



झारखण्ड केन्द्रीय विश्वविद्यालय  
Central University of Jharkhand  
Brambe, Ranchi, Jharkhand, 835205

CUJ/CAP/AG/DST-CERI/NIT/2017/1

Dated: 22-02-2017

Sealed quotations are invited for the articles enclosed in the separate sheet subject to the terms and conditions given below. The quotation should be addressed to Dr. Avijit Ghosh (PI of the Project), Centre for Applied Physics or Dr. Basudev Pradhan (CO-PI of the Project), Centre for Energy Engineering, Central University of Jharkhand, Ratu-Lohardaga Road, Brambe, Ranchi, 835205 and should reach on or before 16/03/2017. Quotations will be opened on the next working day.

**TERMS AND CONDITIONS**

1. Quotations without any erasures and overwriting must be submitted in sealed cover addressed to the, Dr. Avijit Ghosh, Centre for Applied Physics, or Dr. Basudev Pradhan, Centre for Energy Engineering, Central University of Jharkhand, Ratu- Lohardaga road, Brambe, Ranchi- 835 205 super- scribed Tender/ Enquiry No. and the due date failing which, quotation may be ignored. Tender/ quotation should be sent through Post/ Courier/ By Hand.
2. The rate quoted should be inclusive of all packing, forwarding, commissioning & installation, sales tax, freight and insurance charges and should remain valid for our acceptance for minimum period of six (6) months from the due date of opening of the quotations. The quotation should be CUJ consignee's site basis i.e. Central University of Jharkhand, Ratu Lohardaga Road, Brambe, Ranchi.
3. Manufacturer's name of company of origin of materials offered must be clearly specified. Complete details of illustrated literatures/ or drawings, in original (not photocopies), if any must accompany all quotations.
4. The Tender Document for items will be Two- Bid system consisting of Technical Bid and Price Bid. The Tender Document will be submitted item-wise in two separate sealed covers clearly mentioning on the envelope the details of items for which Bid is submitted.
5. The University will not entertain requests for revision in prices once quoted for whatever reason after the tenders are opened during the period of contract.
6. All goods must be delivered at our University at Ratu- Lohardaga Road, Brambe, Ranchi for inspection by our inspecting authority.
7. Full payment will be made within 30 days of the receipt and acceptance after inspection of supplies at destination. The quotations containing different payment terms are liable to be ignored.
8. All goods must be delivered at our university at Ratu- Lohardaga road, Brambe, Ranchi (Stores & Purchase Section) after confirmed order. The University will provide DSIR

certificate, Educational certificate if necessary. The University will not be responsible for issuing any Road Permit.

9. Only Manufacturer/ Authorized dealer/ firms of repute dealing in the items listed in the quotation having experience in sale and repair/ maintenance, need apply.
10. Only latest models/ mentioned models of items need to be quoted.
11. It should be mentioned specifically whether price quoted includes all taxes and duties. Sales tax and/ or other duties legally liable and intended to be claimed should be distinctly shown in the tender. Clearance at customs will be arranged by the supplier.
12. VAT/CST Registration Number and its validity should be indicated. Documentary evidences be supplied/ attached to the tender documents.
13. All rates shall be indicated both in words and figures. Where there is difference between the rates quoted in words and figures, rate quoted in words will prevail.
14. The supplier shall make delivery of the items within the stipulated period from the placement of the purchase order. The purchase order would be placed after assessing the requirement and hence, actual quantity may increase/ decrease
15. The Bidder must enclose point wise compliance of the technical specifications of each item.
16. The price of Tender Document is **Rs. 1000/- only** (One Thousand rupees only) (nonrefundable).  
The Tender Document price should be attached to the Technical Bid in the form of Bank Draft in favour of "Central University of Jharkhand" payable at Ranchi.
17. The Tender Documents comprising of Price- Bid, Technical Bid and Earnest Money Deposit (**refundable**) mentioned against each items in the form of Bank Draft in favour of "Central University of Jharkhand" payable at Ranchi kept in the separate envelope super- scribed with the name of the same. The Tender Document must be enclosed with Earnest Money Deposit otherwise the tender document will be rejected. All the documents must be enclosed in a bigger size envelope super- scribed with the tender number and item name.
18. Only those Manufacturers liable to participate having ISO 9001 and ISO 14001 certification.
19. All legal disputes shall be under the jurisdiction of Jharkhand High court, Ranchi.
20. The University reserves the right to accept or reject any Bid, without assigning any reason thereof. No correspondence in this regard will be entertained.
21. All the participating firms should attach supporting documents in favour of:
  - a) Have at least 5 years of experience in the field.
  - b) Have an annual turnover of at least Rs. 50 Lakh per annum for each of the last 3 years (i.e 2012-13, 2013-14 & 2014-15) (Agency should produce a certificate from their Audit Firm in respect of turnover for the mentioned period)
  - c) It is compulsory for the Indian agents, who desire to quote directly on behalf of their foreign principals, to get themselves enlisted with the central Purchase Organization (eg.DGS&D) or has to be registered with Directorate or Small Scale Industries or any other appropriate authorities.

- d) Have valid TIN Number for registration under VAT/CST
- e) Have PAN for Income Tax. Supporting documents for Income Tax return for the last Two years (i.e 2013-14, 2014-15).
- f) Documents as proof in respect of Technical bid along with supporting documents.
- g) Profile and Track Record of the agency. (3 years)
- h) Copy of signed Balance Sheets of last three years.
- i) Minimum 5 installations report of the quoted model in India.
- j) Detailed terms & conditions regarding performance/ warranty/ bank guarantee/ Inspection/LD/ penalty for delayed supplied will be elaborated in purchase order. For proprietary items/ single manufacturers or Government manufacturers, proper certification in original is to be attached along with the Technical Bid.

**Dr. Avijit Ghosh (PI)**  
**Dr. Basudev Pradhan (Co-PI)**

### List of Instruments

Sl. No.	Name of the Instrument	Technical specifications		EMD (In Rs.)
1.	<b>Glove Box with spin coater and quartz window</b>	<b>Features</b>	<b>Descriptions</b>	<b>75,000/-</b>
		Box Material	Stainless steel, brushed finished inside surface	
		Internal Box Dimensions	900 mm x 1200 mm x 750 mm [H x L x D] or higher	
		Glove Ports	2 or more Teflon glove ports, 220 mm dia should be O ring sealed	
		Gloves	Gloves Butyl	
		Safety Window	Polycarbonate window sapphire coating for chemical and scratch resistance	
		Dust filter	0.3 micron, class H13	
		Shelves	3 x Height Adjustable, Stainless Steel shelves	
		Box pressure	Automatic Box pressure from -15mbar to +15mbar Positive Pressure regulation without vacuum pump	
		Foot pedal	Water proof Foot pedal for Box Pressure adjustments	
		Feed through	2 DN 40 feed through, one should be electrical or better	
		Box Lamp	Fluorescent lamp should be front mounted, automatic switch off.	
		Stand	height 1000 mm, with castors and machine feet (height adjustable)	
		Heat exchanger	Glove Box should be integrated with heat exchanger	
		Antechamber	Cylindrical Antechamber, 390mm diameter, Length 600mm, Material stainless steel, Brushed finish Thickness 2.5mm, Sliding tray stainless steel Door lock easy to operate, spindle lock	
	Purifier	Single filter Purifier Re-generable		
	Attainable purity	Attainable purity should be less than 1 ppm H <sub>2</sub> O and O <sub>2</sub> (at complete pressure range)		
	Removable	oxygen minimum 30L and moisture		

	capacity	minimum 1300g or higher
	Blower	Integrated blower, Flow rate more than 85m <sup>3</sup> /h
	Blower Speed	Automatic Blower speed reduction / increase back to 100%, based on O <sub>2</sub> and H <sub>2</sub> O level
	Pump	Rotary vane pump with Oil mist filter, Oil re-circulation Automatic gas ballast control, 17m <sup>3</sup> /h, dual stage, Automated Switch off of Vacuum pump, Activation at a user Set Time
	PLC Control	Automatic PLC controlled regeneration
	Antechamber	Smaller- Antechamber -150 (D) x 400 (L) mm, Hinged doors, with sliding tray, should be 1/3rd inside and 2/3rd outside or higher
	Sensors	Solid state oxygen sensor, 0- 500 ppm Solid state moisture sensor, 0-500 ppm or better quality sensors
	Solvent adsorption	Solvent adsorption chamber, 5kg activated carbon, with inline and bypass modes
	Operation panel	PLC Controller with Color Touch panel for operation of all Glove box functions
	Remote feature	Remote monitoring of glove box parameters and alerts when values exceed set limits
	Spin coater	For cleaning, drying, coating and/or etching up to Ø 160 mm substrates, Polymer type, Transparent Lid with syringe holder for standard syringe, step-by-step Programming, Keyboard with LED Backlight Display Programmable Storage of 20 Programs with 99steps / each for: Time 1-999 sec/step, Speed 1-10,000 RPM, Acceleration / Deceleration 1-7,500RPM/Sec, Vacuum On/Off Digitally controlled Motor with digital incremental speed signal feed back to include one standard Vacuum Chuck Ø45 mm for up to Ø 6" wafers.
	Quartz window for solar simulator	Should be integrated at base of Glove box size of 4 inch diameter
	Electrical feed through	2 pair more electrical feed through with vacuum buffer
	Drain connection	Integration Spin coater with Electrical feed through for power supply Vacuum supply with vacuum buffer tank One Drain connection with separation valve One Waste bottle outside the glove box.
	Installation base	Should have satisfactory installations base at eastern region with satisfactory service report
	Service Support	Should have Service support from local/ eastern service engineers, provide contact details
	Utilities	Power supply: Voltage 220 V, 50Hz,

			single phase	
		Warranty	Minimum one year after commissioning	
		Accessories	All relevant accessories O & M manual	
2.	Quantum Efficiency (QE) Measurement system	Type of measurement	Spectral response (SR), External quantum efficiency (EQE) and Internal quantum efficiency (IQE)	60,000/-
		Light Source	Xenon Arc lamp( $\geq 150W$ ) (or equivalent), Should be CE certified and should compliant with RoHS. Power Supply should have Constant Power, Current and Intensity control modes. USB or RS-232 communication is preferable. Light Source should includes all necessary items like lamp housing, Power supply, lamp etc.	
		Monochromator	Spectral range: 300-1100 nm and preferably up to 1800 nm(optional) Spot size: $>1 \text{ mm}^2$ (circular or rectangular at focus) USB and/or RS-232 control or equivalent Wavelength accuracy : $<1 \text{ nm}$ Focal length: $\geq 125 \text{ mm}$ Stray light $<0.05\%$ Software should be LabView based Should be compatible with all other items like Source, Filter wheel etc.	
		Signal acquisition	Suitable Chopper with dual channel lock-in-Amplifier/pair of lock-in-Amplifiers for the test cell and reference cell, appropriate modulation frequency Lock-in-Amplifier: Computer Interface: IEEE-488.2 and RS-232 interfaces standard. All instrument functions can be controlled and read through IEEE-488.2 or RS-232 interfaces or TracQ Basic software utilizes GPIB communication.	
		Sample holder and assemblies	Temperature controlled Vacuum chuck Suitable holder for organic or perovskite solar cell measurements Test fixture for thin films	
		Reference cell	System should supplied QE test cell for testing purposes.	
		Detector	NIST traceable Calibrated Si Detector for 300-1100 nm Ge Detector for up to 1800 nm (Optional) Integrating Sphere option should be quoted and Manufacturer should confirm the compatibility and up gradation of Integrating sphere based measurements.	
		External voltage control	0 to 10.0 VDC or equivalent	
		System control & software	Software controlled data acquisition Direct reports of measurement results including SR, IPCE, IQE, AM1.5 Jsc Plotting of SR, EQE and IQE for each point of measurement	

			Compatible desktop computer with monitor (24") with latest Windows operating system. 2KVA Online UPS with the half an hour back up has to be supplied	
		Utilities	Power supply: Voltage 220 V, 50Hz, single phase	
		Warranty	Minimum one year after commissioning	
		Accessories	All relevant accessories O & M manual	
		All necessary focusing and coupling optics should be quoted		
		Filter wheel with at least three filters should be quoted for second order sorting		
		The system can be supplied as single box solution. In case, if you are supplying components please quote for the Optical Breadboard, and all necessary and compatible mounting accessories including sample holders. All the items should be compatible with each other and Vendor should guarantee for the installation.		
3.	Impedance Analyzer	<b>Generator</b>	<b>Voltage Mode / Current Mode</b>	35,000/-
		AC Amplitude $\leq 10\text{MHz}$	0 to 3V rms / 0 to 60mA rms	
		AC Amplitude $> 10\text{MHz}$	0 to 1V rms / 0 to 20mA rms	
		Max AC Resolution	5mV / 100 $\mu\text{A}$	
		DC Bias Range	$\pm 40\text{V}$ / $\pm 100\text{mA}$ or better (without using any booster/external power supply)	
		Max DC Resolution	10mV / 200 $\mu\text{A}$	
		Output Impedance	50 $\Omega$ $\pm$ 1% / $> 200\text{K}\Omega$ at $< 1\text{KHz}$	
		Frequency Range	$\leq 10\mu\text{Hz}$ to $\geq 30\text{MHz}$ or higher	
		Frequency Resolution	0.015ppm or better	
		Frequency Accuracy	0.1% or better	
		Sweep Types	Frequency (log or linear), ac/dc voltage, ac/dc current	
		Inductance	100nH to 1KH or better	
		Capacitance	1pF to 10mF or better	
		Resistance	10m $\Omega$ to 100M $\Omega$ or better	
		Accuracy	0.1% or better	
		Resolution	5 digits	
		Input System	Voltage (x2) / Current	
		Number of Channels	3 independent analyzers operating in parallel	
		Ranges	30mV, 300mV, 3V / 6 $\mu\text{A}$ , 60 $\mu\text{A}$ , 600 $\mu\text{A}$ , 6mA, 60mA	
		Max Resolution	1 $\mu\text{V}$ / 200pA or better	
		Full Scale Peak	$\pm 5\text{V}$ / $\pm 100\text{mA}$	
		Inputs Protected	$\pm 46\text{V}$ / $\pm 250\text{mA}$ or better	
		Variable	Frequency, AC Amplitude, DC Bias	
		Measured Parameters	Voltage gain, phase, real, imaginary, Z, R, X, Y, G, B, V, I, group delay, C, L, Q, D	
		Software Capability:	Appropriate software for all type of measurements, equivalent circuit / modeling techniques for detailed analysis of results, Software should have comprehensive synchronized control on	

			instrument and temperature controller data acquisition.		
		Sample holder	Suitable sample holder for at least 20mm diameter pallet samples to be measured in room temperature		
		Utilities	Power supply: Voltage 220 V, 50Hz, single phase		
		Warranty	Minimum one year after commissioning		
		Accessories	All relevant accessories O & M manual		
		<p>Log Sweep : No. of points / decade should be greater than 500.  The instrument should be capable with 2, 3 or 4 terminal measurement configurations.  The instrument should have provision to operate easily through front panel &amp; also using computer using specialized software.  GPIB / Ethernet interface should be available to connect with computer.</p>			