

**Addendum 01**

The Pre – Bid Meeting was held on 26/11/2019 at 3.00 p.m. in the CCMT Hall, NITK Surathkal for the purchase of “**Particle Sizing & Zeta Potential Analyzer**” (Tender Notification No.: NITK/CRF/CY/AMI/PSZ/04 Dated: 04/11/2019) . The following queries were discussed & the Reply/Clarification given to the prospective bidders.

**Queries & Reply/Clarification**

Sl. No.	NITK Tender Specifications	Questions asked by the vendor	Reply/Clarification	Changes to the Tender
1	System should have Built-in capability of measuring Refractive Index of solvents & Transmittance of samples with dedicated measurement modes	System should have Built-in capability of measuring Refractive Index of solvents & Transmittance of samples with dedicated measurement modes	<p>1. Refractive Index and Transmittance measurements are very much relevant to accurate measurement / estimation of Particle Size using DLS technique. Wrong input parameters result wrong measurements of Particle size and Zeta Potential.</p> <p>2. Built-in Refractive Index &amp; Transmittance measurement modes are application requirements. Standalone Instruments for RI &amp; Transmittance add cost, bench space and complexity</p> <p>3. Performing DLS and ELS measurements on particles in solution requires Prior knowledge of the solvent's refractive index. As per ISO 22412 the actual RI value should be known with +/- 0.5% accuracy. In general refractive index values are strongly dependent on light frequency/ wavelength of light source been used and temperature. Standalone Refractometers may use specific wavelength and temperature which are different from the Laser source and temperature controller that are available in DLS instruments. This results in to wrong measurements.</p>	No Change and to be retained as such.

			4. Built-in Refractive index measurement in DLS instrument ensures the usage of same light source and temperature controller for better accuracy and reproducibility	
2	Source: Diode laser with Power 38 mW or above, wavelength 650 - 660 nm, Gas Lasers are not acceptable	Source: Diode laser with Power 38 mW or above, wavelength 650 - 660 nm, Gas Lasers are not acceptable	<ol style="list-style-type: none"> <li>1. Few equipments has bellow 600 nm laser that may have absorbance by many materials hence Red Laser in the wavelength range of 630-660 nm is used by majority DLS manufactures. Standard power 10mW but has optional 100 mW power laser.</li> <li>2. Red laser is preferred laser with power more than 38mW. They have diode laser not gas laser</li> </ol>	No Change and to be retained as such
3	Measurement angles: Minimum Three Fixed Angles - Forward Angle 15°, Side Angle 90° and Back Scattering Angle 175°; Goniometer type not acceptable	Measurement angles: Minimum Three Fixed Angles - Forward Angle 15°, Side Angle 90° and Back Scattering Angle 175°; Goniometer type not acceptable	<ol style="list-style-type: none"> <li>1. 173, 15 &amp; 90°</li> <li>2. Not a big difference.</li> </ol>	No Change and to be retained as such
4	Signal processing: Advanced PALS technique	Signal processing: Advanced PALS technique	<ol style="list-style-type: none"> <li>1. Few of the vendors use age old Forier transformation to process the data. This is 100 times inferior in terms of sensitivity to measure Zeta of very low mobility samples and samples with non-polar solvents.</li> <li>2. Majority of DLS manufacturers are using Advanced PALS technique. Not having PALS is biggest disadvantage as these systems may not be able to see/measure very low particle mobilities in case of non-polar solvents base samples or low zeta potential</li> </ol>	No Change and to be retained as such

5	System should have Live Transmittance measurement capability to measure the transmittance for every sample to know the suitability of the sample for light-scattering measurement. The value should be reported in real time and value should be displayed during operation	BUILT IN TRANSMITTANCE MEASUREMENT MODE SPECIFICATIONS	<p>1. Requirement for light scattering measurements is the sample is transparent enough. The transmittance measurement gives the user information about the transparency and therefore about the rate of multiple scattering. If the sample is too turbid it leads to multiple scattering events, which can cause erroneous results in DLS &amp; ELS measurements.</p> <p>2. By measuring Transmittance the user gets instant insight into the suitability of the sample for light-scattering measurements. If too low Transmittance value, indication of higher turbidity and user needs to dilute sample to get consistent results.</p>	No Change and to be retained as such
6	System should have built in Refractive Index measurement mode and capability to measure the refractive index of solvents at desired temperature in the range of 0-90 °C	BUILT IN REFRACTIVE INDEX MEASUREMENT MODE SPECIFICATIONS	<p>1. Performing DLS and ELS measurements on particles in solution requires Prior knowledge of the solvent's refractive index. As per ISO 22412 the actual RI value should be known with +/- 0.5% accuracy. In general refractive index values are strongly dependent on light frequency/ wavelength of light source been used and temperature. Standalone Refractometers may use specific wavelength and temperature which are different from the Laser source and temperature controller that are available in DLS instruments. This results in to wrong measurements.</p> <p>2. Built-in Refractive index measurement in DLS instrument ensures the usage of same light source and temperature controller for better accuracy and reproducibility</p>	No Change and to be retained as such

7	Series Measurements should be possible with respect to Time, pH, temperature, concentration, measurement angle, focus position, Transmittance	Series Measurements should be possible with respect to Time, pH, temperature, concentration, measurement angle, focus position, Transmittance	<p>1. Few vendors may have provision only for Series Measurements with respect to Time, pH, temperature, concentration.</p> <p>2. Additional parameters gives additional information and knowledge. For example, transmittance series measurement enables to monitor sedimentation and aggregation process in samples independent of size. Series measurement of focus position enables to monitor the effect of multiple scattering. Series measurement of angle enables to monitor the effect of angle on size measurement.</p>	No Change and to be retained as such
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**Following points to be included in the Addendum :**

- Under tender document, Section 2: Condition of Contract, Pg. No. 13 of 32, clause No. 2 is replaced as:

**“Incase of Import, CIP rate should be quoted. All components of expenditure to arrive by Air at Bangalore need to be explicitly specified. If ship by sea, the nearest seaport Mangaluru/Chennai. However, during financial comparison 6% additional charges will be levied to cover custom clearance and local transport”**

It is decided to extend the Bid submission date by four weeks after displaying Addendum01

**Last date for request tender document** : 07/01/2020, before 3.00 p. m.  
**Last date for Bid submission** : 07/01/2020, before 4.00 pm  
**Bid opening date(tentative)** : 08/01/2020 @ 3.00 p.m.

Sd/-  
Buyer  
Dr. Arun M Isloor

Sd/-  
Chairman  
Central Research Facility  
NITK, Surathkal