Indian Institute of Technology Palakkad
भारतीय प्रौद्योगिकी संस्थान पालक्काड
Under Ministry of Education, Govt. of India
शिक्षा मंत्रालय के अधीन, भारत सरकार

IIT PALAKKAD

Pre-bid Meeting (ONLINE Mode) held on 30-10-2023 at 15 30 hours
Tender No.: TENDER/2023-24/PRJ_044 dated 18-10-2023
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF MICRO NANO INDENTER

Table A indicates the Authorized Representatives of the firms that participated in the Pre-bid Meeting.

Table A

S. No.	Name of the Firm and details of the Authorized Representative(s) who participated
1.	Mr. Prahlada BL. - M/s Labindia Instruments Pvt. Ltd.
2.	Mr. Pratyank Rastogi – M/s Industron Technical Services Pvt Ltd
3.	Mr. Satish Kumar R - M/s Nanatom Technologies

Table B indicates the queries raised by the bidders and the clarifications provided by the institute.

Table-B

M/s Labindia Instruments Pvt. Ltd.			
S. No.	**Query**		**Clarification**
1	Maximum Load ≥ 500 mN	We request you to change it to 1000mN or more. This will also help in covering wide range of the samples starting from polymers to metals.	No change in the required maximum load value.
3	Load resolution ≤ 1 µN	As load resolution is important parameter in case of instrumented indentation measurement, we request you to change load resolution to ≤5nN or more.	No change in the required load resolution value.
6	Indentation depth resolution	As depth resolution is very important for the measurement of thin film samples, we request you to change depth resolution to ≥0.01nm	No change in the required Indentation depth resolution value.
9	Vertical axis (z-axis) range ≥ 30mm	Request you to change it to ≥25mm	Revised. Refer S. No 10 in the revised specifications.
10	X, Y and Z-axis resolution ≤ 100 nm	Request to change it to ≤5µm. As per the ISO standard, indentation spacing should be 5 times the indentation depth on the sample. Hence, we request you to change it to 5µm or more.	Since there is no such a mentioning in ISO standards, no change in the existing value.

18	Data acquisition and mapping - Should have the capability of the high- speed data acquisition and mapping	We request you to mention the data acquisition rate as ≥100kHz with time constant of 20µs. This is the important parameter which shows the capability of the system.	Revised. Refer S. No 20 in the revised specifications.
24	Surface topography generation - Automatic	We will be providing surface mechanical mapping of the hardness and modulus. Please confirm if this is fine with you.	We need mapping of the hardness and modulus, as well surface topography.
27	Calibration samples - Hardness, elastic modulus, fracture toughness, yield strength, and fatigue.	Calibration samples are available for Hardness and elastic modulus. No standard calibration sample is available for fracture toughness, yield strength and fatigue. Hence request to remove calibration sample for fracture toughness, yield strength and fatigue.	Revised. Refer S. No 30 in the revised specifications.
31	Warranty- At least three year from the date of commission on all the supplied components	We request you to change warranty to one year instead of three years.	No change in the required warranty period.
40	Maximum Load ≥ 15 N	We request you to change it to ≥ 10 N	No change in the required maximum load value.
42	Arbitrary loads - Should be able to apply any load within the range	From the pre-bid meeting, we understand that this is a standard microhardness tester. Hence, it is not possible to apply the desired load between 500mN to 15N. Hence, request you to remove this.	This requirement has been removed.
47	Maximum test height ≥ 100 mm	Request you to change it to ≥90mm or more	Revised. Refer S. No 47 in the revised specifications.
48	Measurable surface area ≥ 100 mm x ≥ 100 mm	Request you to change it to> 25 mm x 25 mm.	No change in the existing specification.
49	Position accuracy ≤ 0.5 µm	We request you to change it to 10 µm, as the load range is high.	No change in the required position accuracy value.
52	Dwell Time 0 - ≥ 100 s with 1 s increment	We request you to change it to 10s to 95s	Revised. Refer S. No 52 in the revised specifications.
54	Camera - Colour camera with at least 12 MP resolution	Request you to change it to 1.3MP camera. It will be difficult to identify the edges with higher pixel camera.	No change in the existing specification.

M/s Industron Technical Services Pvt Ltd.		
S. No.	Query	Clarification
1	Maximum Load ≥ 500 mN	The higher the load, the lower will be the resolution and therefore, we suggest that it should be limited to 10 mN, which can offer higher sensitivity for lower load and enable true nanoscale measurement.	No change in the required maximum load value.
4	Maximum indentation depth ≥ 80µm	The higher the displacement, the lower will be the resolution/sensitivity and therefore, we suggest that it should be limited to 5µm, which can offer higher sensitivity for lower displacement and enable true nanoscale measurement.	No change in the required maximum indentation depth.
7	Stages - Fully motorized and automated	Please ensure that all axes X, Y and Z are motorized.	Stage should be fully motorized and automated.
13	Indentation modes -Ability to run in a fully automated mode to perform indentation on specified locations and surface mapping	Automation on specified location and surface mapping means it will require grid form of automation and with surface mapping it means property mapping such as modulus mapping and hardness mapping. Please clarify.	Read the revised sentence as 'Ability to run in a fully automated mode to perform indentations to generate surface mapping of hardness and elastic modulus'
16	Images and video capturing - With an optical microscope having low noise and high resolution of at least 1280 x 1024 pixels	What would be the imaging resolution? How to visualize Vickers indents of a few 100s of nm or at submicron length scale.	Refer the revised specification S. No 17, 18 and 19.
28	Calibrated certified diamond indenters - Vickers, Knoop, Ball, Conico Spherical, Circular Flat - (Qty. 2 each)	Vickers and Knoop are ideal for micro hardness test instruments, for nano indenter Berkovich is the must tip. Please clarify.	Refer the revised specification S. No 30.
35	After installation the system, at the customer end the system should demonstrate test accuracy	Please specify the parameters for accuracy?	Refer the revised specification S. No 37.
36	At least three compulsory training sessions need to be provided at regular intervals. Also, on purchaser demand extra training sessions if	Agree but extra training has to be limited within the warranty period. Please clarify.	The extra training sessions are within the three years warranty period.

	needed have to be provided without any additional charges.		
	Payment terms	100%LC: 80% against shipping docs and 20% after I/C: Please clarify	As per the institute policy, it is 100% after successful installation and demonstration.

M/s Nanatom Technologies.			
S. No.		**Query**	
	Main Indentation Module	What is the minimum test force?	Refer the revised specification S. No 2.
13	Indentation modes	Does surface mapping mean 3D data mapping of Indentation? It requires an AFM or Nano-Indenter or 3D optical-profiler etc.	Read the revised sentence as 'Ability to run in a fully automated mode to perform indentations to generate surface mapping of hardness and elastic modulus'
16&17	Images and video capturing and Magnification	If an optical microscope is required, what are the required Objective lens magnifications? For a combination of low normal forces and High hardness materials, the indent would be small and difficult to view from an optical microscope's objectives(<=100X).	Refer the revised specification S. No 17, 18 and 19.
24	Surface topography generation	Please provide the range of lateral resolutions for surface topography generation.	Refer the revised specification S. No 26.
28	Calibrated certified diamond indenters	For indentation depths lower than or equal to 200 nm requires Berkovich indenter for better results. Request for inclusion of Berkovich indenter.	Refer the revised specification S. No 30.
41	Arbitrary loads	Arbitrary loads are possible in the provided range (Point No. 39 and 40)	Revised.
49	Time for each indentation	Request to change indentation time to ≤ 10 S Loads up to 5N, the requested indentation time (≤ 5 S) is possible.	Refer the revised specification S. No 50.

The Closing Date and Time of the Tender is **15-11-2023, 15:00 hour.**
All other Terms and Conditions of the Tender remain unchanged.

REGISTRAR