



INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
PUNE

CLARIFICATION ON TENDER NUMBER - IISER-PUR-1156-18

ITEM DESCRIPTION- PROCUREMENT OF MULTI-COMPONENT SURFACE SCIENCE SYSTEM

Please refer our Press Tender Notice No.IISER/S&P/16/18 dated 14.1.2019 for procurement of Multi-Component Surface Science System. Tender Reference Number - IISER-PUR-1156-18.

Pre-Bid meeting was held on 22nd January 2019 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 / additions / 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.

22.1.2019

Sd/-
Assistant Registrar (S&P)



IISER PUNE

PRE-BID CONFERENCE FOR PROCUREMENT OF MULTI-COMPONENT SURFACE SCIENCE SYSTEM

TECHNICAL QUERIES AND CLARIFICATION

TENDER NUMBER - IISER-PUR-1156-18

DATE: 22.1.19

S.No	Query/Clarification Sought in Chapter 4		Clarification/Amendment in Chapter 4	
1	<p>Radial Distribution Chamber (RDC)</p> <p>Ultra-High Vacuum chamber made of Stainless Steel grade 316LN (UHV-SS) of about 800-900 mm diameter; Transfer mechanism with rack-and-pinion rotary motion feed through; Transfer length is about 450-600 mm; Transfer positions to other UHV chambers with automatic sample positioning; Fast and reliable drop-proof transfer of hot and cold samples; Loading of the sample to one chamber is independent from measurements and working in other chambers; Manual transfer system should be ready to motorization; Complete set of blank flanges and view ports; During the transferring process the pressure $\geq 10^{-9}$ mbar; and Port for Mass Spectrometer RGA 300.</p> <p>Bidder Queries: Item1 page 20: If RDC have to be made form 316LN? Most commonly used is stainless steel 315. Please change. From 316LN to 315. Item1 page 20: All dimensions in RDC should be</p>	Marks 9	<p>Radial Distribution Chamber (RDC)</p> <p>Ultra-High Vacuum chamber made of Stainless Steel grade 316LN (UHV-SS) of about ≥ 700 mm diameter; Transfer mechanism (horizontal movement) with rack-and-pinion rotary motion feed through; Transfer length is about ≥ 400 mm; Transfer positions to other UHV chambers with automatic sample positioning; Fast and reliable drop-proof transfer of hot and cold samples; Loading of the sample to one chamber is independent from measurements and working in other chambers; Manual transfer system should be ready to motorization; Complete set of blank flanges and view ports (≥ 4 viewports DN 160CF and ≥ 8 transfer positions to other UHV chambers with automatic sample positioning); During the transferring process the pressure $\geq 10^{-9}$ mbar; and Port for Mass Spectrometer RGA 300.</p>	Marks 8

	<p>dedicated and optimized the best system ergonomics. Now compact RDCs are available to save on lab space. New RDC specs are as follows: Chamber dimension to be changed from 800-900 mm dia to 700mm dia. Transfer length: No need to mention say it appropriate. Bidder requested for specification as follows: Distribution chamber 700 mm diameter (UFO) transfer mechanism with rack-and-pinion rotary motion feedthrough. For connecting MBE chamber with Load Lock and extend the system by other chambers.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eight transfer positions to other UHV chambers with automatic sample positioning. <input type="checkbox"/> Fast and reliable drop-proof transfer of hot and cold samples. <input type="checkbox"/> Loading the sample to one chamber is independent from measurements/works in other chambers. During the transferring process pressure in the UHV chambers is on the 10⁻⁹ mbar level. Base pressure 10⁻¹⁰ mbar level. <input type="checkbox"/> 4x Viewports DN 160CF <input type="checkbox"/> Complete set of blank flanges. <input type="checkbox"/> Motorization should be possible in future 			
2	<p>Analysis Chamber (AC)</p> <p>Full Mu-metal (for magnetic shielding) UHV chamber connected to RDC; Necessary black flanges of different sizes and view ports; Base pressure of 10⁻¹¹ mbar; Attachment of Mass Spectrometer RGA 300; Attachment of 2-Leak-valves for sputtering and gas dosing; Ferrovac wobble stick for sample transfer, if needed; Suitable high-precision UHV 5-axes manipulator: manual (preferably, motorized z and theta with controller) [XY-motion module (resolution: manual: 5 µm, motorized: 1 µm) with +/- 12.5 mm</p>	Marks 45	<p>Analysis Chamber (AC)</p> <p>Full Mu-metal (for magnetic shielding) UHV chamber connected to RDC; Necessary black flanges of different sizes and view ports; Base pressure of 10⁻¹¹ mbar; Attachment of Mass Spectrometer RGA 300; Attachment of 2-Leak-valves for sputtering and gas dosing; Ferrovac wobble stick for sample transfer, if needed; Suitable high-precision UHV 5-axes manipulator: manual (preferably, motorized z and theta with controller) [XY-motion module (resolution: manual: 5 µm, motorized: 1 µm) with +/- 12.5 mm</p>	Marks 48

stroke Z-motion module (resolution: 500 μm manual, 10 μm motorized) with travel length 75 mm. R1 – theta rotation (resolution: manual: 1° , motorized: 0.1°) $\pm 175^\circ$ max around Z-axis and R2 – phi rotation (resolution manual: 1° , motorized: 0.1°) continuous around Y-axis]. This should be mounted on DN 160CF flange. Motorization includes limit switch, motor with encoder and controller); Sample receiving station with heating (up to ≥ 1000 K) and cooling (down to liquid $\text{N}_2 \leq 100$ K) with complete set of thermal measurements (electrical and mechanical feed through and connections); and Thermocouple on the sample receiving station.

Bidder Query:

Item 2 para 1 last line: If thermocouple on Analysis Chamber manipulator has to measure temperature near the sample, it should be mounted inside the sample holder really near of the sample not on the station. Please change this sentence for: Thermocouple should be integrated with sample holder.

Electron Energy Analyzer: This is the heart of the Multi-Component Surface Science System and should have full facility for regular XPS/UPS/ARPES/ISS measurements with suitable detector (CCD/MCP or DLD) providing low signal/noise ratio; XPS-imaging option is mandatory; Diameter ≥ 130 mm with wide angle acceptance lens for faster measurements and high throughput; High resolution is very important for us; Necessary electronics for XPS/UPS/ARPES/ISS (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; Computer system with measurement control for XPS/UPS/ARPES/ISS in Fix mode, Sweep mode and Angular mode; Windows based software for data acquisition (CasaXPS software package is

stroke Z-motion module (resolution: 500 μm manual, 10 μm motorized) with travel length 75 mm. R1 – theta rotation (resolution: manual: 1° , motorized: 0.1°) $\pm 175^\circ$ max around Z-axis and R2 – phi rotation (resolution manual: 1° , motorized: 0.1°) continuous around Y-axis]. This should be mounted on DN 160CF flange. Motorization includes limit switch, motor with encoder and controller); Sample receiving station with heating (up to ≥ 1000 K) and cooling (down to liquid $\text{N}_2 \leq 100$ K) with complete set of thermal measurements (electrical and mechanical feed through and connections); and Integration of thermocouple between sample holder and the sample receiving station/manipulator for correct reading of temperature from sample ($\pm 1^\circ\text{C}$ accuracy) during various measurements XPS/UPS/ARPES/ISS.

Electron Energy Analyzer: This is the heart of the Multi-Component Surface Science System and should have full facility for regular XPS/UPS/ARPES/ISS measurements with suitable detector (CCD/MCP or DLD) providing low signal/noise ratio; XPS-imaging option is mandatory; Diameter ≥ 130 mm with wide angle acceptance lens for faster measurements and high throughput; High resolution is very important for us; Necessary electronics for XPS/UPS/ARPES/ISS (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; Computer system with measurement control for XPS/UPS/ARPES/ISS in Fix mode, Sweep mode and Angular mode; Windows based software for data acquisition (CasaXPS software package is

<p>preferable); Free upgrades of the software for 10 years; Computer and Printer: complete package (all-in-one HP Pavilion Desktop 4TB hard disk and 16GB RAM and HP colour laserjet pro MFP M477fdw are preferred); Laser pointer, mounted on the optical axis of the analyser and showing it on the holder surface; Monitor with CCD Camera (lensx10) to observe the sample position and subsequent manipulation; Those bidders quoting other than VG Scienta R3000 electron energy analyzer must make sure that they meet all the standard specifications of VG Scienta R3000 or better than VG Scienta R3000.</p>	<p>preferable); Free upgrades of the software for 10 years; Computer and Printer: complete package (all-in-one HP Pavilion Desktop 4TB hard disk and 16GB RAM and HP colour laserjet pro MFP M477fdw are preferred); Laser pointer, mounted on the optical axis of the analyser and showing it on the holder surface; Monitor with CCD Camera (lensx10) to observe the sample position and subsequent manipulation; Those bidders quoting other than VG Scienta R3000 electron energy analyzer must make sure that they meet all the standard specifications of VG Scienta R3000 or better than VG Scienta R3000.</p>
<p>X-ray Source: A standard and complete set of Dual Anode Al/Mg (600W/400W) with minimal cross-talk (<0.5%); Bake out: 150°C; Spot Size of about 10mmx10mm; Emission controller: emission current from 0-50mA; Filament current: Standby mode 1.5A and Operate mode up to 5.5A; Interlocks: Cooling water signal, vacuum, X-ray tube cover closed; Power supply: AC 230V/50Hz; Cathode failure identification: Shortcut/ Open indicator; and Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables.</p>	<p>X-ray Source: A standard and complete set of Dual Anode Al/Mg (600W/400W) with minimal cross-talk (<0.5%); Bake out: 150°C; Spot Size ≤5mmx5mm; Emission controller: emission current from 0-50mA; Filament current: Standby mode 1.5A and Operate mode up to 5.5A; Interlocks: Cooling water signal, vacuum, X-ray tube cover closed; Power supply: AC 230V/50Hz; Cathode failure identification: Shortcut/ Open indicator; and Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables.</p>
<p>UV Source: A standard and complete package of high intensity UV Source which can be operated with various discharge gases such as helium (He), neon (Ne), argon (Ar), krypton (Kr), xenon (Xe) or hydrogen (H); Water cooling box with controller unit, Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; Necessary attachments of differential pumping set; and, finally, the UV source should be suitable for angle-resolved photoemission measurements (ARPES) with small spot-size.</p>	<p>UV Source: A standard and complete package of high intensity UV Source which can be operated with various discharge gases such as helium (He), neon (Ne), argon (Ar), krypton (Kr), xenon (Xe) or hydrogen (H); Water cooling box with controller unit, if required; Spot Size ≤2mmx2mm; Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; Necessary attachments of differential pumping set; and, finally, the UV source should be suitable for angle-resolved photoemission measurements (ARPES) with small spot-size. Primarily it will be used with discharging of He gas and adjustable He-I/He-II</p>

<p>Bidder Query:</p> <p>Item 2 page 21 UV Source: Bidder sated that UV source cooling box is not necessary and has no influence on measurements. UV lamp needs any the cooling it is provided and no additional external device is not necessary. We understand we can offer UV with cooling only. Remove words 'water cooling box' replace it with necessary cooling.</p> <p>Electron Source: It is a compact, easy to handle reliable flood source for charge neutralization of insulators or semiconductors with complete package of controller units; Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables, power supply voltage: 110V or 230V, 50 Hz or 60 Hz; and Two beam energy ranges: 1 - 10eV, 10 - 500eV.</p> <p>Bidder Query:</p> <p>Item 2 page 21 Electron source: Listed as Electron source but description is for flood gun for charge neutralization. We can quote flood gun, please confirm.</p>	<p>energy line ratio.</p> <p>Electron Flood Gun: It is a compact, easy to handle and reliable electron flood gun for charge neutralization of insulators or semiconductors with complete package of controller units; Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables, power supply voltage: 110V or 230V, 50 Hz or 60 Hz; and Variable beam energy: 1eV- 50eV.</p> <p>Ion-Source: It is a two-lens, extractor type, focused and scan-able (approx. 10mmx10mm) ion source suitable for depth profiling with Ar, enables operation with reactive gases like O₂, H₂, hydrocarbons and all noble gases; integrated scan and deflection unit; this source should be suitable for depth profiling in XPS and ISS, in addition to sample surface cleaning; Beam energy up to ≥5000eV (High ion-beam current; Long lifetime; and High stability); Typical pressure range of operation in the chamber is between 10⁻⁵ to 10⁻⁶ mbar by attachment of differential pump (can be common to UV source, if workable); and Necessary</p>
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			electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables. Please note that this item has been removed from Preparation Chamber and added in Analysis Chamber.	
3	<p>Preparation Chamber (PC)</p> <p>UHV-SS chamber connected to the RDC; Base pressure of $\leq 10^{-10}$ mbar; Necessary blank flanges and view ports; Port for Mass Spectrometer RGA 300; Attachment of 2-Leak-valves for sputtering and gas dosing experiments; Ferrovac wobble stick for sample transfer, if needed; Suitable high-precision UHV 4-axes (x, y, z and theta) manipulator: manual (motorization should be possible at any time) [XY-motion module (resolution: manual: 5 μm, motorized: 1 μm) with +/- 12.5 mm stroke Z-motion module (resolution: 500 μm manual, 10 μm motorized) with travel length 75 mm. R1 – theta rotation (resolution: manual: 1$^\circ$, motorized: 0.1$^\circ$) $\pm 175^\circ$ max around Z-axis)]. This should be mounted on DN 160CF flange. Motorization includes limit switch, motor with encoder and controller.); Sample receiving station with heating (≥ 1000 K) and cooling (LN2 ≤ 100 K); Complete set of thermal measurements (electrical and mechanical feed through and connections).</p> <p>UHV-Evaporator: 1x(3-4) pockets standard UHV evaporator (preferably Kentax or with similar specifications); independent and separately controllable evaporation cells, Internal water cooling, Integrated shutter, Standard version TCE-BSC (420mm) with bellows (stroke: 170 mm) for variable distance to the sample and crucible exchange without breaking the system vacuum (with additional pump (complete set with controller and power supply) down valve for each TCE-BSC); Suitable/DN 40CF</p>	Marks 15	<p>Preparation Chamber (PC)</p> <p>Ultra-High Vacuum chamber made of Stainless Steel grade 316LN (UHV-SS) connected to the RDC; Base pressure of $\leq 10^{-10}$ mbar; Necessary blank flanges and view ports; Port for Mass Spectrometer RGA 300; Attachment of 2-Leak-valves for sputtering and gas dosing experiments; Ferrovac wobble stick for sample transfer, if needed; Suitable high-precision UHV 4-axes (x, y, z and theta) manipulator: manual (motorization should be possible at any time) [XY-motion module (resolution: manual: 5 μm, motorized: 1 μm) with +/- 12.5 mm stroke Z-motion module (resolution: 500 μm manual, 10 μm motorized) with travel length 75 mm. R1 – theta rotation (resolution: manual: 1$^\circ$, motorized: 0.1$^\circ$) $\pm 175^\circ$ max around Z-axis)]. This should be mounted on DN 160CF flange. Motorization includes limit switch, motor with encoder and controller.); Sample receiving station with heating (≥ 1000 K) and cooling (LN2 ≤ 100 K); Complete set of thermal measurements (electrical and mechanical feed through and connections).</p> <p>UHV-Evaporator: 1x(3-4) pockets standard UHV evaporator (preferably Kentax or with similar specifications); independent and separately controllable evaporation cells, Internal water cooling, Integrated shutter, Standard version TCE-BSC (420mm) with bellows (stroke: 170 mm) for variable distance to the sample and crucible exchange without breaking the system vacuum (with additional pump (complete set with controller and power supply) down valve for each TCE-BSC); Suitable/DN 40CF</p>	Marks 12

<p>mounting flange; and Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables.</p> <p>Quartz Crystal Micro Balance (QCMB): It is to be fitted with a z-shift and connected to PC with DN 40CF for providing progressing indication of deposition/thickness monitoring; Needs water cooling 0.8 l/min; Frequency range: 1 to 10 MHz (resolution +/- 0.12 Hz); Crystal: industry standard 14 mm diameter, frequency vibrations 6 MHz; Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; and Separate computer (Laptop is preferred) with software for QCMB operation.</p> <p>Ion-Source: It is a two-lens, extractor type, focused and scan-able (approx. 10mmx10mm) ion source suitable for depth profiling with Ar, enables operation with reactive gases like O₂, H₂, hydrocarbons and all noble gases; integrated scan and deflection unit; this source should be suitable for depth profiling in XPS and ISS, in addition to sample surface cleaning; Beam energy up to ≥5000eV (High ion-beam current; Long lifetime; and High stability); Typical pressure range of operation in the chamber is between 10⁻⁵ to 10⁻⁶ mbar by attachment of differential pump (can be common to UV source); and Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables.</p> <p>Electron-Source: on a mounting flange with Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; Scan-able (10mmx10mm) electron source with a small spot profile; Integrated scan and deflection unit; High current; Beam diameter down to < 100µm; Energy range 0-5keV (width ~ 0.6eV); Max beam current up to 100µA;; a shutter (40 CF) with motorized z-shift to control the exposure of</p>	<p>mounting flange; and Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables.</p> <p>Quartz Crystal Micro Balance (QCMB): It is to be fitted with a z-shift and connected to PC with DN 40CF for providing progressing indication of deposition/thickness monitoring; Needs water cooling 0.8 l/min; Frequency range: 1 to 10 MHz (resolution +/- 0.12 Hz); Crystal: industry standard 14 mm diameter, frequency vibrations 6 MHz; Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; and Separate computer (Laptop is preferred) with software for QCMB operation.</p> <p>Ion-Source: Removed to Analysis Chamber</p> <p>Electron-Source: on a mounting flange with Necessary electronics (extremely stable and low noise) with power supply in suitable cabinets with required electrical cables; Scan-able (10mmx10mm) electron source with a small spot profile; Integrated scan and deflection unit; High current; Beam diameter down to < 100µm; Energy range 0-5keV (width ~ 0.6eV); Max beam current up to 100µA; a shutter mounted on 40 CF flange with motorized z-shift</p>
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	<p>electrons on the samples; 2 Farady cups for measurement of electron-dose and calibration of the electron gun; and Optionally electron-energy loss spectroscopy (EELS) system.</p> <p>Bidder Query: Item 3 page 22 Electron Source: Normally Electron Source is not in Preparation chamber. It is always typically in Analysis chamber. Please explain us the Electron source function in Preparation chamber.</p>		<p>(linear movement with ± 1 mm resolution) to control the exposure of electrons on the samples; 2 Farady cups for measurement of electron-dose and calibration of the electron gun. This electron-source will be primarily used for low/high-energy electron irradiation on samples resembling electron-beam lithography applications. Also, the electron-source should be suitable for upgradation to integration of electron-energy loss spectroscopy (EELS) in the system.</p>	
4	<p>Storage Chamber (SC)</p> <p>UHV-SS chamber connected to the RDC (with suitable Gate Valve) for storing/parking of 10 sample holders in UHV conditions; Easy mechanism for storing/removal of sample holders; and Necessary set of blank flanges and view ports; Ferrovac wobble stick for sample transfer, if needed.</p>	Marks 2	<p>Storage Chamber (SC)</p> <p>Ultra-High Vacuum chamber made of Stainless Steel grade 316LN (UHV-SS) connected to the RDC (with suitable Gate Valve) for storing/parking of 10 sample holders in UHV conditions; Easy mechanism for storing/removal of sample holders; and Necessary set of blank flanges and view ports; Ferrovac wobble stick for sample transfer, if necessary but not mandatory.</p>	Marks 2
5	<p>Load-Lock Chamber (LLC)</p> <p>UHV-SS chamber connected to the RDC to introduce samples in the system; Base pressure in the range of 10^{-8} mbar after 4 hrs of pumping; Loading of 3-5 sample holders in one-time; Necessary set of blank flanges and view ports; preliminary halogen heating; and Ferrovac wobble stick for sample transfer, if needed.</p>	Marks 4	<p>Load-Lock Chamber (LLC)</p> <p>Ultra-High Vacuum chamber made of Stainless Steel grade 316LN (UHV-SS) connected to the RDC to introduce samples in the system; Base pressure in the range of 10^{-8} mbar after approximate 30 min of pumping; Loading of 3-5 sample holders in one-time; Necessary set of blank flanges and view ports; preliminary halogen heating; and Ferrovac wobble stick for sample transfer, if necessary but not mandatory.</p> <p>This chamber should have a bypass option for the attachment of the vacuum suitcase (see item no. 8).</p>	Marks 3

<p>6</p>	<p>Pumping System (PS)</p> <p>Intallation of one Fore-Vacuum cum Buffer system for all the other chambers (RDC, AC, PC, and LLC) with a base pressure of 10⁻⁵ mbar which should be achievable with a suitable combination of magnetic Turbo Molecular Pump (TMP) (≥ 60 l/s for N₂ gas) and a scroll vacuum pump (Alternative: Pfeiffer On-Tool Booster 150); Digital vacuum gauges for the fore-vacuum; and necessary Safety/Vent valves (electromagnetic).</p> <p>For all pumps of the system a central and easily comprehensible software control and pressure monitoring is desirable. Thus, individual controllers may not be necessary and small display on each gauge will show the pressure on each individual sub-system during hands-on-work. The software control should also include software-interlocks against accidental venting.</p> <p>AC: magnetic TMP of about ≥ 680 l/s (N₂ gas); suitable titanium sublimation pump (TSP); Ion pump (≥ 400 l/s); Attachment of a suitable differential pumping system for UPS/ISS/ARPES; Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>RDC: suitable TSP; Ion Pump (≥ 400 l/s); Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>PC: magnetic TMP of ≥ 350 l/s (N₂ gas); Ion pump (≥ 100 l/s); TSP; Connection to Fore Vacuum system; and Complete package of controller, power supply</p>	<p>Marks 10</p>	<p>Pumping System (PS)</p> <p>Each chamber (RDC, AC, PC, and LLC) should have operation of independent pumping system and will have connection to a Fore-Vacuum cum Buffer system for individual chamber venting and pumping. Intallation of one Fore-Vacuum cum Buffer system for all the other chambers (RDC, AC, PC, and LLC) with a base pressure of 10⁻⁵ mbar which should be achievable with a suitable combination of magnetic Turbo Molecular Pump (TMP) (≥ 60 l/s for N₂ gas) and a scroll vacuum pump (Alternative: Pfeiffer On-Tool Booster 150); Digital vacuum gauges for the fore-vacuum; and necessary Safety/Vent valves (electromagnetic).</p> <p>Pumps for AC Chamber: magnetic TMP of about ≥ 680 l/s (N₂ gas); suitable titanium sublimation pump (TSP); Ion pump (≥ 400 l/s); Attachment of a suitable differential pumping system for UPS/ISS/ARPES; Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>Pumps for RDC: suitable TSP; Ion Pump (≥ 400 l/s); Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>Pumps for PC: magnetic TMP of ≥ 350 l/s (N₂ gas); Ion pump (≥ 100 l/s); TSP; Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables</p>	<p>Marks 9</p>
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	<p>and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>LLC: magnetic TMP of ≥ 250 l/s (N₂ gas); a suitable scroll pump for TMP; Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>Chiller: A complete package of suitable closed-flow chillier for X-ray sources, pumps, micro balance and wherever required in the components of the whole system.</p> <p>Bidder Query: Item 5 page 23: Load Lock chamber mentioned in the specs is connected to central pumping system. Specified LL pumping system composed of TMP and suitable scroll pump. In our opinion those two requirements are exclusive. Load lock should be independent with its own pumping system RDC will have its own pumping system. Please confirm we can quote like this. And mention clearly for proper configuration and price comparison. Two independent pumpings for RDC and Load Lock.</p> <p>IISER specify all TMP magnetic pumps. Can we deliver standard TMP? Functionality will be the same. Magnetic pumps will increase the price. Please remove word magnetic.</p> <p>Page 23 and 24: IISER specifies in RDC vacuum gauges. These are not required in Bidder case. Bidder uses Ion pump for checking the pressure in RDC chamber. Additional vacuum gauge increases the price and not required. Can we skip it? Can this be removed from description?</p>		<p>and other required things for the All pumps.</p> <p>Pumps for LLC: magnetic TMP of ≥ 250 l/s (N₂ gas); a suitable scroll pump for TMP; suitable TSP; Connection to Fore Vacuum system; and Complete package of controller, power supply and vacuum gauge, electrical cables and other required things for the All pumps.</p> <p>Chiller: A complete package of suitable closed-flow chillier for X-ray sources, pumps, micro balance and wherever required in the components of the whole system.</p> <p>For all pumps of the system a central and easily comprehensible software control and pressure monitoring unit is desirable. One central digital display connected to each gauge will show the pressure on each individual sub-system during hands-on-work. The software control should also include software-interlocks against accidental venting.</p> <p>All Magnetic Turbo Molecular Pumps should be from Pfeiffer Vacuum and All Ion Pumps should be from Agilent.</p>	
7	Main Frame (MF)	Marks	Main Frame (MF)	Marks

	<p>User friendly and adjustable rigid steel frame for the system comprised of RDC, AC, LLC, SC, and PC having mounting multilayer design, large wheel for easy replacing the system; 19" cabinet for all electronics units equipped with appropriate uninterrupted power supply (UPS supply of approx. 40 kW; 10-15 min) battery power supply backup system (to protect equipment during power failure); Bakeout set: Bakeout timer and temperature regulator unit for 1-2 baking zone(s) (baking temperature up to 150°C) with sensor break protection, heaters with temperature resistant fan; Rigid removable bakeout frames with flexible bakeout tents; LED illumination system for internal illumination of the whole system; and Safe attachment of cooling water tubes and electrical wires to various components.</p> <p>Bidder Query: Item 7 page 24: IISER specify one big frame for the system. This is not practical and not easy to use and service. Bidder propose 3 independent frames for Analysis Chamber, RDC and Preparation chambers. Frame will be integrated during installation as one system. LLC and PC will be connected to RDC and placed on one frame (RDC frame).</p>	4	<p>User friendly and adjustable rigid steel frame for the system comprised of RDC, AC, LLC, SC, and PC having mounting multilayer design, large wheel for easy replacing the system; 19" cabinet for all electronics units equipped with appropriate uninterrupted power supply unit (UPS supply of approx. 40 kW; 10-15 min) to protect equipment during power failure. Cables/wires of ≥ 3 m length are necessary for electrical and electronic connections from various components of the whole UHV system to controller and power supply units; Bakeout set: Bakeout timer and temperature regulator unit for 1-2 baking zone(s) (baking temperature up to 150°C) with sensor break protection, heaters with temperature resistant fan; Rigid removable bakeout frames with flexible bakeout tents; LED illumination system for internal illumination of the whole system; and Safe attachment of cooling water tubes and electrical wires to various components.</p> <p>Single frame would be preferred and modular/independent frames are acceptable as long as long it serve the purpose of fitting into the following footprint. The floor space with vibration isolation feature available for the installation of the system (RDC+AC+PC+SC+LLC) is $\sim 3.5 \times 2.5$ m². LED illumination to all chambers.</p>	3
	Other Necessary Requirements		Other Necessary Requirements	
8	<p>Sample Holder: standard 10 pcs (8 pcs without heating-cooling and 2 pcs with heating-cooling options) + 2 pcs for power samples</p> <p>Bidder Query: Page 24 Item 8: In description of sample holders IISER mentions about powder samples. We understand Load Lock Chamber should be prepared for powder samples and has additional bypass for</p>	Marks 11	<p>Sample Holder: standard 10 pcs (7 pcs without heating-cooling and 2 pcs with heating-cooling options and 1pc with in-built YAG crystal to detect X-ray spot)</p>	Marks 15

<p>slow pumping. This is required and not mentioned.</p> <p>1 pc Au(111) Single Crystals from MaTeck, Germany; 1 pc HOPG (SP-1) from SPI, West Chester, USA; 1 pc Diamond cutter and 2 pcs Si/Au/Ag-wafer cutter; 1 pc Pyrometer (up to 1000 K); 1 pc Spot-welding tool; and 1 pc hot air gun</p> <p>Bidder Query:</p> <p>In point 8 IISER specify spot welding tool. Can you give us more specifications and purpose? We do not understand this.</p> <p>One complete set of Contact Angle Measurement System (bench-mark: model DSA25S from Kruss GmbH, Germany)</p> <p>Complete set of Mass Spectrometer RGA 300 with necessary electronics, power supply and cables/wires. Installation of central gas-dosing systems with all necessary requirements to connect to various leak-valves in the whole systems (gases to be used He, Ar, O₂, NO; NO₂; NH₃, CO, CO₂, SO₂; Cl₂; N₂; supply of various gaseous is not needed however during installation and on-site demonstration supply of necessary gases in small amounts are</p>		<p>1 pc Au(111) Single Crystals from MaTeck, Germany; 1 pc HOPG (SP-1) from SPI, West Chester, USA; 1 pc Diamond cutter and 2 pcs Si/Au/Ag-wafer cutter; 1 pc Pyrometer (up to 1000 K); Spectro Tabs High Purity Conductive Carbon Tabs 12mm O.D. from PELCO Tabs™ - 2 pkg (120 each); 1 pc Spot-welding tool (for welding and soldering of wires to samples and sample holders); 1 pc standard hot air gun (from BOSCH); Ultra High Vacuum (UHV) Aluminum Foil from All Foils, Inc. – 10 packs; Tweezers set from SigmaAldrich model Z162507 2 sets; and complete set of Keithley Pico-ammeter Model 6485 – 1pc with all necessary cables and etc.</p> <p>One complete set of Contact Angle Measurement System model DSA25S from Kruss GmbH, Germany with attachment of software in all-in-one desktop/laptop (equivalent or better than model HP Pavilion All-in-One - 24-xa0055m) for measurement and storage of data.</p> <p>Technical specifications can be found at https://www.kruss-scientific.com/products/drop-shape/dsa25/drop-shape-analyzer-dsa25b/</p> <p>Complete set of Mass Spectrometer RGA 300 with necessary electronics, power supply and cables/wires. Installation of central gas-dosing systems with all necessary requirements to connect to various leak-valves in the whole systems (gases to be used He, Ar, O₂, NO; NO₂; NH₃, CO, CO₂, SO₂; Cl₂; N₂; supply of various gaseous is not needed however during installation and on-site demonstration supply of necessary gases in small amounts are desirable) and specified controllers and sensors for</p>	
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<p>desirable) and specified controllers and sensors for above mentioned gases.</p> <p>2 sets of Standard UHV-Tool box (one big and fixed and one relatively small and movable) for the whole instrumentations. Necessary spare-parts for at least three-years (for examples UHV parts, Cu gaskets, fore vacuum pipes/tubes, water pipes/tubes, electrical wires/cables, welding wires, aluminium foils, etc. etc.)</p> <p>Complete installation of compressed-air for the automatic valves for pumps; 1 pc stand-alone magnetic TMP (≥ 250 l/s) and 1 pc standard scroll pump; and custom made</p> <p>Vacuum-desiccators (for sample and etc. storage – 4 small set and a combined big set)</p> <p>Custom made Vacuum-desiccators (for sample and etc. storage – 4 small set and 1 combined big set with four horizontal compartments)</p> <p>Bidder Query: In point 8 Customer specify vacuum desiccators. Please give to us more specifications and information.</p> <p>One complete set of standard Glove Box system (bench-mark: LABmaster Pro Glove Box Workstation</p>	<p>above mentioned gases.</p> <p>2 sets of Standard UHV-Tool box (one big and fixed and one relatively small and movable) for the whole instrumentations. Necessary spare-parts for at least three-years (for examples UHV parts, Cu gaskets, fore vacuum pipes/tubes, water pipes/tubes, electrical wires/cables, welding wires, aluminum foils, etc. etc.)</p> <p>Complete installation of compressed-air for the automatic valves for pumps; 1 pc stand-alone magnetic TMP (≥ 250 l/s) and 1 pc standard scroll pump; and custom made</p> <p>Vacuum-desiccators: the following desiccator from SigmaAldrich are required Model BAF424004031 – 1 pc. Technical specifications can be found at https://www.sigmaaldrich.com/catalog/product/aldrich/baf424004031?lang=en&region=IN Model Z167959 – 1 pc. Technical specifications can be found at https://www.sigmaaldrich.com/catalog/product/aldrich/z167959?lang=en&region=IN Model Z553808 – 1pc. Technical specifications can be found at https://www.sigmaaldrich.com/catalog/product/aldrich/z553808?lang=en&region=IN Model Z553255 – 1 pc. Technical specifications can be found at https://www.sigmaaldrich.com/catalog/product/aldrich/z553255?lang=en&region=IN</p> <p>One complete set of standard Glove Box system model: LABmaster Pro Glove Box Workstation (Length = 1.5 m Depth – 1.0 m and Height = 0.9 m)</p>
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<p>with minimal configurations from M. Braun Intergas-Systeme GmbH, Germany)</p> <p>Bidder Query: In point 8 IISER specify the glove box. Please let us to know it should be stand alone or integrated with LLC? Also please confirm if has to from M Braun? Can we deliver different brand?</p> <p>A portable vacuum-suitcase with getter pump (or equivalent) to transfer sample from Glove Box to Load-Lock Chamber without breaking the Vacuum.</p> <p>Bidder Query: Also Integration not needs vacuum suitcase specified in next point. If you buy glove box why Vacuum suit case...? So integration Glove box is not needed. You will prepare samples in glove box and transfer it XPS for analysis using vacuum suitcase. Please confirm</p>	<p>with minimal configurations and necessary accessories from M. Braun. Technical specifications can be found at https://www.mbraun.com/products/glovebox-workstations/labmaster-glovebox#specifications</p> <p>A portable vacuum-suitcase with getter pump (or equivalent) to transfer sample from Glove Box to Load-Lock Chamber without breaking the Vacuum. Note that Glove Box is stand alone and to be placed elsewhere in lab and will not be integrated to LLC. Samples will be prepared in Glove Box and transfer to UHV system for XPS and other analysis.</p> <p>A complete set of UV Vis NIR spectrophotometer model: Shimadzu UV-3600 Plus with attachment of software in all-in-one desktop/laptop (equivalent or better than model HP Pavilion All-in-One - 24-xa0055m) for measurement and storage of data. Technical specifications can be found at: https://www.ssi.shimadzu.com/sites/ssi.shimadzu.com/files/Products/literature/Spectroscopy/C101-E128A.pdf</p> <p>The following accessories are required: Accessories controller for external or internal accessories; Solid sample holder for solid films, plates etc to measure transmission and reflection (direct without integrating sphere); Integrating sphere (at least 100 mm dia) for measurement of diffuse reflectance/ diffuse transmittance of solids, thin films and liquids in the wavelength range: 250-2500 nm. Necessary sample holders should be included (for powder samples as well); 6x6 Peltier temperature controlled multicell holder with 6 sample and 6 reference cuvette positions. Heating cooling range from 0 to 100 °C; Cuvettes: One pair, 10mm path length, volume-1.4 ml ±0.1 ml; Software: Having the capability for control, operation, data collection, and data processing; should have the option to export the data in .txt/.asc</p>
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			format.	
	<p><u>Important Note:</u> Hard-copies and soft-copies of all the Catalogues for all the Components/ Suitable Gate Valves exclusively from VAT for various UHV connections to RDC and wherever required/ exclusive Pfeiffer TMPs and scroll Pumps/ exclusive Agilent Ion-Pumps/ During electrical shut-down beyond UPS limit, the valves between TMPs and the chambers should be automatically closed, so called vacuum interlock (power failure safety is very important)/ Sensor attachment during water leakage to secure the safety for the whole instrument.</p> <p><u>The system should be covered with 5 years of comprehensive warranty (please refer Chapter-3 clause no 10 for details)</u></p>		<p><u>Important Note:</u> Hard-copies and soft-copies of all the Catalogues for all the Components/ Suitable Gate Valves exclusively from VAT for various UHV connections to RDC and wherever required/ exclusive Pfeiffer TMPs and scroll Pumps/ exclusive Agilent Ion-Pumps/ During electrical shut-down beyond UPS limit, the valves between TMPs and the chambers should be automatically closed, so called vacuum interlock (power failure safety is very important)/ Sensor attachment during water leakage to secure the safety for the whole instrument.</p> <p><u>The system should be covered with 5 years of comprehensive warranty (please refer Chapter-3 clause no 10 for details)</u></p>	
	Total Marks	100	Total Marks	100

Technical evaluation will be carried out and Vendors having total marks of ≥ 90 will qualify for Price Bid opening. Thereafter, financial proposal shall be evaluated. The Commercially LOWEST BIDDER shall be first preferred Vendor for the award of Order.



IISER PUNE

PRE-BID CONFERENCE FOR PROCUREMENT OF MULTI-COMPONENT SURFACE SCIENCE SYSTEM

COMMERCIAL QUERIES AND CLARIFICATION

TENDER NUMBER - IISER-PUR-1156-18

DATE: 22.1.19

S.No	Query/Clarification Sought	Clarification / Amendment
1.	<p>Extension for Date of Submission of Technical Bids</p> <p>Bidders requested to extend Bid submission date by one week</p>	
3.	<p>Chapter 2, Page 11: Delivery Period/Timeliness - The deliveries & installation must be completed within 6 months, after placement of purchase order.</p> <p>Bidders requested to extend the delivery time by 11 months</p>	<p>Chapter 2, Page 11 :Revised Delivery Period/Timeliness</p> <p>The deliveries & installation must be completed within 7 months, after Opening of Letter of Credit.</p>
4.	<p>Chapter 1 , Page 6: Earnest Money Deposit</p> <p>Request to exempt earnest money deposit as registered with MSME</p>	<p>Chapter 1, Page 6: Earnest Money Deposit</p> <p>EMD and tender fees is exempted for agencies registered with MSME as per Govt. of India norms.</p>
5	<p>Chapter 2 , On page 11: Security Deposit</p> <p>One of the bidder says no security deposit in terms of BG will be given</p>	<p>Chapter 2 , On page 11: Security Deposit</p> <p>Security Deposit is mandatory condition of</p>

		<p>contract. The technical bid of the bidder shall be rejected in absence of compliance of this term in tender document. Refer page 48, Checklist for bidders, Sl No - 13, <i>“Undertaking that the successful BIDDER agrees to give a 10% security deposit and performance Bank Guarantee”</i>.</p> <p>It may be further noted that security deposit can be submitted in the form of Demand Draft/Bank Guarantee as per Chapter 2 page no 3.</p>
	<p>Chapter 3 , On page 16: Warranty / Support</p> <p>Bidder requested to waive off five year warranty period as this is not practical because of many bought out items like Pumps and LEED etc. So we cannot quote and offer.</p> <p>Even if we offer longer warranty: PBG will be only for one year. Reasons are as follows:</p> <p> Bidder still need to leave 10% as margin money to banks hence this money is anyway not available.</p> <p> Bidder needs to pay bank charges to three banks . These charges need to be paid upfront for all the years.</p>	<p>Chapter 3 , On page 16: Warranty / Support</p> <p>Warranty for bought out items in Other Necessary Requirements (Serial No. 8) are for standard 1 year.</p> <p>Others (Serial No. 1 to 7) should be covered with 5 years of comprehensive warranty.</p>