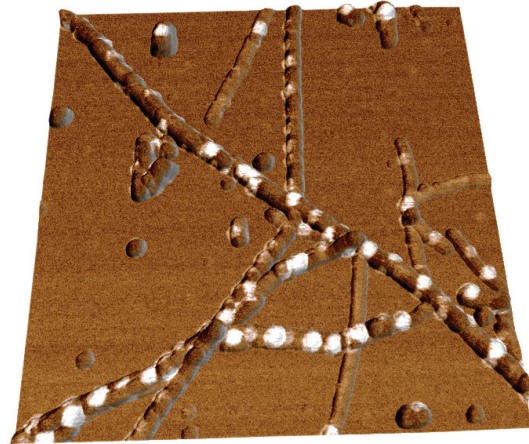


# iDrive™ Magnetic Actuated Cantilever for Effortless Cantilever Tunes in Fluid

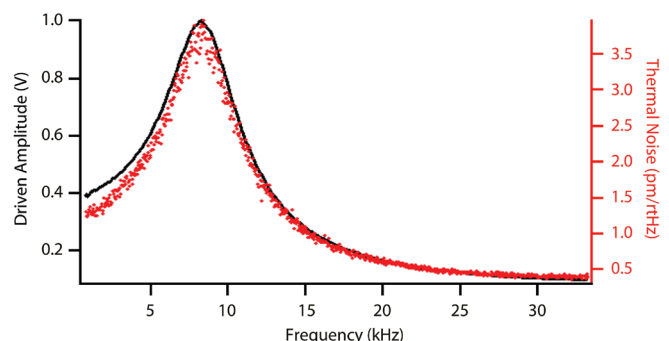
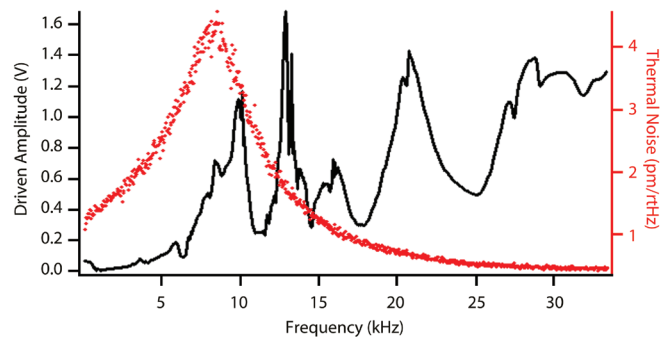
*iDrive uses a proprietary cantilever holder and cantilevers for AC imaging of soft samples in fluid. It simplifies fluid imaging by eliminating the piezo shaker and the multitude of resonance peaks mechanically coupled from the holder and fluid. iDrive uses a patented technique where a small oscillating current flows through the cantilever legs in the presence of a magnetic field causing it to vibrate. It is exclusively available for Asylum's MFP-3D™ and Cypher™ AFMs.*



*Insulin imaged in fluid with the iDrive. Phase channel overlaid on rendered AFM topography, 1μm scan.*

## Feature / Benefits

- iDrive allows auto tuning of the cantilever in fluid. The cantilever tune with iDrive actuation closely resembles the thermal tune.
- Clean cantilever tunes allow for the implementation of Q-control and other techniques in fluid.
- The iDrive NbFeB magnet is fully enclosed and sealed within the cantilever holder which allows for unobstructed bottom view of samples and prevents sample contamination.
- The module can be operated in either iDrive AC mode or standard piezo-driven AC mode – easily switchable in the software.
- Single cantilever holder for both air and fluid imaging.
- Compatible with Dual AC™ imaging mode.
- iDrive does not require expensive magnetically coated cantilevers which can:
  - introduce undesirable cantilever bending.
  - expose the sample to potentially harmful metal ions.



*Cantilever tune in fluid using standard piezo-driven AC mode (top) compared to iDrive AC mode (bottom). Notice that the single peak overlaps nicely with the thermal tune (in red).*

- have limited lifetime by losing magnetic sensitivity due to corrosion in biological fluids, or from oxidation on the shelf.
- Unlike other magnetic actuated techniques, iDrive doesn't require either an extra controller which can add cost and consume valuable lab space, or special sample holders with magnets.
- Compatible with most MFP-3D environmental accessories including the Closed Fluid Cell, BioHeater and Humidity Sensor.

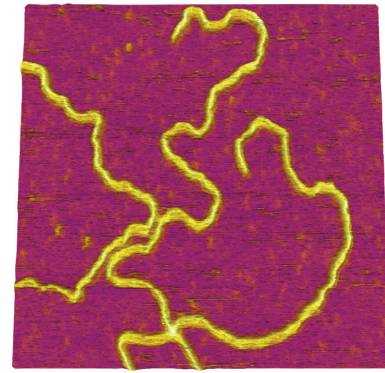
## iDrive Kit

iDrive comes specially packaged as an all-inclusive kit with an ample amount of cantilevers:

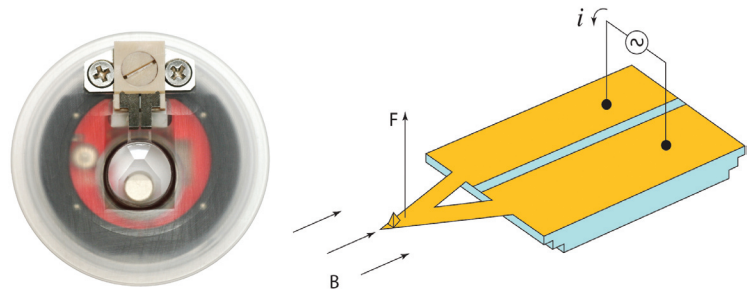
- Proprietary iDrive cantilever holder
- PEEK™ spring clip screws
- Slotted screwdriver
- 105 AR-iDrive-N01 probes

## Probe Specifications

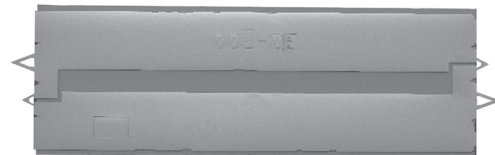
<b>Model #</b>	AR-iDrive-N01	
<b>Tip/lever material</b>	SiN. Four levers total but two short cantilevers (one on each side) are iDrive compatible only.	
<b>Lever Shape</b>	Triangular	
<b>Lever Thickness</b>	0.4µm	
<b>Lever Width</b>	13.4µm (100µm) 27.9µm (200µm)	
<b>Lever Length</b>	100µm 200µm	
<b>Spring constant (N/m)</b>	0.09 (100µm) 0.02 (200µm)	
<b>Resonant freq. (kHz)</b>	32 (100µm) 10 (200µm)	
<b>Tip shape</b>	4-sided pyramid	
<b>Tip height</b>	3µm	
<b>Tip radius</b>	<40nm	
<b>Tip angle</b>	<35° front <35° side	
<b>Coating</b>	40nm Au on tip side 50nm Au on reflex side	
<b>Packaging/Pricing</b>	Half wafer (210)	\$5,730
	70	\$2,465
	35	\$1,450
	10	\$500



*Lambda digest DNA imaged in fluid with iDrive, 500nm scan.*



*iDrive cantilever holder (left) and schematic diagram of the cantilever which shows the Lorentz Force exerted onto the cantilever (right).*



*AR-iDrive-N01 cantilever.*

## System Upgrades

Existing MFP-3D AFM systems in the field will need a small hardware retrofit to the controller for iDrive compatibility which will be provided with the iDrive kit at no additional cost. For upgrade details, price quotations, or if you have multiple controllers that need the compatibility upgrade, please contact us at: [sales@AsylumResearch.com](mailto:sales@AsylumResearch.com).