

Department of Chemical Engineering

Date: 30/8/2012

Indian Institute of Technology, Delhi

NIQ

Following specifications are required for **Solar simulator for solar cell studies**:

SrNo	Features	Description
1	Maximum Cell Dimensions	50 X 50mm
2	Measurement Range	Voltage : 0 to 2 V Current : 0 to 10A
3	Data Acquisition -	Voltage and Current ADC resolution 16 BITS, Setting Voltage resolution DAC 12 BITS.
4	Cell Testing	SOLUX DC Light Sources fixed on top and Solar PV Cell placed inside a Glass Top Metal Enclosure. The contacting mechanism is a isolated top and bottom gold coated spring loaded pins mounted prong, which holds the solar cell in horizontal position. The Reference Pyranometer is mounted inside the enclosure for exact measurement of the instantaneous insolation during the characterization. The inside volume of the enclosure is temperature controlled with external air chiller / heater. The Temperature range of control is 10DegC – 80DegC. Thermocouple/RTD is used to sense the temperature inside the enclosure for control.
5	Light Source	Multiple SOLUX DC Light Sources for illumination.
6	Illumination Uniformity	± 3% over entire test area
7	Reference Solar Cell /Pyranometer	A Silicon based Pyranometer Will be coupled to the electronic circuitry to monitor illumination intensity for acquiring the on-line irradiance of the Light during the characterization.
8	Variable Insolation	70-110mW/cm ² , measured by reference solar cell and acquired by micro-controller.
9	Electronic Load	A Microcontroller controlled SOURCEMETER electronic load for automatically varying the module load to plot the I-V curve.
10	Test Cell Types	a) Mono Crystalline (AR coated & non AR coated) b) Poly crystalline (AR coated & non AR coated) c) Organic Solar Cells.
11	External Chiller	External AIR Chiller will be provided for supplying chilled air to cool the preheated Solar Cell from HOT to COLD temperatures.
12	Temperature Control	The cell testing temperature is Measured from a sensor during testing to allow Temperature compensation of the I-V data. For I-V Characterization w.r.t. to the temperature, the Solar cell will be initially heated to required temperature and allowed to be cooled by pumping chilled air from the reservoir thereby reducing the temp of the cell from Hot to Cold. The Embedded Micro-controller will continuously monitor the Solar cell temperature and characterize the cell at required programmed temperatures. The system can generate

		the IV for the cell for all temperatures right from the programmed HOT and COLD temperatures in a single HOT to COLD temperature run.
13	Extrapolation of I-V data	Option in the software menu for extrapolating the data to the required temperature and Sun-Insolation.
14	Computer Interface	The System is Microcontroller based and has its own LCD displays for the parameters. However the RS-232C Interface provided enables the user to download data to a computer for storage, retrieval and printing with user friendly software.
15	Deliverables	Solar Cell Characterizer with DC SOLUX Lamps LAPTOP for Data Acquisition. DeskJet Printer. External Air Chiller with Temperature Controller. Operation Manual
16	Spares	Set of Spare Lamps Set of Gold Coated Spring Loaded Pins for top and bottom arm.

Please send the above quotations latest by **21/9/2012**

Terms and conditions

1. Quotations must be in sealed envelope; **technical** and **commercial bid** must be sent **separately** in two sealed envelopes & then **put together in one envelope**. The quotes must reach the following address by 21/9/2012 by 17:00 hours latest.

Prof. A. N. Bhaskarwar

Department of Chemical Engineering.

Indian Institute of Technology, Delhi

Hauz Khas New Delhi – 110016.

2. Price must be quoted CIF New Delhi.
3. Please specify warranty period.
4. Indian agency certificate must be enclosed if applicable.
5. Propriety certificate might be enclosed if applicable.
6. Payment through L/C.
7. Validity of quotations should be at least 3 months.
8. Period of delivery should be mentioned.
9. No advance payment will be made.

10. Educational discount should be mentioned

Remarks: The Institute reserves the right to accept or reject any of quotations without assigning the reason thereof.

Prof. A. N. Bhaskarwar
Deptt. of Chemical Engineering
Indian Institute of technology, Delhi
Hauz Khas New delhi-110016
Ph no. 011- 26596161
Email anbhaskarwar@gmail.com

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