



Institute of Petroleum
(Council of Scientific & Industrial Research)
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TENDER NOTICE NO 28/2017-18

Sealed tenders under two bids system (Part-I Technical bid along with EMD and Part II Price bid) are invited from the Indian / Foreign manufacturers/ Authorized Distributors or Indian Agents for the supply, installation and commissioning of the following equipment:-

Sl.No	File No.	Description	Qty	EMD (in Indian Rupees)
1.	PUR/1/17-18/341/AB/RTD/PO:	Automated High Pressure Chemisorption Unit Coupled with Quadrupole Mass Spectrometer	One	Rs 1,96,000.00 (Rs One Lakh Ninety Six Thousand Only)

The bids must reach this office on or before **14.03.2018** upto **14:30 hours (IST)** and shall be opened on same day at **15:00 hours (IST)**.

Please visit our website www.iip.res.in for further details for standard bid documents.


(Stores & Purchase Officer)



CSIR-Indian Institute of Petroleum

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INVITATION FOR BID / NIT (Two Bid System)

1. Sealed tenders under two bids system (part-I Technical bid along with EMD and part II Price bid) are invited from the Indian / Foreign manufacturers/ Authorized Distributors or Indian Agents for the supply, installation and commissioning of the following equipments:-

Sl No.	Tender No.	Description of items	Qty	EMD (in Indian Rupees)
2.	PUR/1/17-18/341/AB/RTD/PO:	Automated High Pressure Chemisorption Unit Coupled with Quadrupole Mass Spectrometer (Detailed specification as per Annexure)	One	Rs 1,96,000.00 (Rs One Lakh Ninety Six Thousand Only)

2. The complete set of "Standard Bid Document" is available in our website www.iip.res.in at free of cost. The same may be downloaded and used while preparing your bid. A copy of the same may be attached along with the bid, duly signed and stamped.
3. The bids must reach this office on or before **14.03.2018** upto **14:30 hours (IST)** and shall be opened on **same day at 15:00 hours (IST)**.
4. EMD should be in favor of Director, I.I.P, Dehradun in form of Demand Draft or Bank Guarantee.
5. The Director, **Indian Institute of Petroleum, Dehradun** reserves the right to accept any or all tenders either in part or in full or to split the order without assigning any reasons there for.
6. The Indian agent of the foreign suppliers should be enlisted with DGS&D.


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Annexure -1

AUTOMATED HIGH PRESSURE CHEMISORPTION UNIT COUPLED WITH QUADRUPOLE MASS SPECTROMETER

The fully automated system for Temperature – Programmed studies like TPD, TPR, TPO, and thermally programmed surface reactions besides chemisorption and BET analyses. The instrument should have the following necessary features.

1. It should allow preparation and analysis of sample at pressures up to 420 psi or better with electronically inbuilt safety checks.
2. It should be versatile analysis protocol permits complex sequencing and experimental design
3. In situ experiments with virtually unlimited steps.
4. There should be option for records pressure as part of the experiment.
5. It should Records pressure as part of the experiment.
6. Capable of analysis
 - Temperature Programmed Reduction (TPR)
 - Temperature Programmed Oxidation (TPO)
 - Temperature Programmed Desorption (TPD)
 - Temperature Programmed Surface Reaction (TPSR)
 - Pulse Chemisorption
 - Pulse Calibration
 - Reaction and Kinetic Studies
7. The instrument should be coupled with a quadrupole Mass analyser for TPSR studies.
8. Minimum three mass flow controllers and an electronically controlled back pressure regulator should be provide for precise gas control.
9. At lease twelve gas inlets (five or more) for preparation, carrier, and loop gases.
10. U-shaped Stainless-steel (SS316) sample tubes and connectors should be provided and withstands to work at high pressure (30 bar or better)and high temperature (650°C or better)
11. Quartz tube with connectors should be provided for ambient pressure chemisorption studies to work at -100 °C to 1100 °C or better.
12. An interactive reporting system that includes an extremely versatile graphic user interface allowing custom presentation of results
13. The high sensitivity TCD detector should have the following broad specifications. It should operate in the constant temperature mode by varying the filament current and voltage with the changing composition of the gas flow. It should have gold plated filament. Software should provide automatic calibration and linearization of TCD output.
14. The internal modules like loop, loop valve, sample valve, detector, detector valve and inter connecting tubing should be held at software programmable constant elevated temperatures of up to 150°C.
15. The furnace and the cooling accessory should be offered to run automatically the temperature-programmed experiment from – 100°C to 1100°C.
16. The cooling accessory should work on LN2 in a completely integrated manner with the main equipment.

17. The system should be equipped with cold trap.
18. Quadrupole mass spectrometer with mass range up to 200 amu. Mass spec data should be editable using peak editing features of the Chemisorption analyser. The Chemisorption software should allow calibrations of Mass spec. NIST mass library should be provided for at least 100 spectra.

Other technical specifications should meet the following requirements.

1. Temperature System

- a) Range Room temperature to 1100°C
- 100 to 1100°C with CryoCooler
- b) Selection Digitally set, 10°C increments.
- c) Ramp Rates Up to 50°C per minute from -70 to 500°C range.
Up to 30°C per minute from 500 to 750°C range.
Up to 10°C per minute from 750 to 1100°C range.

2. Gases.

- a) Loop (Analysis) -H₂, CO, O₂, N₂O, vapors such as pyridine, water etc.
- b) Carrier- He, Ar, and other gases.
- c) Preparation H₂, O₂, He, Ar, CO₂ and NH₃ and others.

3. Gas Flow Rate

- a) Loop (Analysis) 10 to 75 ml/minute
- b) Carrier 20 to 75 ml/minute
- c) Preparation 10 to 75 ml/minute

4. Gas Delivery

- a) Inlet Ports 4 each for preparation gas, carrier gas and loop (analysis) gas ✓
- b) Temperature Internal gas lines and valves heated to 150°C .

21. 5 years of all kind of spares and consumables for running of the instrument and all supplied accessories. A list of spares and consumable required should be provided along with quantity of each item.

42.5KVA online UPS with minimum 30 min power backup of complete System (Emerson or equivalent).

Terms and conditions for instruments

- The supplier must provide installation, commission, and training for group users from operating the instrument to complete structure determination/solution, general maintenance at site without any additional cost with supply of all the relevant manuals and documents in printed format.
- Extended warranty for the system, all accessories and spare parts should be for min of **3 years or more from the date of installation.**
- The supplier must produce detailed lists of Indian users.
- The supplier must demonstrate that they have appropriate set-up and capability to provide after-sales service effectively in India for prompt service (within 48h) support along with number of service engineers specially trained on the offered system.
- Necessary pre-installation advice should be sent immediately after the placement of the order.
- The tender document MUST enclose valid standard specification documents from the company and every specification must be a part of that standard document.
- The supplier must give detailed lists of at least two Indian users for quoted model.
- Onsite comprehensive user and maintenance training.

Optional

Recommended list of spares for smooth running of the instrument and additional CMC/AMC charges for three years on annual payment basis.



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