



Nanosurf NaniteAFM

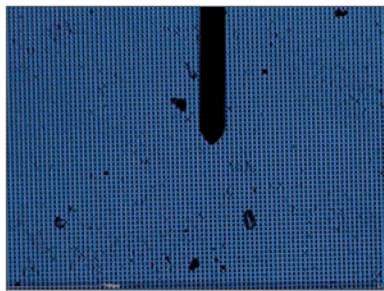
Mountable AFM for Industrial Applications



Main Features:

- Mountable
- Compact
- Robust
- High resolution camera

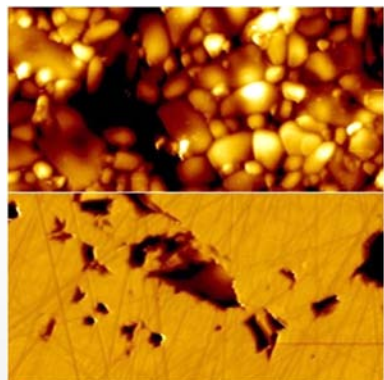
NaniteAFM — Mountable AFM for Industrial Applications



Top view image by the high resolution NaniteAFM video camera showing the AFM cantilever on a test grid. The individual structures of the grid are approximately 5 µm × 5 µm in size.



Simultaneous side view image of the same cantilever and sample. Availability of side view is ideal during a first coarse approach.



Unpolished (top) and polished (bottom) ceramic plate. RMS roughness was determined to be 570 and 310 nm, respectively. Polishing scratches are clearly visible in the bottom image. This quantitative and qualitative AFM information can help optimize the polishing process and its QC. Image size: 90 µm × 90 µm.

The unparalleled small footprint of the NaniteAFM scan head makes it the ideal atomic force microscope for integration into automated industrial environments. With a resolution below one nanometer, the NaniteAFM is capable of detecting and visualizing even the smallest surface structures. Simple handling and a multitude of integration possibilities bring your product analyses to a whole new level. Check coatings for intended structures or irregularities alike, or use additional AFM measuring modes to detect features not visible in topography alone. Its ease of use and reproducibility make the NaniteAFM the perfect quality control tool for precision engineering, production process optimization, or semiconductor fabrication — just to name a few.

NaniteAFM Scan Heads		
	Large Scan	High Resolution
Maximum scan range ^{(1) (3)}	110 µm	10 µm
Maximum Z-range ⁽¹⁾	22 µm	2.0 µm
Drive resolution Z	0.34 nm	0.027 nm
Drive resolution XY ⁽²⁾	1.7 nm	0.15 nm
XY-linearity mean error	< 0.6%	< 0.6%
Z-measurement noise (RMS, Basic mode)	0.4 nm (max. 0.55 nm)	0.07nm (max. 0.2 nm)
Z-measurement noise (RMS, Dynamic mode)	0.3 nm (max. 0.55 nm)	0.04 nm (max. 0.07 nm)
Mounting	Removable scan head (86 × 45 × 61 mm) with 3-point quick-lock mounting plate, mountable to Nanosurf or custom stages	
Alignment of cantilever	Automatic self adjustment	
Automatic approach range	4.5 mm (2 mm below focal plane of internal optics)	
Sample observation	Dual USB video camera system (simultaneous top and side view): – Top view: 3.1 Mpixel color CMOS camera 4× optical magnification (+digital zoom by software) Maximum field of view ≈ 1.75 mm × 1.25 mm Maximum resolution ≈ 2.1 µm Numerical aperture ≈ 0.115 – Side view: 1.3 Mpixel monochrome CMOS camera	
Sample illumination	White LEDs (brightness 0–100%); axial illumination for top view	
<small>(1) Manufacturing tolerances are ±10% for large scan heads and ±15 % for high resolution scan heads (2) Calculated by dividing the maximum range by 16 bits (3) Maximum scan range at 45° scan rotation</small>		

Compatible cantilevers
<p>Cantilevers for the NaniteAFM scan head should have all of the following properties:</p> <ul style="list-style-type: none"> • Grooves that are compatible with the alignment chip used by NanoSensors, NanoWorld, Applied Nanostructures, BudgetSensors, and VISTAprobes • A nominal length of 225 µm or more, and a width of 40 µm or more • A coating on the backside of the cantilever to reflect (infra)red light



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