

# High Performance AFM



NANOMAGNETICS  
INSTRUMENTS

## System Parameters

### Scanner

- 16, 20 or 24 bit and 5, 10, 40, 100  $\mu\text{m}$  XY scan range
- 16, 20 or 24 bit 2,4,6,8,12,15  $\mu\text{m}$  Z scan range,
- 0.01 nm resolution
- Linearized scanning on all axes with optical sensors
- Vacuum sample holder for 1", 2" and 3" samples
- Decoupled Z scanner
- Can hold samples up to 500 gr max.

### Z Motorized Stage

- 50mm range, 250nm resolution

### XY Motorized Stage

- 50 or 76 mm range, 50nm resolution

### AFM Module

- RF modulated low noise 635nm laser
- 25  $\text{fm}/\text{Hz}^{1/2}$  (max.) noise floor
- <14 nm magnetic resolution with super sharp cantilevers



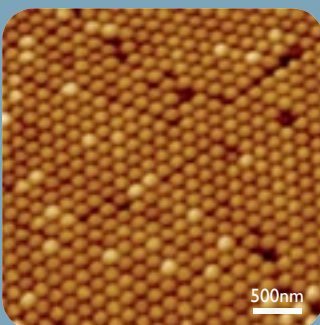
### Video Microscope

- 10MP CCD camera
- Recording and imaging with color CCD camera
- Optical zoom
- 0.7  $\mu\text{m}$  optical resolution

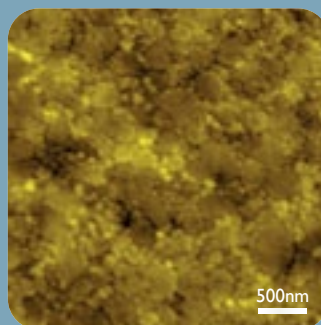
### Acoustic and Vibration Isolation

- Acoustic, thermal and vibration isolation cabinet
- Atmosphere controlled isolation cabinet (optional)
- 0.3 Hz vibration isolation table
- Optional heating and cooling between -10  $^{\circ}\text{C}$  and 100  $^{\circ}\text{C}$

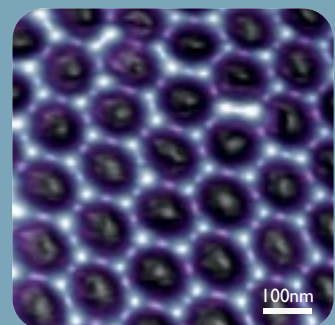
Polystyrene  
Dynamic Mode



LCMO  
Dynamic Mode



Anodic Aluminum  
Dynamic Mode



## System Parameters

### Standard Modes

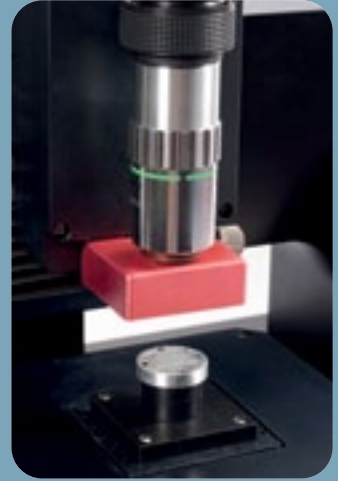
- Contact Mode AFM
- Dynamic Mode AFM
- Conductive AFM
- Phase Imaging
- Magnetic Force Microscope, MFM
- Scanning Tunneling Microscope, STM
- F-d Curves and Spectroscopy
- Electrostatic Force Microscope, EFM
- IV Curves and Spectroscopy with STM Module (pA- nA adjustable current range)
- Non-contact AFM with 5 mHz Resolution Digital PLL

### Optional Microscopy Modes

- Current Sensing AFM (Spreading Resistance AFM)
- Nanolithography
- Viscoelasticity Measurements
- Adhesion Force Imaging
- Conductive AFM
- Scanning Capacitance Imaging, SCI
- Scanning Kelvin Probe Microscopy
- Electrochemical AFM
- Piezo Response Force Microscopy, PRFM
- Closed Liquid Cell AFM
- Lateral Force Microscope, LFM
- Nanoindentation and Scratch Testing

(Please contact us for unspecified modes)

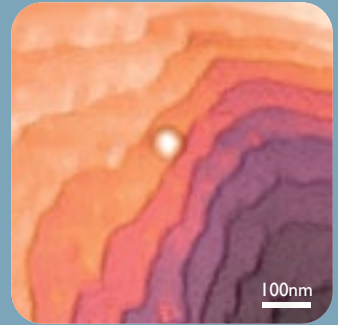
AFM Head & Flexure Stage with Sample Holder



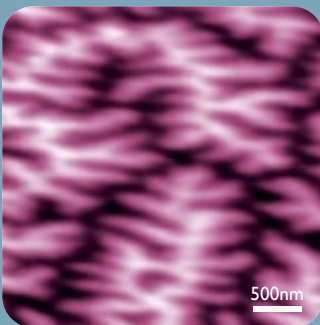
AFM & STM Scan Heads



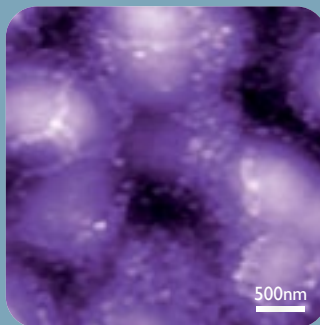
HF Etched Mica Dynamic Mode



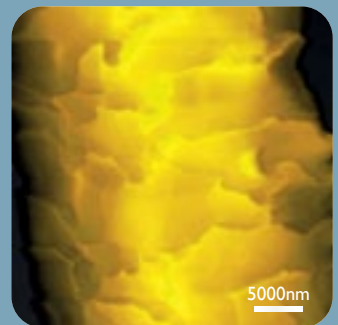
Fe-Ni-Co Alloy  
MFM



Mn Doped Piezo Thin Film  
Contact Mode



Human Hair  
Dynamic Mode





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## System Parameters

### SPM Control Electronics and Software

- 3D imaging
- Image processing, analysis, and recording functions
- Simultaneous data gathering
- Up to 4096 X 4096 pixels imaging
- Automatic cantilever frequency determination
- Multi-user license
- Lifetime free software updates
- 24 bit Scan DAC's
- 24 bit Z- DAC resolution
- FPGA based digital feedback
- STM and AFM feedbacks
- 24 bit 200 kHz, 16 channel ADC
- +/-10V, 16 bit bias voltage output
- 0.030 nm RMS noise ratio
- 5 mHz resolution digital PLL

Note: Specifications are subject to change without notice.



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