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PERIYAR UNIVERSITY

Reaccredited with 'A' Grade by the NAAC

PERIYAR PALKALAI NAGAR
SALEM – 636 011

TENDER NOTICE

No. PU/R/PL&D2/RUSA/Equipment purchase-4/2017 **Date: 21.11.2017**

Sealed tenders will be received by the Registrar, Periyar University, Periyar Palkalai Nagar, Salem – 11 upto 11.00 A.M. on **26.12.2017** for the **Purchase of Solar Simulator with Accessories for RUSA grant Fund in the Periyar University** from reputed firms. The intended tenderers should show their credentials and get concurrence of the Registrar before purchase of tender schedules. Tender schedules can be had from the undersigned from **29.11.2017** to **25.12.2017** between 11.00 A.M and 4.00 P.M on payment of demand draft drawn in any nationalized bank in favour of the Registrar, Periyar University, payable at Salem as detailed below. Tender should reach this office on or before 11.00 A.M. on **26.12.2017**.

Tenders to be opened on **26.12.2017** at 12.00 noon in our office

The EMD in the form of demand draft should be drawn in any Nationalised bank in favour of the Registrar, Periyar University, payable at Salem.

Sl.No	Description	Qty.	Cost of tender documents (Including GST 18%)	EMD Rs	Time of completion of supply
1.	Solar Simulator with Accessories	01	Rs. 10,620/- (Cost-Rs. 9,000/- + GST 1,620/-)	EMD at 1% of the Instrument Value	10 days

(Specifications are Overleaf)

REGISTRAR

Specifications of Solar Simulator with Accessories

Class AAA SOLAR SIMULATOR

Simulator Type	Class AAA Solar Simulator for IEC/ASTM/JIS Standards and illumination should be Vertically downwards.
Beam Size	2x2 inch or bigger
Optical Design	Solar Simulator housing should have proper optical design to remove IR radiation. And lamp mounting should be vertical to avoid uniformity mismatch and the light should be taken through mirrors to optimize IR output from Xenon lamp. It should not fall directly on working plane. Should be fiber free system.
Typical Power Output	100mW/cm2 (1 Sun) ±20% Adjustable Variable light output option should be given. This can be mechanical or Filter based option to vary the output intensity from 0-1 Sun. If Filters provided, please provide it with Filter wheel etc. Considering the stability and safety we are not interested to vary the intensity through power supply.
Lamp Wattage	450 W or higher Xenon lamp
Spectral Match Classification	A (IEC 60904-9 2007) A (JIS C 8912) A (ASTM E927 - 05)
Spectral match	13.8% - 23.0% (400-500nm) 14.9% - 24.9% (500-600nm) 13.8% - 23.0% (600-700nm) 11.2% - 18.6% (700-800nm) 9.4% - 15.6% (800-900nm) 11.9% - 19.9% (900-1100nm)
Uniformity Classification	A (IEC 60904-9 2007) A (JIS C 8912) A (ASTM E927 - 05)
Beam Uniformity	≤2 % Uniformity defined as (please mention your method while quoting) : (Max irradiance – Min irradiance)/Max irradiance + Min irradiance) X100%
Temporal Instability	≤0.5% STI ≤2.0% LTI
Working Distance	At least 6 Inch or higher
Temporal	A (IEC 60904-9 2007) A (JIS C 8912) A (ASTM E927 - 05)

Instability Classification	
Collimation Angle	(half angle) <±4 °
Line Regulation	0.01 %
Power Requirements	Indian Standards, 240 V, 50 Hz
Lamp Type and lifetime	Xenon, 1000 hours average.
ISO certificate	The manufacturing facility should have ISO certification and certificate should be enclosed.
Class AAA Certificate	The Solar Simulator should come with Class AAA certificate and the manufacturing firm should have ISO 17025 lab for PV. Certificate to meet IEC 60904-9 Edition 2 (2007), JIS C 8912, and ASTM E 927-05.
Power Requirements	Should work in Indian Power standards.
	• Should have Temperature sensors and interlocks to ensure operator safety. • Proper Cooling system should be included for Solar Simulator safety and Interlock should be there to ensure safety of the instrument. • Lamp replacement should be simple and easy. • To reduce stray light non-reflective black finish should be there. • Optical Design should able to maintain Spatial Uniformity for long time running.

2. IV Tester:

Should have runs I-V measurements and calculates critical parameters such as short circuit current (Isc), current density (Jsc), open circuit voltage (Voc), fill factor (ff), maximum output power (Pmax), cell efficiency (η), and other standard photovoltaic cell parameters. The station include a source/meter (Keithley based), cabling USB-GPIB converter, and IV measurement software.

- **Communication Interface** GPIB-USB
- **Current Accuracy** <0.23% across all ranges
- **Current Range** 1uA - 1A
- **Current Resolution** 10pA - 10uA
- **Duration of IV Measurement** <1 s
- **Electrical Interface** 4-Wire
- **Output Power** 20 W
- **Number of Measurement Points** from 2 to 1,000, user selectable
- **Software** should be LabView based.

- **Voltage Accuracy** 0.02% across all voltage ranges
- **Voltage Range** 200mV - 200V
- **Voltage Resolution** 1uV - 1mV

3. Reference cell meter or Power meter:

A NIST traceable calibrated Si reference solar cell and a meter to read the value in Sun units should be quoted.

On the other hand, please quote Power meter and calibrated Thermopile detector for Sun measurements in watt unit. Thermopile detector should have range from 190 nm to 11 micron and 10 Watt max measurable limit and should be able to withstand the power density upto 25 KW/cm2. Should have repeatability of < +/-0.5% and should come with inbuilt heat sink.

A Suitable Power Supply should be quoted. It should be CE certified and ROHS complaint one with TFT display.

4. Cell Holder & Probe Kit:

Vacuum cell holder and Probe Kit needs to be supplied for top and bottom contact solar cells.

5. A Light Source:

A 100 Watt Xe (Ozone free) arc source should be quoted for doing Light Bias as well as should be able to use separately for Water splitting/photochemical reaction studies. It should have >30 mm Dia light output and fiber as removal accessory for light biasing application.

The Light Source should have in built automated 5 position filter wheel and filters for Photochemical/ water splitting applications. Should have Mechanical Iris.

This should be CE certified and RoHS Compliant and should be upgradable in future as Tunable Light Source with Monochromator.

USB option is preferable.