

ANNEXURE

OPEN TENDER FOR SIMULATED MOVING BED (SMB) OR ANY OTHER MULTI-COLUMN CONTINUOUS CHROMATOGRAPHIC SYSTEM

PURPOSE

Laboratory-scale and Pilot-scale separation of proteins, sugars and other biomolecules

SPECIFICATIONS

Columns

Number of columns: Minimum 4 (1 column per zone) and maximum 8 columns (2 columns per zone) for four zones

Column Dimensions: The system must be able to operate with two or more column sizes: Lab-scale columns should be in the range 10 mm ID x 250 mm; Pilot-scale columns should be in the range 25 mm ID x 300 mm

Material and packing: Stainless Steel (SS) columns packed with an appropriate matrix/resin to allow efficient separation of proteins and sugars. Column setup must allow removal of matrix/resin from column casing and reloading of fresh resins in the same column.

Column oven

Temperature setting range: 4°C - 80°C,

Temperature control precision: ± 0.5 °C or better

Overheat Protection: Maximum temperature protection adjustable from built-in alarm and auto shut off of heating control

Ports

Number of inlet ports: 2 (for 4 columns) and 4 (for 8 columns)

Number of outlet ports: 2 (for 4 columns) and 4 (for 8 columns)

Software must support systematic switch of inlet and outlet ports between columns at timed intervals

Pump

Dual-piston digital pump

Flow rate range: 0.001 - 12 ml/min or higher

Operating pressure: At least upto 20 bar

Number of pumps: 2 (for 4 columns) and 4 (for 8 columns)

Flow rate increment: 0.1 ml/min

Flow rate accuracy: $\pm 1\%$ or better

Flow rate precision less than $\pm 0.07\%$ RSD or better

Online monitoring system

UV-Visible Detector with 2 flow cells

Wavelength range: 190 – 840 nm

Detection: Simultaneous; up to 4 different wavelengths

Light source: Deuterium lamp with 2000 hr.

Accuracy of adjustment: ± 1 nm

Reproducibility: ± 0.5 nm

Absorbance range: 0 to 5 AU

Linearity < 5% up to 1 AU

Flow cells: In PEEK and/or SS from 0.3 – 2.4 mm path length with temperature control

Materials in contact with mobile phase: PTFE; fused silica, PEEK or stainless steel

Optional stand-alone control/ display

Software to support real time visualization of product peaks, quantification and analysis

Fraction collector (optional)

Number of fractions: Minimum 30

To collect fractions in 15 ml test tubes, 30 ml test tubes and 2 ml microfuge tubes

Materials of construction for contact parts

Acrylic, glass (borosilicate type I), hastelloy, Teflon®, EPDM, PEEK, FEP, PFA, or PTFE

Software

The necessary software for data acquisition, controlling all components, output display, data analyses, evaluation, reporting, storage etc. should be quoted. The software should be easy to handle and user friendly

Software should be straightforward to use- 32/64 bit Windows 7/8 based software

Standard sample schedule wizard

There should be an on-line help function

Installation and training

Installation should be done by the manufacturer. On-site training for operation of equipment (live demo of a model separation process), usage of software and application must be given to the users free of cost.

Warranty

The complete instrument should be under warranty at least for a period of 5 years from the date of installation. Additional cost, if any for extended warranty may be quoted.

In case of breakdown during the warranty period, a competent service engineer of the supplier should make as many visits as are necessary to rectify the problem and replace the faulty parts, without any liability of cost. Supplier should ensure to provide all spares required for making the instrument operational.

Manual

One set of operating manual and service manual including detailed drawings and circuit diagrams (in English) should be provided with the instrument.

Spare parts

The supplier of the instrument must confirm in writing that the spares for the entire instrument will be available for a period of at least ten years after the model of equipment supplied has been phased out. For frequently required spares, there should be adequate inventory with an Indian agency.

Others

Certifications/ Documentation: CE, IQ, OQ and PQ

System should be compatible with any other detector.

Supplier should have preferably service available in Chennai

Should have supplied to the equipment to IIT Madras or any reputed institution or industry in India (reference should be provided) and should be able to give a satisfactory demonstration of the product.