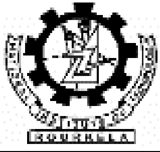

NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008 (ODISHA)
An Institute of National Importance under Ministry of HRD, GOI

NOTICE INVITING TENDER

Tender Notification No: NITR/PW/PH/2019/126 **Dated: 14/06/2019**

The National Institute of Technology, Rourkela invites bids from the eligible bidders for procurement of **Atomic Force Microscope (AFM)** at NIT Rourkela.

Last date of Submission of Bid : **11/07/2019 at 03:00 PM**

Date of opening of techno-commercial Bid **: 12/07/2019 at 03:00 PM**

For Details: http://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx
Contact: Dr. Jyoti Prakash Kar, PH; Ph: +91-661-2462732;
Email: karjp@nitrkl.ac.in
Bidding through: https://eprocure.gov.in/eprocure/app

sd/-
REGISTRAR

NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008, ODISHA

(OPEN TENDER NOTICE NO.: NITR/PW/PH/2019/126 dated: - 14/06/2019)

(PURCHASE OF Atomic Force Microscope (AFM))

Item No	DESCRIPTION	Quantity
1	**Atomic Force Microscope (AFM)**	1 Unit

1. Quantity required**: As mentioned above (All information regarding technical specification provided in the Annexure-I**)
2. Delivery **:** Within **90 days** from the date of purchase order
3. **Last Date of submission of Bid : 11/07/2019 at 03:00 PM**
4. **Date of opening of techno-commercial bid : 12/07/2019 at 03:00 PM**
5. The firm should not have been black listed at any time.
6. The submission of following bids by the tenderer should be through https://eprocure.gov.in/eprocure/app. Please follow the guidelines as per the portal.

Procurement of Atomic Force Microscope (AFM)
(Open Tender Notice No.: NITR/PW/PH/2019/126 dated: 14/06/2019 Due on 11/07/2019 at 11:00 AM)

7. **Liquidated damage clause** will be charged for any delay in supply of goods.
8. The validity of the tender shall be **90 days** from the date of opening of the bids.
9. Detailed advertisement including all tender documents isalso available in our website at http://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx.
10. NIT reserves the right to qualify or deny prequalification of any or all applicants without assigning any reasons.

(REGISTRAR)
NIT, Rourkela
Fax No- 0661-2462022
Ph. No -0661-2472021

Annexure-I

Specifications for Atomic Force Microscope (AFM)

Supply, installation, commissioning, demonstration and training of "Atomic Force Microscope"

The Atomic Force Microscope system should be capable of imaging and measuring features of a specimen (Atomic Step Resolution). The system provided should be a complete system inclusive of all necessary computers, software, hardware, accessories and tools for all the specified imaging modes.

Sl. No.	ITEM	Technical Specifications
1	**System Description**	**1. The system should consists and capable of:** **i.** Main unit with standard microscopy imaging modes for operation under Contact, Tapping, Non-Contact, Lateral Force, Phase Imaging, Force-Distance Spectroscopy. **ii.** Supply of a complete 3D Scanning System with accessories for high resolution imaging. **iii.** Accommodate large samples at least 100 x 100 x 20 mm (xyz), must come with manual x, y stage and z motorized movement with software controlled pitch and tilt corrections. **iv.** PC and Software **v.** All accessories and tools
2	**Scan modes**	**I.** Contact AFM **II.** Tapping Mode **III.** Non-Contact AFM **IV.** Lateral Force Microscopy (LFM) **V.** Phase Imaging **VI.** Force Distance (F-D) Spectroscopy The system should support the following modes: EFM, MFM, Nanoindentation, PFM, PFM with high voltage, SThM, Nanolithography, Conductive AFM, I-V Spectroscopy, SKPM, Sample heating & cooling etc.(Future upgradation)
3.	**Scanner**	**I.** Flexure guided/Piezo Tube scanner. **II.** The scanner should have closed-loop feedback system. **III.** The AFM should be a XY sample scanning system. **IV.** **Scan range :**XY range of at least 50 µm x 50 µm and Z range of at least 12 µm; **V.** **Z noise floor:** 0.03nm **VI.** The movement of X-Y-Z scanner should be completely decoupled and independent from other axis movement. **VII.** The XY-scanner when used to scan a sample in the X and Y directions should guarantees its highly orthogonal 2D movement with minimum out-of-plane motion, which should have less than 1-2 nm of out-of-plane motion for the scan range of about 50 µm. **VIII.** The Z scanner must have high feedback speed with resonant frequency 3 kHz or better. **IX.** Should be provided with a scanner alignment kit
4	**Sample Stage**	**I.** High quality manual XY stage and motorized Z movement. **II.** XY stage should have at least 10 mm × 10 mm moveable range and with manual precision movement (micro meter built-in to the stage. **III.** The working range of Z movement should be at least 25 mm with high precision and repeatability. **IV.** Motorized Z movement should be backlash-free.

		V. The AFM system must allow automated cantilever approach using the motorized Z movement.
5	**Optics**	**I.** The AFM system must provideon-axis view of sample and cantilever from top.The AFM vision system must come with a 1MP CCD camera. **II.** The vision system should provide field of view of 470 µm × 350 µm or better using 10xobjective lens.
6	**Cantilevers and probe tip**	• Contact tip – 10 nos. • Non-contact tip – 10 nos. • Probe tip exchange should be very convenient without requiring special tools or head removal. • The AFM system should allow user to mount cantilever purchased from 3rd party. • Tool kit.
7	**Computer**	*PC should be with below specification or better:* • Intel iCore processor or compatible with the AFM system • 4 GB RAM, 2× 160 GB Hard Disc Drives • Dual LED monitors • Graphic Card: integrated video capture board for display of on-axis microscope camera on PC monitor. • Operating System: Microsoft Windows 7 Professional 32 bit (English)
8	**Software**	• The AFM system should have separate software for data analysis and measurement. • Able to perform multi-tasking with Windows based data acquisition, or equivalent, and imaging processing programs at the same time.
9	**Measurement Software**	• Multiple data acquisition and display • F-d spectroscopy control • Adjusting feedback gain, set point, drive frequency /amplitude /phase in real time. • Seamless data transfer to the analysis software • The data acquisition software should be fool prove, which enable user to obtain topography images in less than 5 mouse clicks, without the need to setup set point, gains, and etc. • The system will start a topography measurement with optimized conditions for imaging automatically at the click of a button during Auto Mode.
10	**Data analysis software**	• Platform-independent software. • 'Copy to Clipboard' function for convenient presentation editing. • Running on Microsoft Windows. • The data should be able to be viewed in Top View, 3 D view, Z height colour, and etc. • Line view should also be done to perform line measurement. • Able to perform functions to include profile tracer, line measurement of height, line profile, power spectrum, average roughness, volume, surface area, grain analysis etc. • Copy to clipboard function for convenient presentation editing.
11	**AFM Controller**	• The AFM controller should come with a high performance processing unit within digital signal processing of 600 MHz and 4800 MIPS.

		• The electronic signal inputs should be at least 20 channels of 16 bit ADC at 500 kHz sampling. • The electronic signal outputs should be at least 21 channels of 16 bit DAC at 500 kHz settling. • Feedback frequency should be at least 500kHz. • Enables simultaneously acquisition up to 16 images. • Enable acquisition of image up to 4096 × 4096pixels. • The controller should be provided with at least one lock-in amplifier for advanced experiments
13	**Warranty**	• One year of comprehensive warranty for all the parts of the AFM system.
14	**Performance Certificate from Users**	• Vendor must provide at least 5 performance certificates.

Other Qualification Criteria:

1. At least five user names and contacts from NIT/IIT/reputed Indian institute/Govt. R&D organizations must be provided where the above equipment and accessories (**Annexure-I**) have been supplied in last five years. Scan copies of the minimum five purchase orders of the above equipment and accessories (**Annexure-I**) must be enclosed along with the technical bid.
2. There must be a local maintenance centre with availability of the spares in India.
3. Scanned copies of the technical brochure of the above equipment and accessories (**Annexure-I**) given in the quotation must be included in the technical bid.
4. Web references must be provided along with the technical bid.
5. Pointwise technical compliance along with any deviation of the mentioned specifications (**Annexure-I**) must be indicated along with technical documents.
6. Customized equipment and accessories (as per **Annexure-I**) will not be accepted. The standard equipment and accessories (as per **Annexure-I**) will only be accepted.
7. Make and model no. should be mentioned in the technical bid.