

Ananda Mohan College
102, 1, Raja Ram Mohan Sarani,
Baithakkhana, Kolkata, West Bengal 700009

Notification inviting Quotation for Procurement of the Equipment

Notification Number: AMC/SERB/01

Date of Notification: October 17, 2020

Quotations are invited (for a SERB project, FILE NO. EEQ/2019/000401) from the eligible concerns as per following details:

1. **Name of the Department:** Physics
2. **Name of the project PI:** Dr. Swati Das
3. **Name, address and email of the concerned person to whom the quotations should be sent:**

Dr. Swati Das
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(Online quotations will be accepted only)

4. Details of the Equipment:

<i>SL No</i>	<i>Name of the Equipment</i>	<i>Specifications</i>	<i>Terms and Conditions</i>
1	Laboratory Muffle Furnace	Maximum Temperature up to 1500°C, working 1400°C With digital PID controller –cum- indicator with relay. With pt/pt-Rh 13% thermocouple. Operated on 230v or 440v ac	One year standard warranty
2	Double beam UV-Visible spectrophotometer	<p>Microprocessor based UV-VIS Spectrophotometer with high resolution touchscreen display, for operation on 220V / 50Hz.</p> <ul style="list-style-type: none"> ▪ Stand-alone operation or complete control through PC with PC software supplied as standard ▪ True double beam optics with aberration corrected concave blazed holographic grating in Czerny – Turner mounting for high energy throughput and high quality monochromatic light ▪ Wide wavelength range of 1,100 nm to 190 nm ▪ High resolution 1 nm spectral bandwidth over entire wavelength range ▪ Wavelength setting and display in steps of 0.1nm ▪ Wavelength accuracy of ± 0.1nm for D₂ spectral line ▪ Wavelength reproducibility of ± 0.1nm ▪ Wavelength Slew rate: approx.. 29,000 nm/min ▪ Variable wavelength scanning speed: $\geq 3,000$ nm/min to 2 nm/min 29,000 nm/min when survey scanning ▪ Ultra low stray light of <0.02%T at 220nm with NaI filter ▪ Wide Photometric range of -4 to +4 Abs and 0 to 400 %T 	<p>Warranty:</p> <p>Three years' standard warranty from the date of Installation</p>

		<ul style="list-style-type: none"> ▪ High Photometric Accuracy of ± 0.002 Abs at 0.5 Abs ▪ High Photometric Repeatability of Less than ± 0.0002 Abs at 0.5 Abs ▪ Baseline stability: < 0.0003 Abs/Hr (700 nm, one hour after light source turned ON) ▪ Ultra low Photometric noise of < 0.00005 Abs (700 nm) ▪ Dual source – high intensity Tungsten-Halogen and Deuterium lamp with automatic changeover ▪ High sensitivity matched pair Silicon Photodiode detector ▪ 4 USB ports or more for high speed PC and printer connectivity, data storage and transfer through USB pen drive ▪ The instrument should provide network access via wireless connectivity. Data can be transferred to a PC via a network ▪ Must supply one pair of 10mm path length Quartz Cuvettes of 1 ml volume as a standard supply 	
3	HIGH SPEED Spin Coater	<p>High Quality Spin Coater. requirement 2 Stage Spinning Stage I - 500 - 2000 RPM Time 1 - 20 secs Stage II - 2000 - 8000 RPM Time 1 - 999 secs Four digit RPM LED Digital Display Solid State Timer: 0 - 999 sec with Digital Display process time remaining display Acceleration: 300-2000rpm/sec Speed Stability:<1% Vacuum :>2.1 CFM with vacuum and drain port. Teflon coated Stainless Steel bowl dia 8",height 2.5" with cover. With vacuum chuck for substrate diameter up to 4" . Supplied complete with Vacuum pump</p>	One year standard warranty

4	High Speed Centrifuge for Graphene	CENTRIFUGE with speed regulator, safety lid lock, digital speed METER & TIMER, With Rotor Head & Accessories TECHNICAL DATA Max. Speed: 16000RPM Max. RCF: 16,600 RCF Max. Tube Size : 40ML	One year standard warranty
5	High Vacuum Setup for Field Emission	<p><u>VACUUM CHAMBER:</u></p> <ul style="list-style-type: none"> ➤ Material of Construction (MOC): SS 304 grade /Better; ➤ Chamber size : Approximately 400 mm (W) X 400 mm (D) X 450 to 500 mm (H) [minimum requirement] ➤ Necessary ports required for Pumping, evaporation sources, Gas Inlet, Vent, gauge, feedthrough, view port, mechanism etc. <p><u>THERMAL EVAPORATION SOURCE:</u></p> <ul style="list-style-type: none"> ➤ LT evaporation electrical feed through and evaporation source holder for evaporation made of electrolytic pure copper, with 200 A current carrying capacity for sector evaporation source holder to be provided as a standard which can accept Filament / Basket / Boat as evaporation source. ➤ A 200 A power supply capable of delivering 200 A at 10 V, 100 A at 20 V ➤ Thyristor Controller in the input circuit of LT selector provides the output power variation. ➤ Digital panel meters provided for secondary current through current transformers. ➤ Electromagnetic shutter with control panel for Thermal source <p><u>IB CLEANING:</u></p> <ul style="list-style-type: none"> ➤ One HT electrical feed through to carry power for ion cleaning should be provided. 	Warranty: Three years' standard warranty from the date of Installation

- A bar type ion bombardment gadget should be fixed on the feedthrough to provide a uniform glow discharge.
- A 5000V DC open circuit, 3500 Volts at 50mA high reactance type λ transformer and solid state bridge rectifier should be provided.
- Thyristor based IB current controller with display should be there

Substrate Holder:

- 260mm dia flat static work holder

FILM THICKNESS MONITOR:

- A Digital Thickness monitor with water cooled Crystal holder, and Oscillator to be provided to measure the in situ rate of deposition and Thickness. The DTM should have the following specification:
 - Rate Display: 3 digits LED auto ranging from 00.00 to 999 A°/sec.
 - Thickness display: 4 digits LED auto ranging from 0.000 to 999.9 kA°.
 - Static Thickness resolution: 1 A° at min. update rate.

High vacuum pump:

- A diffusion pump having suitable pumping speed (minimum 600 lit/sec) to achieve chamber vacuum level at least 5×10^{-7} mbar. Detachable liquid nitrogen trap to be provided for fitting below the high vacuum valve and for use when needed.
- Ultimate Pressure: $\leq 5 \times 10^{-7}$ mbar to be achieved

Rotary Pump:

- Dual stage rotary pump (12 m³ /hr or Higher) for roughing and backing operations.

HIGH VACUUM VALVE:

		<ul style="list-style-type: none"> ➤ Motorized high vacuum Poppet type valve with built in facility to automatically throttle the pumping system by ‘cracking’ the valve, for maintaining accurate process pressure for plasma processes. ➤ Drawing of the Poppet valve should be provided along with the bid. <p><u>VACUUM VALVES:</u></p> <ul style="list-style-type: none"> ➤ Electro magnetically operated right angle bellow sealed valves for roughing , backing and high vacuum applications ➤ Electro magnetically operated Vent valve ➤ Fine control needle valves to be provided <p><u>SS Plumbing line & Collar</u></p> <ul style="list-style-type: none"> ➤ SS Plumbing line with flexible hoses & KF connections wherever required with necessary interlocks to be provided <p><u>VACUUM GAUGES:</u></p> <ul style="list-style-type: none"> ➤ Digital Pirani and Penning Gauges with display to be provided. ➤ ➤ Necessary pumping systems can be accommodated below the stand ➤ Must have castor wheels for mobility with arresting pads. <ul style="list-style-type: none"> ➤ Set of O rings and gaskets – 1 set ➤ Quartz crystals - 10 No’s ➤ Tungsten helical - 6 No’s ➤ Tungsten baskets – 6 No’s ➤ Molybdenum Boats – 5 No’s ➤ Rotary Pump Oil – 5 litres <ul style="list-style-type: none"> ➤ Water chiller unit of capacity of 0.5 TR is required with re-circulating pumps, storage tank, valves, gauges 	
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		<p>etc. for closed loop water cooling</p> <ul style="list-style-type: none"> ➤ Supplier or its Authorized Agent should have ISO or equivalent international standard certificate. ➤ Supplier or its Authorized Agent must have supplied minimum 5 nos. of similar equipments to Government labs / Govt. Institutions / Universities, etc. ➤ List of Organization names with user details to be submitted along with offer where similar type supplied earlier to above said institutions / Universities / etc. ➤ Original Invoice, Original Warranty Certificate, Original Test Reports should be produced for all imported items from OEM (Original Equipment Manufacturer) at the time of supply of the equipments ➤ System Catalogue & Accessories catalogues like Rotary Pump, digital thickness monitor should be provided along with Technical Bid ➤ Supplier will support the user with all the spares for a minimum period of 10 years. ➤ Local Service should be available. Detail of experienced service engineer including contract detail should be provided in tender document. ➤ Bidder has to submit audited accounts (Balance sheet profit and loss account) of last 3 financial years. Audited statement must be signed and stamped by qualified chartered 	
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	<p>accounted.</p> <ul style="list-style-type: none"> ➤ Bidder has to submit last 3 years Income Tax return certificate ➤ Operation Manual is required after installation and acceptance of equipment ➤ Training for 1-2 users is required to make them well familiar with the operation of various components and successful growth of the thin films using the given deposition unit. 	
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4. Last date of submission of the quotation by email: October 31, 2020 (closed 1730 hrs. IST)

Note:

1. The Principal Investigator of this project the right to reject any quotation if it fails to fulfil general norms.
2. The Principal Investigator of this project the right to cancel any notification inviting quotations for procurement of the equipment under unavoidable circumstances.
3. The payment will be done after successful installation of instrument.
4. The decisions of the purchase committee and the Principal will be final in this regards

Principal Investigator :

Swati Das

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PKM 15
16/10/2020
Principal

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