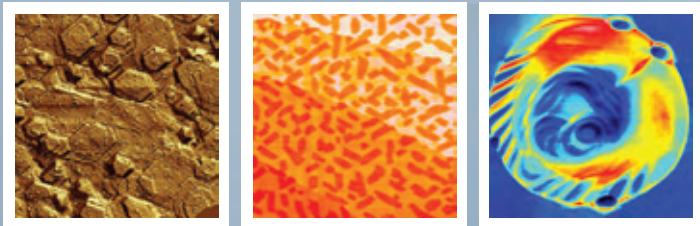




NTEGRA Prima

Super resolution SPM
Your first step towards Probe NanoLaboratory



5 reasons to choose Prima

1 Instrument for scanning probe microscopy

Prima integrates more than 40 techniques common to Scanning Probe Microscopy, spectroscopy and lithography. Therefore Prima is the ideal SPM instrument for thorough investigation of physical and chemical properties of samples with the highest precision and carrying out high-resolution scanning.

2 Simultaneous optical control and scalable possibilities

An integrated optical viewing system with resolution up to 1 μm allows targeting the tip and controlling the measuring process in real time. NTEGRA Prima supports all kinds of scanning types required for different samples. Scanning by sample, scanning by probe and simultaneous scanning by both. Also it increases the scanning range up to 200 μm in XY plane and 20 μm in Z direction.

3 Platform technology

NanoLaboratory NTEGRA was designed with an open architecture for hardware and software integration, thus Prima allows to use various inter-compatible components by simple “plug&play” method. As such, it forms the platform technology for advanced magnetic and liquid measurements, high temperature measurements with precise temperature control, nanomanipulations, near-field optical microscopy, and even non-SPM methods such as Raman spectroscopy and microtomy, making your first step towards the complete nanolaboratory.

4 Scientifically recognized

NT-MDT is a worldwide established brand name in the world of nanotechnology. More and more scientists recognize NT-MDT as the designer and supplier of advanced and the most complete SPM instruments.

5 Precise and accurate

Prima features built-in closed-loop capacitive sensors for all the axes (X, Y, Z). These sensors read the real scanner displacement and compensate parasitic piezoceramics properties including non-linearity, hysteresis and creep with extremely low noise level. Prima enables the closed-loop control on fields as small as 10 x 10 nm – this is what you need to get precise lithography with perfect and accurate linearity.

Scanning Probe Microscopy

In air&liquid: AFM (contact + semicontact + non-contact) / Lateral Force Microscopy / Phase Imaging / Force Modulation / Adhesion Force Imaging / Lithography: AFM (Force)

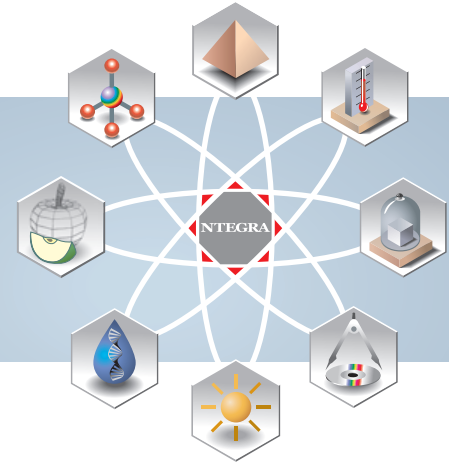
In air only: STM / Magnetic Force Microscopy / Electrostatic Force Microscopy / Scanning Capacitance Microscopy / Kelvin Probe Microscopy / Spreading Resistance Imaging / Lithography: AFM (Current), STM / AFAM (optional)

Specification	Scan type	
	Scanning by sample	Scanning by probe
Sample size	Up to \varnothing 40 mm, up to 15 mm in height	Up to \varnothing 100 mm, up to 15 mm in height
Sample weight	Up to 100 g	Up to 300 g
XY sample positioning	5 x 5 mm	
Positioning resolution	readable resolution 5 μm sensitivity 2 μm	
Scan range	100 x 100 x 10 μm 3 x 3 x 2.6 μm	100 x 100 x 10 μm 50 x 50 x 5 μm
	Up to 200 x 200 x 20 μm (DualScan™ mode)	
Non-linearity, XY (with closed-loop sensors)		
Noise level, Z (RMS in bandwidth 1000 Hz)	With sensors	0.04 nm (typically), \leq 0.06 nm
	Without sensors	0.03 nm
Noise level, XY (RMS in bandwidth 200 Hz)	With sensors	0.2 nm (typically), \leq 0.3 nm (XY 100 μm)
	Without sensors	0.02 nm (XY 100 μm), 0.001 nm (XY 3 μm)
Linear dimension estimation error (with sensors)		
		\pm 0.1 %
		\leq 0.15 %
Optical viewing system	Optical resolution	1 μm
	Field of view	4.5 - 0.4 mm
	Continuous zoom	available
		3 μm
		2.0 - 0.4 mm
		available

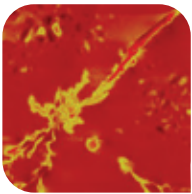
Articles: D. Tranchida, S. Piccarolo, J. Loos, A. Alekseev.
Mechanical characterization of polymers on a nanometer scale through nanoindentation. A study on pile-up and viscoelasticity, Macromolecules, 40 (4), 1259-1267, (2007)

NTEGRA platform

a complete solution for research, industry and nanotechnology

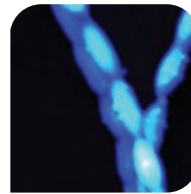


NTEGRA Prima



Prima is a high-resolution, low-noise SPM ideal for the multi-user labs. It integrates more than 40 techniques common to Scanning Probe Microscopy, spectroscopy and lithography. Integrated optics coupled to the SPM provides imaging of samples with almost continuous zoom from the millimeter to angstrom range.

NTEGRA Spectra



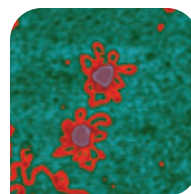
Spectra integrates SPM with Raman spectrometry and laser confocal microscopy to study the distribution of chemical properties with molecular resolution. The system is optimized for Tip Enhanced Raman Scattering (TERS) enabling even single molecules to be detected and recognized by their spectra.

NTEGRA Aura



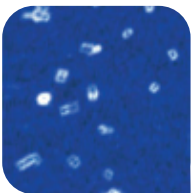
Aura is a powerful SPM instrument that gives a full control of the ambient environment in experiments. Measurements in controlled low vacuum (up to 10^{-2} Torr) provide high sensitivity of many-pass techniques such as MFM, EFM, SCM, etc.

NTEGRA Vita



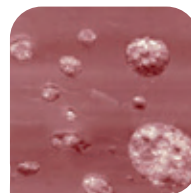
Vita was designed to study biological and living objects. It works with liquid cells, has a heating / cooling module and can be mounted on an inverted optical microscope. Vita's low noise, closed-loop sensors afford unprecedented accuracy for both probe movement and force measurements.

NTEGRA Therna



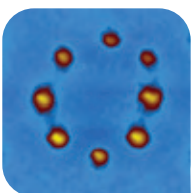
Therna allows one to perform SPM measurements at constant and varying temperatures with the thermal drifts less than 10 nm per K. In long term experiments at constant temperature the drift is < 5 nm per hour.

NTEGRA Tomo



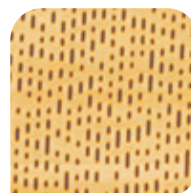
Tomo is an integration of AFM and ultra-microtome instrument that automatically cut the sample to nanometer thin slices. After that AFM images from the stable block face with nanometer resolution. Thus, Tomo can rebuild a 3D virtual model of the whole sample after scanning each layer.

NTEGRA Solaris



Solaris combines three different microscopy techniques: shear force microscopy, scanning near-field optical microscopy (SNOM) and atomic force microscopy (AFM). By adding the power of SNOM analysis to your SPM you can investigate optical properties far beyond the diffraction limits.

NTEGRA Maximus



Designed to meet requirements of both research and industry, Maximus is an ideal SPM instrument for investigation of large samples (up to 100 mm in diameter and 15 mm in thickness). It includes a programmable linear / rotary stage allowing to scan different points of a sample automatically. The instrument of choice for the high throughput screening.