SECTION-C

Tender No. IPR/TN/PUR/ET/20-21/15 dated 18-02-2021

Technical Specification of Scanning Near Field Optical Microscope (SNOM) is an add-on accessories of existing Atomic Force Microscope (AFM NTEGRA Model) available at FCIPT/IPR

Sr. No.	Technical Specifications
1.	SNOM system for non-transparent samples with side excitation and top collection by straight fiber probe to install on existing Ntegra AFM system (made by NT-MDT) available at FCIPT/IPR and can be operated by existing Nova SPM software (made by NT-MDT).
2.	**SNOM scanning measuring head specifications:** 2.1 Scanning head base on tuning fork with straight fiber design. 2.2 Scanning range XYZ >= 90x90x9 μm. 2.3 Closed loop capacitance sensors. 2.4 Non-linearity XY - 0.15% peak to peak with correction. 2.5 Repeatability - 100 nm (without thermo drift) 2.6 Sample size (in NTEGRA configuration) - Up to Ø 100 mm, 15 mm in height 2.7 I2C identification 2.8 Overall dimensions - 150×130×120 mm (with Reflection module) 2.9 Should operate with existing existing Ntegra system and operate Nova SPM software
3.	**SNOM Laser Specifications :** 3.1 Type of laser : Diode Laser 3.2 Wavelength : 532nm 3.3 Laser power >=40mW 3.4 Mode of use : Transversal modes 3.5 Spectral line width FWHM : 0.1 nm or better 3.6 Internal Temperature stabilisation 3.7 Optical/mechanical components to connect laser with Reflection unit
4.	**SNOM Reflection unit :** 4.1 Should deliver light from laser source to sample 4.2 Includes lens - N/A=0.45; W.D.=30 mm 4.3 Coupling module to optical fiber 4.4 Possibility to adjust laser position by micro-mechanical screws 4.5 Should be installed on the SNOM scanning measuring head
5.	**SNOM PMT module** 5.1 Photon multiplier module for SNOM collection mode. 5.2 Should be Equipped with fiber chuck holder for single mode fiber - to use with NT-MDT. 5.3 MF-series SNOM fiber probes. 5.4 Equipped with removable filter holder (for d=25 mm filters, NT-MDT filter) for fluorescence measurements. 5.5 Spectral range: 250 - 850 nm. 5.6 Peak sensitivity at 400 nm. 5.7 Frequency bandwidth 0-20 kHz. 5.8 Should be connected to NT-MDT Ntegra controller and operates via Nova software.
6.	**Fiber SNOM probes with tuning fork sensors:** 6.1 Quantity : 10 probes

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	6.2 Probe aperture diameter : less than 100 nm 6.3 Fiber diameter : 125 μm 6.4 Wavelength of light : 450-600 nm 6.5 Fiber length : 2 m 6.6 Probe tip coating : Va-Al
7.	**SNOM Light Polarizers system :** 7.1 λ/ 4 wave-plate circular polarization, 7.2 Rotatable Glan-Thomson polarizer (Melles-Griot). 7.3 Set of mechanical components to couple to the system
8.	**SNOM Operational Manual :** Written in English, including Component manual, Protocols and instructions for maintenance and trouble shooting.
9.	Vendor should provide the spares of the existing AFM at least for 3 years.
10.	**Warranty:** 1 Year, from the date of commissioning at FCIPT/IPR.
11.	**Installation :** Installation, demonstration of operation should be provided at FCIPT/IPR by the vendor.
12.	**Acceptance Criteria :** 12.1 Scanning range of 90x90 μm should be demonstrated. 12.2 Demonstration of Laser adjustment using by micro-mechanical screws 12.3 Demonstration of Near-Field Intensity in the metal coated periodical optical structure like grating etc. in the range of 4 x 4 μm and 1 x 1 μm. 12.4 Surface Topography in Shear Force mode of operation.
13.	**Training of Hardware and software :** Suitable training of all hardware and software operation should be provided at FCIPT/IPR by the vendor.

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Technical Specification Compliance Statement of Scanning Near Field Optical Microscope (SNOM) is an add-on accessories of existing Atomic Force Microscope (AFM NTEGRA Model) available at FCIPT/IPR

Sr. No.	Required Technical Specifications	Vendor's Specifications
1.	SNOM system for non-transparent samples with side excitation and top collection by straight fiber probe to install on existing Ntegra AFM system (made by NT-MDT) available and can be operated by existing Nova SPM software (made by NT-MDT).	
2.	**SNOM scanning measuring head specifications:** 2.1 Scanning head base on tuning fork with straight fiber design. 2.2 Scanning range XYZ >= 90x90x9 µm. 2.3 Closed loop capacitance sensors. 2.4 Non-linearity XY - 0.15% peak to peak with correction. 2.5 Repeatability - 100 nm (without thermo drift) 2.6 Sample size (in NTEGRA configuration) - Up to Ø 100 mm, 15 mm in height 2.7 I2C identification 2.8 Overall dimensions - 150×130×120 mm (with Reflection module) 2.9 Should operate with existing existing Ntegra system and operate Nova SPM software	
3.	**Laser Specifications :** 3.1 Type of laser : Diode Laser 3.2 Wavelength : 532nm 3.3 Laser power >=40mW 3.4 Mode of use : Transversal modes 3.5 Spectral line width FWHM : 0.1 nm or better 3.6 Internal Temperature stabilisation 3.7 Optical/mechanical components to connect laser with Reflection unit	
4.	**Reflection unit :** 4.1 Should deliver light from laser source to sample 4.2 Includes lens - N/A=0,45; W.D.=30mm 4.3 Coupling module to optical fiber 4.4 Possibility to adjust laser position by micro-mechanical screws 4.5 Should be installed on the SNOM scanning measuring head	
5.	**PMT module** 5.1 Photon multiplier module for SNOM collection mode. 5.2 Should be Equipped with fiber chuck holder for single mode fiber - to use with NT-MDT. 5.3 MF-series SNOM fiber probes. 5.4 Equipped with removable filter holder (for d=25 mm filters, NT-MDT filter) for fluorescence measurements.	

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	5.5 Spectral range: 250 - 850 nm. 5.6 Peak sensitivity at 400 nm. 5.7 Frequency bandwidth 0-20 kHz. 5.8 Should be connected to NT-MDT Ntegra controller and operates via Nova software.	
6.	**Fiber SNOM probes with tuning fork sensors:** 6.1 Quantity : 10 probes 6.2 Probe aperture diameter : less than 100 nm 6.3 Fiber diameter : 125 μm 6.4 Wavelength of light : 450-600 nm 6.5 Fiber length : 2 m 6.6 Probe tip coating : Va-Al	
7.	**Light Polarizers compatible with system :** 7.1 λ/ 4 wave-plate circular polarization, 7.2 Rotatable Glan-Thomson polarizer (Melles-Griot). 7.3 Set of mechanical components to couple to the system	
8.	**SNOM Operational Manual :** Written in English, including Component manual, Protocols and instructions for maintenance and trouble shooting.	
9.	Vendor should provide the spares of the existing AFM at least for 3 years.	
10.	**Warranty:** 1 Year, from the date of commissioning at FCIPT/IPR.	
11.	**Installation :** Installation, demonstration of operation should be provided at FCIPT/IPR by the vendor.	
12.	**Acceptance Criteria :** 12.1 Scanning range of 90x90 should be demonstrated. 12.2 Demonstration of Laser adjustment using by micro-mechanical screws 12.3 Demonstration of Near-Field Intensity in the metal coated periodical optical structure like grating etc. in the range of 4 x 4 μm and 1 x 1 μm. 12.4 Surface Topography in Shear Force mode of operation.	
13.	**Training of Hardware and software :** Suitable training of all hardware and software operation should be provided at FCIPT/IPR by the vendor.	

Authorized Signatory

Official Seal & Date