

PointProbe® Plus XY-alignment Non-Contact / Soft Tapping Mode-Reflex Coating

The XY-auto-alignment AFM probes for Non-Contact / Soft Tapping mode application with a Reflective coating extend the plug-and-fit alignment concept of the Alignment Chip (ALIGN) to 150µm short AFM cantilevers optimized for non-contact / soft tapping mode applications. AFM probe exchange with an AFM tip repositioning accuracy of better than $\pm 8 \mu\text{m}$ is possible for all AFM probes of the XY-alignment AFM probes series - independent of their AFM cantilever length. This series is adjusted to the tip position of AFM probes with an AFM cantilever length of 225 µm.

As a matter of course, the features of the proven PointProbe® Plus series such as high application versatility, compatibility with most commercial SPMs, extremely low and reproducible tip radius as well as a precisely defined AFM tip shape are maintained. The typical AFM tip radius of less than 7 nm and the minimized variation in AFM tip shape provide more reproducible images and enhanced resolution.

NANOSENSORS™ PPP-XYNCSTR AFM probes are designed for non-contact or soft tapping mode imaging. The combination of soft AFM cantilever and fairly high resonance frequency enables stable and fast measurements with reduced AFM tip-sample interaction. This feature significantly reduces AFM tip wear and sample wear at the same time.

The AFM probe offers unique features:

- guaranteed AFM tip radius of curvature < 10 nm
- AFM tip height 10 - 15 µm
- highly doped silicon to dissipate static charge
- Al coating on detector side of AFM cantilever
- chemically inert
- high mechanical Q-factor for high sensitivity
- AFM tip repositioning accuracy of better than $\pm 8\mu\text{m}$ (in combination with Alignment Chip)

The reflective coating is an approximately 30 nm thick aluminum coating on the detector side of the AFM cantilever which enhances the reflectivity of the laser beam by a factor of about 2.5. Furthermore it prevents light from interfering within the AFM cantilever. As the coating is nearly stress-free the bending of the AFM cantilever due to stress is less than 2 degrees.

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]	160	75 - 265
Force Constant [N/m]	7.4	1.2 - 29
Length [µm]	150	140 - 160
Mean Width [µm]	27	19.5 - 34.5
Thickness [µm]	2.8	1.8 - 3.8

Order codes and shipping units:

Order Code	AFM probes per pack	Data sheet
PPP-XYNCSTR-10	10	of all probes
PPP-XYNCSTR-20	20	of all probes
PPP-XYNCSTR-50	50