

SuperSharpSilicon™ Magnetic Force Microscopy - Reflex Coating

The NANOSENSORS™ SSS-MFMR AFM probe is optimized for high resolution magnetic force imaging. The SuperSharpSilicon™ AFM tip basis combined with a very thin hard magnetic coating result in an extremely small radius of the coated AFM tip and a high aspect ratio at the last few hundred nanometers of the AFM tip - the essential demands for high lateral resolution down to 20 nm in ambient conditions.

Due to the low magnetic moment of the AFM tip the sensitivity to magnetic forces is significantly decreased if compared to standard MFM probes but the disturbance of soft magnetic samples is also reduced.

The hard magnetic coating on the AFM tip is characterized by a coercivity of app. 125 Oe and a remanence magnetization of app. 80 emu/cm³ (these values were determined on a flat surface).

The SPM probe offers unique features:

- hard magnetic coating on the tip side (coercivity of app. 125 Oe, remanence magnetization of app. 80 emu/cm³)
- effective magnetic moment 0.25x of standard AFM probes
- metallic electrical conductivity
- guaranteed AFM tip radius of curvature < 15 nm
- magnetic resolution better than 25 nm
- Al coating on detector side of AFM cantilever enhancing the reflectivity of the laser beam by a factor of about 2.5
- alignment grooves on backside of silicon holder chip
- precise alignment of the AFM cantilever position (within +/- 2 µm) when used with the Alignment Chip
- compatible with **PointProbe® Plus XY-Alignment Series**

As both coatings are almost stress-free the bending of the AFM cantilever due to stress is less than 3.5% of the AFM cantilever length. For enhanced signal strength the magnetization of the AFM tip by means of a strong permanent magnet prior to the measurement is recommended.

This AFM probe features alignment grooves on the back side of the holder chip. These grooves fit to the NANOSENSORS Alignment Chip.

Cantilever data:

Property	Nominal Value	Specified Range
Resonance Frequency [kHz]	75	45 - 115
Force Constant [N/m]	2.8	0.5 - 9.5
Length [µm]	225	215 - 235
Mean Width [µm]	28	20 - 35
Thickness [µm]	3	2 - 4

Order codes and shipping units:

Order Code	AFM probes per pack	Data sheet
SSS-MFMR-10	10	of all probes
SSS-MFMR-20	20	of all probes
SSS-MFMR-50	50