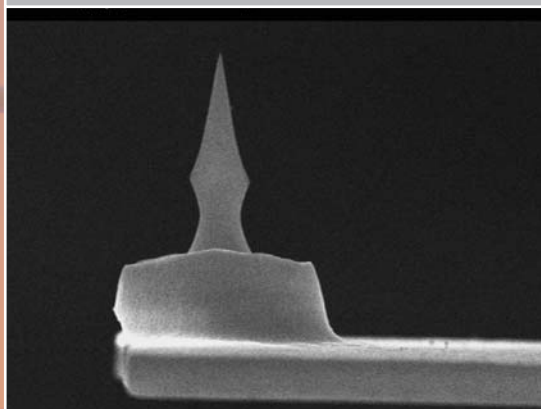
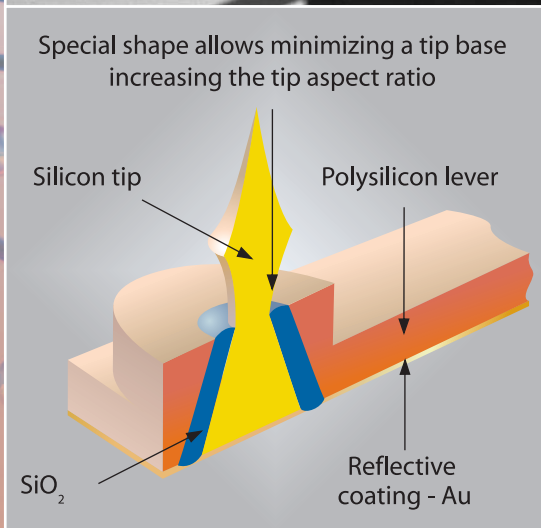
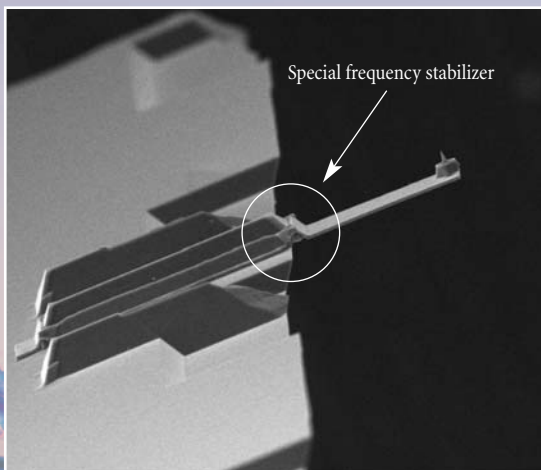


ETALON

the next generation of AFM probes



Advanced features:

- High aspect ratio tip
- Resonant frequency is specified with high accuracy
- Enhanced reflection
- Economic price

Why is the tip aspect ratio so high?

Because the probe geometry allows to reduce significantly the tip base diameter while maintaining the tip height.

In addition the tip itself is sharp - typical curvature radius is 10 nm.

How is the resonance frequency specified with such high accuracy?

Because the patented technology applied for cantilever manufacturing allows strict control of the lever thickness ($\pm 0.07 \mu\text{m}$ only!).

Moreover a special frequency stabilizer guarantees a high accuracy of the lever length ($\pm 2 \mu\text{m}$).

Why is the reflection so high?

Because the cantilever back-side is almost atomically smooth.

Roughness* is less than 2nm!

Reflection is further increased by Au coating.

*RMS on the area $20 \times 20 \mu\text{m}$ as measured by AFM



Contact us at tips@ntmdt.ru or visit www.ntmdt-tips.com for more information

The new High Accuracy "ETALON" probe series have polysilicon levers with silicon high resolution tips. Due to the technology used for lever manufacturing they have very reproducible parameters that leads to exact values for probe resonant frequency and force constant (typical dispersion $\pm 10\%$ / $\pm 20\%$).

Moreover the new High Accuracy "ETALON" probes have low noise when operating in contact and noncontact AFM modes. It is possible due to the fact that the polysilicon material in the lever is softer than the silicon one usually used for probes production. Polysilicon levers have a shorter length compared to silicon probes at the same force constant value.

High Accuracy "ETALON" probes have high aspect ratio silicon tips (cone angle $\leq 22^\circ$) with a typical curvature radius of 10nm.

Comparison between polysilicon and silicon probes

Comparative parameters	Polysilicon	Silicon
Thickness deviation	$\pm 0.07\mu\text{m}$	$\pm 0.3\mu\text{m}$
Roughness of reflective surface	2nm	20nm
Lever material	Soft, flexible	Fragile after dopping
Resonant frequency	Typical dispersion $\pm 10\%$	Till $\pm 100\%$
Force constant	Typical dispersion $\pm 20\%$	Till $\pm 100\%$

Unique color and NT-MDT logo on each cantilever chip

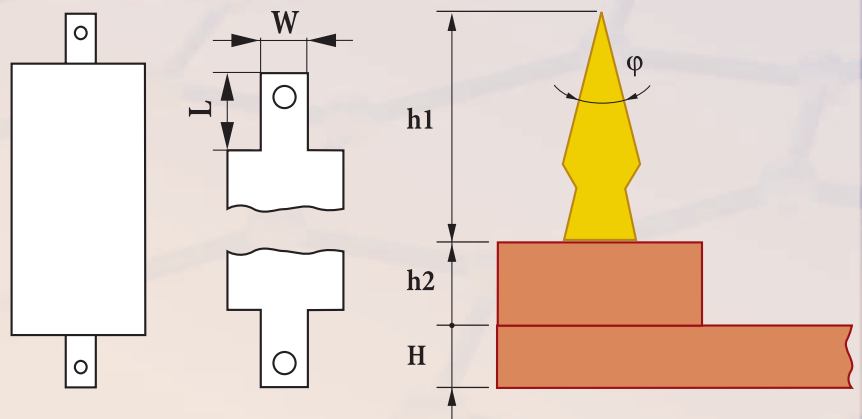


High Accuracy NONCONTACT "ETALON" probes HA_NC series

- Standard chip size: 1.6x3.6x0.45 mm.
 - High reflective Au coating.
 - Typical curvature radius of a tip: 10 nm.
 - Total tip height : 9–16 μm .
 - Each chip has two RECTANGULAR springs.
 - Recommended for noncontact/semicontact modes.
 - Packaged in GelPak® boxes.
- GelPak® is a registered trade mark of Vichem Corporation

Specification for HA_NC probes

Chip thickness	0.45 mm
Reflective side	Au
Spring number	2
Tip height h1	5–10 μm
Tip base height h2	4–6 μm
Ratio h1/h2	>1
Tip aspect ratio	5:1
Cone angle φ	$\leq 22^\circ$
Curvature radius of a tip	typical 10 nm



Cantilever series	Spring	Cantilever length, $L \pm 2\mu\text{m}$	Cantilever width, $W \pm 3\mu\text{m}$	Cantilever thickness H, μm			Resonant frequency, kHz		Force constant, N/m	
				min	typical	max	Nominal	Typical dispersion	Nominal	Typical dispersion*
HA_NC	A	87	32	1.68	1.75	1.82	200	$\pm 10\%$	5.8	$\pm 20\%$
	B	117	32	1.68	1.75	1.82	120	$\pm 10\%$	3.4	$\pm 20\%$

* at the similar value of Q-factor (about 250)

www.ntmdt-tips.com

Order NT-MDT accessories via on-line web shop www.ntmdt-tips.com

A broad choice of SPM probes, calibration standards and test samples is available.

Exclusively from NT-MDT - the famous grating TGT1 for tip characterization, super sharp DLC tips and PTB-traceable certified gratings.