

Technical specification for proposed

Ion Chromatography System

Ion Chromatography (IC) system for analysis of Anions like fluoride, chloride, nitrate, phosphate, sulphate, perchlorate, oxyhalides, organic anions like formate, acetate, speciation of arsenic (arsenite and arsenate), selenium, chromium and cations like sodium, ammonium, aliphatic amines, lithium, potassium, calcium, aluminium, magnesium, nickel, cobalt, copper, zinc, iron, manganese, barium, strontium by conductivity detection. The system should be able to perform both suppressed and non-suppressed conductivity applications. The flow paths should be of PEEK material and inert withstanding the entire pH range 0-14. The system should be PC based with data acquisition and system control through the same software. The software should be able to identify various components like pump, column, detectors automatically. The system should have the components with following technical specifications.

PUMP :

- 1) One number of high pressure pump of serial dual piston type with selectable 0.001 to 20mL / min flow rate with a flow reproducibility of $\pm 0.1\%$. Pump should have the following specifications :
 - Serial dual pistons with two inert check valves.
 - Resolution of flow rate : 0.001mL to 20 mL per minute
 - Pulsation : Lower than 1%
 - Pressure range : 0 – 5000 PSI

Conductivity Detector :

- 1) One number of conductivity detector for analysis of anion and cation, should be microprocessor based with a Thermostated micro-flowcell conductivity block with an accuracy of $\leq 0.01^{\circ}$ C. The user should be able to set temperature of the conductivity block between 20 – 50 $^{\circ}$ C.
- 2) Conductivity measurement range: 0 – 15000 μ S/ cm or more.
- 3) Electronic noise < 0.1nS/cm at 1uS/cm level
- 4) Temperature coefficient range 0-5%

The system should be upgradable to electrochemical detector for cyanide and Sulphide analysis in future. Upgradation facility should also available for UV detector in future.



Column Housing :

Housing should be able to identify the columns and set the optimal operating conditions for column operations.

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IC Columns :

IC columns for analyses of anions ,cations should be provided. The columns should have electronic chip to store data and history of column use. It should also be possible to record the number of injections and the working hours.

Injector :

Dual position 6-Port injector valve with fast response time and controlled through software.

Chemical Suppressor :

Suppressor should be of packed bed type with high loading and high back-pressure (at least 350psi or more) tolerance with continuous regeneration. The regeneration of the suppressor should be by external chemical regeneration mode with the possibility of controlling the regenerant flow rate. The suppressor should be 100% solvent – acetone, methanol & acetonitrile compatible. At least 8 year warranty or more suppressors should be provided along with manufacturers certificate indicating the warranty.

UV Detector should be quoted optionally as per below specs.

Diode Array UV-Visible Detector

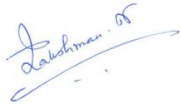
Diode array UV-Visible Detector for detection of transition metals and lanthanides. The detector should be of multi data channel (minimum 6 channels) and the wavelength range should be 190 to 800 nm. It should have two separate lamps namely D2 and Halogen lamp for UV and Visible range respectively.

Data Work station :

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Software for data acquisition & processing system along with complete system control should be offered. The necessary software should be fully Windows based. The software should be able to control the system.

Others :

- (i) No gas should be used for complete operation of the system
- (ii) IC should be supplied with monographs and manuals
- (iii) The  **Dr. -Ing. Lakshman Neelakantan** System should be warrantied for 3 years
- (iv) A detailed compliance statement to above mentioned specifications should be provided along with technical quote.
- (v) Previous installations: Vendor should have minimum 5 or more installations in IITs and/or Central Universities/labs. List of such 5 latest users (contact details) and copy of their installation report should be enclosed.
- (vi) The bidder must either be OEM or legal representatives of the OEM in India. Installation and training should be provided at customer site. At least three training session should be arranged as when scholars require soon after installation.
- (vii) Service facility and down-time call attendance:

Supplier should clearly mention about their service set up in India for prompt service support along with contact details of service engineers specially trained on the offered system. Service should be provided within 24 h from the report of technical problem so that machine down time is minimized.

In case the Equipment / System remains non-operational for more than 5 days then warranty period will be extended for the equivalent period for which Equipment / System remained non-operational. Warranty extension in such case shall be done without prejudice to any other Term & condition of the contract.


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