INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH

PUNE

CLARIFICATION ON TENDER NUMBER - IISER-PUR-1045-15

ITEM DESCRIPTION- PROCUREMENT OF SEMICONDUCTOR PARAMETER ANALYSER SYSTEM WITH PROBE STATION

Refer our Press Tender Notice No.IISER/S&P/16/15-16 dated 28.1.2016 for procurement of Semiconductor parameter analyser system with Probe Station. Tender Reference Number – IISER-PUR-1045-15.

Pre-Bid meeting was held on February 09th , 2016 at 3.00 PM and minutes of meeting is as under.

At the outset, the Chairman welcomed all the Members and the representative of the Prospective Bidders and briefed in general the scope of the Project and thereafter requested Assistant Registrar (S&P) to brief the vendors on the salient features of the commercial terms and the indenting Officer to read out the clarification sought by the Prospective Bidders and replied thereto as detailed in Annexure -II

The representatives present were satisfied with the replies given and it was informed that the corrections / additons / clarifications given, as discussed during the Pre-Bid Conference would be hosted on the website of IISER Pune and all the Prospective Bidders are required to take cognizance of the proceedings of the Pre-Bid Conference before submitting their bids as stipulated in the Bidding Documents.

The other terms & conditions of the notice issued on our IISER website www.iiserpune.ac .in will remain unchanged. No more correspondence in this regard will be entertained

The meeting ended with vote of thanks to the Chair

Sd/-

9.2.2016 Assistant Registrar (S&P)

ANNEXURE -II

IISER PUNE

PRE-BID CONFERENCE FOR PROCUREMENT OF SEMICONDUCTOR PARAMETER ANALYSER SYSTEM WITH PROBE STATION

TECHNICAL QUERIES AND CLARIFICATION

TENDER NUMBER - IISER-PUR-1045-15 – Chapter 4 , Page No 25-26 **DATE : 9.2.16**

"Semiconductor electrical characterization system (4200-SCS made from Keithley/Tektronix) should be useful for characterizing electrical properties of Metal Organic Frameworks thin film devices. It should be easy to operate integrated system suitable to measure low level electrical signals with built in interactive test modules for nanostructures including *I-V* measurement of bio-functional nano-devices."

The above paragraph should be read as

"**Fully integrated Semiconductor Electrical Parameter Characterization System to be useful for characterizing electrical properties of inorganic, metal-organic, hybrid, polymer and thin-film materials. It should be an easy to operate and user friendly system capable of measuring low level electrical signals with built in interactive test modules for standard *I-V* measurements."**

Serial No.	Query/Clarification Sought	Specification	Clarification / Amendment
1	Type of SMU (High Power & Low Power)	2.2W & 20W	High power ≥20W Low power ≥2 W
2	No of SMU	2 expandable upto 9	4 (2 high-power and 2 low power) expandable upto 10
3	Voltage Resolution: Measure / Source	1 uV to 200 uV / 5 uV to 5 mV	≥0.5 uV to ≥100 uV / 5 uV to 5 mV
4	Current Resolution: Measure / Source	100 aA to 100 nA / 1.2 fA to 5 uA	100 aA to 100 nA / ≥1 fA to 5 uA
5	Voltage Range: Measure / Source	200 mV to 200 V	≤2V to 200 V
10	Built in C-V Measurement : Range: Frequency Range: DC Voltage Bias: Measurement Parameters:	 1pF to 1uF 1KHz to 10 MHz variable. + / - 30V / 1mV resolution. Cp-G; Cp-D; Cs-Rs; Cs-D; R-jX; Z-theta	 1pF to ≥1uF 1KHz to 5MHz (and above) ≥ + / - 25V / 1mV resolution. Cp-G; Cp-D; Cs-Rs; Cs-D; R-jX; Z-theta
11	Display	Built in 12.5 TFT display.	Built in LED/LCD display (≥ 12"). Preferably Touch Screen
12	Switching: Low current Switch card optimized for Semiconductor applications No Of Channels: Contact configuration: Max. Voltage / Current: Connectors Offset current 3-db bandwidth	 8 * 12 matrix card 2 form A 200V / 2A 3-Lug Triax < 100fA 30 MHz	 8 * 12 matrix card 2 form A 200V / ≥1A 3-Lug Triax < 100fA 30 MHz
13.	Built-in Pulse Generator desired: Channels: Frequency Range: Pulse Width Programmable:	Dual Independent Channels High Speed: High Voltage: 1Hz–50MHz 1Hz-2MHz 10ns to (period-10ns) 250ns to (period-100ns)	Optional Pulse width 100 nS or better

	Pulse Amplitude Range: 50 Ohms 1M Ohms Amplitude Resolution: 50 Ohms 1M Ohms Period Range: Timing Resolution Programmable Parameters: Pulse Measurement: Bandwidth: Maximum Sample Rate: Memory Depth: Trigger Source Trigger Modes	+/-5V +/-20 V +/-10V +/-40 V 1 mV 5 mV 2 mV 10 mV 20ns to 1s 500ns to 1s 10ns 10ns Pulse Width, Duty Cycle, rise time, fall time, amplitude, offset 2 Channels DC to 750MHz 1.25 Gs/S per Channel 1M/CH. CH1; CH2; External; Pattern. Edge; Pulse Width.	
14.	Hardware/ Architecture	In-Built PC platform with windows-OS, having LAN; GPIB; USB; RS232; parallel port; HDD,CD-RW; Should provide libraries / projects for measurement of device parameters for semiconductors	In-Built PC platform with windows-OS, having LAN; GPIB; USB; HDD,CD-RW; Should provide libraries / projects for measurement of device parameters for semiconductors Inclusion of RS232 and parallel ports are preferable
15.	Power requirement	230V AC, +/- 10%; 50Hz.	100 to ≥ 230V AC, +/- 10%; 50Hz.

TENDER NUMBER - IISER-PUR-1045-15 (Chapter 4, Pages 27-28)

Query/Clarification Sought	Clarification / Amendment	QTY.NOs
6” Manual Analytical Probe Station 6” X-Y Sample Stage 2” X-Y Stage for Stereo Zoom Microscopes 6” Nickel Plated Vacuum Chuck Course & Fine Platen Lift including Micropositioner Vacuum Ports and connectors/also supports magnetic based micropositioners Holds from single die to 6” wafer and accepts 4.5” wide probe cards when used with adapter. System may be upgraded to 8”.	Suitable analytical probe station to be integrated with Semiconductor Parameter Analyser System capable of providing room-temperature as well as high-temperatures measurements with very low-level of noise. The Vacuum chuck≥6" and preferably triaxial) and sample stage (6” X-Y, preferably≥ 90mm roll -out chuck stage) should be easy to operate and user friendly. Samples size: wafer like samples with diameter 4" and above.	1
Fiber Optic Ring & Illuminator for Motic SMZ Series	Fiber Optic Ring & Illuminator for microscope	1
20X Eye pieces for SMZ 168	≥40X Eye pieces for microscope	1
Active Air vibration Table Top 20” X 24” Dimensions With antistatic laminate & air compressor Air Compressor for Active Air vibration table top	Active Air vibration Table Top With antistatic laminate and air compressor or In-built vibration isolation solution within the probe station A suitable dark box on top of the probe station is desirable.	1
Motic Stereo Zoom Microscope Standard 10X eye pieces Zoom Ratio 1:6.7 Zoom Range 0.75X-5X Magnification 7.5X to 50X Working Distance – 113mm Trinocular Head w/CCD Port	Standard Stereo-Zoom Microscope ≥40X eye pieces Zoom Ratio 1:6.7 Zoom Range 0.75X-5X Magnification 7.5X to 50X Working Distance – 113mm Trinocular Head w/CCD Port	1

Ring Light with Power Supply	Ring Light with Power Supply	
High Resolution Micropositioner having independent X-Y-Z Motion Control; Pivot Head; 100 TPI Resolution; Vacuum Base; Left Hand	High Resolution Magnetic Micropositioner having independent X-Y-Z Motion Control preferably with Pivot Head; Left Hand	2
High Resolution Micropositioner having independent X-Y-Z Motion Control; Pivot Head; 100 TPI Resolution; Vacuum Base; Right Hand	High Resolution Magnetic Micropositioner having independent X-Y-Z Motion Control preferably with Pivot Head; Right Hand	2
Triaxial Probe Tip Holder Noise Floor ± 2fA when used with Triaxial chuck and in electrically shielded environment; Long Shank; Screw Lock; 60” Triax Cable Mounting for a Pivot Head Series micropositioner	Triaxial Probe-Tip Holder	4
Probe Tips (5 per box) Tungsten; 5 Micron Diameter Tungsten; 20 Micron Diameter Gold plated Tungsten; 5 Micron Diameter Beryllium Copper; 12 Micron Diameter Palladium; 12 Micron Diameter Steel; 12 Micron Diameter	Probe Tips (≥5 per box) Tungsten; ~5 Micron Diameter Tungsten; ~20 Micron Diameter Tungsten; 0.2-0.5 Micron Diameter Gold plated Tungsten; ~5 Micron Diameter Beryllium Copper; 10-12 Micron Diameter Palladium; 10-12 Micron Diameter Steel; 10-12 Micron Diameter	 2 1 1 1 1 1 1
Quiet Vacuum Pump; 230 VAC 50 Hz operation; -11” Hg or -33.3 Kpa; Includes 10’ soft ½” vacuum tubing and power cord; 40 dB max @ 1m	A suitable Vacuum Pump needed for holding the sample in the probe station 230 VAC 50 Hz operation	1
Temperature range (300K to ca. 600K)	Thermal Chuck (300K to ca. 600K) with complete setup , controller and power supply unit, cables, chiller, digital temperature read out, etc. Reversible heating and cooling operation during measurements in the temperature range 300K-600K is required.	

NOTE: Necessary accessories for I-V and C-V measurements including cables, extra cables, power supply, tool-box, and reference samples, manual (soft and hard copies), UV-lamps of 325 nm and 400 nm (effect on the current-voltage characteristics), etc are required. The semiconductor parameter analyzer system along with probe station should be ready for up-gradation with respect to Pulse I-V measurements. A suitable vacuum chamber (~10^{-3} mbar) on top of the sample holder (for handling ambient sensitive samples) is desirable which would also allow to measure I-V in certain gas-enriched environment and/or humid conditions.

ANNEXURE -III

IISER PUNE

PRE-BID CONFERENCE FOR PROCUREMENT OF SEMICONDUCTOR PARAMETER ANALYSER SYSTEM WITH PROBE STATION

COMMERCIAL QUERIES AND CLARIFICATION

TENDER NUMBER - IISER-PUR-1045-15 DATE : 9.2.16

S.No	Query/Clarification Sought	Clarification / Amendment
	----------NIL----------	----------NIL----------