



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai - 400076

Technical Specifications for Non-Contact Metrology System
RFx No. 610000710 (Reference No. 100016110)

This tender includes the purchase of a 'non-contact metrology system' that will be used for characterizing 2D and 3D surfaces. 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. Wherever the system is being used, background checks may be done at the expense of the vendor.
2. The price quote must include the price of the software, accessories, packing 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.**
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, it must be addressed promptly, positively within *seven working days*. In case 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.	Mode of scanning	Non-contact type
2.	Method	White light Interferometry/Coherence Scanning Interferometry (CSI)/Phase Shifting Interferometry (PSI)
3.	Measurement parameters	2D and 3D surface profile: Opaque Film thickness, step height, surface roughness, surface texture
4.	Sample type	Films, coatings, opaque, transparent, rough and reflective material 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. Samples may be solid, semisolid or liquid.
5.	Sample reflectivity	0.05%-100%
6.	Camera	High resolution (>1.3 MP)

7.	Tip/Tilt	Motorized and manual tip/tilt of +/- 3 degrees
8.	Auto-part Finding and Auto focussing	Yes
9.	Crash safety feature, i.e. auto crash detection and prevention	Yes
10.	Step Height (range, repeatability, and accuracy)	<ul style="list-style-type: none"> a) Able to measure minimum step of 5 nm or less b) Able to measure maximum step of 30 mm or more c) Step height repeatability (1-sigma) of 0.1% or better for a step height standard of 1.8 microns or larger (National metrological institute traceable) d) Step height accuracy (1-sigma) of 0.3% or better for a step height standard of 1.8 microns OR Step height accuracy (1-sigma) of 0.8% or better for a step height standard of 8 microns (National metrological institute traceable)
11.	Z stage (travel length and resolution)	<ul style="list-style-type: none"> a) 100 mm or more travel automated /motorized with 100 nm or better resolution, and b) 100 micron or more travel with a piezo stage, c) 0.01 nm or better vertical resolution for the entire Z scan range independent of optical accessories or surface
12.	RMS repeatability	0.01 nm or better, independent of optical accessories, data acquisition range, and surface (sub-angstrom repeatability is needed to accurately measure surface roughness of Si wafers, for example, that have Ra of a few angstrom)
13.	XY Stages (range and resolution)	<ul style="list-style-type: none"> a) Motorized and programmable b) Minimum 150 mm travel in each direction c) Lateral optical resolution of 0.5 micron or better d) Spatial sampling of 0.1 micron or better using zoom from compulsory items
14.	Objectives type	Michelson/Mirau
15.	Objectives turrets	<ul style="list-style-type: none"> a) Objectives must be turret mountable b) 4 or more objective turrets that are motorized and automated
16.	Objective	5x-6x and 50x (total two objectives)
17.	Motorized Software Selectable Optical Zoom Lens:	(0.5x or 0.55X), 1x and 2x
18.	Vibration isolation table:	Standard Vibration isolation table or unit and worktable. In absence of vibration isolation table, the performance of machine must not be affected by any induced and natural vibration
19.	Illumination source:	White light LED source and green light source
20.	Software:	<ul style="list-style-type: none"> a) Compatible software for Data Acquisition and Analysis in a single platform and package with the following capabilities: Autofocus and Auto-alignment, Automated and user-friendly operations, Step height measurement, Surface roughness measurement, Surface Texture measurement, Optical Stitching capability, Offline processing capability. b) No 3rd party software other than MS Office and OS c) Software Licence Validity: Minimum 15 years and above with free updates when released

		d) Minimum 5 additional software for analysis
21.	Software functions	<ul style="list-style-type: none"> • Anchor Statistics Analysis • Auto-covariance Analysis • Bearing Ratio Analysis • Confinement Analysis • Cross Hatch Analysis • Digital High/Low Pass Analysis • Feature Statistics Analysis • Filtered Histogram Analysis • Histogram Step Measurement • Intensity Plot • Power Spectral Density (PSD) Analysis <ul style="list-style-type: none"> • Rz Surface Analysis • Scrolling Contour Analysis • Slope Analysis • S-Parameters Analyses • Standard Plots • Step Measurement Analysis • Surface Area Analysis • Stylus X/Y Analyses • Surface Area • Texture Analysis • Trace Analysis • Volume Analysis • Multiple Region Analysis
22.	Computer:	Branded and updated PC with Windows 10 operating system, i7 processor, 16 GB RAM, 1 TB hard drive, Flat panel 24 inch LCD monitor, and DVD writer
23.	Documentation (Manual, Drawings, if any, and Literature):	Complete set of documentation in hard copy as well as softcopy
24.	Installation and Commissioning:	<p>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.</p> <p>b) The instrument to be installed, tested, and commissioned by the manufacturer's qualified engineer/representative at IIT Bombay and performance must be tested on NIST certified standards.</p> <p>c) Trained service engineers in India (preferably in Mumbai) should be available to resolve any technical problems in the future.</p>
25.	Warranty:	Twenty-four months of warranty after successful installation/commissioning and acceptance. Including replacement of parts.
26.	Annual maintenance cost	For the next three years after warranty (must be quoted year-wise manner)
27.	Spares Availability Assurance:	The vendor must confirm the availability for at least ten years of the spare support of the offered system.
28.	Standards: NIST Certified Standards	Should be compatible with the system to be supplied
29.	1. Step Height standard 2. Surface Roughness standard	Should be provided with the equipment
30.	Objectives	Quote all other objectives that can be fitted with the machine
31.	Accessories	Quote all the accessories of the system
32.	Training and installation	Installation: YES Minimum of three days of onsite training. Training to operate the instrument must be given to our research scholars free of charge.
33.	24 Inch retina display	Should be compatible with the system to be supplied