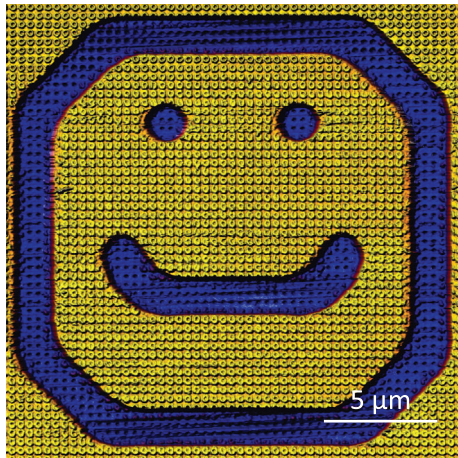


# NTEGRA II



Nanoimprinted patterns  
by Nanosensors  
Done by ScanT™

Leading AFM in Nanoscale Analysis

Atomic Force Microscopy with all the latest solutions

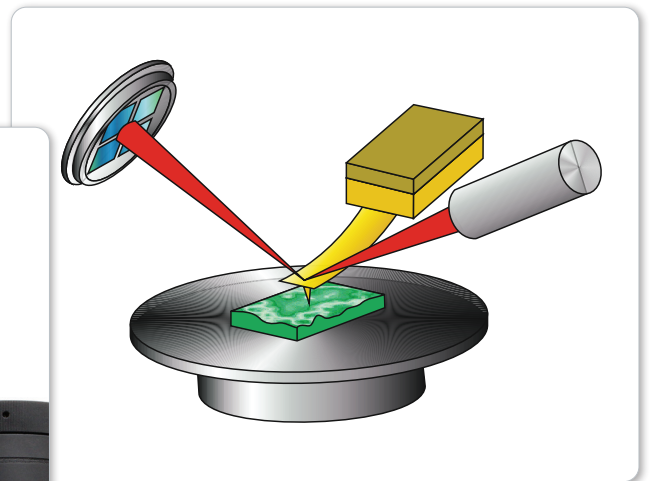
Jumping AFM – HybriD Mode™

Automation of the experiment – ScanT™

Widest possibilities for specific cases

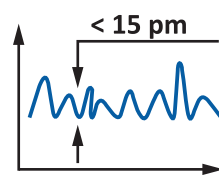
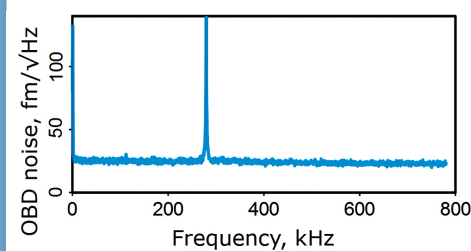
Open architecture system

User-friendly software



# NTEGRA II – Precise, Fast and Intelligent Microscope

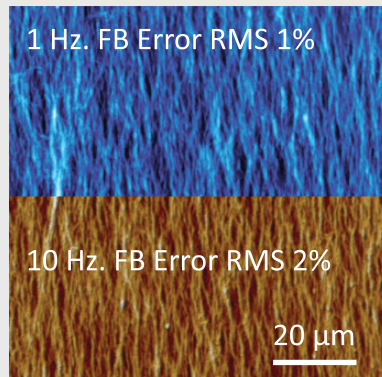
NT-MDT introduces NTEGRA II, a second generation of the most popular AFM in the world. With added capabilities, enhanced functionalities, it delivers an unprecedented level of modularity and flexibility becoming a true partner of a researcher. Intelligent, fast, reliable, precise and, undeniably, easy to use.



## Best parameters

With implementation of a new proprietary technology, NTEGRA II delivers exceptional noise floor of down to 15 pm, becoming the most stable and quiet AFM in the world.

1 Hz. FB Error RMS 1%



90×90×0,5 μm image of collagen fibers.  
1&10Hz scanning rates

## Fast RapidScan™



NTEGRA II enables scans for up to 10 Hz with standard cantilevers (resonance frequency up to 500 kHz) and up to 25 Hz with short cantilevers (resonance frequency more than 1 MHz).

No additional hardware and software are required.



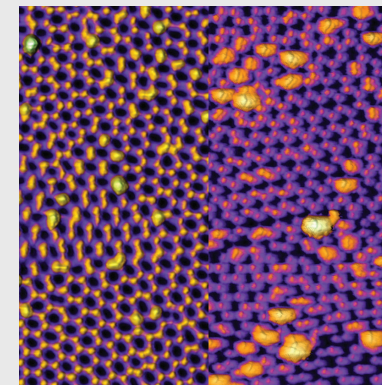
## Intelligent ScanT™



Program has been developed with the help of neural networks to provide auto-tuning of scanning parameters for imaging in AM-AFM.

Automatic maintenance of attractive (non-contact) & repulsive (intermittent-contact) regimes.

Artifact-free scanning without parachuting. Perfect performance at samples with any kind of morphology.

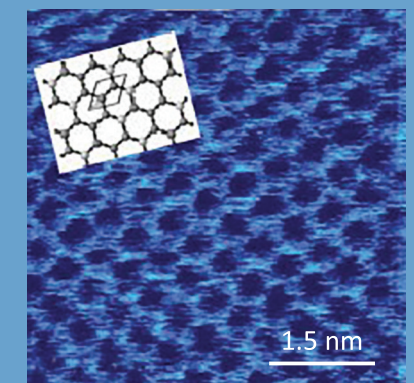


ScanT™ User only

## Precise scanners

NTEGRA II scanner uses closed loop sensors in all three directions to ensure that researchers obtain accurate and reliable data with atomic resolution.

Switching between tens of microns scan ranges to few nanometers is now easy, fast and without loss of scan quality.

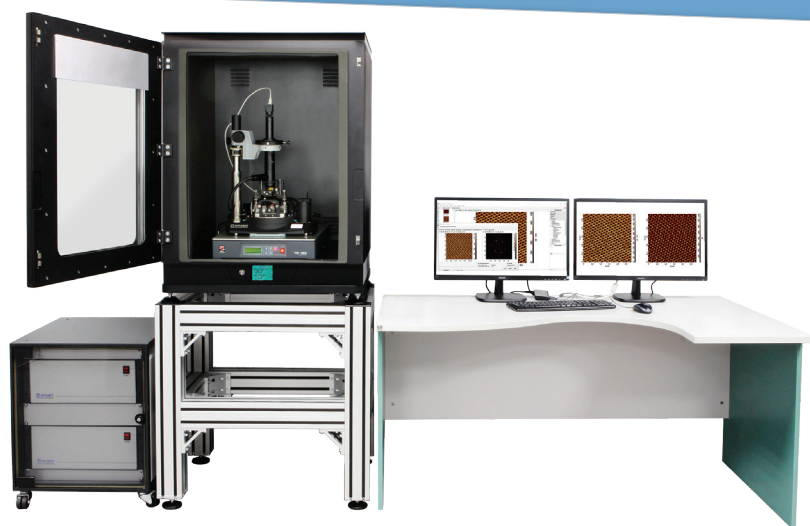


AFM topography with atomic scale resolution of Mica

## Ultrastable Cabinet

To phase out influence of noisy environments, NTEGRA II comes with a standard enclosure that provides temperature control, acoustic and vibration isolation.

Such combination reveals a true nature of NTEGRA II as the most stable AFM in the world that delivers a thermal drift at less than 0.2 nm/min level.

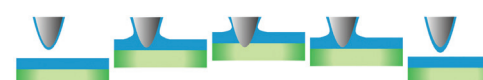
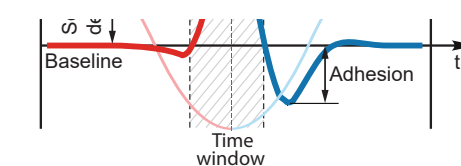


## HybriD Mode™



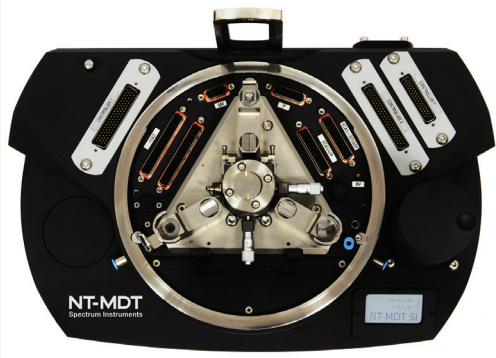
The HybriD™ AFM mode is now a standard mode that enables quantitative nano-mechanical measurements to provide researches with Young modulus maps, maps of adhesion, deformation, etc.

Furthermore, implementation of non-oscillatory technique in electrical modes, such as conductive AFM, PFM, KPFM, allows now researchers to work with fragile and loosely fixed samples.





# NTEGRA II – The ultimate research microscope



## Open design & easy access to the sample

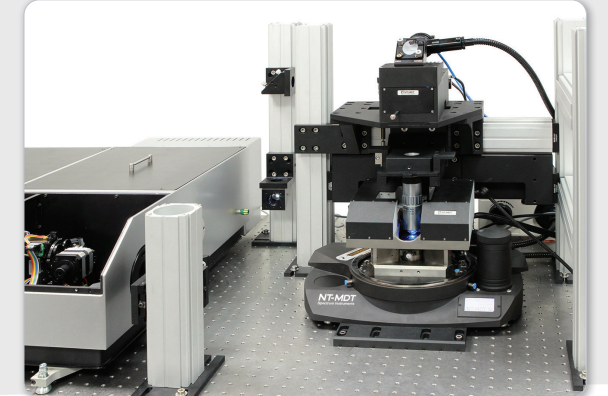
Open architecture in hardware, software, and signal integration provides a portal for you to customize and expand this list to fit your applications.

NTEGRA II create a core around which your lab can build a full spectrum of analytical operations.

## NTEGRA Spectra II – Your AFM-Raman system

Change happens at interfaces and today's most exciting changes in microscopy are happening where multiple technologies interface.

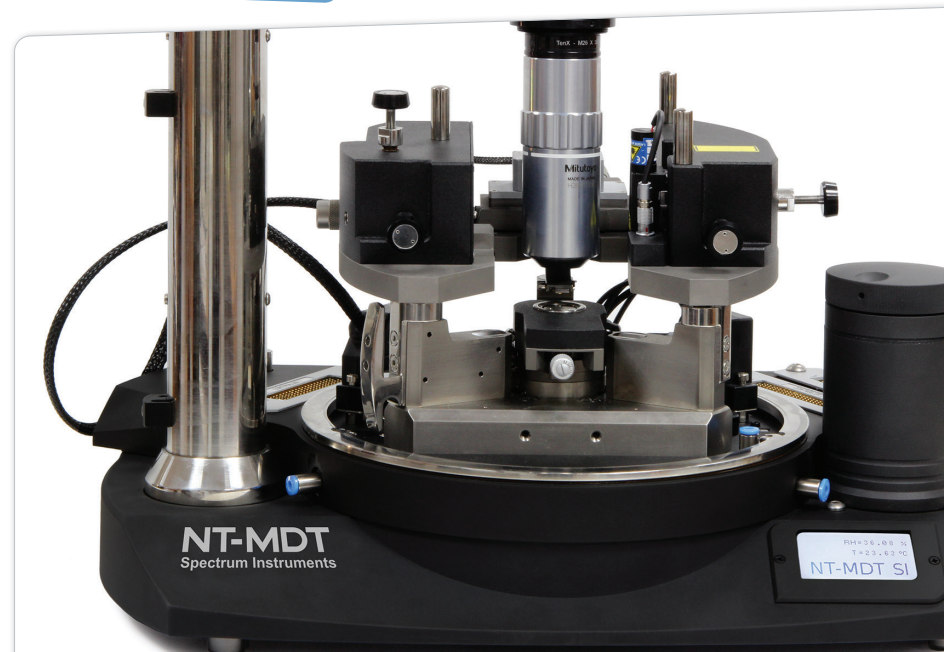
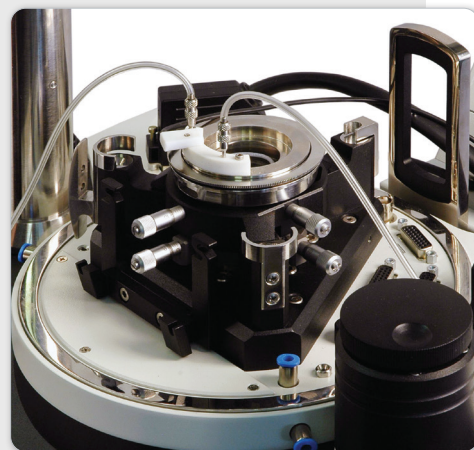
NTEGRA Spectra II is a prime example, uniting the full power of confocal microscopy, atomic force microscopy, Raman & fluorescence spectroscopy in one platform.



## Life Biology

To maintain life and present the best conditions for measurement, most biological samples must be kept in fluid solutions.

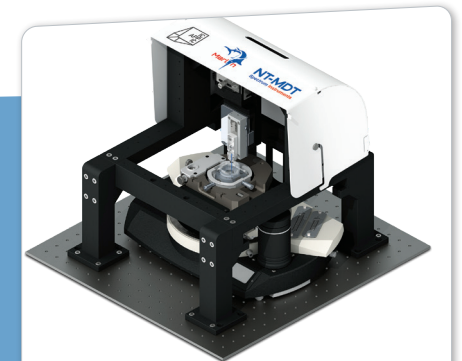
For conventional AFM biological imaging as well as biochemistry and bioorganic applications, NTEGRA II uses a unique sealed fluid cell which maintains an enclosed volume.



## NTEGRA Marlin

Enhance possibilities of your laboratory with SICM module NTEGRA Marlin.

Hopping mode ion conductance microscopy: non-contact imaging of living cells and jelly surfaces. Nano-injection: nanopipettes with SICM feedback control can be used for local sub-picoliter injections to single cells.



## Vacuum & External field

NTEGRA II is a high-sensitive system perfectly suited for measurements in vacuum up to  $10^{-3}$  torr or under controlled atmosphere environments.

The widespread application AFM with enhanced MFM measurement capabilities in external magnetic field.



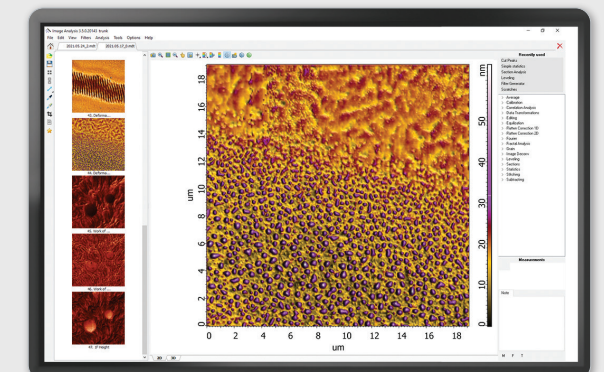
## Image Analysis



More than 100 methods for AFM data processing & analysis.

Powerful toolkit for AFM image leveling. Smart package for automatic practical detection. Nonlimited number of copies under onsite license.

ISO-ASME-compatible statistical analysis.

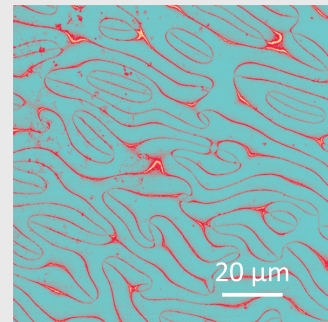




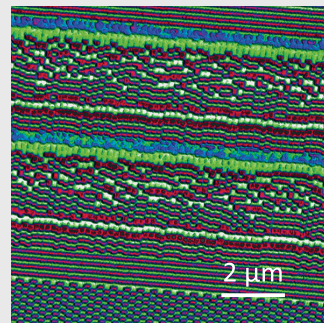
# Applications

- Biology and Biotechnology
- Materials Science
- Semiconductors
- Polymers and Thin Organic Films
- Data storage devices and medias

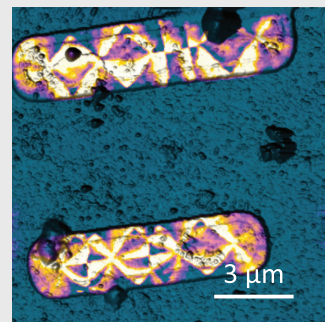
- Piezoelectrics & Ferroelectrics
- Nanocomposites
- Carbon materials
- Nanowires & Nanotubes
- Domain structures



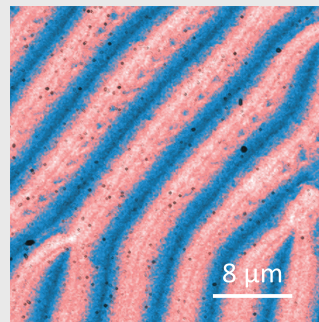
SS PFM  
Ferroelectric Domains  
in  $\text{ErMnO}_3$



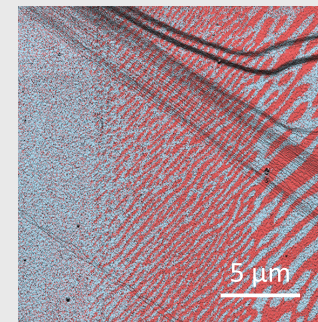
MFM  
Domains of 1TB HDD



MFM  
Domains in TbGdFeCo film

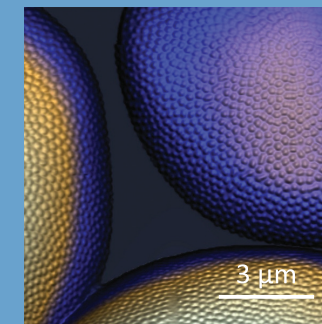


MFM  
Garnet Film

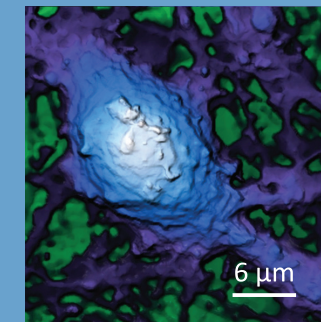


Hybrid Mode PFM  
TGS crystal near Curie  
temperature

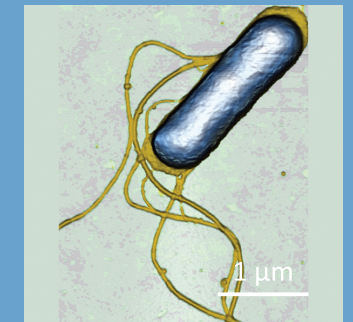
## Domains



AM-AFM  
Drosophila eye

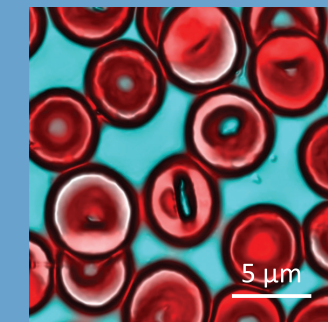


SICM  
Rat Neuron

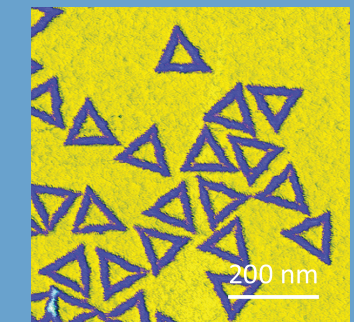


AM-AFM  
E. coli in liquid

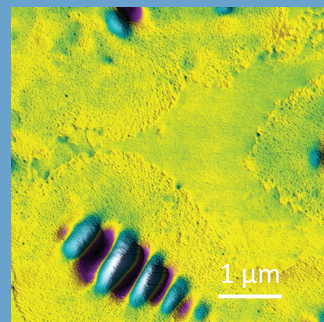
## Bio



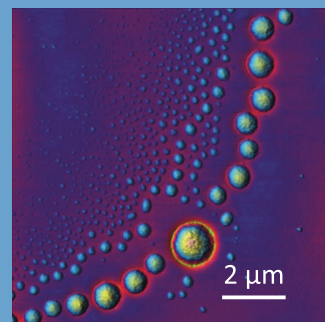
AM-AFM  
Blood cells on glass



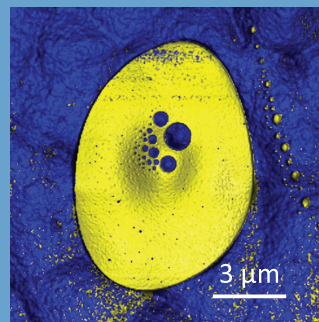
ScanT  
DNA Origami



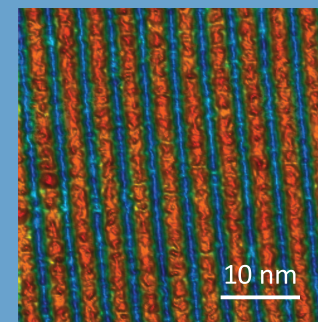
AM-AFM  
Bitumen film



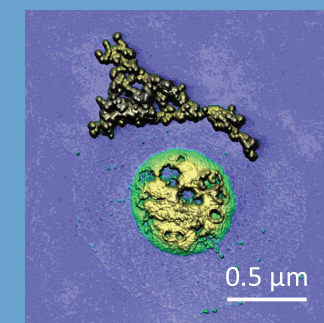
AM-AFM  
PS-LDPE



Hybrid Mode  
E Modulus over topography  
of PS-LDPE blend

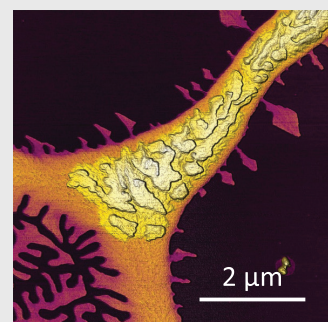


AM-AFM  
F14H20 on HOPG

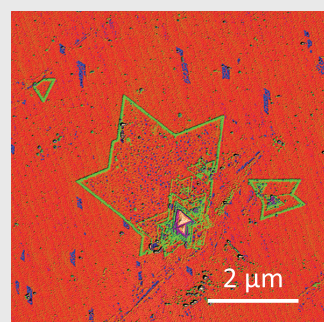


ScanT  
sPS particles on Si

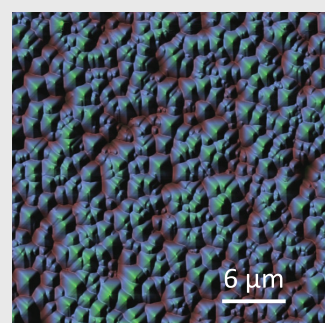
## Polymers



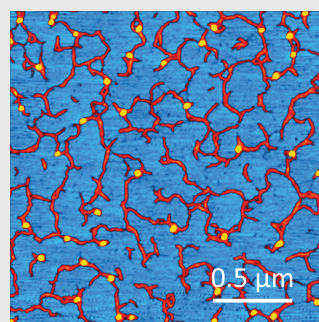
AM-AFM  
Thin film of semiconducting  
polymer on Si



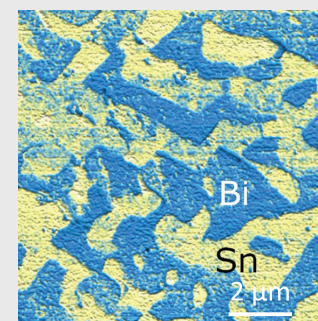
Hybrid Mode  
 $\text{WS}_2$  Monolayers Grown  
on Epitaxial Graphene



ScanT  
Black Si



AM-AFM  
PAH Synthetic Nanographene



Hybrid Mode, E modulus  
Bi-Sn alloy

## Nanoelectronics

## AFM Modes

Contact AFM: LFM, FMM, SRI, PFM

AM-AFM: MFM, EFM, SCFM, KPFM

Hybrid Mode™: Young's modulus,  
Work of Adhesion, Current, Force  
Volume, PFM, KPFM, MFM, EFM,  
Thermal Microscopy

AFM spectroscopy, SS PFM  
Nanolithography: Voltage, Current, Force  
Scanning Tunneling Microscopy

## Controlled Environment

Vacuum  
Temperature  
Gases  
Liquid  
Electrochemical environment  
External magnetic field  
Humidity



### Contact Us

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### Follow Us



Scan type: by sample, by probe, both

Sample size: up to 100 mm in diameter

XYZ scan range: 100x100x10  $\mu\text{m}$  (CL)

Closed loop sensors noise:

XY – less than 0.2 nm,

Z – less than 0.04 nm

Scan speed: up to 10 Hz with standard probes,  
up to 25 Hz with short probes

Noise floor: less than 15 pm RMS  
(10-1000 Hz bandwidth)

Thermal drift: less than 0.02 nm/min

Optical resolution:

3  $\mu\text{m}$  standard,

1  $\mu\text{m}$  – optional

Automated software configuration for different  
modes

Intelligent module ScanT™ that automatically finds  
optimal parameters for scans

Open design software for user-defined modes

Built-in 5 lock-in amplifiers

External variable magnetic field generators:  
in-plane up to 2000 Gauss, out-of-plane  
up to 500 Gauss

Interference-free SLD source for OBD tracking  
system

STM module

Various liquid cells

Electrochemical cells for 3 and 4 cathode schemes

Heating stages: up to 300 °C

Signal Access Module

Scanning Ion Conductance Microscopy

Integration with Inverted Light Microscopes  
(Nikon, Olympus, Zeiss, Leica)

Integration with confocal Raman modules for  
simultaneous AFM-Raman measurements and TERS

Integration with Nano-IR microscopy

Low vacuum – down to  $10^{-3}$  Torr