



A100 AFM Atomic Force Microscope

With more than 15 years experience A.P.E. Research has developed several advanced Scanning Probe Microscope systems in order to provide the needed research tools for Universities and Research Centers active in the field of nanotechnology.

A100 AFM is a versatile high resolution atomic force microscope suited to a wide variety of applications including surface science, semiconductor technology, chemistry and polymers, optoelectronics, bioscience and medicine.

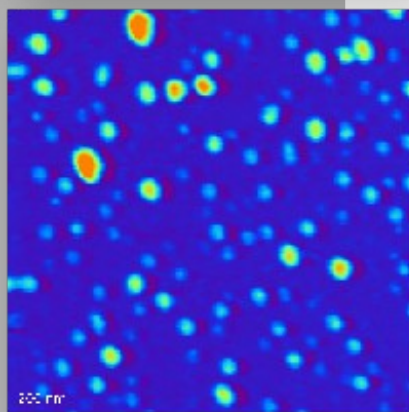
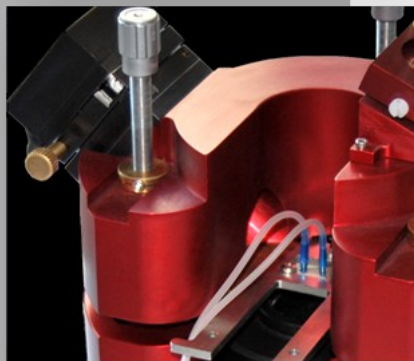
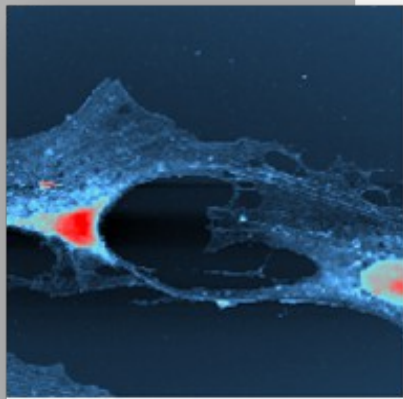
The instrument is provided with flexure scanning stage in order to eliminate piezotube typical creep and hysteresis problems. The flexure scanning stage guarantees a high planarity for customers interested in large area imaging in air or liquid. The completely decoupled XY & Z scanning system is guaranteeing the highest positioning accuracy without any lateral translation during tip sample approach procedure.

The rigid mechanical design ensures low noise and high stability during all scanning process providing sub-nanometer resolution on large scanning areas. With absolute positioning functionality the system is suitable for precise Nanolithography applications as well for I-V characterization and Electrochemical applications.

The AFM Head provides excellent open access to the sample and probe for easy and fast exchange operations, as well for the easy insertion of different electrodes and sensors. The optical set-up coupled with high definition video system gives a direct, real – time probe and sample top view for the precise probe positioning on the sample.

The proprietary SWC control software platform is a powerful tool for sophisticated imaging-data acquisition, evaluation and post-processing for all implemented techniques like AFM, STM SNOM, etc. All main system parameters are controlled and clearly displayed in real– time, giving the user the possibility to follow the acquiring operation and simultaneously monitor and adjust multiple data signal channels by a simple click.

A100 AFM can be individually configured to handle a wide variety of SPM specific measurements modes (EFM, MFM, STM, Phase Imaging, CAFM, KPM etc..). This modular structure allows the user to select and continuously improve the existing set-up according to the personal specific demands.



Key features:

- High Versatility
- Ease of Use
- Easily interchangeable Samples
- Automatic tip sample approach
- Integrated acoustic and vibration damping system
- Working modes: A100 supports major SPM scanning techniques* but not restricted to the following: *Contact AFM mode, Non-contact mode, Semi-contact mode, Phase Imaging, Force Modulation, Lateral Force Microscopy, Force Curves Analysis, Electric properties, Magnetic Force Microscopy, STM, etc.*

A100 SPM scanning system:

The system can be equipped with various type of scanners for different working ranges

Standard 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: 0.4 nm, Open loop: 0.1 nm

Closed loop linearity: 0.1%.

Z scan size:

10 μm (high voltage mode)

1 μm (low voltage mode)

Resolution: 0.1 nm (high voltage mode),

0.01 nm (low voltage mode).

*Based on specific demands other scanning ranges can be combined by the user in different configurations, we can provide higher resolution scanners on specific request **.*

AFM Head

AFM Head with holder for commercial cantilevers. The holder can be removed to easy mount cantilevers. The head also houses laser, photo-diode sensor with preamplifier.

Sample position XY range: 13 x 13 mm (different XY stages available on specific request). Z stage travel: 13 mm servo-assisted.

SPM Control System:

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. High speed and temporal precision are provided by hardware timing.

High Voltage Amplifier

HVA is an amplifier module projected to drive A-100 scanning Stage

Acquisition software

Software runs under Windows 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. The software controls all the parameters of the instrument

Accessories:

A.P.E. Research has developed additional AFM tools for specific measurements modes* (EFM, MFM, STM, Phase Imaging, CAFM, KPM Nanolithography, etc...).

* Some of the SPM techniques are requiring additional specific tools/accessories .

Characteristics and technical specifications are subject to change without notice.

** Please contact your local distributor for specific configuration.

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