

**INDIAN INSTITUTE OF TECHNOLOGY ROPAR, RUPNAGAR-140001 (PUNJAB)**  
**DEPARTMENT OF CHEMISTRY**

Dated: 04-03-2010

**SUBJECT: N.I.Q. for purchase of scientific equipments**

Sealed quotations are invited for the supply of the Surface area and pore size analyzer. The equipment is to be installed at IIT Ropar (Rupnagar) Punjab. Delivery of the equipment will be required within 2-3 months of placement of the purchase order. The quotations should reach in the office of Head, Department of Chemistry (Room No.106), IIT Ropar, Nangal Road, Rupnagar-140001, Punjab, latest by 3:30 PM on March 19, 2010. The firms are requested to send offers for Technical and Commercial bids in separate sealed cover.

**1. Surface area and pore size analyzer**

**One Number**

**Basic Requirements**

1. Fully automated, vacuum volumetric, gas sorption system. The system can tests one or more sample while simultaneously and independently degassing a further one or two samples. The system generates adsorption and desorption data points as needed for the determination and reporting of the following.

- (a) Isotherms: Selectable number of data points at any desired target pressure.
- (b) Measurement: Measurement of single and multi point BET surface area ( $0.0005 \text{ m}^2/\text{gm}$  to no known upper limit ). Capable of measuring both micro-pore and meso-pore range.
- (c) Pore analysis: Detectable volume limit  $< 0.0001 \text{ cc per gm}$  or better
- (d) Pore diameter:  $3.5 \text{ \AA}$  to  $3000 \text{ \AA}$  or better with Nitrogen.
- (e) BJH Pore Size Distribution
- (f) Total Pore Volume: At user selectable  $P/P^0$ .
- (g) Average Pore Size: Radius or Diameter
- (h) Statistical Thickness: de Boer, Halsey or Carbon Black Models
- (i) t-method: Micropore Area, Mesopore area, Micropore volume etc.
- (j) Micropore Size Distribution: MP, HK, SF, DA, etc.
- (k) Pressure Measurement Range: 0 to 1000 mm Hg or better.

2. Analysis station consisting of Sample Cells, P0 Cells, Sample Pressure Transducers, Thermistor coolant level sensor.

3. Adsorbates: Argon, Nitrogen, or any other non-corrosive gas such as  $\text{O}_2$ ,  $\text{H}_2$ ,  $\text{CO}_2$ , etc.

4. The system is equipped with both rotary oil pump and turbo-molecular pump. Ultimate vacuum ( $10^{-9}$  torr or better) should be achieved by dedicated turbomolecular pump.

5. Degas Unit: Two number of automatic degas stations having temperature range from ambient to 400 deg<sup>0</sup>C or better.
6. Gas Requirement: Nitrogen and Argon Cylinder with two stage regulator should be provided.
7. One 50 Liter and one 5 liter capacity liquid nitrogen container (Cryocan) should be provided.
8. Cold trap: 50 hrs. or better using liquid nitrogen.
9. High-end Computer system with state-of-the-art hardware including laser printer
10. System should be computer controlled. Suitable software should be provided to run the instrument and the software should be capable to calculate all those physical parameters discussed in requirement no 1.
11. About 20 sample cells and 5 P0 cells should be provided with the instrument.
12. Warranty: Three years from the date of installation
13. Installation: The equipment should be installed by certified engineer of the firm.

**Terms and Conditions:**

1. The equipments should be supplied and installed at IIT Ropar (RUPNAGAR) Punjab
2. The prices quoted should be inclusive of all taxes and CIF IIT Ropar
3. The quotation received after due date will not be considered
4. The Institute reserves the right to reject any quotation without assigning any reasons
5. The suppliers must support the quoted specifications with the help of original printed manuals of the equipments
6. The payment terms should be specified in the quotation clearly
7. The suppliers may mention any number of optional accessories in their quotes; however the same should be clearly distinguished from the main requirements along with their individual prices.
8. List of Institutions/University/Industry where instrument has already been installed by the supplier.
9. EMD of Rs. 25000/- in the form of Bank draft in favor of Registrar IIT Ropar, Payable at Roopnagar is to be deposited along with the quotation.

**Note:** Technical bid will be open on 20<sup>th</sup> March 2010 at 11:00 am.