File Ref. No. PUR/IICT/DMS/324/RE/23-24 **Dt: 28-11-2023**
CPPP Tender ID : 2023_CSIR_174792_1

Minutes of Pre-Bid Conference (PBC) held on 28-11-2023 for proposed procurement of ***"supply installation commissioning of VOLUMENTRIC SORPTION ANALYZER" –***

Chairpersons / Members of the Technical Sub Committee (TSC) present during PBC including domain expertspresent during PBC:-

1. Dr N Lingaiah Chairman
2. Dr. Pratyay Basak, Member
3. Dr Sreepariya Vedantam, Member
4. Shri D Venkateshwar Rao, Member
5. IO/PL – Dr. Rohit Kumar Rana

Representatives of the following firm attended the PBC:

1. M/s Anton Paar India
2. M/s Verder Scientific Pvt. Ltd.
3. M/s Partech Scientific Instruments

The following points were discussed during the PBC:

Query raised by M/s. Verder Scientific Pvt. Ltd, and response of CSIR-IICT:
Query-1: Point number 4 in Chapter 4. The vendor requested to change the pressure transducer range to "0.1 torr, 10 torr and 1000 torr" from the existing to "1.5 torr, 10 torr and 1000 torr or better".
Response: The technical specification is changed to "1.5 torr or less, ~10 torr and ~1000 Torr.

Query raised by M/s. Anton Paar India, and response of CSIR-IICT:
Query-1: Point number 5 in Chapter 4. The vendor requested to change temperature range from "-10°C to 500°C" to "-10°C to 150°C".
Response: Not accepted, since the temperature range "-10°C to 500°C" is the users requirement for this equipment.

Query raised by M/s. Partech Scientific Instruments, and response of CSIR-IICT:
No queries

Technical Points discussed by CSIR-IICT:
Following points were discussed by CSIR-IICT and amended as given below:

(**1st statement in the tender spec**): High precision automatic gas / vapor adsorption analyzer with minimum three measurements ports for the measurement of gas / vapor adsorption isotherms and sorption kinetics along with surface area and pore size distribution on three different samples.

(**Point # 4 & 5**) Since minimum three sample ports are specified, in the specs are changed accordingly.

(**point # 15**) Two 47 lts UHP CO_2 filled cylinders with two suitable regulator (with heating accessory); One 47 lts He filled gas cylinder with regulator. Appropriate gas lines should be provided with gas purifier, and all required accessories during the installation.

(**point #17**) The equipment should be delivered within 3-4 months from purchase order issued. The supply should include installation, commissioning and training of CSIR-IICT personnel.

Points clarified by CSIR-IICT Team during PBC:

The firm informed that they do not have problem with other points of tendered specifications and requirements. Participating bidders have been informed that points raised by them during PBC will be examined by CSIR-IICT's **Technical Sub Committee (TSC)** constituted for the purpose of procurement of said equipment and **post PBC changes** in tendered specifications and requirements to be agreed after due consideration of the same by TSC, if any, will be uploaded in **CPPP** as part of **revised/amended tendered specifications**.

Minutes of the PBC with changes agreed (if any) will be uploaded in due course at **CPPP** for information and reference of prospective bidders on or before **28.11.2023**. All bidders are requested kindly to take a note of changes in tendered specifications subsequent to PBC held today, i.e. 05-12-2023 before they start submitting their online bids through CPPP.

(Dr. Pratyay Basak) 28/11/2023
Member

(Dr Sreepriya Vedantam) 28.11.2023.
Member

(D Venkateshwar Rao) 28.11.23
Member

(Dr. Rohit Kumar Rana)
IO/PL

(Dr. N Lingaiah) 28/11/2023
Chairperson

Revised Specifications/Corrigendum

File Ref. No. PUR/IICT/DMS/324/RE/23-24 **Dt 28.11.2023**

Volumetric Sorption Analyzer

High precision automatic gas / vapor adsorption analyzer with minimum three measurements ports for the measurement of gas / vapor adsorption isotherms and sorption kinetics along with surface area and pore size distribution on three different samples.

Detailed specifications:

(1) Capability to measure micro and meso-pore surface area (0.01 m^2/g and above with N_2 at 77K); micro / meso-pore size distribution (0.35 nm and above) using nitrogen gas adsorption with provisions for using Kr and Ar gas adsorption.

(2) It should measure adsorption/desorption isotherms and sorption kinetics of various gases, such as N_2, Ar, O_2, CH_4, CO, CO_2, C_2H_4, C_2H_6, C_2H_2, C_3H_6, C_3H_8, etc., in temp from -10°C to 500 °C or better.

(3) Software should have capability:

- To control the operation of the unit unattended with programming for multiple sample measurements (dosing settings, equilibrium criteria, leak test, etc.) at different temperature.
- To measure BET and Langmuir surface area, t-plot, BJH, HK, DFT, Dinomom- Astakhov and other models for pore size distribution (to be mentioned in the quote).
- To analyze sorption kinetic data and to fit adsorption isotherms in to various isotherm models.
- To calculate micro / meso-pore surface area and pore-size distribution, sorption uptake analysis.

(4) Number of measurement ports : Minimum 3 (for simultaneous measurement on at least three samples)

- At least two sample ports should be capable of measuring adsorption / desorption at very low pressure for micro-pore analysis, i.e. at least two ports should have minimum 3 pressure transducers in the range of 1.5 torr or less, ~10 torr and ~1000 Torr.
- One sample port should be capable of measuring adsorption / desorption isotherms up to 6000 torr pressure or higher (fitted with at least one pressure transducer in range of ~7000 torr).

(5) All the 3 ports should be capable of measuring adsorption/desorption isotherms at -10°C to 500°C or better with the required accessories, such as, suitable heating/cooling having high precision temperature control and programmability with system software for maintaining the temperature.

(6) For analysis at 77K, the unit should have cryogenic dewar flask, N_2 liquid level sensor or equivalent technology.

(7) Capability to heat the unit including manifold at 50° or higher for vapor adsorption measurements to prevent vapor condensation.

(8) Unit should have at least six gas inlet ports (He, N_2, CO_2, CH_4, two other gases of user choice) and minimum one vapor inlet port with software capability to select required gas for measurement.

(9) The unit should have in-built turbo molecular vacuum pump with suitable backing pump capable of obtaining vacuum in the range of 10^{-7} mbar or better.

(10) External degassing facility for sample preparation for at least four samples simultaneously in vacuum and temperatures from room temp to 450°C or better.

(11) Spares / accessories / consumables for trouble free operation of the unit for 2 years: 12 sets each consisting of sample tubes, rod inserts for reducing sample tube volume, 'o' rings / seals, etc.

(12) Extra three sets of spare sample tubes of different sizes for all ports.

(13) Two standard reference samples (meso-porous and micro-porous) for unit calibration.

(14) Branded PC for data acquisition and analysis – latest mother board, 1 TB HDD, 16 GB or higher RAM, 21" or 24" LED screen, keyboard, mouse, licensed MS windows.

(15) Two 47 lts UHP CO_2 filled cylinders with two suitable regulator (with heating accessory); one 47 lts He filled gas cylinder with regulator. Appropriate gas lines should be provided with gas purifier, and all required accessories during the installation.

(16) Suitable UPS with one hour power backup for both power and control circuit.

(17) The equipment should be delivered within 3-4 months from purchase order issued. The supply should include installation, commissioning and training of CSIR-IICT personnel.

(18) Three year warranty on the complete system.

All the other tender terms remains unchanged. Bidders may please submit their bids accordingly.

28/11/2023
(Dr. Pratyay Basak)
Member

28.11.2023.
(Dr Sreepriya Vedantam)
Member

28/11/23
(D Venkateshwar Rao)
Member

(Dr. Rohit Kumar Rana)
IO/PL

(Dr. N Lingaiah) 28/11/2023
Chairperson