



Being Nano-Instruments

CSPM 5500

Scanning Probe
Microscope





Performance

- Multi-function: AFM, LFM, STM, Conductive AFM, MFM and EFM;
- Multi-Mode: Contact Mode, Tapping Mode, Phase Imaging and Lift Mode;
- SPM in liquid and Environmental Control SPM;
- Real-time temperature and humidity detecting;
- Force Analysis: I-V Curve, I-Z Curve, Force Curve and Amplitude Curve;
- Nano-Processing and manipulating: Lithography Mode and Vector Scan Mode;
- Fast automatically tip-engaging
- Simply change the tipholder to switch between STM and AFM;
- Full digital control, auto system status recognition;
- Sample movement system inside;
- With a 32-bit Digital Signal Processor (DSP) from Texas Instruments, 4.8 billion times of calculation per second can be achieved;
- Controller and Computer connected through a 10M/100M Fast Ethernet;
- Large sample size: up to $\phi 45\text{mm}$, 30mm thick;
- Online Control Software and offline Image Processing Software for Windows;
- Trace-Retrace scan, Back-Forward scan;
- Online real-time 3D image;
- Automatically Brightness and Contrast refresh;
- Data can be loaded out for further analysis;
- Nano-Movie function: Continuous data collection, storage and replay;
- Multi-Analysis: Granularity and Roughness;
- Tip Estimation and Image Re-construction;
- Modularized design for convenience of maintenance and future upgrade;
- Second display monitor and optical microscope system attachable;



Specifications

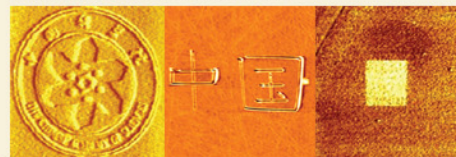
Functions	Atomic Force Microscope (AFM) which has full coverage of Contact Mode, Tapping Mode, Phase Imaging and Lift Mode; Lateral Force Microscope (LFM); Magnetic Force Microscop (MFM); Scanning Tunneling Microscope (STM); Conductive AFM, SPM in liquid, Environmental Control SPM; Nano-Processing System including Lithography Mode and Vector Scan Mode;
Resolution	AFM: 0.26nm lateral, 0.1nm vertical; STM: 0.13nm lateral, 0.01nm vertical;
Technical Parameters	Current Sensitivity: $\leq 10\text{pA}$; Force Sensitivity: $\leq 5\text{pN}$; Image Pixels: 128×128 , 256×256 , 512×512 , 1024×1024 , 2048×2048 ; Scan Angle: $0-360^\circ$ adjustable; Scan Rate: 0.1-100Hz adjustable; Pre-setting Tunneling Current: 0.001-10nA Bias: -10-+10V; Temperature Sensitivity: 0.1°C , Humidity Sensitivity: 0.5%RH
Electronics	CPU: 32-bit Digital Signal Processor (DSP) at 600MHz from Texas Instruments; DAC: 20 channels of 16-bit DAC; ADC: 20 channels of 16-bit ADC; Communication Interface: 10M/100M Fast Ethernet;
Mechanics	Sample Size: Up to $45\text{mm} \times 45\text{mm}$, 30mm thick; Engagement: Auto engagement with travel distance of 30mm and precision of 50nm
Software	Online Control Software and offline Image Processing Software for Windows Vista/XP/2000/9x;

Introduction



● **CSPM5500** Scanning Probe Microscope is one of Being Nano-Instruments' latest, original, most innovated, mainstay designs and remains a highly dependable unit. The unit has a full coverage of SPM techniques of STM, AFM, LFM, Conductive AFM, MFM, EFM, Environmental Control SPM and Nano-Lithography...And the unit is designed to provide images from atomic scale to 100 μ m in size.

● **CSPM5500** SPM system is designed for multi-function of Nanolithography, including Graphical-nano-lithography, vector scan and DPN.



TMS320C642
DSP inside

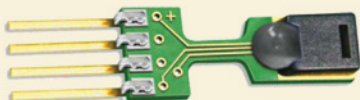
● With a Digital Signal Processor (DSP) TMS320C642 inside **CSPM5500** SPM system, which shows high performance from Texas Instruments, 4.8 billion times of calculation per second can be achieved. Therefore **CSPM5500** can handle complicated multi-functional tasks efficiently.

spm/DNA
realtime software kernel

● A real-time operating system of Spm/DNA is embedded in **CSPM5500** SPM system. (Spm/DNA is the trademark of Ben Yuan Nano-Instruments.)

By Spm/DNA system, the stability and flexibility of the whole facility are ensured. The unique design of the Spm/DNA brings more security of the whole system. For example, tip can be protected when an emergency such as computer breakdowns and power shutdowns.

● A real-time environmental temperature and humidity detecting system is embedded in **CSPM5500** SPM system.



● **Easy** system installation by simply connecting the SPM controller and the computer with a Ethernet interface which has superiorities of:

1. Faster and large signal transmission;
2. Better compatibility, a laptop or a desktop computer can be used;
3. The electrical interference can be eliminated;
4. Up to 100-meter long connection, unlimited connecting distance on LAN or Internet;



● A two-level sample movement system is embedded in **CSPM5500** SPM to provide precise tip-sample location.

CSPM
5500

Scanning Probe
Microscope

For more details,

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