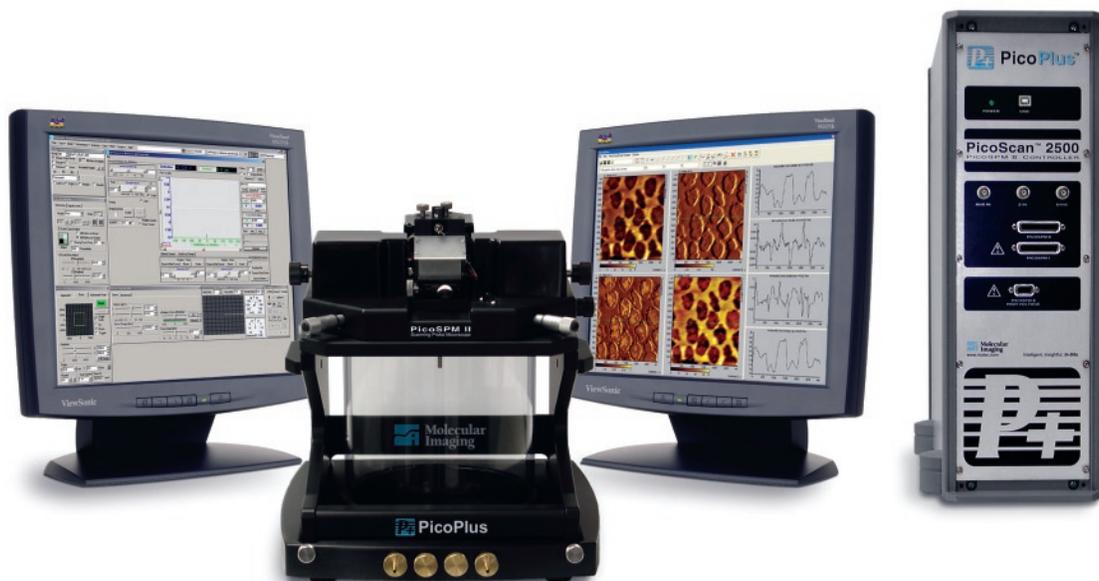


PicoPlus™

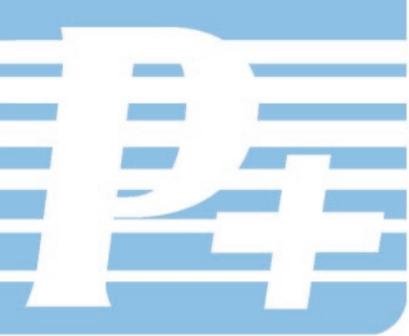
One system does it all!



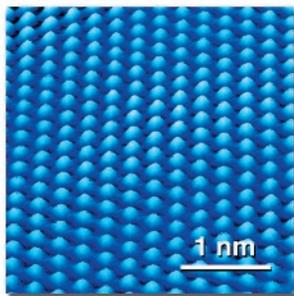
**Molecular
Imaging**

The Leader in *in-situ* SPM

Intelligent
Insightful
In-situ



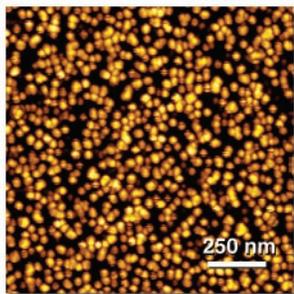
PicoPlus™



STM image of atomically resolved HOPG imaged with the multi-purpose small scanner.



Stand-alone capability permits usage on large samples.



MAC Mode AFM image of ferritin molecules imaged with the multi-purpose small scanner.

Introducing PicoPlus™

Molecular Imaging's PicoPlus is a new, modular Scanning Probe Microscope (SPM) system that has been designed with you, the user, in mind. This versatile, upgradeable system combines the new PicoSPM® II Microscope, multi-purpose Scanners, and PicoScan™ Controller with additional modular components. The result is a multifaceted platform that offers numerous unique features *and* superior performance.

Cost Effective Modular Design

PicoSPM II Microscope

The new PicoSPM II Microscope offers optimal resolution in an extremely flexible, modular package. Powerful features have been added while retaining all of the unique advantages of Molecular Imaging's legendary PicoSPM Microscope (including *in-situ* imaging, top-down scanning and environmental control).

The open-top architecture of the PicoSPM II Microscope allows an unobstructed optical view of the cantilever and sample. The flip-top stand provides easy access to samples, allowing the user to change samples quickly. A low drift micro translation system is integrated into the microscope. The microscope can be used in a stand-alone configuration on large samples. For added versatility, Molecular Imaging's environmental chamber easily integrates with the microscope, so experiments can be performed in controlled

atmospheres. But PicoPlus versatility does not stop here. The PicoSPM II microscope can even be coupled with a conventional inverted optical microscope for life science applications.

Acquiring images on tilted surfaces is not an issue with the PicoPlus microscope because it has three compensating stepper motors. Samples are also raised and lowered with these motors, permitting precise vertical engage.

Multi-Purpose Scanner

PicoPlus multi-purpose scanners are unsurpassed in performance and versatility. Different imaging modes require hardware changes. But, unlike other brands, the PicoPlus has scanner nose-cones that are easily interchanged. The standard nose-cone performs contact mode AFM and LFM. Additional modes, such as dynamic AFM (magnetic MAC Mode® and acoustic AC), Current Sensing (CSAFM), and STM, are available by simply changing nose-cones.

Available in two scan ranges, atomic or up to 100 μm, PicoPlus scanners are optimized for the user's applications.



A multi-purpose scanner utilizes interchangeable nose-cone modules for various imaging modes.

One system does it all!

PicoPlus Controller

Molecular Imaging's PicoPlus controller, the PicoScan 2500, has a modular design with plug-in boards that allows easy maintenance and upgrades. The controller's hardware has nine 16-bit input channels and four 24-bit output channels. PicoScan, a 32-bit Windows® based software package, with user level scripting, provides scanning control. Custom functions and routines are at the PicoScan 2500 user's fingertips. An integrated script editor and example scripts are standard.

Integrated Environment and Temperature Control

Environmental control is not an afterthought at Molecular Imaging, it has been standard on every Molecular Imaging SPM for the last decade. The PicoPlus has an integrated environmental chamber with eight inlet/outlet gas/electrical ports to allow total control of the imaging environment and sample temperature. The multi-purpose scanners are hermetically sealed with the chamber which allows the PicoPlus to image samples under harsh environments.



The environmental chamber permits true environmental control.

Sample temperature is precisely controlled on the PicoPlus system via the temperature stage. Three types of stages permit control from -30 °C to 250 °C.

Video Microscope

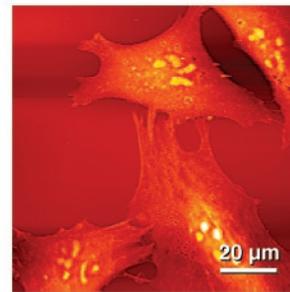
The PicoPlus microscope and multi-purpose scanners are 'open-top' designs, allowing high-resolution video microscopy straight down the optical axis. With Molecular Imaging's unique micro translation stage, the cantilever can be accurately positioned on sample features. Multiple video options are available for high quality image resolution.



Open-top design allows for high resolution video microscopy.

BioScan™ Inverted Optical System

The BioScan combines inverted optical microscopy with high performance SPM. High resolution AFM is achieved on the inverted microscope because PicoPlus has an integrated, lightweight sample stage with a short, rigid, sample mounting capability. PicoPlus has an open optical path, so samples can be illuminated with a variety of light sources, which allows PicoPlus to be used in conjunction with, for example, fluorescence imaging.



MAC Mode AFM image of mouse lung endothelial cells imaged with the multi-purpose large scanner.

One System Does It All

PicoPlus is a versatile, modular SPM system that can be configured to your particular research needs. Whether your features measure in angstroms or tens of microns, PicoPlus is a system that grows with your needs and budget without sacrificing performance.



BioScan configuration adds the features of an inverted microscope.

Advantages of the PicoPlus

 Built with the same high standards that brought you the first true environmental and liquid SPM, PicoPlus has the following advantages:

- Modular system that is upgradeable to existing and future options (EC, temperature control, closed loop, lithography, fluorescence, infrared, software upgrades, etc.)
- Atomic resolution
- Large scan range
- Easy sample access with top-down scan
- Easy fluid operation with open cell
- Integrated environment control
- *In-situ* electrochemical SPM
- Temperature control from -30 °C to 250 °C
- Contact mode AFM with friction
- MAC Mode and acoustic AC mode with phase imaging
- STM with sub-picoampere control
- Unrivalled top-down simultaneous video microscopy
- High performance on an inverted optical microscope
- 32-bit Windows® based software
- USB interface
- Standard Visual Basic scripting

PicoPlus Component Specifications

PicoSPM II Microscope

Imaging modes	STM, Electrochemical STM, Contact mode AFM, Acoustic AC mode AFM, MAC Mode® AFM, Phase Imaging, Force Modulation, Electrochemical AFM, Current Sensing AFM, Magnetic Force Microscopy, Pulse Force Mode AFM
Compatibility	Environmental chamber, temperature control, BioScan, ambient or fluid imaging
Temperature control	Ambient to 250 °C, -5 °C to 40 °C, or ambient to -30 °C. ±0.1 °C or better
Data length	16 bits, all channels
Image pixel resolution	Up to 1024 × 1024
Tip approach	Three stepper motor controlled automatic vertical approach
Scan range	100 µm with large scanner
Resolution	Atomic resolution with small scanner
Maximum sample size	2 cm × 2 cm approximately 5 mm thick
Physical	23 cm H × 22 cm W × 22 cm D, 6 Kg

PicoScan 2500 Controller

Input	Nine 16-bit channels
Scanner drive	5 channels, ±215 V, 24-bit
Output	Four 24-bit channels, ±10 V
Interface	USB
Maximum scan rate	48 lines/sec at 256 × 256
Image channels	2 for 1024 × 1024, 8 for 512 × 512, 30 for 256 × 256
Spectroscopy channels	26
Scripting	Standard Visual Basic Scripting language
Power	100-120 V AC, 2 A or 220-240 V AC, 1 A: 50-60 Hz
Physical	48 cm H × 16 cm W × 51 cm D, 15 Kg



**Molecular
Imaging**

The Leader in *in-situ* SPM

4666 South Ash Avenue
Tempe, Arizona 85282 USA
Tel: 1.480.753.4311
Fax: 1.480.753.4312
Email: info@molec.com
Web: www.molec.com

Intelligent
Insightful
In-situ