

## **High Pressure Gas Sorption Analyzer**

IIT-Madras is looking for High Pressure Gas Sorption analyzer for measuring gas sorption on a single sample of microporous / mesoporous material, such as MOFs (Metal Organic Frameworks). The following technical specifications should be met to qualify the technical bid.

A detailed compliance statement should be provided, and it should be supported by the manufacturer's (OEM) product brochure or website. Information provided in the supplier/redistributor/vendor/reseller's brochure or website cannot be considered as supporting document. Technical bids without proper compliance statement will not be considered.

The bidder should be an Original Equipment Manufacturer or their authorized vendors/dealers/partners. If vendors/dealers/partners are participating in the bidding, an authorization certificate should be provided.

### **Required specifications and components**

1. Automated, high pressure sorption equipment, with a single sample holder
  - a) Sample types: powder, film, coating on a substrate
  - b) Sample materials: inorganic materials, polymers, organic-inorganic hybrids
  - c) In-situ sample degassing and sample preparation
  - d) Desorption measurements
2. Measurements based on gravimetric method. Following are the requirements for the microbalance
  - a) Capacity: 2.5 gm or higher
  - b) Weight resolution: 0.25  $\mu\text{g}$  or less
  - c) Short term stability over 10 min: 2  $\mu\text{g}$  or lower
  - d) Long term stability over 24 hours: 5  $\mu\text{g}$  or lower
3. Temperature
  - a) Temperature range of 0 to 400  $^{\circ}\text{C}$  and temperature accuracy  $\pm 0.1$   $^{\circ}\text{C}$
  - b) Cryogenic measurement at 77 K should also be provided
4. Pressure
  - a) Range: vacuum to 50 bar
  - b) Base vacuum:  $10^{-5}$  mbar or lower
5. One or more gas input ports
6. Compatibility with the following gases:  $\text{CO}_2$ ,  $\text{H}_2$ ,  $\text{CH}_4$  and  $\text{N}_2$
7. Capability for future extension for
  - a) Gas sorption from multi-component gas mixtures
  - b) Automated input gas mixing
  - c) Time dependent or dynamic measurement
  - d) Static and flow modes

All the accessories required for the specifications above must be quoted.

**Computer and software**

- Software for instrument control, parameter setting, and real-time data acquisition
- Necessary hardware like computer, which can be connected to the quoted equipment, for the above functionality must be quoted separately.

**Demonstration of Prior Experience**

- The vendor must also provide at least one scientific publication for an equivalent application in a Scopus-Listed Research Journal that uses the quoted equipment
- Two separate performance report from two clients.
- Installation and training , onsite should be included