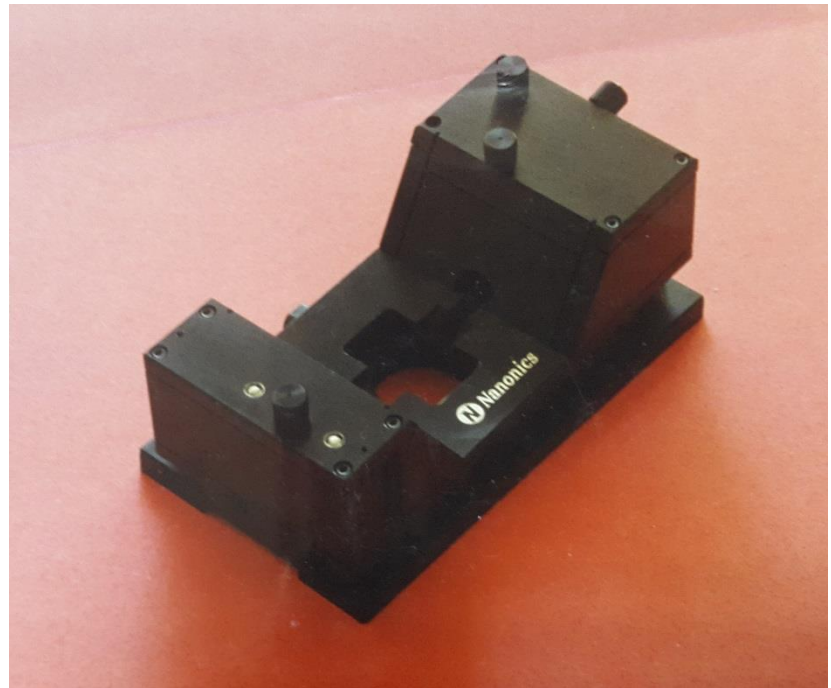
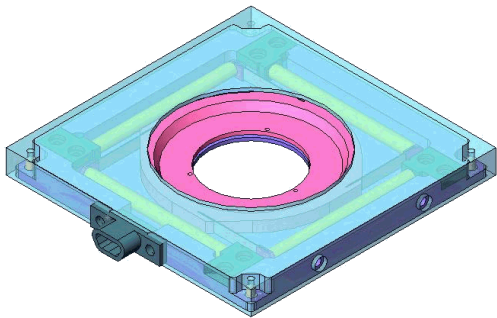


# Nanonics MultiView 1500

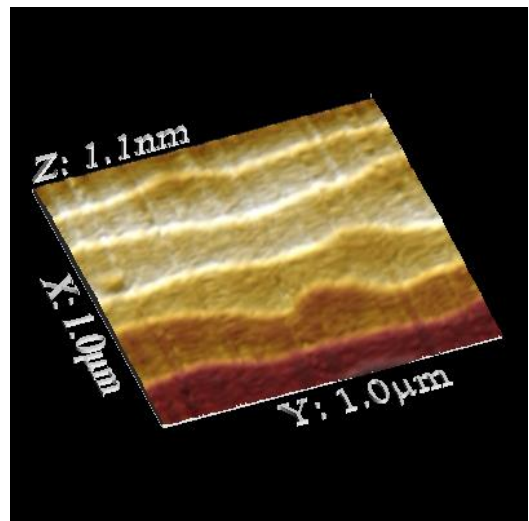
A Most  
Versatile  
Ultrasensitive  
Scanning Probe  
Microscope



Patented UltraThin  
3D Flat Scanners™



*The Next Evolution In  
NanoCharacterization™*



Atomic Steps Strontium Titanate

# Ultrasensitive Compact Flexible Scanning Probe Microscope

## Providing The Ultimate In SPM Imaging & Harnessing New Horizons

The MultiView 1500™ is a compact ultra-low noise scanning probe microscope offering the highest of resolution and force sensitivity. It offers all modes of AFM, contact, tapping, non-contact and elasticity mapping together with other standard protocols. The MV 1500™ has the ultimate in flexibility for full optical integration with a variety of microscopes including Raman and Fluorescence. Unlike any other AFM it can be placed on the stage of any upright microscope for viewing opaque samples with the highest numerical aperture objectives. Furthermore, the system is completely unimpeded from below allowing for ease of integrating inverted and dual microscopes, magnets etc. Besides the ability to use all AFM probes available today, owners of the MV1500™ have exclusive use of Nanonics NanoToolKit™ of probes that permit a full range of functional SPM applications without obstructing the optical axis from above. This allows for on-line spectral characterization of chemical information using Raman, fluorescence or other spectral techniques. Functional SPM imaging available with such optically friendly probes include:

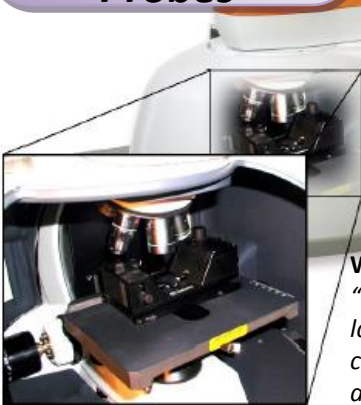
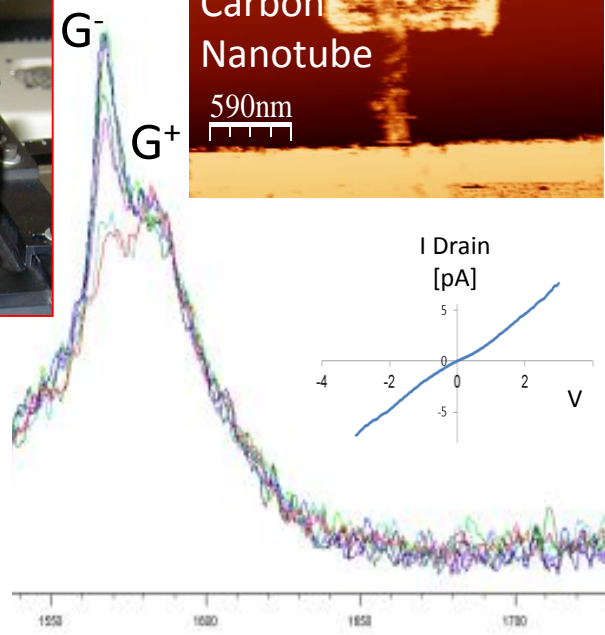
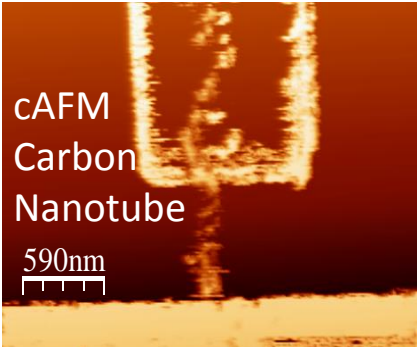
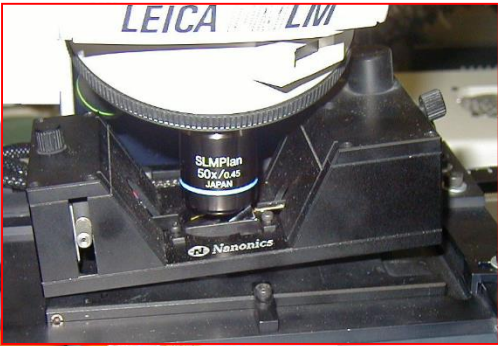
- Conductive AFM (cAFM)
- MFM/EFM
- Thermal Conductivity (SThM)
- Near-field scanning optical microscopy (NSOM)
- Nanochemical Drawing with Fountain Pen Nanolithography (FPN)
- Scanning Electrochemical Microscopy (SECM)
- And numerous other SPM functionalities



Whatever your needs advanced or simple The MV1500™ is your scanning probe microscope of choice.

### MultiDimensional NanoCharacterization

**Exclusive Use of Nanonics Optically Friendly Probes**

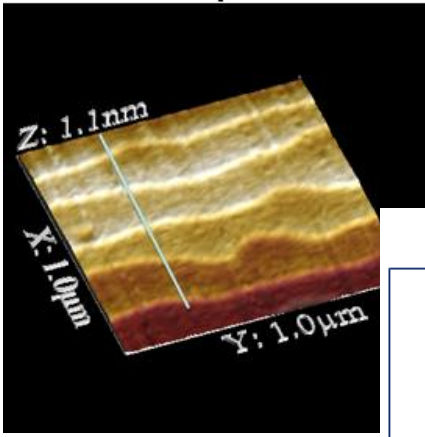


**Raman**

**What Customers Say:**  
*"...the tip apex is not shadowed, as the laser beam is a focused beam with a converging angle of 26.7°, while the half angle of the tip is only about 4°.*

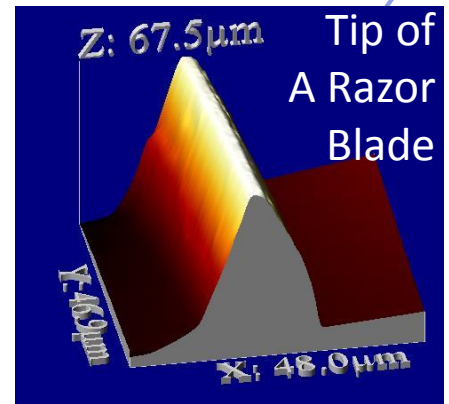
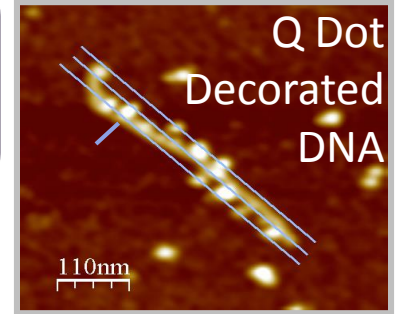
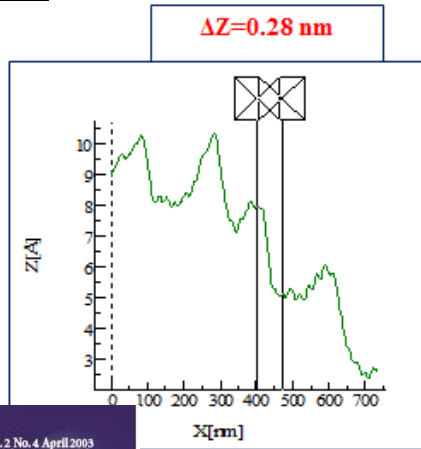
**Raman Shift**

# UltraLow Noise In X, Y And Z



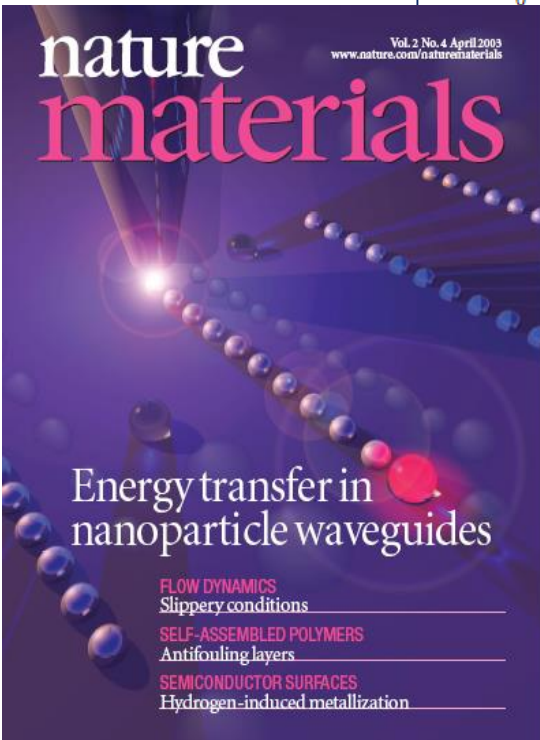
Strontium Titanate  
Atomic Steps

From  
The Ultra Small To  
The Ultra Large

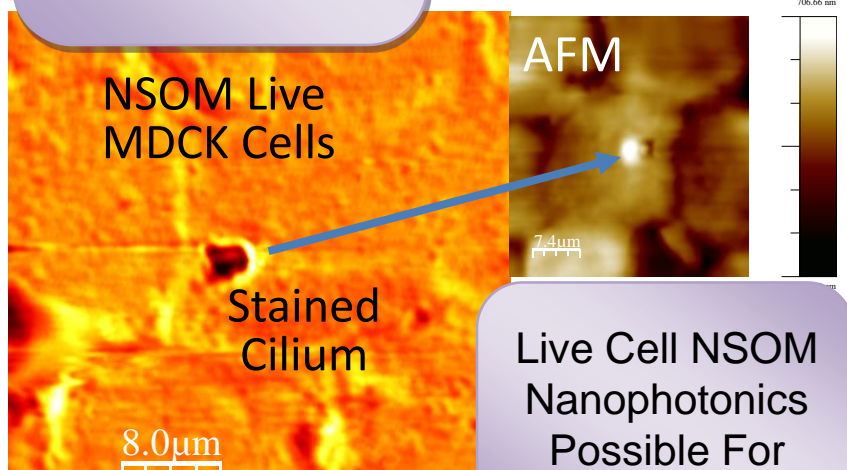


Unprecedented  
85µm Z Range  
For Studying  
Real Samples

Excellence In Near-  
field Scanning Optical  
Microscopy (NSOM)  
& Super-resolution  
Optics



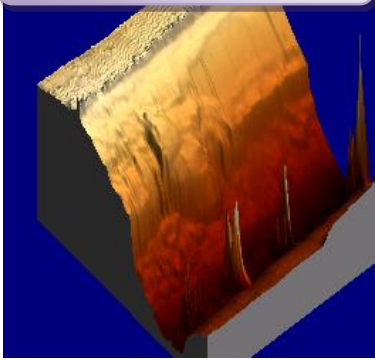
The NanoPhotonics  
System of Choice For  
The Last Two Decades



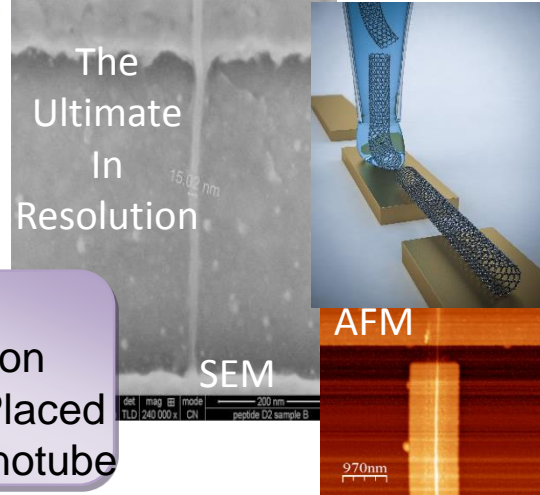
Live Cell NSOM  
Nanophotonics  
Possible For  
The First Time

# A Sampling of SPM Applications With The MV 1500™

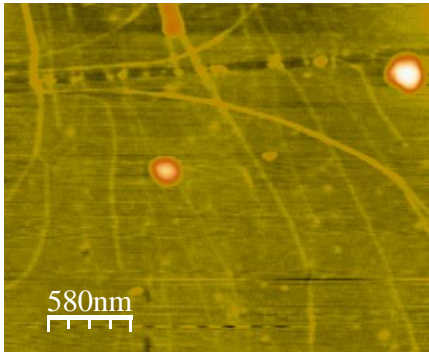
Side Wall Imaging



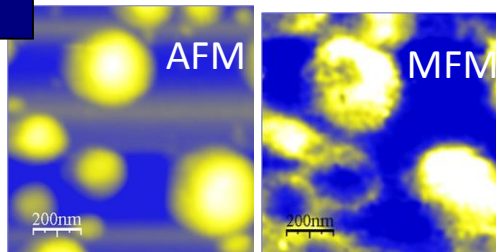
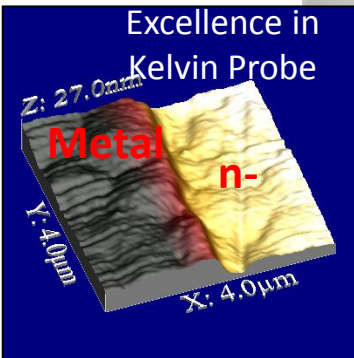
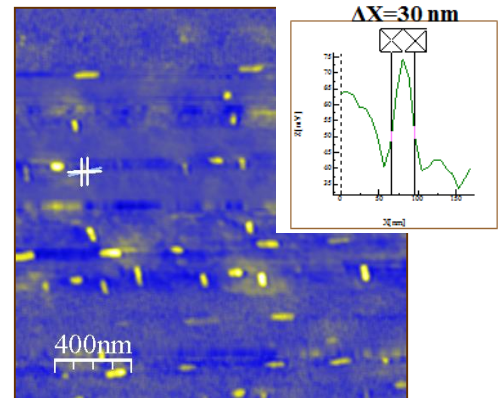
Writing Aligned Carbon  
Nanotubes, DNA &  
Conducting Metallic  
Lines From Solution



Excellence  
In NanoManipulation  
Single Nanoparticle Placed  
On Single Carbon Nanotube



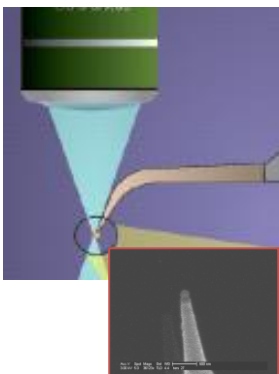
Thermal Conductivity  
Imaging Voids In Silicon



Glove Box  
Ready



Imaging Magnetic Cobalt Particles  
Placed Between Grating Lines With  
Exclusive Single Magnetic  
Nanoparticle Probes



# Specifications

AFM	Contact, non-contact, intermittent contact
AFM Feedback	<ul style="list-style-type: none"><li>- Optical Beam Bounce feedback: Contact mode, Intermittent (Resonant\Semi-Contact) mode</li><li>- The above modes can work in Normal and Lateral Force</li><li>- Magnitude and Phase Imaging</li><li>- Optional: Frequency Modulation Tuning Fork feedback with high Q factors and no optical feedback interference</li></ul>
Scanning Stage	<ul style="list-style-type: none"><li>- Piezo based flat scanning stage with central opening suitable for integration with optical microscopes with clear optical access uniquely from above for opaque samples and from below for inverted/dual microscopes, magnets etc</li></ul>
Scanning Modes	<ul style="list-style-type: none"><li>- Sample scanning</li></ul>
Scanning Range	<ul style="list-style-type: none"><li>- Up to 85 microns in XY</li><li>- Up to 85 microns in Z</li></ul>
Scanner Resolution	<ul style="list-style-type: none"><li>- X and Y: 0.05nm, Z : 0.02nm</li></ul>
Z Imaging Noise	<ul style="list-style-type: none"><li>- 0.05nm rms/ 0.2nm p-p obtained with AFM imaging of HOPG sample with atomic steps</li></ul>
Sample Size	<ul style="list-style-type: none"><li>- Up to 100mm in XY and 30mm in Z</li><li>- Large samples with odd geometries including allowing hanging of samples for cross section scans of edges</li></ul>
Sample Positioning	<ul style="list-style-type: none"><li>- Rough Scanning of 6 mm in XY using the same Fine Scanning Piezos controlled through AFM software and &lt;1 nm positioning accuracy</li><li>- 85 micron XYZ positioning through Piezo offsets with accuracy of &lt;1nm</li></ul>
Optical Viewing	<ul style="list-style-type: none"><li>- Clear optical access from above and below the sample without obscuration due to Cantilever or scanning stage.</li></ul> <p>Optional Video Microscope:</p> <ul style="list-style-type: none"><li>- Dynamic magnification range 2.1–13.5X (full possible range: 0.09-393X)</li><li>- Field of View: 3 – 10 mm</li></ul> <p>Optional Research Grade Microscope:</p> <ul style="list-style-type: none"><li>- Upright, Inverted and Dual Upright/Inverted optical microscope</li><li>- High NA objectives of 50x and 100x objectives including Water Immersion objectives.</li><li>- Suitable for sensitive optical measurements such as Confocal, Fluorescence, NSOM, etc.</li><li>- Transparently integrated with Raman and other micro Spectroscopy systems</li></ul>
Vibration Isolation	<p>Passive:</p> <ul style="list-style-type: none"><li>- Vertical natural frequency of 1/2 Hz or less can be achieved over the entire load range</li><li>- Horizontal natural frequency is load dependent. 1/2 Hz or less can be achieved at or near the upper limits of the payload range</li></ul> <p>Active:</p> <ul style="list-style-type: none"><li>- Also available</li></ul>

## Controller

- Feedback speed of 4MHz
- ADCs/DACs in 18 bit
- 18 bit ADCs 4MHZ of sampling rate with 92 dB SFDR with various input ranges of +/-10V, +/-5V, +/-2.5V, +/-1.25V
- X, Y, & Z High Voltage Amplifiers, Voltage output of  $\pm 150v$ , 4 voltage display channels, Hardware slop compensation
- 4 Digital inputs and outputs
- 8 Analog inputs and outputs

## Software

- Lab View based Software
- Intuitive scan parameter setup
- Real time processing of tilt removal and line normalization
- Imaging and displaying 16 simultaneous channels
- Zoom-in and offset scans
- Inertial motion software interface for sample positioning
- Z stepper motor interface for tip-sample approach
- Extensive image processing options
- Import data as Windows bitmaps and ACSII. Export data as TIFF and Windows bitmaps and ACSII

## ScanControl Module

- Built-in module allows user to actively control the AFM scan for integration and synchronization with external instrumentation (such as Raman spectrometers, pulsed lasers, etc.)
- Easy and intuitive graphical interface for specifying measurement points
- Possibility of taking extra ADC measurements during scan
- Possibility of sending triggers to external hardware during scan
- Possibility of running a user-defined Lab View VIs, allowing the user to perform any action or calculation during the scan

## Imaging Modules

The MV1500 supports a multitude of SPM Imaging Techniques including standard techniques such as Force vs Distance curves and a variety of special options such as Electrical Imaging, Nano Indentation, Nanolithography, SECM, PFM, Thermal Conductivity, Thermocouple Temperature Imaging, Kelvin Probe and other functional imaging possibilities.



**NANONICS  
IMAGING Ltd.**

*The Next Evolution In  
NanoCharacterization™*

RIFERIMENTO PER L'ITALIA



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