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**भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे**

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE**

IISER/PUR/0554/23

**PREBID CLARIFICATION ON GeM TENDER NUMBER – GEM/2023/B/3723239**

 **मल्टीपल गैस सोखना** **की खरीद**

**Item Description - Procurement of Multiple Gas Adsorption**

मल्टीपल गैस सोखना की खरीद के लिए संस्थान की वेबसाइट www.iiserpune.ac.in और GeM पोर्टल पर 27/07/2023 को प्रकाशित एक खुली निविदा देखें। Refer to an open tender published on the Institute website [www.iiserpune.ac.in](http://www.iiserpune.ac.in) and on the GeM Portal on 27/07/2023 for procurement of Multiple Gas Adsorption.

प्री-बिड मीटिंग 02/08/2023 को शाम 3.00 बजे आयोजित की गई और बैठक का कार्यवृत्त निम्नानुसार है:

Pre-Bid meeting was held on 02/08/2023 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 अवं 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 IISER 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 / 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.

हमारी आईआईएसईआर वेबसाइट www.iiserpune.ac.in और GeM portal 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) and GeM portal 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.

02/08/2023 सहायक कुलसचिव (भंडारण एवं क्रय)

02/08/2023 Assistant Registrar (S&P)

ANNEXURE -II

**TECHNICAL AND COMMERCIAL QUERIES AND CLARIFICATION**

**PRE-BID CONFERENCE FOR PROCUREMENT OF MULTIPLE GAS ADSORPTION**

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| --- | --- | --- |
| **S. No.** | **Query/Clarification Sought** | **Clarification / Amendment** |
| 1 | Sl no: 2, Analyzer Capability –Analyzer Capability – CI & INNES are old formulas and we have better formulas available in our software. Please consider other equivalent/better formulas. | Amended, please refer revised specification attached as Annexure III. |
| 2 | Sl no:5, Port for saturation vapor pressure – The material for the P0 port has been mentioned as SS. We offer glass P0 cell which experiences the same thermal conditions as that of the sample cells. Please accept the glass P0 cell also. | Amended, please refer revised specification attached as Annexure IIIHowever, the materials should be durable and sustain thermal conditions. |
| 3 | Sl no: 8, Pressure transducers – The tender specs has mentioned 5 nos. We offer 3 nos with better performances. We guarantee 4 x 5 point BET measurement in 20 minutes and 4 x 40 points isotherms in 8 hours flat. Request you to amend this specs. | Amended, please refer revised specification attached as Annexure III |
| 4 | Sl no: 9,High vacuum system – With 10-4 P/P0, no turbo pump is necessary. Please amend this specs. | Amended, please refer revised specification attached as Annexure III. |
| 5 | Sl no: 10, Dead Volume correction – The tender specs seems to be of only one supplier. We offer Active Coolent Level Sensor (CLS) technology which is far more superior and accurate. Request you to amend this specs to accept the CLS technology also. | Amended, please refer revised specification attached as Annexure III. |
| 6 | Sl no: 12, Insitu Pretreatment– Insitu degassing is never suggested by the expert as this has high chances for contaminations. Request to change this specs for dedicated degasser. | Tender specifications prevail. A dedicated degasser is fine for regular samples but we also measure adsorption for very moisture sensitive and containing high boiling coordinated samples, and for that reason we need the in-situ pretreatment system. |
| 7 | In tender it is mentioned that minimum P/P0 requirement is 10^-4 and analysis station should have 1000 torr pressure transducer. This means the instrument will be used for measuring pore size distribution up to 20 Angstrom. But in that case turbo molecular vacuum pump is not needed as this pump is used to get minimum P/P0 at 10^-7 and analysis station should be equipped with 1000 torr , 10 torr and 1 torr transducer.We request you to kindly clarify the same and let us know whether turbo molecular vacuum pump is needed. | Amended, please refer revised specification attached as Annexure III. |
| 8 | 1). Sr. No. 9 of specifications: Ananlyser should have a turbo molecular vacuum pump for low pressure adsorption.: We sincerely feel that Turbo molecular pump is not required because your requirement is Isotherm starting from P/Po = 10-4 to 0.99, to achieve this range of isotherm rotary pump is sufficient, Also as per tender only 1000 torr sensors are to be quoted, even if turbo pump is supplied 1000 torr sensors will not be able to monitor the gas dosing in TMP range: hence we kindly request you to remove the requirement of turbo molecular pump. | Amended, please refer revised specification attached as Annexure III. |
| 9 | Additional items and optional items: As per the current tender specs there is a need to quote for additional items and optional items, as per our understanding in the GeM bidding portal there is provision for inputting only one price, no provision in GeM to upload separate price for optional items.  Kindly clarify on this to enable us to quote a separate price for optional items. | Additional items and optional items are mandatory. Accordingly, the bidder may quote the price of the main item along with the **Additional items and optional items** in the price bid. However, Bidder should mention a detailed breakup of the price bid i.e., the Price of the main item, Price of additional and optional items in pdf format.L1 will be determined by the total price of equipment including the price of additional and optional items.  |
| 10 | We also request you to add the pore size measurement range (Pore Diameter): 0.7- 500 nm as a part of specification. | Amended, please refer revised specification attached as Annexure III. |
| 11 | 1/ Against the point no. 9, you have mentioned” turbo-molecular pump”. Since there is no mention of any low pressure measuring transducer elsewhere, we feel TMP might not be needed. Also you have mentioned 10-4 as the achievable value of P/P0 measurement, which could be done using rotary vac pump. | Amended, please refer revised specification attached as Annexure III. |
| 12 | 2/ Against point no. 12, you have mentioned” In-Situ pretreatment for extremely low pressure application”.  Since there is no mention of extremely low pressure measuring transducer, please clarify if you need this facility. As was discussed during the meeting, if moisture contamination is to be taken care of, a temperature of maximum 200Deg. C. could be sufficient. | Amended, please refer revised specification attached as Annexure III..A dedicated degasser is fine for regular samples but we also measure adsorption for very moisture-sensitive samples, and for that reason, we need the in-situ pretreatment system. Also since sometimes high boiling coordinated solvents need to remove completely at 300°C temperature is very important for us.  |
| 13 | 3/ The std. size available for the gas cylinders is 47 Ltr. Please clarify if this size is acceptable. | Amended, please refer revised specification attached as Annexure III. In the specification, it is written about 50 Ltr capacity |

**ANNEXURE -III**

Technical Specifications –

Multipurpose Gas Adsorption Instrument

General:

A fully automated equipment for measurement of adsorption characteristics of various gases i.e. CO2, C2H2, C2H4, C2H6, CH4. C3H6, C4H8 etc. This unit should be capable of measuring a wide range of adsorption isotherms at various temperature.

The unit should be fully automated and should have all the accessories and features for sample preparation & treatment.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl** | **Features** | **Specifications** | **Points** |
| 1 | Measurement Technique | The system should be automatic and capable of carrying out physisorption measurements of various gases volumetric gas adsorption technique. | - |
| 2 | Analyser Capability | System should provide all standard analytical data on Gas sorption isotherm, BET specific surface area, BET automatic analysis, Langmuir specific surface area, Adsorption rate measurement, differential adsorption isotherm, NLDFT / GCMC models, etc. | - |
| 3 | Adsorptive Gases | Should be compatible with high purity gas like N2, Ar, CO2, C2H2, C2H4, C2H6 CH4, NH3, butane, and other non-corrosive gases | - |
| 4 | Sample Ports | * Have three or more sample analysis ports,
 | **10** |
| 5 | Port for Saturation vapor pressure | System should have a dedicated port with its own pressure sensor to measure saturation vapor pressure; the material should be durable and sustain thermal condition. | **10** |
| 6 | Gas inlet ports | Gas ports for 2 or more gas inlet connections with automatic port selection through software,  | **10** |
| 7 | Measurement range | * Surface area: 0.01 m2/g and above with (N2, Ar)
* Pore Diameter Range: 0.7 to > 200 nm
* Isotherm starting from P/Po = 10-4 to 0.99 with N2 @77K.
 | **10** |
| 8 | Pressure Transducers | * System should have minimum 3 numbers of 1000 Torr pressure sensors.
 | **10** |
| 9 | High Vacuum system |  Ananlyser should have a high vacuum pump for low pressure adsorption. | **5** |
| 10 | Dead volume correction. | * System should have provision to correct changes in dead volume (free space) due to LN2 evaporation.
 | **5** |
| 11 | Excess Gas Dosing Optimization | Software should have provision to reduce the total measurement time with software-based optimization of excess gas dosing based on isotherm data measured in the past. | **5** |
| 12 | In-Situ pretreatment for extremely low-pressure applications  |  Offer should also include an additional heater and temperature controller for in-situ pretreatment for extremely low-pressure measurements and to remove contamination during sample tube changeover from degaussing port to analysis port. The heater should be able to heat samples up to 300°C or more for in all the ports. For elevated temperature adsorption studies and in-situ sample pre-treatment.  | **10** |
| 13 | Accessories for Hydrocarbon adsorption studies | Water bath (Closed) For measurement temperature from -10 to 70˚C, with PP ball for heat insulation and suitable Water Chiller cum recirculatory to control temperature of water bath. | **10** |
| 14 | Cryo cooling | Dewar vessel of capacity: 2L or more, with LN2 holding time: 30 hours or more.  | **5** |
| 15 | Software | The software should be an original licensed copy software.It should display instrument status, trend chart and real time isotherm parallel for all samples during measurement. The required analysis software for measured data should be provided. The software should have the data handling features like user defined report generation, data/ figures export to spread sheets (ASCII files import/ export, word/ excel compatibility, pdf formats) and offline dataprocessing etc. | **-** |
| 16 | Essential Accessories | System should be supplied with 6 and more numbers of Samples cells. Surface area reference material should be supplied. | **5** |
| 17 | Training | The manufacturer / supplier of instrument should provide three days onsite training in both hardware and software to the laboratory personnel in the installation, operation, and maintenance of the instruments. | **5** |
| 18 | Warranty | 3 years or more |  |
| **Below installation and operating requisites need to offer separately** |
| 19 | Computer  | A suitable branded computer with following specification for data collection: AMD Ryzen 7 5700G, 512 GB SSD + 1 TB HDD, 16 GB DDR4 RAM, NVIDIA GeForce RTX™ 3060 (12 GB GDDR6), 24 inch LED Screen, Keyboard, mouse, licensed MS windows original. |  |
| 20 | Gas cylinders | Ultra-high pure Nitrogen and He gas cylinders, about 50 Ltr capacity with double stage SS regulators |  |
| 21 | Vacuum pumps | Required vacuum pump of following specifications should be offered. Ultimate partial vacuum: 2 x 10-4 mbar |  |
| 22 | Liquid Nitrogen container | 10L Liquid nitrogen container with liquid nitrogen transfer device should be supplied |  |
| 23 | Pre-installation Requirements | Complete technical details of pre-installation requirements should be furnished along with the bid. Vendors are required to quote/add and provide all other installation accessories, and ser vices required for successful installation and smooth operation of the equipment. |  |
| **The following optional accessories need to offer separately** |
| 1 | Computer  | A suitable branded computer with following specification for data collection: AMD Ryzen 7 5700G, 512 GB SSD + 1 TB HDD, 16 GB DDR4 RAM, NVIDIA GeForce RTX™ 3060 (12 GB GDDR6), 24 inch LED Screen, Keyboard, mouse, licensed MS windows original. |  |
| 2 | Printer | Branded Color laser printer with scanner and auto document feeder.  |  |
| 3 | Vacuum pumps | Required vacuum pump of following specifications should be offered. Ultimate partial vacuum: 2 x 10-4 mbar |  |
| 4 | Cooling system | Water bath (Closed) For measurement temperature from -10 to 70˚C, with PP ball for heat insulation and suitable Water Chiller cum recirculatory to control temperature of water bath. |  |
| 5 | Valves | Pressure sensor valves for the main instrument – Total No. 6 |  |