

SuperSharpSilicon™ - High Quality-Factor - Magnetic Force Microscopy - Reflex Coating

The NANOSENSORS™ SSS-QMFMR AFM probe combines the high resolution performance of the SuperSharpSilicon™ magnetic force microscopy AFM probe with the high mechanical quality factor under ultra high vacuum conditions of the Q30K-Plus-Series. An extremely small radius of the coated AFM tip, a high aspect ratio at the last few hundred nanometers of the AFM tip and a Q-factor of more than 35,000 facilitates outstanding lateral resolution in the magnetic force image and high operation stability under UHV conditions.

Due to the low magnetic moment of the AFM tip the sensitivity to magnetic forces is decreased if compared to standard MFM probe 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
- excellent mechanical Q-factor under UHV conditions for high sensitivity
- 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
Quality Factor	30000	30000 - 50000

Order codes and shipping units:

Order Code	AFM probes per pack	Data sheet
SSS-QMFMR-10	10	of all probes