



Enquiry No: CHM/RG/2016/0610/01  
Enquiry Date: 15/10/2016  
Closing Date: 30/11/2016

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Dear Sir or Madam: Quotations are invited for purchase of a “HPLC system and their accessories.”

Pre-Qualification Criteria

Supply, Delivery, Installation and Commissioning of Completely Integrated High Performance Liquid Chromatography System.

The next generation Integrated HPLC must be capable of standalone operation and have internal diagnostics to monitor the instrument’s performance and record in an electronic logbook.

Modules must be connected via fibre optic noise resistant high-speed transmission technology to enhance the reliability and sensitivity of the HPLC.

The Integrated HPLC must have the following condensed into a compact package:

1. Solvent Delivery System for quaternary gradient
  2. Degassing unit
  3. Conductivity detector...DAD 190-900 nm UV-VIS Detector
  4. Columns
  5. Sample Injector
  6. System Controller
  7. Data Management System
  8. Others
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1. Solvent Delivery System for quaternary gradient
    - It should be a serial dual plunger micro-volume construction
    - The flow rate should be settable between 0.001 to 5 ml/min
    - Flow rate accuracy should be within  $\pm 1\%$  or  $2\mu\text{l}$  whichever is larger
    - Flow rate precision should be within  $\pm 0.075\%$  RSD
    - Pressure setting range should be  $10\text{-}400\text{ kg/cm}^2$
    - It should have a pressure fluctuation of less than  $1\text{ kg/cm}^2$
    - It should have a 4 channel low pressure solvent mixing capability
    - Concentration accuracy should be  $\pm 0.5\%$
    - Concentration precision should be  $\pm 0.1\%$
    - Must be equipped with Dynamic Inlet Valve to greatly improve flow rate stability and gradient performance
    - It should have automatic rinsing mechanism for cleaning of plunger
    - Maintenance kit, reservoir tray (with 2 solvent bottles complete with fittings) & automatic rinsing kit must be supplied as standard
    - It must have a leak sensor as safety feature

- It should have functions for maintenance and validation which are accessible by a dedicated operation button
2. Degassing Unit
    - Membrane degassing unit for 5 flow lines
    - Degassing capacity to less than 1.5 ppm of oxygen remaining at 1 ml/min
    - It must have a leak sensor as safety feature
    - Any error status should be transferrable to the operating software
  3. DAD 190-900 nm UV-VIS Detector
    - HPLC detector = The DAD/PDA should have wavelength of 190 to 950 nm with accuracy of  $\pm 1$  nm and for better sensitivity the no of diodes should be >1000 elements. The light source should include Deuterium as well as Tungsten lamps providing sampling rate of 20 Hz. The drift should be within 0.9 mAU at 254 nm.
  4. Columns
    - Column should be reverse phase, C8, C18, analytical and semi preparative 1 each
  5. Sample Injector
    - Sample injection volume should be variable between 2  $\mu$ l to 100  $\mu$ l for analytical.
    - Upto 2 mL for semipreparative. Syringe must be provided for appropriate volumes.
  6. System controller
    - The controller must be equipped with a big, clear LCD display for control parameters and time programs as well as spectrum display of scanned data and chromatogram display.
    - It should store minimum 20 analysis files with a total upto 400 steps of time programs
    - It must have the capability of data buffering to protect collected chromatography data from PC failure
  7. Data Management System printing
    - Hardware
      - Required computer should be provided with the system. The instrument should be ready to use upon installation.
      - UPS: 3 KVA or as per requirement.
    - Software
      - It should be capable of controlling HPLC systems and data acquisition of upto 8 channels (2 detectors for each system).
      - The monitoring of all the four HPLC systems simultaneously should be possible
      - Auto start-up, Auto shut-down, baseline stability auto judgement, Auto-validation; Auto purge, etc. must be available from the touch of a button
      - Operation of the system should be easy and intuitive via a state-of-art win 2007/above software
      - There should be an on-line help function context sensitive
      - Method file capability should include LC analysis parameters, data processing parameters, report format, etc.
      - The quantitation software should include, internal standard, external standard, normalization and corrected normalization for accurate and reproducible quantitation
      - The calibration curves obtained with weighted regression should be possible

- A multipoint calibration curve calculation using the average value of each concentration should be possible
- The reporting format should be flexible and easy to use in any desired format
- The data should be convertible to other formats. Spread sheet software and word-processing software should be available to provide data in tables or graphs through industry standard protocols
- Software must have its own log files for complete audit trails
- An audio-visual multi-media CD-ROM for Maintenance and Troubleshooting must be provided
- System suitability, System security as well as System check functions must be provided which comply with Good Laboratory Practice (GLP) and Regulatory Conformity

### **Service, Warranty and Training**

1. The system should be accompanied with Conformity Certificate.
2. Tendered price should include delivery, installation, commissioning and training (at least 4 users) at customer's location.
3. A qualified factory-trained engineer shall conduct on-site installation, commissioning and training.
4. Complete support for equipment for at least a period of 24 months after warranty. This shall include the following at no extra cost:
  - Travel and Labor expenses of Customer Engineer.
  - Service Parts used for repairs.
5. Vendor to provide service guarantee: should the system require service during the warranty period, vendor must guarantee or replacement of instrument for free.
6. Vendor to have logistic support to ensure that over at least 95% of the service parts are readily and upkeep delivery within 24 hours.
7. The warranty shall commence only upon successful completion of the Acceptance Test or commissioning.
8. Support should be available from Monday to Friday, 8.30am to 5.30pm (excluding Public Holidays), local time.
9. Vendor to provide a copy of Site-Preparation checklist.
10. Vendor to provide both on-site and operator training for users on the system start-up, usage, maintenance, quality control, trouble shooting, etc. including comprehensive classroom training.
11. Vendor must demonstrate that it has a proven appropriate set-up and capability to provide after-sales service efficiently and effectively. The supplier should have in his facility a similar system to that proposed in this tender for training purpose.
12. A declaration of Conformity certificate must be provided.
13. A declaration of System Validation certificate must be provided.
14. All modules must be GLP compliant.

### **Photodiode Array (PDA) UV-VIS Detector**

- The wavelength range should be 190 nm – 800nm

- The photo-diode array detector should have 512 elements and an element resolution of 1.2nm/element must be available.
- The detector must have 2 modules of operation using a variable slit: High Resolution mode at a slit width of 1.2nm and a High Sensitivity mode at a slit width of 8nm
- A Semi micro flow cell [2.5 µL volume, 5 mm cell path length, 12 MP a pressure max.] with temperature control with should be available as standard
- A Conventional flow cell [12 µL volume, 10 mm cell path length, 12 MP a pressure max.] with temperature control should be available as an option.
- The flow cells must be temperature controlled from ambient + C to 50 C
- Wavelength accuracy should be +1 nm
- A deuterium lamp [D2] and a Tungsten lamp [W] should be available as Light Source for UV and visible wavelengths respectively.
- The selection of light source must be flexible to select D2, W or both [D2+W] the lamps for analysis (3modes)
- The Drift must be smaller than  $0.5 \times 10^{-3}$  AU/Hour
- The Noise Level must be smaller than  $0.6 \times 10^{-5}$  AU
- Linearity should be equal or more than 2.0AU (ASTM method)
- It should have automatic wavelength accuracy check at 4 wavelengths (UV & Vis) & wavelength correction
- It should have a self-aligning mechanism for the light sources and cell.
- Light sources and cell should be accessible from the front for easy maintenance.
- It must have data buffering function to collect up to 20 min of data for all wavelength regions in case of PC malfunction.

### **ESSENTIAL CONSUMABLES, TOOL KIT ETC**

- Instrument to be supplied with all essential consumables for HPLC. Tool Kit and accessories necessary for installation/demonstration of the HPLC as well for smooth operation of the HPLC at least two year. Only solvents and sample will be provided by us.
- 1) C-18 & C-8 Column Analytical (5u) -1 each
  - 2) Guard columns- 1 each for the columns ordered.
  - 3) C-18 & C-8 semipreperative column – 1 each

### **Terms and Conditions:**

1. **Prices should be upto CIP New Delhi and IIT Kanpur including packing and forwarding, insurance and fright.**
2. **Prices should include transportation, installation and maintenance for 3 year, which includes all manufacturing flaws.**
3. **Proprietary / Dealership certificate, if any.**

4. **Minimum 2 years warranty.**
5. **Validity of quotation should be at least for 90 days.**
6. **Delivery after installation receiving confirmed order must be completed within 45 days.**
7. **Maximum educational discount.**
8. **Other specification according to the above technical requirements including commercial bids.**

Kindly mention “**HPLC system and their accessories (CHM/RG/01)**” on sealed envelope-carrying quotation, literature and send your best offer so as to reach us on before November 30,2016 to the following address. Delivery must be made within 30 days of confirmed order.

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