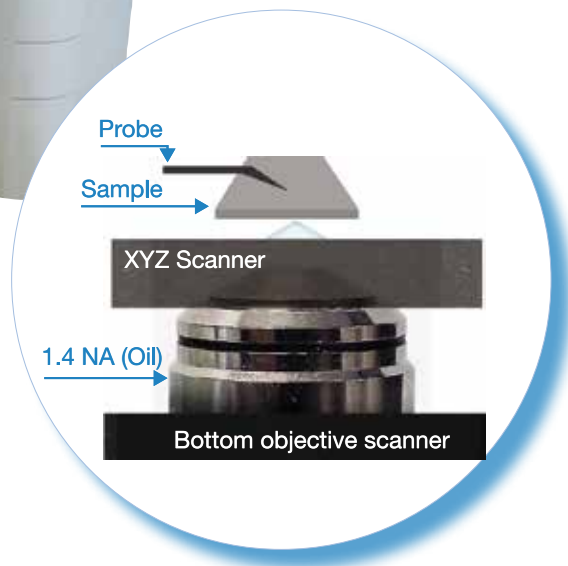


CombiScope XploRA

Fully integrated system based on AIST-NT CombiScope biological scanning probe microscope and HORIBA XploRA INV compact and fully automated inverted micro-spectrometer



Ultimate solution for transparent samples, providing high spatial resolution and collection efficiency in inverted microscope configuration with a compact integrated spectrograph, full microscope capabilities, and high performance SPM system.



CombiScope Scanner and Base

Sample scanning range	100 µm x 100 µm x 20 µm (±10 %); Optional 200 µm x 200 µm x 20 µm (± 10 %)
Scanning type by sample	XY non-linearity 0.05 %; Z non-linearity 0.05 %
Noise	<ul style="list-style-type: none"> • 0.1 nm RMS in XY dimension in 200 Hz bandwidth with capacitance sensors on • 0.02 nm RMS in XY dimension in 100 Hz bandwidth with capacitance sensors off • < 0.1 nm RMS Z capacitance sensor in 1000 Hz bandwidth
X, Y, Z movement	<ul style="list-style-type: none"> • Digital closed loop control for X, Y, Z axes • Motorized Z approach range 1.3 mm • Motorized XY head positioning 1.6 mm x 1.6 mm, 1 µm resolution
Sample size	Maximum 50.8 mm x 50.8 mm, 5 mm thickness and up to 100 mm x 100 mm with special holder
Sample positioning range	25 mm x 25 mm

AFM Head

Laser wavelength	1300 nm, non-interfering with spectroscopic detector
Registration system noise	Down to < 0.03 nm
Alignment	Fully automated cantilever and photodiode alignment
Probe access	Free access to the probe for additional external manipulators and probes

SPM Measuring Modes

• Contact AFM in air/(liquid optional)	• Conductive AFM (optional)	• Nanolithography
• Semicontact AFM in air/(liquid optional)	• Magnetic Force Microscopy (MFM)	• Nanomanipulation
• Non -contact AFM	• Kelvin Probe (Surface Potential Microscopy, SKM, KPFM)	• STM (optional)
• Phase imaging	• Capacitance and Electric Force Microscopy (EFM)	• Photocurrent Mapping (optional)
• Lateral Force Microscopy (LFM)	• Force curve measurement	• Volt-ampere characteristic measurements (optional)
• Force Modulation	• Piezo Response Force Microscopy (PFM)	

Liquid Cell (optional)

Fixing of Petri dish 35 mm	Heating up to 60° C
Sample positioning range 10 x 10 mm, 1 µm resolution	Cooling below room temperature down to 5° C
Volume of liquid: 3 ml	Sample positioning range 5 x 5 mm
Capability of liquid exchange	Positioning resolution 1 µm
Autoclave and ultrasonic cleaning of cell parts	

Temperature Control for Liquid Cell (optional)

Spectroscopy Modes

• Confocal Raman, Fluorescence and Photoluminescence imaging and spectroscopy	• Tip-Enhanced Fluorescence (TEFS)
• Tip-Enhanced Raman Spectroscopy (TERS) in AFM, STM, and shear force modes	• Near-field Optical Scanning Microscopy and Spectroscopy (NSOM/SNOM)

Conductive AFM Unit (optional)

Current range	<ul style="list-style-type: none"> • 100 fA ÷ 10 µA • 3 current ranges (1 nA, 100 nA and 10 µA) switchable from the software
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Optical Access and Microscope

Bottom optical access	Up to 1.49 NA oil immersion objective
Closed loop piezo objective scanner for ultra stable long term spectroscopic laser alignment	<ul style="list-style-type: none"> • Range 20 µm x 20 µm x 15 µm • Resolution: 1 nm
Inverted microscope	Research grade Nikon Ti-u, with optional Dark Field, DIC, Epi fluorescence and more

Spectrometer

Fully automated XploRA INV compact inverted micro-spectrometer, functional as stand-alone micro-Raman microscope	
Wavelength range	50 cm ⁻¹ to 4000 cm ⁻¹
Gratings	4 gratings on computer controlled turret (600, 1200, 1800 and 2400 g/mm)
Automation	Fully motorized, software controlled operation

Detection

Full range of CCD detectors and EMCCDs
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Laser Sources

Typical wavelength	532 nm, 638 nm, 785 nm. Other wavelength available on request
Automation	<ul style="list-style-type: none"> • Fully automated laser and filter switching for up to 3 simultaneous lasers • Laser polarization selection and spectral analyzer options for all wavelengths

Software

Integrated software package including full featured SPM, spectrometer and data acquisition control, spectroscopic and SPM data analysis and processing suite, including spectral fitting, deconvolution and filtering, optional modules include univariate and multivariate analysis suite (PCA, MCR, HCA, DCA), particle detection and spectral search functionalities.



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