

NIPER-G/PUR/GLOBAL/2018/06

**Tender Specification for
Nano Particle Size (DLS based), Zeta Potential, Molecular weight , Micro rheology
measurement**

A proven complete system should have the measurement facility for **Nano Particle Size, Zeta Potential (Aqueous, Non Aqueous, Solid Flat Surface) ,Molecular Weight & micro rheology measurement** at variable temperature (0°C -90°C with +/- 0.1 deg.c accuracy) with inbuilt Peltier temperature controller.

Specification as per the Tender Notification in Chapter 4

Amended Specifications as per the Pre Bid meeting held on 22-02-2018 in Chapter 4

1. Description:
Particle size analysis (at high and low concentrations for any dispersions / emulsions / colloids / submicron suspensions):
- (i) **Principals: Dynamic Light Scattering (True Non Invasive Back Scattering detection)**
 - (ii) **Measurement Angle: 173°**
 - (iii) **Minimum Particle size range (dia):**
Preferably 0.40-0.60nm (with sufficient documentary proof in terms of Analysis report or published journal should be attached without which bid will be rejected)
 - (iv) **Maximum Particle size range (dia):** 9000 to 10000nm (with sufficient documentary proof in terms of Analysis report or published journal should be attached without which bid will be rejected)
 - (v) **Minimum sample required:** preferably less than 14µl.
 - (vi) The instrument should be very sensitive, i.e. Toluene count should be more than 140kcps.....also the photon count should be mentioned in the analysis report.
 - (vii) Should have a facility to measure long term trend analysis (continuous measurement of more than 10000data with some fixed time interval) so that kinetics of growth as function of

No change in any specifications

- time/temperature, molecular size of clusters/large molecules can be determined.
- (viii) Instrument should have automatic and manual measurement facility. Manual measurement should have facility of fixing measurement position with the cuvette and attenuator.
- (ix) **Sample Concentration:** Minimum sample concentration around 0.1 mg/mL (of 15 to 20 kDa protein) & Max. sample concentration around 40% w/v.

Zeta Potential (in both aqueous and non-aqueous solution phase)

- (i) Principal of measurement :
Preferably by high & Low frequency micro electrophoresis, Laser Doppler velocimetry with Phase Analysis light Scattering.
- (ii) **Measurement Angle:** backward angle
- (iii) **Zeta Potential Range:** Preferable more than +/-400mV
- (iii) **Size Range :** Min: 5nm, Max: 90 micron
- (iv) **Maximum Sample Concentration:** Preferably more than 35% w/v
- (v) **Maximum sample conductivity:** Preferably more than 180mS/cm
- (vi) Live measurement windows for display of Frequency, Voltage and Current, Zeta Potential vs pH, Electrophoretic mobility vs pH and Zeta potential vs Current.
- (vii) Minimum sample volume: 20µl.

- **Micro rheology:**

System should have micro rheology measurement unit compatible with the main equipment. The micro rheology attachment should have the capability to determine the viscoelastic properties like

(i) Storage modulus (G’)

(ii) Loss modulus (G’')

At different frequencies, Complex viscosity and mean square displacement of particles.

Also the micro rheology apparatus should be able to give the correlograms relating scattering intensity against time.

Molecular weight determination

Molecular weight determination: Should have facility to measure MW

Range of molecular weight – around 1,000Da to 2×10^6 Da or better.

Other Essential parameters for the quoted model:

- The instrument should have Dry Air purging facility to avoid condensation.
- Laser: Should be Class 1 type, preferably low power (less than 5mw, He-Ne Laser, higher laser power will be disqualify)
- Optics: Fixed Optics with automatic alignment prior to measurement.
- Auto initialization: Automatic.
- Correlator: should have more than 3900 channels
- Detector: Should be Avalanche Photo Diode Detector.
- Measurement time: should be less than 10Sec.

Software: Software should be suitable for running the equipment, data acquisition, data analysis, data transfer, graphical presentation etc. Vendor should also mention the key feature of the software.

- Should be compatible with Windows OS.
- Should have facility to create Standard Operating Procedure (SOPs) for better result quality & easy handling.
- Should have facility of Custom Report Generation for different application.
- Should have built-in library for RI with facility to insert RI for new sample.
- Should have built-in library for different solvent for selecting appropriate viscosity with facility to insert viscosity for new sample.
- Data representation should have facility to display Intensity wise / Volume wise / Number wise Particle Size Distribution and Statistics.
- Should have facility to see the correlogram.
- Should have facility to over plot the results for direct comparison.
- Should have Temperature based trend analysis facility
- Should have Time based trend analysis facility.
- Should have Crystal screening facility
- Should have facility to measure 2nd Viral Co-efficient
- Should have Polymer Characterization facility.
- Should have facility to measure/display of Zeta Potential, Electrophoretic Mobility, Conductivity, Temp, Formulation Stability
- Should have facility to plot Zeta Potential vs pH; Electrophoretic mobility vs pH;

- **Surface Zeta Potential (Streaming Potential)**

For the measurement of zeta-potential of solid surfaces e.g. silica, PEEK

Support: (i) Remote access of the instrument (ii) Readily available complete service spare kit optical alignment on the fault identification and rectification. (iii) Vendor should provide full details of their service facility in Guwahati.

Essential accessories/items

- (i) Suitable Computer i5 and Laser Colour printer should be quoted along with the system.
- (ii) Essential Cuvettes for Aqueous medium:

Size measurement

- Polystyrene Cuvettes(1.5ml Capacity) : 200nos
- Glass Cuvettes (1.5ml Square) : 2nos

Zeta Potential measurement

- Gold Plated Folded Capillary Zeta Potential Cuvettes: 10nos with 20 nos stoppers
- Universal cell for Non Aqueous sample: 1no.

Validation Standards:

- 60nm NIST Traceable Size Standard: 1no
- Zeta Potential Standard: 1no

Installation/Demonstration/Application Training at site: It should be free of cost by the supplier.

Application Training at site: at least 3-4 days to the group of users.

Warranty: 3 year from the date of Installation

User list: Complete user list with a minimum of 5 Installations in North East Region.

Service Downtime: 24 Hrs

Nearest Service Centre: Should be in or around Guwahati.

	<u>Shifting & Re-Installation to our Permanent Campus:</u> should be free of charge	
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Sd/-
Purchase officer

General Terms and Conditions applicable to all 13 tenders published in newspaper on 19th February 2018 and exhibited in NIPER Guwahati website.

Following additional information is provided for the information of prospective bidders for 13 different items for which tender inquiry is issued:

1. Payment terms:

Considering the request made by few prospective bidders during the pre-bid conference held in the institute on 22nd February 2018, regarding payment terms related with foreign suppliers it is clarified that the **indicated payment terms in the tender documents still remains unchanged.** However Director, NIPER Guwahati **at his own discretion** can consider any other mode of payment requested by suppliers based on the reputation, credentials of foreign suppliers in the field and also protecting the interests of NIPER Guwahati. **No request for advance payment will be considered.**

2. Clarification with regard to projecting the cost implications of free delivery of the item at NIPER Guwahati premises.

Subsequent to the Pre-bid conference with regard to projection of price for items coming from abroad, the following guidelines may be followed:

- A) The F.O.B. C.I.F., C.I.P. prices as per the suppliers quote should be indicated in foreign currency only
- B) The additional cost towards payments of custom duty against duty exemption certificated provided by the institute, clearance charges, forwarding consignment from port of clearance to NIPER Guwahati premises etc. can be quoted in Indian currency.

For comparing the price with other bids, the institute at the time of preparing comparative chart for the tenders, the total F.O.B., C.I.F., C.I.P. cost will be converted into equivalent Indian currency at the exchange rate prevailing on the date of tender opening i.e. 13th February

2018 at 1500 hours IST and add the equivalent Indian currency value to the clearance and forwarding charges indicated by the supplier.
