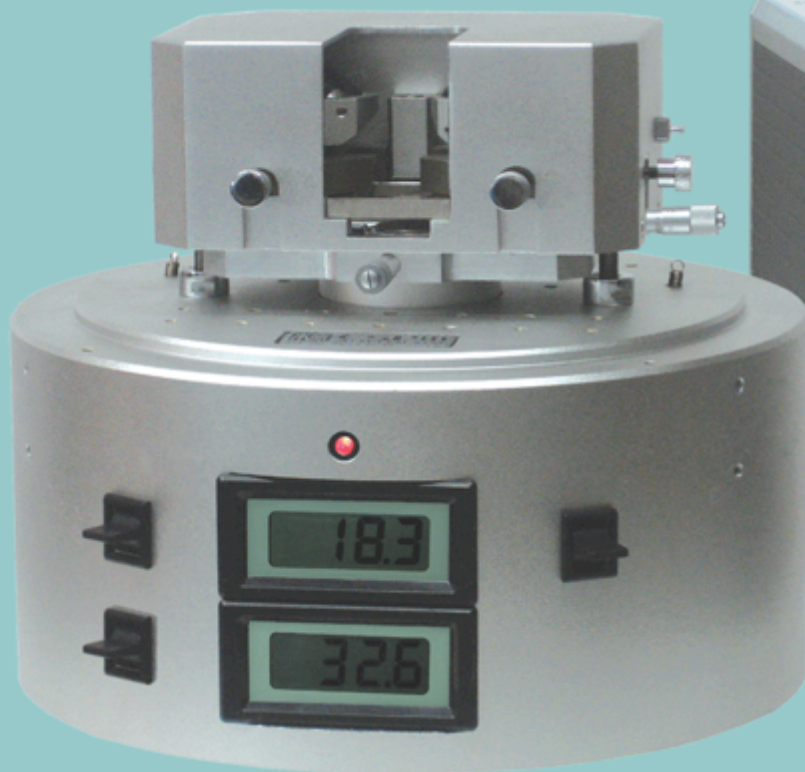


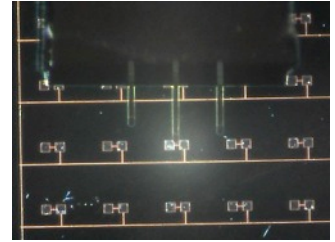
CN6000

Scanning Probe Microscope



Performance

- Multiple-functions: AFM, LFM, STM, Conductive AFM, MFM and EFM;
- Multiple-Modes: Contact Mode, intermittent-contact Mode, Phase Imaging and Lift Mode;
- SPM in liquid and with Environmental Control;
- Real-time temperature and humidity monitoring;
- Force Analysis: I-V Curves, I-Z Curves, Force Curves and Amplitude Curves;
- Nano-Processing and manipulation: Lithography Mode and Vector Scan Mode;
- Fast, automatic tip-sample approach
- Simply change the tipholder to switch between STM and AFM;
- Full digital control, auto system status recognition;
- Sample movement system;
- Core processes run by a 32-bit Digital Signal Processor (DSP) from Texas Instruments;
- Controller and Computer connected via 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 display;
- Automatic 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-size Estimation and Image Re-construction;
- Modularized design for convenience of maintenance and future upgrade;
- Second display monitor and optical microscope system attachable;



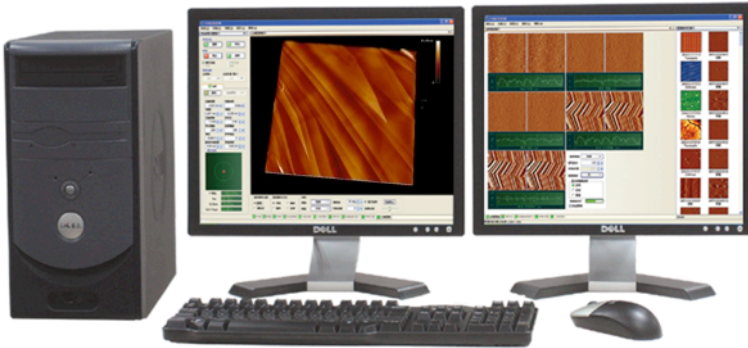
Top view optics allows precise tip-sample positioning



Specifications

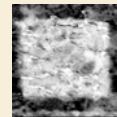
Functions	Atomic Force Microscope (AFM) which can operate in Contact-Mode, intermittent-contact Mode, Phase Imaging and Lift-Mode; Lateral Force Microscopy (LFM); Magnetic Force Microscopy (MFM); Scanning Tunneling Microscopy (STM); Conductive AFM, SPM in liquid, Environmental Control SPM; Nano-Processing 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 \times 128, 256 \times 256, 512 \times 512, 1024 \times 1024, 2048 \times 2048; Scan Angle: 0-360 $^\circ$ adjustable; Scan Rate: 0.1-100Hz adjustable; Tunneling Current range: 0.001-10nA Bias: -10V to +10V; Temperature Sensitivity: 0.1 $^\circ\text{C}$, 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 45mm \times 45mm, 30mm thick; tip-sample approach: Auto approach 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



The CN6000 Scanning Probe Microscope offers a wide range of SPM techniques including STM, AFM, LFM, Conductive AFM, MFM, EFM, Environmental-Control SPM and Nano-Lithography...The microscope is designed to enable imaging from the atomic scale up to large-scale areas as big as 100µm.

The CN6000 SPM system is designed for multiple techniques of Nanolithography and surface modification, including Graphical-nanolithography, vector scan and DPN.

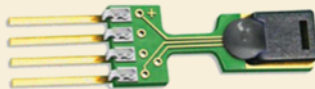


TMS320DM642
DSP inside

With a Digital Signal Processor (DSP) TMS320C642 inside, the CN6000 SPM system, which shows high performance from Texas Instruments, 4.8 billion calculations per second can be achieved. Therefore the CN6000 can handle complicated multi-functional tasks efficiently.



A real-time environmental temperature and humidity monitoring system is embedded in the CN6000 SPM.



A real-time operating system (RTOS) is embedded in the CN6000 SPM control electronics.

With the RTOS, the stability and flexibility of the microscope is ensured. For example, the tip can be protected in emergencies such as computer breakdown and power shutdowns.

Simple system integration - the computer and controller are connected via an Ethernet interface which has the advantages of:

1. High-speed signal transmission;
2. Compatibility, a laptop or a desktop computer can be used;
3. Electronic interference can be eliminated;
4. Up to 100-meter long connection, unlimited connection distance on LAN or Internet;



A two-level manipulation system is embedded in the CN6000 to provide precise tip-sample location. The tip can be moved using an x-y stage, and the sample can be moved using a built-in interlial sliding mechanism

