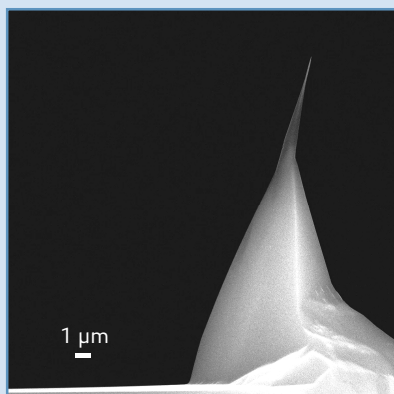
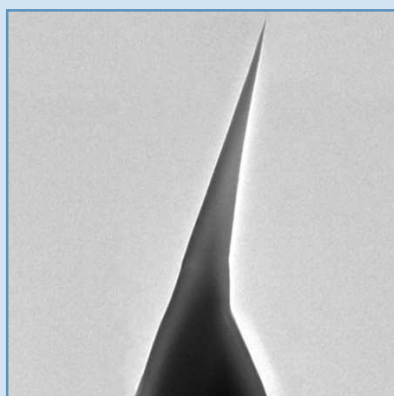


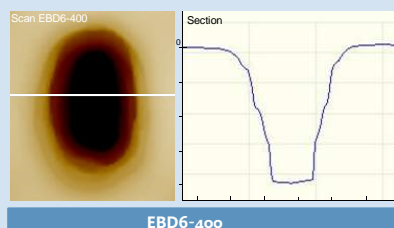
Provided with  
**TrueDimensions**  
Online access to key probe  
parameters for every  
individual tip



EBD6-400A side view SEM image.



Side view TEM image explicitly revealing the EBD6-400A tip shape uniformity and homogeneity.



EBD6-400

Trench scan (left) and the corresponding depth profile (right) measured with an EBD6-400A AFM tip showing accurate feature characteristics.

Tapping Mode, 256x256, scan rate 0.2 Hz.

## Type: EBD8-600A / EBD6-400A / EBD4-200A EBD2-100A / EBD3D2-100A

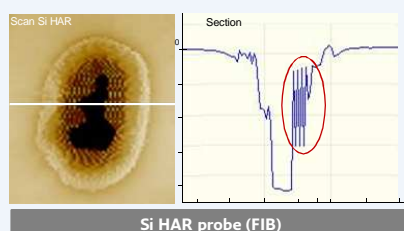
### High performance replacement for FIB silicon AFM tips

Extreme aspect ratio EBD AFM tip solutions for extended depth profiling capabilities combine the mechanical stability of a precisely fabricated conical shape and the durability of high-density diamond-like carbon for enhanced and long-lasting tip performance.

### Features

- **Extreme aspect shape.** 2000 nm to 8000 nm long AFM tips with an aspect ratio up to >10 for extended depth profiling.
- **Precise orientation.** Tilt compensated for enhanced feature bottom accessibility and reliable high-resolution inspection of steep structures.
- **Excellent stability.** Conical shape optimized for accurate measurement performance even on sharpest feature edges.
- **Improved throughput.** Outstanding tip material durability for enhanced tip lifetime and reduced cost per measurement.
- **Quality guaranteed.** 100% quality control for every individual tip. Online datasheets including individual dimensional values available 24/7 via QR code.

### Application example



Si HAR probe (FIB)

AFM trench recorded with a state-of-the-art Si HAR tip: both the scan (left) and the corresponding profile (right) exhibit considerable dithering on trench edges (red circle). Tapping Mode, 256x256, scan rate 0.2 Hz.

nanotools Extreme Aspect Ratio AFM tips are specially designed and fabricated to overcome inspection accuracy limitations arising from tip-sample sidewall interactions. This effect becomes critical especially on feature discontinuities such as trench edges (see image on the left recorded with an EBD6-400A).

NT\_EBD8-600\_v0010  
NT\_EBD6-400\_v0010  
NT\_EBD4-200\_v0020  
NT\_EBD2-100\_v0010  
NT\_EBD2-100\_v0020

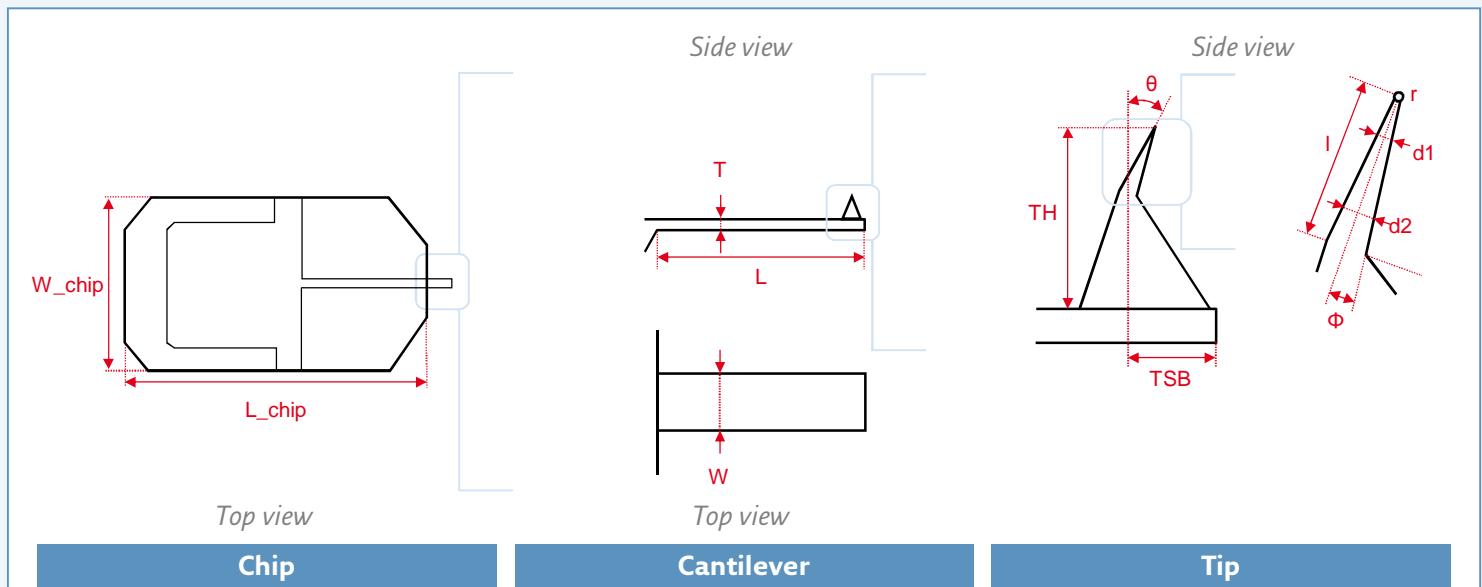


## Technical specifications

Part number	NT_EBD8-600_v0010	NT_EBD6-400_v0010	NT_EBD4-200_v0020	NT_EBD2-100_v0010	NT_EBD2-100_v0020
<b>Tip</b>					
Length / l	8000 nm (6000-8000 nm)	6000 nm (4000-6000 nm)	4000 nm (3000-4000 nm)	2000 nm (2000-3000 nm)	2000 nm (2000-3000 nm)
Width / d <sub>1</sub>	100 nm <sup>[1]</sup> (80-120 nm)	100 nm <sup>[1]</sup> (80-120 nm)	100 nm <sup>[1]</sup> (80-120 nm)	100 nm <sup>[2]</sup> (90-110 nm)	100 nm <sup>[2]</sup> (90-110 nm)
Width / d <sub>2</sub>	600 nm <sup>[3]</sup> (580-620 nm)	400 nm <sup>[4]</sup> (380-420 nm)	200 nm <sup>[5]</sup> (180-220 nm)	n/a	n/a
Half cone angle / $\Phi$	<3° (AR>10)	<3° (AR>10)	<3° (AR>10)	<5° (AR>6)	<5° (AR>6)
Sharpness / r	<5 nm (<10 nm)	<5 nm (<10 nm)	<5 nm (<10 nm)	<5 nm (<10 nm)	<5 nm (<10 nm)
Tilt compensation / $\theta$	13° ( $\pm 1^\circ$ )	13° ( $\pm 1^\circ$ )	13° ( $\pm 1^\circ$ )	13° ( $\pm 1^\circ$ )	3° ( $\pm 1^\circ$ )
Total tip height / TH	21 $\mu$ m (18-23 $\mu$ m)	19 $\mu$ m (15-20 $\mu$ m)	19 $\mu$ m (15-20 $\mu$ m)	17 $\mu$ m (12-18 $\mu$ m)	17 $\mu$ m (12-18 $\mu$ m)
Tip set back / TSB	15 $\mu$ m ( $\pm 10$ $\mu$ m)	15 $\mu$ m ( $\pm 10$ $\mu$ m)	15 $\mu$ m ( $\pm 10$ $\mu$ m)	15 $\mu$ m ( $\pm 10$ $\mu$ m)	15 $\mu$ m ( $\pm 10$ $\mu$ m)
<b>Cantilever</b>					
Material	Si	Si	Si	Si	Si
Shape	NT-RTESPA	NT-RTESPA	NT-RTESPA	NT-RTESPA	NT-RTESPA
Length / L	120 $\mu$ m ( $\pm 5$ $\mu$ m)	120 $\mu$ m ( $\pm 5$ $\mu$ m)	120 $\mu$ m ( $\pm 5$ $\mu$ m)	120 $\mu$ m ( $\pm 5$ $\mu$ m)	120 $\mu$ m ( $\pm 5$ $\mu$ m)
Width / W	30 $\mu$ m ( $\pm 2$ $\mu$ m)	30 $\mu$ m ( $\pm 2$ $\mu$ m)	30 $\mu$ m ( $\pm 2$ $\mu$ m)	30 $\mu$ m ( $\pm 2$ $\mu$ m)	30 $\mu$ m ( $\pm 2$ $\mu$ m)
Thickness / T	4.4 $\mu$ m ( $\pm 0.5$ $\mu$ m)	4.4 $\mu$ m ( $\pm 0.5$ $\mu$ m)	4.4 $\mu$ m ( $\pm 0.5$ $\mu$ m)	4.4 $\mu$ m ( $\pm 0.5$ $\mu$ m)	4.4 $\mu$ m ( $\pm 0.5$ $\mu$ m)
Force constant* / k	40 N/m ( $\pm 20$ N/m)	40 N/m ( $\pm 20$ N/m)	40 N/m ( $\pm 20$ N/m)	40 N/m ( $\pm 20$ N/m)	40 N/m ( $\pm 20$ N/m)
Resonance frequency* / f	320 kHz ( $\pm 50$ kHz)	320 kHz ( $\pm 50$ kHz)	320 kHz ( $\pm 50$ kHz)	320 kHz ( $\pm 50$ kHz)	320 kHz ( $\pm 50$ kHz)
Tip side coating	none	none	none	none	none
Back side coating	reflex	reflex	reflex	reflex	reflex
<b>Chip</b>					
Length / L <sub>chip</sub>	3400 $\mu$ m	3400 $\mu$ m	3400 $\mu$ m	3400 $\mu$ m	3400 $\mu$ m
Width / W <sub>chip</sub>	1600 $\mu$ m	1600 $\mu$ m	1600 $\mu$ m	1600 $\mu$ m	1600 $\mu$ m
Thickness / T <sub>chip</sub>	315 $\mu$ m	315 $\mu$ m	315 $\mu$ m	315 $\mu$ m	315 $\mu$ m
Alignment grooves	no	no	no	no	no

[1] measured at 1000 nm tip depth, [2] measured at 550 nm tip depth, [3] measured at 5000 nm tip depth, [4] measured at 3000 nm tip depth, [5] measured at 2000 nm tip depth.

n/a: specification not applicable for this product | \*Values are calculated from the (measured) cantilever geometry. Actual values of >90% of all probes are guaranteed to be within the specified range.



For more information please visit

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