

भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे  
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE

निविदा संख्या पर प्रीबिड स्पष्टीकरण - आईआईएसईआर/पीयूआर/3081/22  
PREBID CLARIFICATION ON TENDER NUMBER - IISER/PUR/3081/22

**वस्तु विवरण- हाई प्रेशर गैस सॉर्प्शन एनालाइजर की खरीद**  
Item Description- Procurement of High Pressure Gas Sorption Analyzer

हाई प्रेशर गैस सॉर्प्शन एनालाइजर की खरीद के लिए 21/03/2023 को संस्थान की वेबसाइट [www.iiserpune.ac.in](http://www.iiserpune.ac.in) और सीपीपी पोर्टल पर प्रकाशित खुली निविदा देखें।

Refer an open tender published on Institute website [www.iiserpune.ac.in](http://www.iiserpune.ac.in) and on CPP Portal on 21/03/2023 for procurement of High Pressure Gas Sorption Analyzer.

प्री-बिड मीटिंग 03/04/2023 को अपराह्न 3.00 बजे आयोजित की गई और बैठक का कार्यवृत्त निम्नानुसार है:

Pre-Bid meeting was held on 03/04/2023 at 3.00 PM and minutes of meeting is as under:

प्रारंभ में, समिति ने सभी सदस्यों और संभावित बोलीदाताओं के प्रतिनिधियों का स्वागत किया और सामान्य तौर पर निविदा के दायरे की जानकारी दी और उसके बाद सहायक कुलसचिव (भांडार एवं क्रय) से बोली लगाने वालों को निविदा की मुख्य विशेषताओं के बारे में जानकारी देने का अनुरोध किया।

At the outset, the committee welcomed all the Members and the representative of the Prospective Bidders and briefed in general the scope of the tender and thereafter requested Assistant Registrar (S&P) to brief the bidders on the salient features of the tender.

उपस्थित प्रतिनिधि दिए गए उत्तरों से संतुष्ट थे और यह सूचित किया गया था कि प्री-बिड कॉन्फ्रेंस के दौरान की गई चर्चा के अनुसार दिए गए सुधार / परिवर्धन / स्पष्टीकरण को आईआईएसईआर पुणे की वेबसाइट पर होस्ट किया जाएगा और सभी संभावित बोलीदाताओं को बोली दस्तावेजों में निर्धारित अनुसार अपनी बोली जमा करने से पहले प्री-बिड सम्मेलन की कार्यवाही का संज्ञान लेना आवश्यक है।

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..

हमारी आईआईएसईआर वेबसाइट [www.iiserpune.ac.in](http://www.iiserpune.ac.in) पर जारी नोटिस के अन्य नियम और शर्तें अपरिवर्तित रहेंगी। इस संबंध में और कोई पत्राचार नहीं किया जाएगा।

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

बैठक अध्यक्ष के धन्यवाद प्रस्ताव के साथ समाप्त हुई। / The meeting ended with vote of thanks to the Chair

Sd/-

03/04/2023

सहायक कुलसचिव (भांडार एवं क्रय)

03/04/2023

Assistant Registrar (S&P)

## TECHNICAL AND COMMERCIAL QUERIES AND CLARIFICATION

### PROCUREMENT OF HIGH PRESSURE GAS SORPTION ANALYZER

Open Tender Ref. No: IISER/PUR/3081/22

S. No	Query/Clarification Sought	Clarification / Amendment
1	<p><b><u>Page No.25, Chapter No.4, Point No. 1</u></b></p> <p>Instrument should measure gas adsorption for gases CO<sub>2</sub>, N<sub>2</sub>, O<sub>2</sub>, CH<sub>4</sub> in the pressure range of 0 to 35 bar or above with all safety features.</p> <p>Require an automated high-pressure gas sorption analyzer for the determination of storage capacity of materials intended for use in gas storage, gas separation, gas sequestration, and studying adsorption/desorption kinetics for core studies. Method of analysis employed shall be vacuum-volumetric (manometric). It shall include fully automated sample preparation (outgassing) with multiple ramp and hold steps and full control of ramp rate. It will have full software control of manifold and sample temperature. Control, data acquisition and reporting software shall be included and allow communication with the unit via USB.</p> <p><b>Amendment requested:</b> O<sub>2</sub> can only be used to 10 bar for safety reasons.</p>	<p><b><u>Page No.25, Chapter No.4, Point No. 1</u></b></p> <p>Response: This is amended to 10 bar for Oxygen gas.</p>
2	<p><b><u>Page No.25, Chapter No.4, Point No. 3</u></b></p> <p>Built-in degassing ports feature a dedicated manifold independent of the sample analysis manifold(s) to eliminate the possibility of contamination with dedicated backfill gas input and pressure transducer, plus digital vacuum gauge.</p>	<p><b><u>Page No.25, Chapter No.4, Point No. 3</u></b></p> <p>Response: Amended to include insitu degassing in the analysis port with the required heating and vacuum provisions.</p>

	<p>Degassing ports are equipped with dual-thermocouple heating mantles for over-temperature protection and a vacuum pump reaching 10<sup>-3</sup> Torr at least has to be provided. All the connectors and the tubes needed to connect the pump to the degassing unit and the sample holder should be provided.</p> <p>Manifold should be actively thermostated to within <math>\pm 0.02^{\circ}\text{C}</math> between user controlled temperature range of <math>30^{\circ}\text{C}</math> to <math>50^{\circ}\text{C}</math> to ensure the highest level of accuracy.</p> <p>The sample temperature must be controlled to within <math>\pm 0.1^{\circ}\text{C}</math> between <math>100^{\circ}\text{C}</math> and <math>400^{\circ}\text{C}</math> (with included heating mantles).</p> <p><b>Degassing on iSorb is performed in-situ. Therefore, these specifications are not required.</b></p>	
3	<p><b><u>Page No.26, Chapter No.4, Point No. 4</u></b></p> <p>Analysis stations are served by a turbopump backed by a built-in, dry diaphragm pump to ensure oil-free analysis conditions. See specifications below.</p> <p>Up to six heating steps programmable per degassing protocol; each step consists of one programmable heating rate ramp plus one time-programmable isothermal (hold) period.</p> <p>Prevention of powder elutriation via an intelligent, pressure-limit mode that will pause the heating ramp if the pressure rise exceeds a certain user-programmable value. Automatically terminate degassing according to programmable pressure rise test, thereby minimizing total degassing time.</p> <p>A dedicated saturation pressure (<math>P_0</math>) cell (with dedicated pressure transducer) constructed from glass to ensure an identical thermal environment as sample cell(s). Operates without any service utility, such as compressed gas, other than standard mains electricity supply.</p> <p><b><u>Amendment requested:</u></b> These specifications are not part of High Pressure Adsorption</p>	<p><b><u>Page No.26, Chapter No.4, Point No. 4 is amended as:</u></b></p> <p>Analysis stations are served by a turbo pump backed by a built-in, dry diaphragm pump to ensure oil-free analysis conditions. See specifications below.</p> <p>Up to six heating steps programmable per degassing protocol; each step consists of one programmable heating rate ramp plus one time-programmable isothermal (hold) period.</p> <p>Prevention of powder elutriation via an intelligent, pressure-limit mode that will pause the heating ramp if the pressure rise exceeds a certain user-programmable value. Automatically terminate degassing according to programmable pressure rise test, thereby minimizing total degassing time.</p>

	Analyzer System. This point needs to be removed.	
4	<p><b><u>Page No. 27, Chapter No.4, Specifications Section:</u></b></p> <p>Vacuum system (Internal): Turbo-molecular drag pump + dry diaphragm pump</p> <p><b><u>Amendment Request:</u></b> Turbo-molecular drag pump is not required for this high pressure instrument.</p>	<p><b><u>Page No. 27, Chapter No.4 Specifications Section is amended as</u></b></p> <p>Response: The turbo molecular pump is removed. Pump reaching the specified vacuum <math>10^{-4}</math> Torr is to be supplied.</p>
5	<p><b><u>Page No. 28, Chapter No.4, Specifications Section:</u></b></p> <p>Station configuration: Low Pressure Transducers: 2 (1 bar). High Pressure Transducers : 2 (100 bar)</p> <p><b><u>Amendment requested:</u></b> Low pressure transducer needs to be removed from the specifications.</p>	<p><b><u>Page No. 28, Chapter No.4 Specification Section:</u></b></p> <p>Response: “Low pressure transducer” point stands deleted / removed</p>
6	<p><b><u>Page No. 28, Chapter No.4 Specifications Section</u></b></p> <p>Transducer sharing between stations: None</p> <p><b><u>Amendment requested:</u></b> Transducer sharing is not applicable to this system.</p>	<p><b><u>Page No. 28, Chapter No.4 Specifications Section</u></b></p> <p>Response: No amendment required. It has been already specified transducer sharing as ‘none’.</p>
7	<p><b><u>Page No. 28, Chapter No.4 Specifications Section</u></b></p> <p>Measurement Valves: Magnetic latching, no heating/temperature gradient or equivalent.</p> <p><b><u>Amendment requested:</u></b> Pneumatic valves operated with house air needs to be included.</p>	<p>Response: Tender Specifications prevails. Already the equivalent valves is included in the specifications.</p>
8	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p>Status monitoring (software) valves (open/closed), current</p>	<p>Response: Amended as follows, “Capability to make blank cell measurements to operate helium</p>

	<p>Po, number of points requested, number of points acquired, pump speed, heating mantle temperature, manifold temperature, Pirani gauge reading, adsorbate selected, degasser backfill pressure</p> <p>Void volume modes (physisorption) Automatically measured, re-use value already measured, helium-free method, re-measure during analysis at 0.75torr, re-measure at end of run, with/without temperature compensation.</p> <p><b><u>Amendment requested:</u></b></p> <p>There is no po cell, no pump speeds no pirani gauge. A blank cell measurement to operate helium free across the sample knowing the sample skeletal density and mass.</p>	<p>free across the sample to measure the skeletal density and mass.”</p>
9	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Temperature setting:</b> 0.1 °C increments</p> <p><b><u>Amendment requested:</u></b></p> <p>This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>Response: Sample needs to be heated to require temperatures with controlled heating rate. <b><u>Tender Specifications Prevails.</u></b></p>
10	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Temperature Accuracy:</b> <math>\pm 1\%</math> of the set point at control thermocouple</p> <p><b><u>Amendment requested:</u></b></p> <p>This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>Response: The temperature of the sample needs to be fixed during the isotherm measurement, these needs to have the specified precision. <b><u>Tender Specifications Prevails .</u></b></p>
11	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Temperature stability:</b> <math>&lt; 5^{\circ}\text{C}</math></p> <p><b><u>Amendment requested:</u></b></p> <p>This is not part of High Pressure Adsorption Analyzer System.</p>	<p>Response: The instrument should have a safety system to ensure that the temperature does not go above <math>5^{\circ}\text{C}</math> from the set temperature. <b><u>Tender Specifications Prevails.</u></b></p>

	This point be removed.	
12	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p>Thermocouples per mantle: 2 (one control, one safety over temperature)</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
13	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p>Degas monitor: Pirani or better</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
14	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p>Degas cold trap: 1L</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
15	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p>Backfill transducer: 1000 torr</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>Response: Backfilling of the chamber to ambient pressure should be possible. Without this the sample cannot be unloaded from the instrument under a protective gas (e.g. N2).</p> <p>Amended as stated above.</p>
16	<b><u>Page No. 28, Chapter No.4:</u></b>	Response: Backfilling of the chamber to ambient pressure should be possible. Without this the sample cannot be unloaded

	<p><b>Backfill pressure:</b> programmable</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>from the instrument under a protective gas (e.g. N2).</p> <p>Amended as stated above.</p>
17	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Backfill Gas:</b> dedicated input</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>Response: Backfilling of the chamber to ambient pressure should be possible. Without this the sample cannot be unloaded from the instrument under a protective gas (e.g. N2).</p> <p>Amended as stated above.</p>
18	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b><u>Results/Calculations</u></b></p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>Response: This point stands removed / deleted.</p>
19	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Surface Area:</b> BET, Langmuir, t-plot, BJH/DH, DR, DFT</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	<p>Response: This point stands removed / deleted.</p>
20	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Mesopore Size:</b> NLDFT, BJH/DH, Kr thin film</p> <p><b><u>Amendment requested:</u></b></p>	<p>Response: This point stands removed / deleted.</p>

	This is not part of High Pressure Adsorption Analyzer System. This point be removed.	
21	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Micropore size:</b> NLDFT, QSDFT, SF, HK, MP method, DA, Monte Carlo</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
22	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Pore size overlay:</b> Multiple samples, including different DFT models and adsorbates</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
23	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Pore volume:</b> Gurvich, <math>\alpha</math>-s, BJH/DH, DFT, DR</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
24	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Adsorption energy:</b> Clausius-Clapeyron, DR</p> <p><b><u>Amendment requested:</u></b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.</p>	Response: This point stands removed / deleted.
25	<p><b><u>Page No. 28, Chapter No.4:</u></b></p> <p><b>Fractals:</b> FHH, NK</p>	Response: This point stands removed / deleted.



	<b>Amendment requested:</b> This is not part of High Pressure Adsorption Analyzer System. This point be removed.	
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