

## Specifications for Atomic Force Microscope (AFM)

**INDUSTRIAL TRIBOLOGY MACHINE DYNAMICS AND MAINTENACE ENGINEERING CENTRE, INDIAN INSTITUTE OF TECHNOLOGY, DELHI.**

**Notice inviting quotations (NIQ)-(Last date for submission 24.10.2013- 5-30 PM)**

### **SPECIFICATIONS OF AFM**

1. The AFM system should be **based on state of the art technology** and complete in all respects and ready for operation as per specifications.
2. Adequate protection against power failure, leakage current, and short circuit failure should be provided in the system

Sl. No	Nomenclature	Requirement
<b>Technical</b>		
1	Atomic Force Microscopy	<p>System should have following specifications.</p> <ol style="list-style-type: none"> <li>1. Optical Beam Bounce Feedback</li> <li>Sample scanning</li> <li>3. Piezoelectric Based Flat Scanner up to 70 <math>\mu\text{m}</math>. or above X &amp; Y scan range</li> <li>4. Z height range 7-15<math>\mu\text{m}</math>. (scanning of non-biological samples)</li> <li>5. 150 x 170 mm automatic XY stage</li> <li>6. Flat piezo scanner stage totally free optical axis from top and below with 10-25 mm central opening to view the sample during AFM scanning</li> <li>7. Scanner must be compatible to use for high aspect ratio glass and quartz probes with exposed tip geometry for deep trench and high Z range sample study and all forms of silicon cantilever probes for other operation</li> <li>8. Scanning modes: contact and Intermittent, phase imaging, force mapping</li> <li>9. Scanner Resolution open loop &lt;0.3 nm (XY)</li> <li>10.Z feed back noise &lt;0.15 nm</li> <li>11.Hardware specifications: Supports various imaging modes including AFM (contact and non- contact), phase and force mapping</li> <li>12.Up to 8 data channels can be read and imaged simultaneously. ADCs are 16 bit and DACs have 16-bit resolution or more , Image size 1024 x 1024 or more</li> <li>13.Video Microscope: Optical Microscope for viewing of the scanning process</li> <li>14.At least 20 tips along with calibration samples Ultra-low noise vibration isolation platform</li> <li>15.Appropriate Computer system with UPS.</li> <li>16. Additional scanner of 1 <math>\mu\text{m}</math> (Z)- <b>Optional feature-</b> Cost should be mentioned separately.</li> </ol>
<b>Options for up-gradation and addition in future</b>		
1.	Microscope	Research Grade Upright Microscope
2	Tuning fork feed back	Tuning fork feed back module
3	Possibility for Integration with Raman Microscope	Integration should allow single software for synchronize data collection from Raman system and AFM system with pixel by pixel correlation
4	Profiler	To integrate AFM to optical profilometer preferably a white light interferometer
5	Liquid Imaging	Capability to do liquid imaging

### **Terms and Conditions**

1. All quoted models must be compatible with Indian power supply: 220 Volts/50Hz for single phase and 440 V/50 Hz for three phase supply.

2. The Technical and commercial quotations must be submitted separately in sealed envelope with a subject (Quotation for **AFM**) written on that.

**Technical bid must contain the following:**

- (a) Quotation should be directly from the Original manufacturer or authorized sales agent.
- (b) Sole agency certificate (if applicable) and its validity from Foreign Principals (in case of foreign manufacturer),
- (c) **Proprietary certificate** (if applicable, for any component or instrument quoted).
- (d) Delivery period should be specifically mentioned and should be as small as possible.
- (e) Details on installation, commissioning and training of the equipment must be specified.
- (f) State service support for the equipment in India, specifically in Delhi; give details of service centres with address, telephone numbers and name of service engineers available, response time during warranty and afterwards.
- (g) Certificate of compliance with deviations from specification (if any) must be attached.
- (h) **Original brochures and original specification sheets (from equipment manuals)** directly obtained from the principal manufacturer of the quoted model must be enclosed along with supporting data. **A table of compliance for all the points in specifications with authentic signature must be supplied. This is required for the evidence of confirmation of the specifications. Without this, your quotation will NOT be considered.**

**The Financial Bid must contain the following:**

- (a) Prices of the quoted model should be FOB Delhi and include all taxes, delivery, installation and onsite training charges. Please note that IIT Delhi is exempted from central excise and custom duty.
- (b) The products will be used for educational purposes. Any applicable academic institution discounts should be offered and stated.
- (c) Guarantee or warranty conditions must be clearly specified; exemptions if any must be clearly stated. Charges for additional **comprehensive warranty for 2 years should be quoted separately.**
- (d) Service charges per visit and AMC after one year of warranty period must be specified.
- (e) Validity of quotation must be till 90 days,
- (f) Mode of payment is through LC only for foreign purchases (any kind of advance payment clause should be avoided). Name and address of the company on whose name the LC is to be opened should be clearly mentioned.
- (g) Supplier must submit TIN number/PAN number as applicable.

3. Institute reserves the right to order equipment with better quality over lower price and to accept or reject any or all the quotations without assigning reasons thereof.

4. The Technical Bid and Financial Bid must be sealed in separate envelopes, placed inside an outer cover envelope, and then sealed and submitted by **24.10.2013- 5-30 PM** Indian standard time to the following address:

Attn of:

Prof. Jayashree Bijwe

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