

DEPARTMENT OF CHEMICAL ENGINEERING  
INDIAN INSTITUTE OF TECHNOLOGY DELHI  
HAUZ KHAS, NEW DELHI – 110016

Ref No: IITD/ChemEng/RP02501

Dated: 14/02/2014

**NOTICE INVITING QUOTATION**

**Sub: Purchase of a Quadruple Mass Spectroscopy System**

Sealed quotations in separate envelopes of technical and commercial bid kept in a one sealed outer envelope are invited for purchase of a 'Quadruple Mass Spectroscopy System' as per specifications given below. Your sealed quotation should reach latest by 5.30 PM on 05/03/2014 to **Prof. S. Basu, Department of Chemical Eng., Indian Institute of Technology Delhi (IIT Delhi), Hauz Khas, New Delhi - 110016**. Your quotation should be super scribed 'Quotation for Quadrupole Mass System dated 14.02.14.

**Specifications:**

1. Turbo Pump: 60 lit/see or better turbo molecular pump. Turbo controller, Auto vent valve with delay timer. Splinter shield, Vacuum protection module
2. Mass Spectrometer: Dual faraday and electron multiplier, detectors with range of 200 amu.
3. Detection Limit: 0.1ppm to percentage levels.
4. Ionization potential: 0 -150 eV.
5. Penning controller and gauge for vacuum integrity confirmation and interlock protection of the mass spectrometer in case of over pressure.
6. Ion source control.3 RS485 (multi-protocol) to interface with a wide range of external devices for example MFC.
7. Read multiple inputs like temperature pressure and integrate that with the MS data
8. Easily integrated with a TGA apparatus.
9. Up gradation facility with low pressure inlet up to 25 mbar / very low pressure up to 1 mbar and also high temperature ( 200 °C) – High pressure up to 30 bar
10. There should be provision for upgrading with high temperature inlet (250 °C) and should also have easy up gradation to corrosion resistance.
11. Should be capable of soft ionization for discriminating between difficult very close mass
12. The interface should be such so as to be able to provide very fast analysis < 300 msec and provide a real time trend analysis
13. Should be capable of handling multistreams
14. The system should have very fast scan speeds of the order of 400-500 measurements per sec.
15. Software: Fully automated and compatible for different analysers. It should have histogram, real time trend analysis, ion source control for appearance potential, analogue I/O logging control, display partial pressure ratios, quantitative and normalized composition, scan environment editors, real time diagnostics and critical parameter monitoring and should be able to take data from 2 external signals and be able to trigger analysis. Comprehensive data export facility including DDE, ASCII and clipboard exchange RS232, RS485, 10/100 Base-T LAN interfaces. Two analogue inputs (+10V & -10V) for reading external signals simultaneously with mass spectrometer data. Automated data acquisition via TTL trigger for hands-free operation. Extensive programmable trip mode with ASCII outputs to comms ports and relay outputs for process control applications.

**Essential accessories**

16. Standard branded PC with b/w laser printer for controlling Mass Spectroscopy and printing
17. Online UPS with required rating for backup power of minimum 30 min.
18. Differential Electrochemical Mass Spectroscopy Cell – single thin-layer flow cell with inlet and out, membrane and vacuum pump. System should be adaptable to membrane inlet mass spectrometry.

**Terms & Conditions:**

1. The quotations must have validity of at least three months.
2. Quotation must include insurance and air-freight charges, delivery period of the items addresses to Indian Institute of Technology, Delhi, India (FOB and CIF, New Delhi).
3. The products will be used for educational purposes. Any applicable academic institution discounts should be offered and stated.
4. Detailed Brochures should accompany the offer.
5. If the bidder is an authorized dealer then the authorized Indian dealership certificate from the principles should be enclosed.
6. Warranty details must be given.
7. Payment will be through irrevocable letter of Credit.
8. In case the items are proprietary products of the company, a proprietary item certificate stating the same must be provided.

9. Installation and Training should be provided free of cost.
10. Institute reserves the right to accept or reject any or all the quotations without assigning reasons thereof.

Chairman, PFC