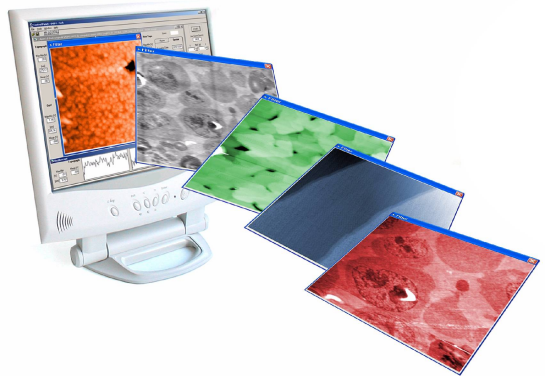
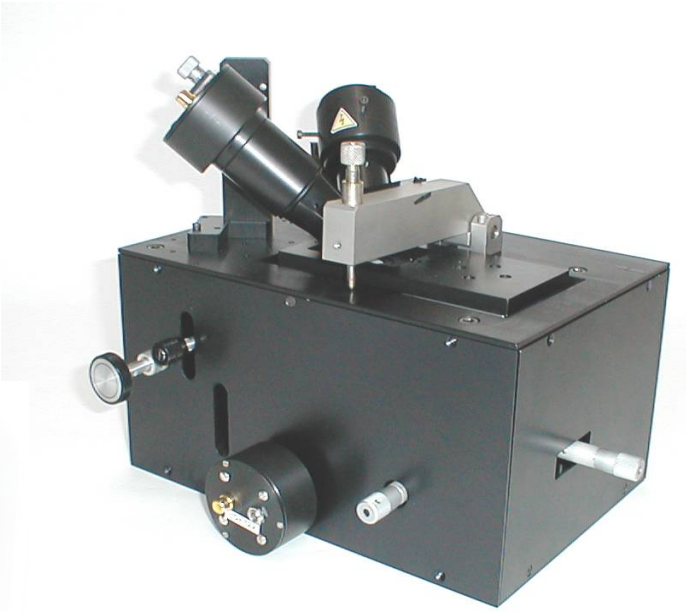
A.P.E. Research
NANOTECHNOLOGY

AREA SciencePark

TriA-SNOM Scanning Near-Field Optical Microscope

Tools for Microscopy and Nanotechnologies





TriA-SNOM Microscope

The invention and subsequent development of scanning probe microscopy (SPM) methods have produced the necessary tools for a step forward in optical measurements.

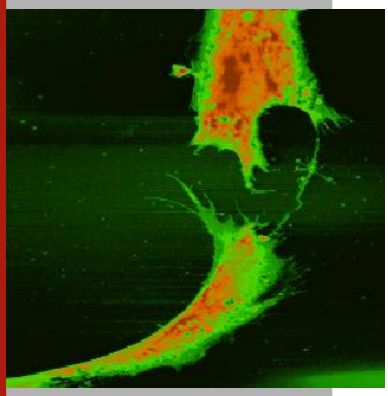
The possibility to go beyond the Abbe diffraction limit has been achieved with the Near-field light optical microscopes (SNOM). They employ SPMs precision of piezoelectric raster-scanning together with sharp probes to obtain light optical images at subwavelength resolution.

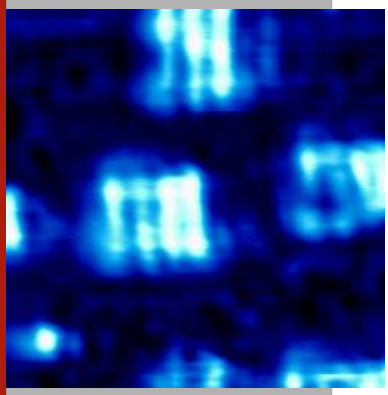
Particular care has been taken to different problems in solid state or biological applications.

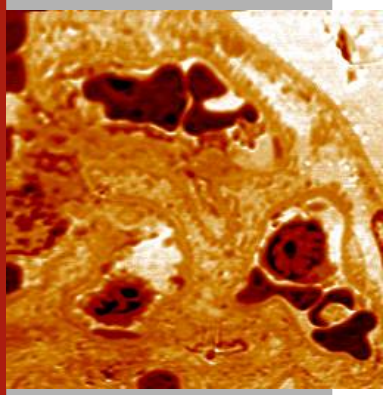
For this reason each SNOM must be tailored with a clear vision of what is going to be the main problem of interest. Our company collaborates with our customers in order to give them an instrument which could be as much as possible tuned to their needs.

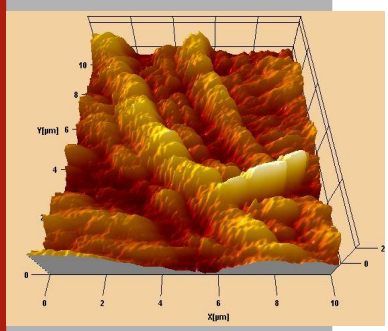
This project is the result of a collaboration between A.P.E. Research and the INFM, the Italian National Institute for the Physics of Matter.

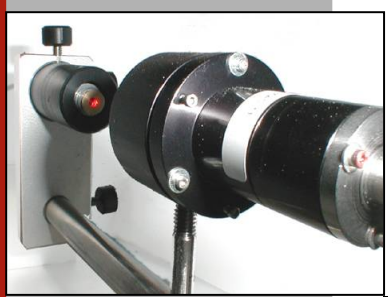
TriA-SNOM











A100-SGS SPM Stage

Scanning stage with absolute positioning system with strain gauge sensors.

Scanner technical data:

X-Y scan size: 100 x 100 µm (high voltage mode);
10 x 10 µm (low voltage mode)
Resolution high voltage mode: Closed loop: 2 nm, Open loop: 0.2 nm
Closed loop linearity: 0.1%.

Z scan size: 10 µm (high voltage mode)
1 µm (low voltage mode)
Resolution: 0.16 nm (high voltage mode), 0.02 nm (low voltage mode).

TriA-SNOM Head

SNOM Head is suitable for Simultaneous Acquisition of Optical signal (up to 3: reflection, transmission and collection mode) and Topographic signal.

Optical signals acquisition by 2 Photomultipliers.

Sample holder size: 30x30 mm;

Translator range 13 x 13 x 13 mm; servo assisted z movement.

2 Optical Vision System integrated into the SNOM head:

-Optical vision system to monitor probe approaching on the sample;

-Inverted optical microscope for Transparent sample.

A.P.E. Research suggests "Lovalite" SNOM probes.

Probe Holder is suitable for any Commercial SNOM fibers.

Dual demodulator

A.P.E. Research Dual demodulator for Optical signals acquisition.

SPMCU2-PI

SPM Control Unit

SPM Control Unit and PC (equipped with a multi input-output board) drives the scanner, data acquisition and sample motion. Tip to sample distance is controlled by ultra-low noise analog feedback, digitally driven by PC.

HVA3-PI Unit

High Voltage Amplifier

HVA is an amplifier module projected to drive TriA-SNOM Heads.

Computer and Acq. Board

Windows XP operating system; Pentium IV, 512 MB DDR SDRAM, 80 GB HDD, CD R/W, mouse, keyboard; 17 inch LCD monitor. Acquisition board and interface.

Acquisition software

Software runs under Windows XP and is composed of a multi-window applications for instrument control and data acquisition. The software comes equipped with simple filters for immediate analysis of acquired images.

Accessories

Acoustic Box with floating marble Table

Image Metrology SPIP™ data analysis software

Characteristics and technical specifications subject to change

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