



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

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Technical Specifications for Dynamic Light Scattering (DLS) and Zeta Potential Measuring System

RFX NO. 610000821 (Reference No. 1000017933)

DLS & ZETA POTENTIAL MEASURING SYSTEM TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS

PARAMETERS TO BE MEASURED

Particle Size and zeta potential measurements for globular proteins, nanoparticles, and polymers (most colloidal-sized materials) in any non-absorbing liquid. Capability to measure molecular mass and A2. Transmittance value measurement will be added advantage

Temperature control range

0°C to 90°C +/- 0.1°C

Condensation control

Purge using dry air

Laser Source

Diode Laser 630nm – 660 nm; Laser Power 4-40 mW

Detector

Photo Diode

Laser warm-up time

20 min or better

PARTICLE SIZE MEASURING RANGE

Measuring principle: Dynamic Light Scattering

Range: 0.4 nm to 9 micrometer or better

Maximum concentration: 40 % w/v

Measurement angles: Minimum Two angles - 173° -175° and 13° -15 ° preferably Side angle 90° in addition

Minimum concentration (protein): 0.1 mg/mL (lysozyme)

Temperature control: 20 deg. C - 90 deg. C

ZETA POTENTIAL MEASUREMENT SPECIFICATIONS

Measuring Principle: Electrophoretic Light Scattering

Sensitivity: 1 mg/mL (lysozyme)

Zeta potential range: greater than +/- 500 mV or more

Mobility range: greater than +/- 20 micrometer.cm/V.s

Zeta Potential Size range: 3 nm – 100 micrometer

Maximum sample concentration: 40 % w/v

MOLECULAR MASS MEASUREMENT SPECIFICATIONS

Measuring Principle: Static Light Scattering (Having Debye Plot will be preferable)

Molecular-mass range: 1 kDa – 20 MDa or better

Transmittance Measurement capability is added advantage

SOFTWARE SPECIFICATIONS

1. Software capabilities for specifically carrying advanced measurements for proteins.
2. Software codes for running micro-rheology characterization will be an added advantage
3. User friendly, preferably windows Based Presentation of Input parameters, results and analysis on a single page

Cuvettes

1) 10 quartz cuvettes for size measurements:

a) small volume \leq 350 microliter

b) Larger volume up to 3 mL

2) Atleast 5 boxes of disposable plastic cuvettes (10 to 15 mm) with caps for size measurements

3) For zeta measurements: 4 pairs of electrode cuvettes

4) Flow cell cuvette

5) Standard size particles for calibration purpose of DLS and Zeta potentials

6) Suitable PC/laptop with appropriate specifications should be included in the quote.

7) Ability to carry out micro-rheology experiments will be an added advantage.

8) Autotitrator for pH and conductance measurements along with suitable accessories is preferred.

9) Viscosity measurement system is preferable.

Warranty: The instrument should be supplied with 5 years comprehensive warranty.