

Our 2 Part E-Tender Notice No. IPR/TPT/TN/ET/F/19-20/6 Dated 7th JUNE, 2019 for Supply of Dynamic Light Scattering (DLS) Instrument for Particle Size and Zeta Potential (ZP) Measurement with accessories as per the technical specifications mentioned in the tender document – 1 System

SECTION - C

TECHNICAL SPECIFICATIONS OF STORES AND DRAWINGS.

Technical Specifications for Supply of Dynamic Light Scattering (DLS) Instrument for Particle Size and Zeta Potential (ZP) Measurement with accessories



INSTITUTE FOR PLASMA RESEARCH

GANDHINAGAR, GUJARAT

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Technical Specifications for Supply of Dynamic Light Scattering (DLS) Instrument for Particle Size and Zeta Potential (ZP) Measurement with accessories

Name of the item/Equipment: Dynamic Light Scattering (DLS) Instrument for Particle Size and Zeta Potential (ZP) Measurement.

Scope: DLS and ZP have the greater efficiency to measure the size distribution and surface potential of nanoparticles. DLS and ZP will be used for the characterization of Li₂TiO₃ nanoparticle. Other than ceramic nanoparticles, other nanoparticles (e.g. TiO₂, Al₂O₃, CuO, ZnO, etc.) and nanofluids under R&D program in IPR and FCIPT will be characterized by this instrument.

Quantity: 1 No.

Specifications:

Sr. No.	Features	Specification
1	Principle of operation	Dynamic Light Scattering
2	Particle Size	1nm – 5um or better, with ability to export auto co-relation function in different file format. Should supply NIST standard for particle size.
3	Zeta Potential	Zeta potential limit -200 mV to +200 mV or better.
4	Source	Temperature controlled Laser Diode.
5	Detector	Photodiode detector
6	Sample volume for size measurement	Variable volumes ~12µL to conduct experiments based on requirements.
7	Temperature Control	0°C to 90°C or better, ± 0.1 °C. No external circulator required.
8	Sample Concentration	DLS: 0.1 mg/mL to 50 mg/mL or better. Should be able to perform zeta potential and size measurement with concentrated samples upto 40% w/vol or better.
9	Scattering Angle	Two angles minimum; Forward angle (~13°), and back angle (~173°) or equivalent as long as instrument capabilities are not negatively affected.
10	Accuracy	DLS: ± 2% or better on NIST traceable latex standards. Zeta: ±5% or better for aqueous systems with NIST SRM1980.
11	Maximum Sample Conductivity	20 S/m or higher
12	Cuvettes for DLS and Zeta Potential	<ul style="list-style-type: none"> • For aqueous solution: Disposable polystyrene cuvettes with appropriate cap, quantity 100 units or more. • For other solvents: Square glass cuvettes with appropriate cap, • Folded capillary cell, pack of 10 units with electrode and stoppers
13	Reference Material	Vendor shall provide the following NIST reference materials; i). Latex reference material for validation of sizing

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		ii). Reference materials for validation of zeta potential.
14	Warranty	The complete instrument and accessories should be under warranty for a period of minimum one years from the date of acceptance in IPR.
15	Pre-dispatch Inspection Tests	NIST confirmation certificate of the standard material (mentioned in clause no. 10) must be provided before dispatch of the Instrument. Dispatch clearance of the instrument shall be provided by IPR based on the review of the certificate.
16	Installation and training	Training should be provided by vendor on operation and application of the instrument at IPR.
17	Software	The software should give the following information; 1. Size distribution v/s Intensity 2. Zeta potential v/s Intensity 3. Average size of the distribution 4. Automatic expert advisor 5. Molecular wt. and radius of gyration by Debye plots 6. Export the raw data in EXCEL and CSV format 7. User can modify method/library for the tests Vendor should also provide other detail of the software along with the specification/requirement of PC and OS for the installation and operation of DLS software.
18	Manual	One set of operating manual and service manual (in English) should be provided with the instrument. The manual should be presented in both, hard and soft copy
19	Others	The vendor should also confirm that the spares for the entire instrument will be available for a period of at least seven years after the installation of the instrument.
20	Acceptance Criteria	After installation and commissioning at IPR, final acceptance will be given based on the test to be carried out in NIST latex reference standard sample (as mentioned in clause no. 10). Result will be verified with the NIST certificate provided by vendor before pre-dispatch inspection (as per clause no. 15).

Vendor shall also provide the following information;

1	Spares	The vendor is requested to provide the list of spares and consumables along with their cost
2	Software up-gradation	Vendor may provide the details of the up gradation policy of the software.
3	Instrument up-gradation	Vendor may provide the upgradation details of Instrument to Auto titrator, Size exclusion chromatography for future requirement.
4	Customer List	The vendor is requested to submit the list of customers to whom they have supplied such instruments.

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Compliance Statement

Compliance Statement for Supply of Dynamic Light Scattering (DLS) Instrument for Particle Size and Zeta Potential (ZP) Measurement with accessories

Technical Specification Compliance Sheet

Name of the item/Equipment: Dynamic Light Scattering (DLS) Instrument for Particle Size and Zeta Potential (ZP) Measurement.

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Quantity: 1 No.

Specifications:

Sr. No.	Features	Specification	Whether Comply (Yes/No)	Numerical values and other information
1	Principle of operation	Dynamic Light Scattering		
2	Particle Size	1nm – 5um or better, with ability to export auto co-relation function in different file format. Should supply NIST standard for particle size.		
3	Zeta Potential	Zeta potential limit -200 mV to +200 mV or better.		
4	Source	Temperature controlled Laser Diode.		
5	Detector	Photodiode detector		
6	Sample volume for size measurement	Variable volumes ~12µL to conduct experiments based on requirements.		
7	Temperature Control	0°C to 90°C or better, ± 0.1 °C. No external circulator required.		
8	Sample Concentration	DLS: 0.1 mg/mL to 50 mg/mL or better. Should be able to perform zeta potential and size measurement with concentrated samples upto 40% w/vol or better.		
9	Scattering Angle	Two angles minimum; Forward angle (~13°), and back angle (~173°) or equivalent as long as instrument capabilities are not negatively affected.		
10	Accuracy	DLS: ± 2% or better on NIST traceable latex standards. Zeta: ±5% or better for aqueous systems with NIST SRM1980.		
11	Maximum Sample Conductivity	20 S/m or higher		

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12	Cuvettes for DLS and Zeta Potential	<ul style="list-style-type: none"> • For aqueous solution: Disposable polystyrene cuvettes with appropriate cap, quantity 100 units or more. • For other solvents: Square glass cuvettes with appropriate cap, • Folded capillary cell, pack of 10 units with electrode and stoppers 		
13	Reference Material	Vendor shall provide the following NIST reference materials; i). Latex reference material for validation of sizing ii). Reference materials for validation of zeta potential.		
14	Warranty	The complete instrument and accessories should be under warranty for a period of minimum one years from the date of acceptance in IPR.		
15	Pre-dispatch Inspection Tests	NIST confirmation certificate of the standard material (mentioned in clause no. 10) must be provided before dispatch of the Instrument. Dispatch clearance of the instrument shall be provided by IPR based on the review of the certificate.		
16	Installation and training	Training should be provided by vendor on operation and application of the instrument at IPR.		
17	Software	<p>The software should give the following information;</p> <ol style="list-style-type: none"> 1. Size distribution v/s Intensity 2. Zeta potential v/s Intensity 3. Average size of the distribution 4. Automatic expert advisor 5. Molecular wt. and radius of gyration by Debye plots 6. Export the raw data in EXCEL and CSV format 7. User can modify method/library for the tests <p>Vendor should also provide other detail of the software along with the specification/requirement of PC and OS for the installation and operation of DLS software.</p>		
18	Manual	One set of operating manual and service manual (in English) should be provided with the instrument. The manual should be presented in both, hard and soft copy		

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19	Others	The vendor should also confirm that the spares for the entire instrument will be available for a period of at least seven years after the installation of the instrument.		
20	Acceptance Criteria	After installation and commissioning at IPR, final acceptance will be given based on the test to be carried out in NIST latex reference standard sample (as mentioned in clause no. 10). Result will be verified with the NIST certificate provided by vendor before pre-dispatch inspection (as per clause no. 15).		

Vendor shall also provide the following information;

1	Spares	The vendor is requested to provide the list of spares and consumables along with their cost
2	Software up-gradation	Vendor may provide the details of the up gradation policy of the software.
3	Instrument up-gradation	Vendor may provide the upgradation details of Instrument to Auto titrator, Size exclusion chromatography for future requirement.
4	Customer List	The vendor is requested to submit the list of customers to whom they have supplied such instruments.

Bidder must submit compliance statement dully filled with exact technical values of each specifications (Not with OK, CONFIRM, COMPLY, ACCEPTABLE) alongwith official seal and signature with their offer.

Authorised Signatory

Official Seal

Date :-