

HYBRID-NITRIDE™

## HYBRID-NITRIDE™ AFM PROBES

Leading edge in sharpness and durability

### General

- contact mode AFM probe for wide range of applications
- fits to all well-known commercial AFMs
- silicon nitride cantilevers and tips
- cantilevers are attached to a support chip made of SU-8 epoxy (hybrid design)
- suitable for operation in liquids

### Material Features

- low-stress silicon nitride for lowest cantilever bending
- excellent hardness for wear resistance and extended lifetime
- SU-8 epoxy allowing for single support chip design

### Cantilevers

- multi-lever design with two rectangular and two triangular cantilevers
- reflective chromium / titanium / gold coating on the backside of the cantilevers
- stress compensated with bending below 3°

### Support Chip

- made of SU-8 epoxy material (3.4mm x 1.5mm x 0.5mm)
- beveled corner design avoids mechanical contact between chip and sample
- notch design for clear indication of cantilever type (notch near triangular cantilevers)
- easy handling due to single holder chip

### Tip

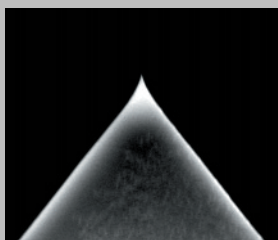
- oxide sharpened pyramidal probe tip
- tip height 3.5  $\mu\text{m}$  and tip radius of curvature typically < 15 nm
- macroscopic half-cone angles 35°

### Package sizes

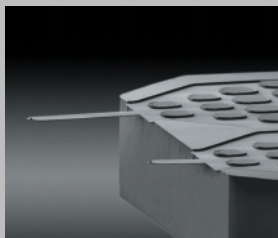
20 and 50 probes

### Unique features in brief:

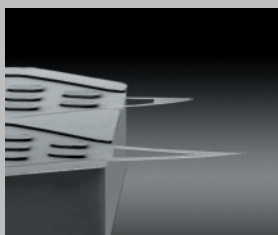
- single holder chip for easy handling
- no breaking residue due to superior single holder design (**no glass strips**)
- beveled corner design avoids mechanical contact between chip and sample
- notch design of support chip for clear indication of cantilever type



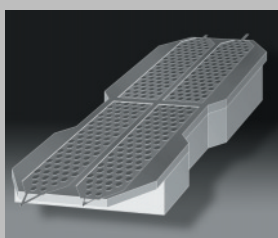
Tip Close Up



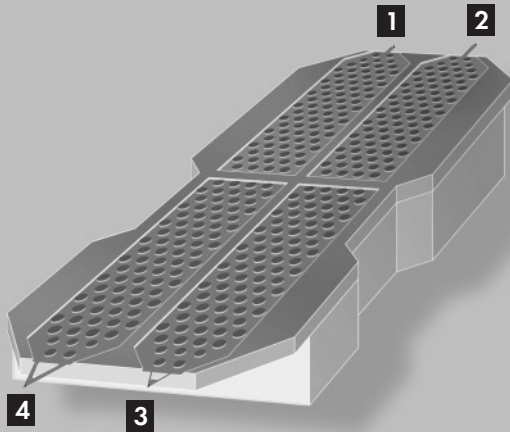
Rectangular Cantilevers



Triangular Cantilevers



3D Sketch



## MECHANICAL PROPERTIES

Cantilever #	1	2	3	4
Shape	Rectangular		Triangular	
Overall Thickness	500nm	500nm	500nm	500nm
Length	100µm	200µm	100µm	200µm
Width (single beam)	40µm	40µm	14µm	28µm
Force Constant	0.26 N/m	0.03 N/m	0.17 N/m	0.05 N/m
Resonance Frequency	48 kHz	12 kHz	48 kHz	12 kHz

Please note: The above given mechanical properties are typical values  
 Product claims of licensed US Patent Nos. 5221415, 5399232 and 5580827

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## ABOUT NANOWORLD® AG:

Nanotechnology is our field. Precision is our tradition. Innovation is our key instrument. That's why we are located in Switzerland, one of the most powerful and innovative areas in Europe.

Our location in Neuchatel is next to the IMT (Institute of Microtechnology, University of Neuchâtel) and the CSEM (Swiss Center of Electronics and Microtechnology). From this perfect infrastructural surrounding we support our customers with high precision Scanning Probes for their success in atomic force microscopy (AFM).

Using our knowledge as well as our high precision Scanning Probes, our clients are able to get the best results they need for atomic force microscopy (AFM).

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