

Diamond Coated Tip - Non-Contact/Tapping Mode - Long Cantilever - Reflex Coating

NANOSENSORS™ DT-NCLR AFM probes are designed for non-contact mode or tapping mode AFM (also known as: attractive or dynamic mode). The NCL type is offered as an alternative to **NANOSENSORS™** high frequency non-contact probee (NCH). The NCL type AFM cantilever is recommended if the feedback loop of the microscope does not accept high frequencies (400 kHz) or if the detection system needs a minimum AFM cantilever length > 125 µm. Compared to the high frequency non-contact type NCH the maximum scanning speed is slightly reduced. This AFM probe combines high operation stability with outstanding sensitivity and fast scanning ability.

For applications that require hard contact between AFM tip and sample this sensor offers a real diamond tip-side coating. This coating features extremely high wear resistance due to the unsurpassed hardness of diamond. The typical macroscopic AFM tip radius of curvature is between 100 and 200 nm. Nanoroughnesses in the 10 nm regime improve the resolution on flat surfaces.

The AFM probe offers unique features:

- real diamond coating
- AFM tip height 10 - 15 µm
- high mechanical Q-factor 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**

The DT Diamond coating is an approximately 100 nm thick coating of polycrystalline diamond on the tip-side of the AFM cantilever leading to an unsurpassed hardness of the AFM tip. The raman spectrum of the coating verifies the real diamond coating.

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]	210	155 - 275
Force Constant [N/m]	72	34 - 142
Length [µm]	225	215 - 235
Mean Width [µm]	37.5	30 - 45
Thickness [µm]	7	6 - 8

Order codes and shipping units:

Order Code	AFM probes per pack	Data sheet
DT-NCLR-10	10	of all probes
DT-NCLR-20	20	of all probes
DT-NCLR-50	50