INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076

Purchase Requisition No. 1000004725 (SRM RFX No. 6100000072)

Technical Specifications for Requirement of Multi-Angle Light Scattering System with Size Exclusion Chromatography and Field Flow Fractionation Set-up (MALS-SEC-FFF). The system should be capable of working in the batch mode and could be coupled to RI and UV detector.

Technical specifications for Supply, Installation, Commissioning of Field Flow Fractionation with SEC system-Multi Angle Light Scattering, UV & RI detector along with all the accessories.

1. ***MALS Specifications*:**

- **Laser light source with controllable power.**
- **High-gain, high dynamic range, static light scattering detectors: Minimum 18 detectors for MALS detection.**
- **Mass range: from 1000 Da to 1 GDa. A lower range better than 1000 Da is also preferable.**
- **Rg Size range typically 10 nm to 500 nm**
- **Sensitivity of detection 0.4 microgram/ml of BSA or better.**
- **Measurement modes: online & batch. The online and batch mode MALS should have a vertical geometry for long life of the measurements.**
- **Vendor should supply Cuvette for Batch mode with - 10 mm circular cuvettes (Pack of 10)**
- **In order to reduce noise and spikes, it is preferred that circular glass cuvette should spin at constant speed inside the MALS batch compartment.**
- **Temperature range- ambient plus heating is mandatory.**
- **Detector resolution 24 bit.**
- **In built ultrasonic cleaning module for automatic cleaning of the flow cell is preferred.**

2. ***FFF-SEC Specifications*:**

- **The FFF system shall be offered on the same platform, in two formats- Size Exclusion Chromatography and Asymmetric Flow-FFF techniques for separation of polymers, proteins, aggregates, nanoparticles etc. in aqueous solvent.**

- **FFF and MALS should be controlled by the same software or the software should be compatible with each other.**

- **Temperature range 5-90 Celsius**

- **Separation range 1 nm to 100 microns.**

- **Focus technology to avoid band broadening of larger sample volumes.**

- **cross-flow control using dual syringe pump**

- **System should have degassing module and eluent organizer, manual injection valve**

3. ***Refractive Index (RI) detector*: Differential RI detector should be able to generate *dn/dc* measurements on the protein samples and compatible with MALS detector for measurement of absolute molecular weights.**

4. ***UV detector:* A UV detector with 2 channels with selectable wavelength; wavelength range 190 - 700 nm, approx. 12 µL cell volume.**

5. ***Software package*: for operation of all the detectors and analysis of data should be provided with multiple licenses.**

6. ***Channel cartridges and membranes:* for asymmetric flow FFF for analytical and/or semi preparative measurements of protein solutions. All other consumables for sample and solvent handling such as tubings, fittings, solvent organizer, membranes, degasser, filter kits, protein standards etc.**

7. ***SEC columns:* Should be compatible with Aqueous and Organic solvents. Analytical (typically 4 - 8 x 300mm) and semi preparative. Carrier Liquids: Aqueous: any aqueous liquid, pH from 2 - 11, ionic strength from DI water to saline. Organic: THF, MeOH, etc. SEC column should be able to separate 100 Da- 2000 kDa sample range. Additional SEC columns for protein 10 KDa to 1000 KDa should be provided.**

8. **General Specifications:**

   A. **Warranty: 3 years comprehensive warranty on all parts.**

   B. **Computer Requirements: Two high end computers (i7; 5th generation) with 26 inch screen Displays with 1920 x 1080 resolution or higher. RAM 16 GB or more. 1 TB GB or larger solid state disk. Proper UPS should be provided for the machine.**

9. **This order will be in placed in full or in parts.**

10. **The vendor should quote for all items.**