

# The *PICO*Station

## Simple and precise scanning probe microscopy

The compact *PICO*Station consists of a unique, sturdy mounting combined with the versatile *ULTRA*Objective scanning probe microscope head. It is just as flexible as its big sister, the *NANO*Station II. Either as a complete initial system or as an accessory for your optical microscope, make the most of your *ULTRA*Objective and turn it into a high-resolution scanning probe microscope. The solid and very stable mounting of granite permits familiar, uncomplicated handling. The great stability means that a noise level of below 0.05 nm rms can be achieved (in connection with the optional active anti-vibration system). This extremely low level means that atomic corrugations can be seen with no difficulty.



Above: *PICO*Station with 40  $\mu\text{m}$  *ULTRA*Objective

## Measuring modes

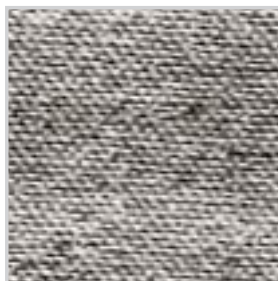


The *PICO*Station offers maximum versatility. All SPM measuring modes can be used, and the measuring head can be easily changed for new applications. The following standard measuring modes are available: contact, non-contact mode, phase contrast, field contrast for magnetic or electrical characterisations (MFM/EFM), force modulation (FM), lateral force (LFM), fluid compatibility, metrology-compatible measuring head with sensor.

Other modes available on request.

Left: Detail of the *PICO*Station

## Applications



The *PICO*Station can be used to inspect all biological or inorganic surfaces. It is even possible to inspect samples in fluids with the *ULTRA*Objective liquid immersion.

Left: 2D image of a measurement on HOPG (Highly oriented pyrolytic graphite)

## Specifications of the *PICO*Station-SPM-System

Scan range:	20 $\mu\text{m}$ x 20 $\mu\text{m}$ x 3 $\mu\text{m}$ 40 $\mu\text{m}$ x 40 $\mu\text{m}$ x 4 $\mu\text{m}$ 80 $\mu\text{m}$ x 80 $\mu\text{m}$ x 5 $\mu\text{m}$ hardware linearized scan motion in X-Y-direction (optional in Z-direction)	Digital input resolution:	16 bit A/D
Noise level:	0.05 nm rms in vertical direction (Z)	Digital output resolution:	16 bit D/A
Lateral accuracy:	typically within 1%, closed loop scanning	Output voltage:	$\pm 165$ V, mit 2 $\mu\text{V}$ rms
Vertical resolution:	< 0.1 nm	Input channels:	max. 4 simultaneous
Scan speed:	typ. 1 to 10 Hz	External inputs:	max. 3 high speed with 16 bit resolution
Detection principle:	fiber optic interferometry, noise level < 0.01 nm rms	Image size:	freely selectable, from 128 to 1024 pixels, even rectangular sizes
Tips:	silicon tips, various types	Processing:	internal 32 bit DSP, typ. 50 MHz
Tip change:	adjustment free	Computer interface:	USB (standard universal serial bus)
		Operating system:	MS-Windows 2000®
		including high resolution stepper motor for automatic sample approach	