



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai - 400076

PR No. 100026173

Technical Specifications for Particle Size Analyzer

This tender includes the purchase of a 'particle size analyzer system' that will be used for characterizing the micro and nanoparticle size distribution. The desired specifications of each of the components are given below.

Notes and essential terms for qualification:

1. The vendor should provide details of **at least five customers from India (at least three from IITs or other government research facilities in the past three years)** where a similar system/equipment from the manufacturer has been working successfully. Background checks may be done at the vendor's expense wherever the system is being used.
2. The price quote must include the software price, accessories, packing, shipping, taxes, duties, etc. Educational/research/academic discounts may be applied, if applicable. An authorization letter should be furnished along with the quotation.
3. A compliance statement should be enclosed with the quotation. **Point by point list of the product specifications against what is asked must be provided in the compliance statement to demonstrate that the requirements have been met.** In addition, a technical brochure of the system must be provided.
4. Kindly quote every setup and accessories as per the IIT Bombay's tender specification format with all the supportive brochures, documents, and literature.
5. As and when the queries are raised against any technical point, they must be addressed promptly and positively within *seven working days*. If the response is not received within seven working days, the offer will be rejected on technical grounds.

Technical Specifications:

S N.	SPECIFICATIONS/ PART/ACCESSORIES	DESCRIPTION & DETAILS
1.	Method	Using any of the following principles, a) Laser Diffraction b) Dynamic Light Scattering (DLS) c) Tracking Analysis d) Acoustic Analysis

		The system must comply with ISO-13320 (laser diffraction) or ISO13322-1/2 (image analysis) or ISO194430 (tracking analysis) or ISO 22412 (DLS) or ISO 20998-1/2 (acoustic analysis) guidelines depending on the principle used
2.	Measurement parameters	<ul style="list-style-type: none"> a) Particle size distribution in the range of 0.01 – 1000 micrometers or wider using one or multiple lens systems b) Optics must be computer-controlled and automated with an autofocus facility c) The laser source must be high-quality, stable, and coherent. LED sources are not permissible. Optics should be rigid and robust for better sensitivity and accuracy. d) Accuracy of 1% or better, i.e., mean relative std. deviation of 1% or better e) Precision of 1% or better f) Should be able to reliably measure the particle size even when the transmission is as low as 5% g) The measurement principle must be based on a well-proven physical principle.
3.	Sample type	<ul style="list-style-type: none"> a) Metallic, Polymer, or Ceramic powders b) Micro/nano gas bubbles dispersed in liquids c) Should be able to measure moving solid or liquid particles dispersed in air or any gaseous medium d) Should be able to measure moving solid particles or gas bubbles dispersed in water or any liquid medium <p>Note: Performance must be demonstrable on samples provided by IIT Bombay to all the shortlisted bidders, and the final technical qualification will be decided after the demonstration and evaluations of results.</p>
4.	Sample handling	<ul style="list-style-type: none"> a) The system must work in both dry and wet mode. b) A vibratory and a non-flowing sample handling option must be included for the dry mode. The system should be able to handle even highly agglomerated materials. c) For wet mode, the sample dispersion unit must be included. The sampling sequences like fill, dilute, rinse, etc., must be automated and software controlled. The circulation must be able to handle a wide range of aqueous and organic solvents. d) The changeover from dry to wet mode must be easy. e) The system should be modular and upgradable for additional facilities in future
5.	Software:	<ul style="list-style-type: none"> a) The latest upgraded, licensed software should be installed b) Software Licence Validity: Minimum 15 years with free updates when released

		<ul style="list-style-type: none"> c) User-friendly GUI d) Must provide volume, number, and area distributions of the particles with percentile and other data in raw format (ASCII/Excel/Binary). e) Facility for generating reports like undersize/ oversize, histogram, density distribution, cumulative distribution, percentage, and tabula logarithmic, normal distribution, etc. f) Standard SOP generation and user-defined sample loading g) Compliant with FDA 21 CFR Part 11 h) No 3rd party software other than MS Office and OS i) Minimum 5 additional software for analysis
6.	Computer:	Branded and updated PC with Windows 10 operating system, i7 processor, 16 GB RAM, 1 TB hard drive (with a slot for SSD), Flat panel 24 inch LCD monitor, and DVD writer
7.	Documentation	Complete set of documentation (manual, drawings, and other literature) in hard copy as well as softcopy
8.	Installation and Commissioning:	<ul style="list-style-type: none"> a) The lead time for the delivery of the equipment should not be more than three months from the date of receipt of the purchase order. b) The instrument should be installed, tested, and commissioned by the manufacturer's qualified engineer/representative at IIT Bombay, and performance must be tested on NIST-certified standards. c) Trained service engineers in India (preferably in Mumbai) should be available to resolve any technical problems in the future. d) Minimum of three days of onsite training. Training to operate the instrument must be given to our research scholars free of charge.
9.	Warranty:	Twenty-four months of warranty after successful installation/commissioning and acceptance. Including replacement of parts.
10.	Annual maintenance cost	Annual maintenance and calibration cost for the next three years after warranty (must be quoted year-wise manner)
11.	Spares Availability Assurance:	The vendor must confirm the availability of at least ten years of spare support for the offered system.
12.	Standards	NIST certified standards compatible with the system to be supplied
13.	Operating Environment	<ul style="list-style-type: none"> a) Operating temperature 15-40 deg C or higher b) Humidity 40-80% RH or higher
14.	Operating Voltage	100-240 VAC, 50 HZ. Must be compatible with Indian standards
15.	Accessories	Quote all the accessories of the system
<p>Note that the equipment will be used for academic research at IIT Bombay. Suitable academic pricing/research discount should be applied wherever possible.</p>		