

Atomic Force Microscope

Manufacturer: Bruker

Model: Dimension Icon

Descriptions

Atomic force microscopy (AFM), is a high-resolution microscopic technique where the microscopic information is gathered by "feeling" the surface with a mechanical probe. Piezoelectric scanners facilitate (in x, y and z directions) tiny, but accurate, movements to enable very precise scanning. With demonstrated resolution on the order of fractions of a nanometer, more than 1000 times better than the optical diffraction limit, AFM has become a standard technique for surface analysis of materials.

Specifications

X-Y scan range	90 μ m x 90 μ m typical, 85 μ m minimum
Z range	10 μ m typical in imaging and force curve modes, 9.5 μ m minimum
Vertical noise floor	<30pm RMS in appropriate environment typical imaging bandwidth (up to 625Hz)
X-Y position noise (closed-loop)	\leq 0.15nm RMS typical imaging bandwidth (up to 625Hz)
X-Y position noise (open-loop)	\leq 0.10nm RMS typical imaging bandwidth (up to 625Hz)
Z sensor noise level (closed-loop)	35pm RMS typical imaging bandwidth (up to 625Hz); 50pm RMS, force curve bandwidth (0.1Hz to 5kHz)
Integral nonlinearity (X-Y-Z)	<0.5% typical
Sample size/holder	210mm vacuum chuck for samples, \leq 210mm diameter, \leq 15mm thick
Motorized position stage (X-Y axis)	180mm x 150mm inspectable area; 2 μ m repeatability, unidirectional; 3 μ m repeatability, bidirectional
Microscope optics	5-megapixel digital camera; 180 μ m to 1465 μ m viewing area; Digital zoom and motorized focus
Controller	NanoScope V
Workstation	Integrates all controllers and provides ergonomic design with immediate physical and visual access
Vibration isolation	Integrated, pneumatic
Acoustic isolation	Operational in environments with up to 85dBC continuous acoustic noise
AFM modes	Standard: ScanAsyst, PeakForce Tapping, TappingMode (air), Contact Mode, Lateral Force Microscopy, PhaseImaging, Lift Mode, MFM, Force Spectroscopy, Force Volume, EFM, Surface Potential, Piezoresponse Microscopy,

Instruction Manual & Analysis software: available upon request from laboratory.

