

AdvancedTEC™

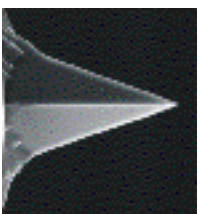
Advanced Tip at the End of the Cantilever

- REAL TIP VISIBILITY FROM TOP
- Monolithic Silicon-SPM-Probe for very high resolution imaging
- Typical tip radius of curvature < 10 nm
- Tip height 15 - 20 μm
- Aspect ratio of the last 0.5 μm of the tip > 4:1 (seen from front and side)
- Half cone angles < 12° seen along the cantilever axis and < 8° seen from the side
- Tip shape is defined by real crystal planes resulting in highly reproducible geometries and extremely smooth surfaces
- Rectangular cantilever with trapezoidal cross section



PointProbe® Plus (PPP)

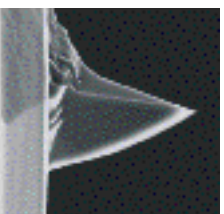
- Silicon-SPM-Probe for enhanced resolution imaging
- Minimized variation in tip shape resulting in more reproducible imaging
- Tip radius is typ. better than 7 nm
- Fits to all well-known AFMs
- Monolithic design of support chip, cantilever and tip
- Rectangular cantilever with trapezoidal cross section
- Tips are shaped like a polygon based pyramid
- Macroscopic half-cone angles are 20° seen along the cantilever and 25° to 30° when seen from the side
- Tip height 10 - 15 μm
- Highly doped single crystal silicon (0.01-0.025 Wcm)



PointProbe® Plus Tip

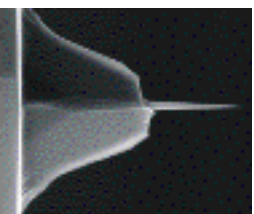
Rotated Tip

- General data like PointProbe® Plus
- Tip is rotated 180° with respect to the center axis along the cantilever
- Rotated Tip



AR5 / AR10 Tip

- High aspect portion (5:1 or 10:1) is longer than 1.5 μm
- Symmetrical when seen from side as well as along
- the cantilever axis
- Half cone angle is typically < 5° for AR5 and < 2.8° for AR10
- Tip radius is typically < 10 nm



Coatings

NOTE: Coatings are available for selected types only

- **Reflex Coating**
- Aluminum coating on the backside of the cantilever
- Enhanced reflectivity of the laser beam
- Stress compensated

- **Gold Coating**
- Gold coating on the backside or on both sides of the cantilever
- Enhanced reflectivity of the laser beam

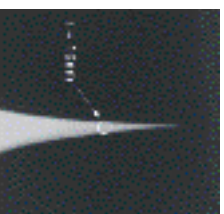
- **Platinum Coating**
- Chromium and platinum-iridium5 alloy coating on both sides of the cantilever
- High conductivity allows electrical measurements by using adusted parameters
- Enhanced reflectivity of the laser beam
- Stress compensated

- **Magnetic Coating**
- Different hard and soft magnetic coatings on the tip side of the cantilever
- Stress compensated

- **Diamond Coating**
- Polycrystalline electrically conductive diamond coating on the tip side of the cantilever
- Unsurpassed hardness of the tip

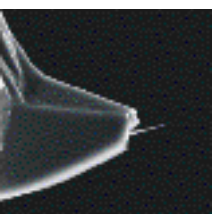
SuperSharpSilicon™ Tip

- Probe for high resolution imaging of micro roughness and nanostructures
- Tip radius is typically better than 2 nm



AR5T / AR10T Tip

- General data like AR5 and AR10
- Tip is tilted 13° with respect to the center axis of the tip in order to compensate the mounting angle of the AFM head
- Tip radius is typically < 10 nm



Quick Selection Table

	Type	Application	Force Constant / [N/m] (nominal)	Resonance Frequency / [kHz] (nominal)	Coatings	Special Tip Versions
Contact	ATEC-CONT	Contact Mode	0.2	15	---	---
	PPP-CONT	Contact Mode	0.2	13	Reflex, Ptlr5, Au	DT, CDT, RT, PL2, PLC, TL
	PPP-CONTSC	Contact Mode (short cantilever)	0.2	25	Reflex, Ptlr5, Au	---
	PPP-ZEILR	Contact Mode (Seiko or Zeiss)	1.6	27	Reflex	---
	PPP-XYCONT	Contact Mode (XY-Series)	0.2	13	---	---
Non-Contact	ATEC-NC	Non-Contact / Tapping Mode	45	335	---	---
	PPP-NCH	Non-Contact / Tapping Mode (high frequency)	42	330	Reflex, Ptlr5, Au	SSS, RT, AR5, AR5T, AR10, AR10T, DT, CDT, PL2, PLC, TL
	PPP-NCL	Non-Contact / Tapping Mode (long cantilever)	48	190	Reflex, Ptlr5, Au	SSS, AR5, DT, CDT, PL2, PLC, TL
	PPP-NCST	Non-Contact / Tapping Mode (soft tapping)	7.4	160	Reflex, Ptlr5, Au	---
	PPP-QNCHR	Non-Contact / Tapping Mode for UHV (high frequency, enhanced Q-factor)	42	330	Reflex	---
	PPP-SEIH	Non-Contact / Tapping Mode (Seiko Non-Contact Mode)	15	130	Reflex	SSS
	PPP-XYNCH	Non-Contact / Tapping Mode (high frequency, XY-Series)	42	330	---	---
	PPP-XYNCST	Non-Contact / Tapping Mode (soft tapping, XY-Series)	7.4	160	Reflex, Ptlr5, Au	---
Special	ATEC-FM	Force Modulation Mode	2.8	85	---	---
	PPP-EFM	Electrostatic Force Microscopy	2.8	75	Ptlr5	---
	PPP-FM	Force Modulation Mode	2.8	75	Reflex, Au	SSS, DT, CDT, PL2, PLC, TL
	PPP-LFM	Lateral / Friction Force Microscopy	0.2	25	Reflex	---
	PPP-MFMR	Magnetic Force Microscopy	2.8	75	Hard Magnetic & Reflex	---
	PPP-LM-MFMR	Magnetic Force Microscopy (low momentum)	2.8	75	Hard Magnetic & Reflex	---
	PPP-LC-MFMR	Magnetic Force Microscopy (low coercivity)	2.8	75	Soft Magnetic & Reflex	---
	PPP-QLC-MFMR	Magnetic Force Microscopy for UHV (low coercivity, enhanced Q-factor)	2.8	75	Soft Magnetic & Reflex	---
	SSS-MFMR	Magnetic Force Microscopy (high resolution)	2.8	75	Hard Magnetic & Reflex	---
	SSS-QMFMR	Magnetic Force Microscopy for UHV (high res., enhanced Q-factor)	2.8	75	Hard Magnetic & Reflex	---
	PPP-QFMR	Force Modulation Mode for UHV (enhanced Q-factor)	2.8	75	Reflex	---