is issued.

xii) The equipment must operate at 230V / 50 Hz single phase and / or equivalent three phase electrical power.

xiii) If the bidder is an authorized representative in India, they are requested to inform their technical ability to take care of the problems in the system, if developed later within the warranty and outside the warranty period. The responsibility of the Indian agent must be clearly specified.

xiv) The bidder from abroad shall obtain, if required, export permission from the appropriate authorities in his country or the country of origin for items to be shipped to India in case of items to be imported. The University shall provide necessary information if required for this purpose.

xv) The validity of the each quotation should be at least for SIX MONTHS from closing date.

xvi) The offers will not be considered if received after the bid closing date and time.

xvii) The offers received through telex / telefax / e-mail will not be accepted by the University under any circumstances.

xviii) The University shall not be responsible for any delay / loss or non-receipt of quotations by post / courier service.

xix) No unsolicited correspondence shall be entertained after the submission of the offer.

xx) If an order is placed with the firm, the purchase shall be governed by an agreement as per the University rules in force at the time.

xxi) Additional terms and conditions will be incorporated in the purchase order, if needed, to safe guard the interests of the University.

xxii) Quotation is not transferable.

xxiii) In case of any dispute in respect of the quotation, all legal matters shall be instituted within the jurisdiction of the place where the purchaser ordinarily resides.

7. Power to reject the offer:

- i) Pondicherry University reserves the right to accept / reject any offer in full or in part or accept any offer other than the lowest offer without assigning any reason thereof. Any offer containing incorrect and incomplete information shall be liable for rejection.
- ii) No Agency commission will be paid to any authorized agent in India.
- iii) Liquidated damages: Timely supply of the ordered items, installation, commissioning (wherever is applicable) and training etc. is the essence of the contract. In case of failure to supply within the time specified in the Purchase order, a penalty / LD of 0.5% of the total value per week or a part thereof shall be levied subject to a maximum of 7.5% in respect of items which are not supplied. The decision of Pondicherry University shall be final in this regard.
- iv) Bidder(s) must be authorized business partners of Global / National service providers of the respective equipment.
- v) The Bidders must enclose authorization letter from the respective global / national service providers of the above equipment's particularly mentioning an undertaking that in case of default by the Bidder, they (Global Service Provider) shall take over all the responsibilities of the Bidder.
- vi) The Bidder should not be involved in any Bankruptcy filing for protection from it.
- vii) The training should be provided by the supplying companies on the specimen and operation of the equipment's for a minimum period of two weeks from the date of installation with an expert team.
- viii) For any clarification with respect to technical specifications, please contact the respective Department PI as per the details given below: -

S. No	Name of the PI / Department	Contact Details
1	Dr. G. Ramesh Babu / Department of Physics	<u>Rameshg.phy@pondiuni.edu.in,</u> <u>rameshcu@gmail.com</u> 0413 – 2654 785

III. Specific Conditions for Imported Equipment's

1. Payment of EMD:

The Quotation must be accompanied by EMD as stated above, by means of a Demand Draft, drawn in favor of **The Finance Officer, Pondicherry University, payable at Puducherry**. *The Small Scale units are exempted from payment of EMD provided they enclose the proof of their exemption Certificate issued by the competent authority.*

2. Payments terms:

- i) Normally a letter of Credit will be opened for 90% of CIP price, on receipt of order acknowledgement. However, 100% of the LC also be considered, if the supplier provide Bank Guarantee towards performance Security for the 10 % of the total cost of the equipment to cover the Warranty Period.
- ii) Bank charges in India shall be borne by the purchaser and outside India shall be borne by the contractor / supplier.
- iii) The offer must be in English. The rates should be indicated both in figures and words against item specified in the given table. It is preferable that the price be quoted in Rupees or in US Dollars or in major foreign currencies.
- iv) The total cost should be quoted for FOB as well as CIF – Pondicherry University.
- v) However, the price quoted under FOB or should also include the following cost if they are required during the initial stage:
 - a) Local freight / insurance for Chennai airport to University laboratory.
 - b) Installation cost if any.
 - c) Cost of consumables which are required for the equipment for initial operation up to a reasonable time.
- vi) In case of the Principal supplier of foreign country unable to meet the conditions stated at para no.4, the local agent / dealer should fulfill the above said conditions in respect of Local Insurance, Freight, safety transport and installation, etc.
- vii) The bidder from within India shall obtain the requisite approval for Imports etc., if required.

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