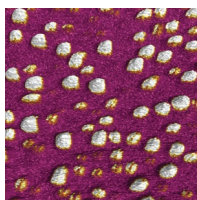


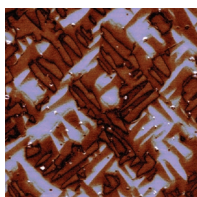
# Options and Accessories for the Cypher S AFM

## Advanced Applications Options



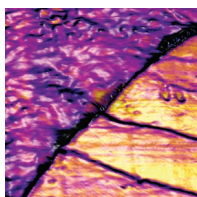
### *ORCA™ Conductive AFM*

ORCA provides conductive AFM imaging and I-V measurement capabilities. The standard module is capable of measuring currents from  $\sim 1\text{pA}$  to  $20\text{nA}$ . The kit includes a sample mount, conductive AFM probes, and accessories. Modules for different current ranges are available upon request. Also available as a dual gain version for expanded range.



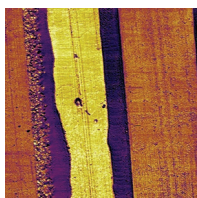
### *High Voltage Piezoresponse Force Microscopy (HV-PFM)*

The HV-PFM option enables high sensitivity, high bias, and crosstalk-free measurements on piezoelectrics, including ferroelectrics and multiferroics. The kit includes an integrated high voltage amplifier ( $\pm 150\text{V}$ ), high voltage cantilever holder, high voltage sample mount, and conductive cantilevers.



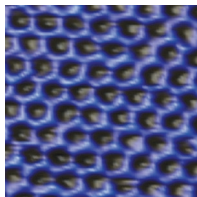
### *Contact Resonance Viscoelastic Mapping Mode*

The Contact Resonance option provides wide-band, frequency-independent excitation of the sample, enabling a variety of contact resonance techniques. With exclusive Asylum modes like Dual AC™ Resonance Tracking (DART) and Band Excitation, these methods allow quantitative mapping of material properties including both elasticity and viscoelastic damping.



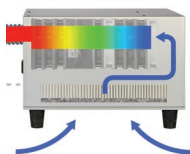
### *AM-FM Viscoelastic Mapping Mode*

AM-FM mode combines the features and benefits of normal tapping mode with Frequency Modulation (FM) mode. Normal tapping mode provides non-invasive, high-resolution topographical imaging while the second mode drive frequency is adjusted to keep it on resonance. The second mode resonance is a sensitive measure of the tip-sample interaction, and can be used with appropriate mechanical models to quantitatively estimate both the elastic and loss moduli of the material and the tip-sample dissipation.



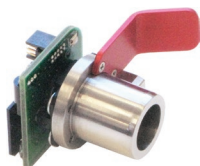
### *Scanning Tunneling Microscopy (STM)*

The STM option provides tunneling current imaging at constant current or constant height, and I-V measurement capability. The kit includes STM probes, STM probe holder with integral preamp ( $\sim 1\text{pA}$  to  $10\text{nA}$ ; other modules for different current ranges are available upon request), and a  $500\text{M}\Omega$  test resistor.



### *Air Temperature Controller (ATC)*

The ATC flows temperature regulated, HEPA filtered air through the Cypher enclosure. Closed-loop temperature control isolates the AFM from room temperature variations, minimizing thermal drift for imaging and force curves. The temperature control system is controlled via a graphical user interface within the Asylum Research software.



### *MultiLux™ Laser Modules*

Cypher offers four Laser Modules, one of which is included with initial system purchase. It is possible to add any of the following additional laser modules to enhance the capabilities of the Cypher:

- Standard Laser Module: RF-modulated laser diode light source module with nominal 10 $\mu$ m x 30 $\mu$ m focused spot size. Recommended for all AC-mode imaging.
- Small Spot Laser Module: RF-modulated laser diode light source module with nominal 3 $\mu$ m x 9 $\mu$ m focused spot size. Recommended for all AC-mode imaging with small cantilevers.
- Standard SLD Module: Superluminescent Diode (SLD) light source with nominal 10 $\mu$ m x 30 $\mu$ m focused spot size. Recommended for all contact mode and force measurements.
- Small Spot SLD Module: SLD light source with nominal 3 $\mu$ m x 9 $\mu$ m focused spot size. Recommended for contact mode and force measurements using small cantilevers.



### *Air Cantilever Holder*

The air cantilever holder is used for all ambient environment imaging. In addition to AC mode and contact mode, it can be used for many other modes such as EFM, MFM, LFM, SKPM, PFM, FM-AFM and many others. This item is included with initial system purchase.



### *Droplet Cantilever Holder Kit*

The droplet cantilever holder is used for all fluid measurements. It includes a low-evaporation chamber to minimize evaporation during longer term imaging sessions. The holder can be fully disassembled for cleaning. This kit is included with initial system purchase.



### *Vertical Sample Clamp*

This sample clamp allows sectioned, micro-cryotomed and other samples to be firmly held for a variety of AFM measurements. Compatible with the Cypher AFM and the sample puck holder on the MFP-3D AFM. For samples 0-2mm thick.