NANOWORLD® SPM AND AFM PROBES
Nanotechnology is our field. Precision is our tradition.

POINTPROBE®
- most widely used and best known SPM and AFM probe world-wide
- silicon SPM and AFM probe for very high resolution imaging
- alignment grooves on back side of support chip
- tip radius typically < 8 nm, guaranteed <12 nm
- available with different tip shapes

PYREX-NITRIDE
- silicon nitride cantilevers and tips
- designed for various imaging applications in contact mode or dynamic mode
- oxide sharpened pyramidal tips
- tip radius typically < 10 nm
- available either with triangular or rectangular cantilevers
- also available as tipless version

ULTRA-SHORT CANTILEVERS
- ultra-short cantilevers designed for High-Speed AFM
- 3 types with very high resonance frequencies (1.2 MHz - 5 MHz) and high force constants for dynamic mode applications in air
- 3 types with high resonance frequencies and low force constants (0.15 N/m - 0.6 N/m) mainly for applications in liquid
- wear resistant High Density Carbon/Diamond Like Carbon (HDC/DLC) tip
- tip radius typically < 10 nm

ARROW™
- optimized positioning through maximized tip visibility
- three sided tip defined by real crystal planes
- special tip shape leads to very symmetric scans
- tip at the very end of the cantilever
- tip radius typically < 10 nm, guaranteed < 15 nm
- also available as high speed version with a resonance frequency of up to 2 MHz
**Pointprobe® Tip (Standard)**
The standard Pointprobe® tip is shaped like a polygon based pyramid. Its macroscopic half cone angle is 20° to 25° viewed along the cantilever axis, 25° to 30° when looked from the side and virtually zero at the very tip end. The Pointprobe® tip is 10 - 15 µm high and shows a tip radius of typically smaller than 8 nm (smaller than 12 nm guaranteed).

**Material Features**
- highly doped, single crystal silicon (resistivity 0.01 - 0.025 Ohm·cm)
- no intrinsic stress and absolutely straight cantilevers
- chemically inert silicon for application in fluids or electrochemical cells

**Support Chip**
- rectangular cantilever with trapezoidal cross section
- wider detector side for easy laser beam alignment (see sketch on left)
- small width at the tip side reduces damping

**Package Sizes**
- packages of 10, 20 or 50 AFM probes
- full wafer of 380 AFM probes (up to 388 AFM probes depending on the product)

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**SuperSharpSilicon™ Tip (SSS)**
For enhanced resolution of micro-continuity and nanostructures we have developed an advanced tip manufacturing process leading to a further improvement of the tip sharpness with tip radii as small as 2 nm.

**Tip Features**
- The tip height is 10 - 15 µm and the typical radius of a SuperSharpSilicon™ tip is about 2 nm. We guarantee a tip radius of smaller than 5 nm (guaranteed yield: 80%). The half cone angle is smaller than 10° at the last 200 nm of the tip.

**High Aspect Ratio Tip (ARS/ARST)**
For measurements on samples with sidewall angles approaching 90°, e.g. deep trench measurements or other semiconductor applications, we offer two different types of High Aspect Ratio Tips showing near vertical sidewalls.

**Tip Features**
- The high aspect ratio portion of the AR5/ARST tip is larger than 2 µm and shows an aspect ratio of typically 7:1 (minimum aspect ratio of 5:1 guaranteed). Consequently the half cone angle of the high aspect ratio portion is typically smaller than 5°. In order to get symmetrical images when scanning deep trenches it is necessary that the tip is perpendicular to the sample. Therefore, in order to compensate the most common tilt angle of 13° used in commercial AFMs, the high aspect ratio portion of the ARST is tilted 13° with respect to the central axis of the tip.

**Diamond Coated Tip (DT), Conductive Diamond Coated Tip (CDT)**
For SPM and AFM applications that require hard contact between probe and sample we recommend our Diamond Coated Tip (DT). Some typical applications are friction force measurements, measurement of the elastic properties of samples, as well as wear measurements or nanostructuring. The Conductive Diamond Coated Tip (CDT) additionally offers a conductive, non-passivated coating.

**Tip and Coating Features**
- True polycrystalline diamond coating on the tip side of the cantilever with the unsurpassed hardness of diamond.
- The tip height is 10 - 15 µm and the thickness of the diamond layer is approximately 100 nm. The macroscopic tip radius is in the range of 100 - 200 nm, but the tip often exhibits a nanoroughness in the 10 nm regime.
- In case of the CDT the conductivity is in the range of 0.003 - 0.005 Ohm·cm.

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**AVAILABLE COATINGS**

<table>
<thead>
<tr>
<th>Coating Type</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Reflex Coating</td>
<td>30 nm thick aluminum reflex coating on the detector side of the cantilever</td>
<td>- hard magnetic coating: cobalt alloy coating on the tip side of the cantilever</td>
</tr>
<tr>
<td></td>
<td>• enhances reflectance of the laser beam by a factor of 2.5</td>
<td>- stress compensated and wear resistant</td>
</tr>
<tr>
<td></td>
<td>• prevents light from interfering within the cantilever</td>
<td>- detector side coating enhances the reflectance of the laser beam by a factor of 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- allows electrical measurements</td>
</tr>
<tr>
<td>Hard Magnetic/Soft Magnetic Coating</td>
<td>100 nm thick polycrystalline diamond coating on the tip side of the cantilever</td>
<td>• 100 nm thick polycrystalline diamond coating on the tip side of the cantilever</td>
</tr>
<tr>
<td></td>
<td>• soft magnetic coating: soft magnetic coating on the tip side (coercivity of approx. 0.75 Oe, remanence magnetization of approx. 225 emu/cm³)</td>
<td>• unsurpassed hardness of the tip</td>
</tr>
<tr>
<td></td>
<td>• permanent magnetization of the tip</td>
<td>• resistance &lt;10 Ohm·cm for CDT</td>
</tr>
<tr>
<td>Diamond Coating</td>
<td>25 nm thick platinum iridium 5 coating on both sides of the probe</td>
<td>• stress compensated and wear resistant</td>
</tr>
<tr>
<td></td>
<td>• detector side coating enhances the reflectance of the laser beam by a factor of 2</td>
<td>- allows electrical measurements</td>
</tr>
<tr>
<td>Gold Coating (on request)</td>
<td>70 nm thick gold reflex coating on the detector side of the cantilever</td>
<td>• 100 nm thick gold coating on both sides of the probe</td>
</tr>
</tbody>
</table>
**ARROW™ SILICON AFM PROBES**

Optimized positioning through maximized tip visibility

**General**
- SPM and AFM probes for high resolution imaging
- Fit to all well-known commercial SPMs and AFMs
- cantilever and tip are supported by a single crystal silicon support chip
- monolithic design of support chip, cantilever and tip

**Material Features**
- highly doped, single crystal silicon (resistivity 0.01 - 0.025 Ohm.cm)
- no intrinsic stress and absolutely straight cantilevers
- chemically inert silicon for application in fluids or electrochemical cells

**Cantilever**
- rectangular cantilever with triangular free end
- easy positioning of tip on the area of interest due to the ARROW™ shape
- consistent distance between tip and cantilever end
- trapezoidal cross section with wide detector side for easy laser adjustment

**Support Chip**
- dimensions of the support chip are very reproducible (3.4 mm x 1.6 mm x 0.3 mm)
- etched corners of the support chip avoid contact between the support chip and the sample

**Tip**
- tip height 10 - 15 µm and radius of curvature typically < 10 nm (< 15 nm guaranteed)
- macroscopic half-cone angles
  - are 30° to 35° seen along the cantilever axis
  - are 20° to 25° seen from the side

**Package Sizes**
- packages of 10, 20 or 50 AFM probes
- full wafer of at least 380 AFM probes

**AVAILABLE COATINGS**

**Reflex Coating**
- 30 nm thick aluminum reflex coating on the detector side of the cantilever
- enhances reflectance of the laser beam by a factor of 2.5
- prevents light from interfering within the cantilever

**PtIr5 Coating**
- 25 nm thick platinum iridium5 coating on both sides of the probe
- stress compensated and wear resistant
- detector side coating enhances the reflectance of the laser beam by a factor of 2
- allows electrical measurements

- Other coatings for standard SPM ans AFM probes available on request

**ARROW™ Ultra High Frequency Scanning Probes (UHF)**

NanoWorld ARROW™ UHF probes have a cantilever capable of resonating with a frequency of up to 2 MHz. These probes combine outstanding sensitivity with fast scanning ability. As for all probes of the ARROW™ series, the ARROW™ UHF probes are made from monolithic silicon which is highly doped to dissipate static charge. It is chemically inert and offers a high mechanical Q-factor for high sensitivity.

The ARROW™ UHF probes feature a 3.5 µm long triangular cantilever and a tetrahedral tip with a height of 3 µm and a radius of curvature smaller than 10 nm.

The unique ARROW™ shape allows easy positioning of the tip on the area of interest.

The reflex coating (aluminum or gold) on the detector side of the cantilever enhances the reflectance of the laser beam by a factor of 2.5 and prevents light from interfering within the cantilever.

**ARROW™ TL (Tipless Cantilevers for Special Applications)**

The ARROW™ TL SPM and AFM probes have tipless cantilevers and are available with either 1 cantilever or with cantilever arrays consisting of 2 or 8 rectangular cantilevers with a triangular free end.

All types of the ARROW™ TL series are optionally available with a gold coating on the sample facing side of the cantilever.

<table>
<thead>
<tr>
<th>Cantilever Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resonance Frequency</td>
</tr>
<tr>
<td>Force Constant</td>
</tr>
<tr>
<td>Length</td>
</tr>
<tr>
<td>Width (rectangular part)</td>
</tr>
<tr>
<td>Thickness</td>
</tr>
<tr>
<td>Pitch (in case of TL2 and TL8)</td>
</tr>
</tbody>
</table>

**ARROW™ TL1**
- Tipless cantilever, single cantilever beam on silicon support chip

**ARROW™ TL2**
- Tipless cantilever array, two cantilever beams on a single silicon support chip

**ARROW™ TL8**
- Tipless cantilever array, eight cantilever beams on a single silicon support chip
Gold Reflex Coating
- 20/30 nm thick gold reflex coating on both sides of the probe
- enhances reflectance of the laser beam
- tip remains uncoated

System limitations: due to their small cantilever sizes and their very high resonance frequencies USC probes currently cannot be used in all commercially available SPMs and AFMs. Only AFMs with a sufficiently small laser spot and electronics that are capable of dealing with high resonance frequencies of up to 5 MHz are able to work with the USC probes. If in doubt whether these probes can be used in your AFM please check back with us or with your AFM manufacturer.

In order to cover a wide range of possible applications using High-Speed AFM, six different types of Ultra-Short Cantilevers (USC) have been developed: three types with very high resonance frequencies [1.2 MHz – 5 MHz] and high force constants mainly for dynamic mode applications in air and three types with high resonance frequencies and low force constants [0.15 N/m - 0.6 N/m] mainly for applications in liquid.

### USC mainly for dynamic mode applications in air
- resonance frequency of 1.2 MHz and higher
- stiffness of 3.0 N/m and higher
- mainly designed for applications in non-contact mode in air but can also be used for other applications

<table>
<thead>
<tr>
<th>Type</th>
<th>USC-F5-k30</th>
<th>USC-F2-k3</th>
<th>USC-F1.2-k7.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resonance Frequency</td>
<td>5.0 MHz</td>
<td>2.0 MHz</td>
<td>1.2 MHz</td>
</tr>
<tr>
<td>Force Constant</td>
<td>30 N/m</td>
<td>3.0 N/m</td>
<td>7.3 N/m</td>
</tr>
<tr>
<td>Cantilever length</td>
<td>10 μm</td>
<td>10 μm</td>
<td>20 μm</td>
</tr>
<tr>
<td>Cantilever width</td>
<td>5 μm</td>
<td>5 μm</td>
<td>10 μm</td>
</tr>
<tr>
<td>Thickness</td>
<td>0.68 μm</td>
<td>0.28 μm</td>
<td>0.67 μm</td>
</tr>
</tbody>
</table>

* Values in air

### USC mainly for applications in liquid
- resonance frequency of 1.5 MHz and lower
- stiffness of 0.6 N/m and lower
- mainly designed for applications in liquid but can also be used for applications in air (depending on the application)

<table>
<thead>
<tr>
<th>Type</th>
<th>USC-F1.5-k0.6</th>
<th>USC-F1.2-k0.15</th>
<th>USC-F0.3-k0.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resonance Frequency</td>
<td>1.5 MHz</td>
<td>1.2 MHz</td>
<td>0.3 MHz</td>
</tr>
<tr>
<td>Force Constant</td>
<td>0.6 N/m</td>
<td>0.15 N/m</td>
<td>0.3 N/m</td>
</tr>
<tr>
<td>Cantilever length</td>
<td>7 μm</td>
<td>7 μm</td>
<td>20 μm</td>
</tr>
<tr>
<td>Cantilever width</td>
<td>3 μm</td>
<td>2 μm</td>
<td>10 μm</td>
</tr>
<tr>
<td>Cantilever thickness</td>
<td>0.10 μm</td>
<td>0.08 μm</td>
<td>0.19 μm</td>
</tr>
</tbody>
</table>

* Values in air

For more information on ongoing developments of AFM probes for High-Speed AFM and for application examples please have a look at: www.highspeedscanning.com
General
- SPM and AFM probes for a wide range of applications in contact mode or dynamic mode
- fit to all well-known commercial SPMs and AFMs
- silicon nitride cantilevers and tips
- cantilevers are supported by a support chip made of pyrex-glass
delivered as separated single support chips for easy handling

Material Features
- low-stress silicon nitride for lowest cantilever bending
- excellent hardness for wear resistance and extended lifetime

Cantilevers
- multi-lever versions with either four rectangular cantilevers or four triangular cantilevers
- single lever version with one triangular cantilever
  (compatible with PeakForce Tapping™ and ScanAsyst® mode)
- reflective gold coating on the detector side of the cantilevers
- stress compensated with bending below 2°

Support Chip
- support chip made of pyrex-glass (3.4 mm x 1.6 mm x 0.5 mm)
- easy handling due to single support chips

Tips
- oxide sharpened pyramidal tips
- tip height 3.5 µm and radius of curvature typically < 10 nm
- macroscopic half cone angles 35°

Package Sizes
- packages of 20 or 50 AFM probes

Pyrex-Nitride AFM Probe
Triangular Cantilevers (PNP-TR)
- triangular shaped cantilevers
- multi-lever design
- 4 cantilevers per chip, 2 long and 2 short cantilevers
gold reflex coating on the detector side of the cantilevers
available with gold coating on both sides of the probe

Pyrex-Nitride AFM Probe
Diving Board Cantilevers (PNP-DB)
- rectangular diving board shaped cantilevers
- multi-lever design
- 4 cantilevers per chip, 2 long and 2 short cantilevers
gold reflex coating on the detector side of the cantilevers

Pyrex-Nitride AFM Probe
Single Triangular Cantilever (PNP-TRS)
- single triangular shaped cantilever
- one cantilever per chip
gold reflex coating on the detector side of the cantilever
- designed for PeakForce Tapping™ and ScanAsyst® Mode*

### AVAILABLE COATINGS

**Gold Coating**
- 70 nm thick gold reflex coating on the detector side of the cantilevers enhances reflectance of the laser beam
- optional 35 nm thick gold coating on the tip side (front side) of the cantilevers

### PNP Tipless (PNP-TR-TL)
- triangular Pyrex-Nitride probes are also available in a tipless version
gold reflex coating on the detector side of the cantilevers
available with gold coating on both sides of the probe

*PeakForce Tapping™ and ScanAsyst® are registered trademarks of Bruker Corp.
### Quick Selection Table

<table>
<thead>
<tr>
<th>Application</th>
<th>Type</th>
<th>Coating Tip/ Front Side</th>
<th>Coating Detector Side</th>
<th>Tip Shape</th>
<th>Resonance Frequency</th>
<th>Force Constant</th>
<th>Cantilever Length x Width x Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact Mode</strong></td>
<td>Arrow CONT</td>
<td>-</td>
<td>-</td>
<td>Arrow™</td>
<td>14 kHz</td>
<td>0.2 N/m</td>
<td>450 x 4.5 x 2 µm</td>
</tr>
<tr>
<td></td>
<td>CONT</td>
<td>-</td>
<td>-</td>
<td>Pointprobe®</td>
<td>13 kHz</td>
<td>0.2 N/m</td>
<td>450 x 5 x 2 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow CONTR</td>
<td>-</td>
<td>-</td>
<td>Arrow™</td>
<td>14 kHz</td>
<td>0.2 N/m</td>
<td>450 x 4.5 x 2 µm</td>
</tr>
<tr>
<td></td>
<td>CONT</td>
<td>-</td>
<td>-</td>
<td>Reflex (Al)</td>
<td>13 kHz</td>
<td>0.2 N/m</td>
<td>450 x 5 x 2 µm</td>
</tr>
<tr>
<td></td>
<td>ZEBIR</td>
<td>-</td>
<td>-</td>
<td>Pointprobe®</td>
<td>27 kHz</td>
<td>1.6 N/m</td>
<td>450 x 5.5 x 2 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow CONT™</td>
<td>Pti5</td>
<td>Pti5</td>
<td>Arrow™</td>
<td>14 kHz</td>
<td>0.2 N/m</td>
<td>450 x 4.5 x 2 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow Pti5®</td>
<td>-</td>
<td>-</td>
<td>Pointprobe®</td>
<td>13 kHz</td>
<td>0.2 N/m</td>
<td>450 x 5 x 2 µm</td>
</tr>
<tr>
<td><strong>Contact Mode (short cantilever)</strong></td>
<td>CONTSC</td>
<td>-</td>
<td>-</td>
<td>Reflex (Al)</td>
<td>25 kHz</td>
<td>0.2 N/m</td>
<td>225 x 48 x 1 µm</td>
</tr>
<tr>
<td></td>
<td>CONTSCR</td>
<td>-</td>
<td>-</td>
<td>Pointprobe®</td>
<td>13 kHz</td>
<td>0.2 N/m</td>
<td>450 x 4.5 x 2 µm</td>
</tr>
<tr>
<td><strong>Contact Mode or Tapping Mode</strong></td>
<td>PNPFTR (triangular cantilevers)</td>
<td>Cantilever 1</td>
<td>Reflex (C/Au)</td>
<td>Pyramidal silicon nitride</td>
<td>67 kHz</td>
<td>0.32 N/m</td>
<td>100 x 13.5 x 0.5 µm</td>
</tr>
<tr>
<td></td>
<td>PNPFTR-Au (triangular cantilevers)</td>
<td>Cantilever 1</td>
<td>C/Au</td>
<td>-</td>
<td>67 kHz</td>
<td>0.32 N/m</td>
<td>100 x 13.5 x 0.5 µm</td>
</tr>
<tr>
<td></td>
<td>PNPFDB (rectangular cantilevers)</td>
<td>Cantilever 1</td>
<td>Reflex (C/Au)</td>
<td>-</td>
<td>67 kHz</td>
<td>0.48 N/m</td>
<td>100 x 40 x 0.5 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow USCF1.240.6</td>
<td>Au (tip remains uncoated)</td>
<td>Reflex (Au)</td>
<td>Electron Beam Deposited (EBD) spike</td>
<td>1.2 MHz</td>
<td>0.15 N/m</td>
<td>7 x 2 x 0.08 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow USCF1.240.15</td>
<td>Au</td>
<td>Reflex (Au)</td>
<td>Pyramidal silicon nitride</td>
<td>5.0 MHz</td>
<td>0.6 N/m</td>
<td>7 x 3 x 0.10 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow USCF0.340.3</td>
<td>Au</td>
<td>Reflex (Au)</td>
<td>Pyramidal silicon nitride</td>
<td>1.2 MHz</td>
<td>0.15 N/m</td>
<td>7 x 2 x 0.08 µm</td>
</tr>
<tr>
<td><strong>Non-Contact / Tapping Mode</strong></td>
<td>Arrow UHF</td>
<td>Reflex (Al)</td>
<td>Arrow™</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arrow UHF-AuD</td>
<td>Reflex (Al)</td>
<td>Arrow™</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arrow NC</td>
<td>Pointprobe®</td>
<td>285 kHz</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NCHR</td>
<td>Arrow™</td>
<td>330 kHz</td>
<td>125 x 30 x 4 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arrow NCHR</td>
<td>Reflex (Al)</td>
<td>Arrow™</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Arrow NCP</td>
<td>Pti5</td>
<td>Pti5</td>
<td>Pointprobe®</td>
<td>160 x 45 x 4.6 µm</td>
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<td></td>
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<td></td>
<td>NCHP</td>
<td>Pti5</td>
<td>Reflect (Al)</td>
<td>Arrow™</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SSSNCH</td>
<td>-</td>
<td>SuperSharpSilicon™</td>
<td>330 kHz</td>
<td>125 x 30 x 4 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AR5NCCH</td>
<td>-</td>
<td>Reflex (Al)</td>
<td>High Aspect Ratio (5:1)</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>AR5NCCHR (Tilt Compensated)</td>
<td>-</td>
<td>Reflex (Al)</td>
<td>High Aspect Ratio (10:1)</td>
<td>160 x 45 x 4.6 µm</td>
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<tr>
<td></td>
<td>DT-NCHR</td>
<td>Diamond</td>
<td>Reflex (Al)</td>
<td>Diamond</td>
<td>125 x 30 x 4 µm</td>
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<tr>
<td><strong>Non-Contact / Tapping Mode (High frequency)</strong></td>
<td>SEHR</td>
<td>Reflex (Al)</td>
<td>Pointprobe®</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>SSSSEHN</td>
<td>-</td>
<td>SuperSharpSilicon™</td>
<td>160 x 45 x 4.6 µm</td>
<td></td>
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<tr>
<td><strong>Force Modulation Mode</strong></td>
<td>Arrow FM</td>
<td>-</td>
<td>Reflex (Al)</td>
<td>Pyramidal silicon nitride</td>
<td>67 kHz</td>
<td>0.32 N/m</td>
<td>100 x 13.5 x 0.5 µm</td>
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<tr>
<td></td>
<td>FM</td>
<td>-</td>
<td>Pointprobe®</td>
<td>75 kHz</td>
<td>2.8 N/m</td>
<td>240 x 35 x 3 µm</td>
<td></td>
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<tr>
<td></td>
<td>Arrow FMR</td>
<td>Reflex (Al)</td>
<td>Pointprobe®</td>
<td>75 kHz</td>
<td>2.8 N/m</td>
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<tr>
<td></td>
<td>DT-FMR</td>
<td>Diamond</td>
<td>Reflex (Al)</td>
<td>Diamond</td>
<td>105 kHz</td>
<td>6.2 N/m</td>
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<td><strong>Electrostatic Force Microscopy</strong></td>
<td>Arrow EF™</td>
<td>Pti5</td>
<td>Pti5</td>
<td>Pointprobe®</td>
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<td>2.8 N/m</td>
<td>240 x 35 x 3 µm</td>
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<tr>
<td></td>
<td>EF™</td>
<td>Pti5</td>
<td>Pti5</td>
<td>Pointprobe®</td>
<td>75 kHz</td>
<td>2.8 N/m</td>
<td>240 x 35 x 3 µm</td>
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<td><strong>Magnetic Force Microscopy</strong></td>
<td>MFMR</td>
<td>Hard magnetic</td>
<td>Reflex (Al)</td>
<td>Pointprobe®</td>
<td>75 kHz</td>
<td>2.8 N/m</td>
<td>225 x 28 x 3 µm</td>
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<td>S-MFMR</td>
<td>Soft magnetic</td>
<td>Reflex (Al)</td>
<td>Pointprobe®</td>
<td>75 kHz</td>
<td>2.8 N/m</td>
<td>225 x 28 x 3 µm</td>
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<tr>
<td><strong>Special Applications</strong></td>
<td>Arrow TL1</td>
<td>1 cantilever</td>
<td>-</td>
<td>Ti/Au</td>
<td>6 kHz</td>
<td>0.03 N/m</td>
<td>500 x 100 x 1 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow TL1-Au</td>
<td>1 cantilever</td>
<td>Ti/Au</td>
<td>Tipless silicon</td>
<td>6 kHz</td>
<td>0.03 N/m</td>
<td>500 x 100 x 1 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow TL2</td>
<td>Array of 2 cantilevers</td>
<td>-</td>
<td>Ti/Au</td>
<td>6 kHz</td>
<td>0.03 N/m</td>
<td>500 x 100 x 1 µm</td>
</tr>
<tr>
<td></td>
<td>Arrow TL2-Au</td>
<td>Array of 2 cantilevers</td>
<td>Ti/Au</td>
<td>Tipless silicon</td>
<td>6 kHz</td>
<td>0.03 N/m</td>
<td>500 x 100 x 1 µm</td>
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<tr>
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<td>Arrow TUB</td>
<td>Array of 8 cantilevers</td>
<td>Ti/Au</td>
<td>Tipless silicon</td>
<td>6 kHz</td>
<td>0.03 N/m</td>
<td>500 x 100 x 1 µm</td>
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<td><strong>Tipless Cantilevers</strong></td>
<td>PNPFTR1</td>
<td>Triangular cantilevers</td>
<td>Reflex (Al)</td>
<td>Tipless silicon nitride</td>
<td>67 kHz</td>
<td>0.32 N/m</td>
<td>100 x 13.5 x 0.5 µm</td>
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<td></td>
<td>PNPFTR1-Au</td>
<td>Triangular cantilevers</td>
<td>Ti/Au</td>
<td>Tipless silicon nitride</td>
<td>67 kHz</td>
<td>0.32 N/m</td>
<td>100 x 13.5 x 0.5 µm</td>
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About NanoWorld

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.

Using our knowledge as well as our high precision SPM and AFM probes, our clients achieve the best results with Scanning Probe Microscopy (SPM) and with Atomic Force Microscopy (AFM).

The wide selection of tip shapes, spring constants, resonance frequencies and coatings translates to the most appropriate probe for your research as well as industrial applications.

The Pointprobe® Silicon AFM probes are the most widely used and best known AFM probes world-wide and have become the standard probes in many laboratories. The AFM probes of the Pointprobe® series are available in many different cantilever versions and tip shapes.

The AFM probes of the Arrow™ series feature a unique tip shape that allows easy positioning of the tip on the area of interest. The Arrow™ UHF version is designed for high speed scanning with a resonance frequency of up to 2 MHz.

With the Ultra-Short Cantilevers series NanoWorld now offers a whole range of AFM probes for High-Speed AFM. They are designed to resonate at frequencies of up to 5 MHz and feature a very wear resistant tip made of High Density Carbon/Diamond Like Carbon (HDC/DLC). Three different versions mainly for applications in air and three different versions mainly for applications in liquid are currently available.

The PNP Silicon Nitride AFM probes are available as versions with multiple triangular cantilevers, a version with a single triangular cantilever as well as a version with multiple rectangular cantilevers. They feature a pyramidal silicon nitride tip with a radius of curvature smaller than 10 nm. Tipless triangular silicon nitride cantilevers with either gold coating on the detector side or on both sides of the cantilevers are also available.