Turnkey Glovebox Solutions for Asylum Research AFMs

Asylum Research

Introduction

Isolated environments are now essential for many research applications. Asylum Research has developed glovebox solutions for its **Cypher**™ and **MFP-3D**™ Atomic Force Microscopes. This provides a controlled environment while enabling maximum performance of the AFM. The glovebox is ideal for AFM applications including electrochemistry, batteries, photovoltaics, organic semiconductors, OLEDs, etc.

Glovebox Platforms

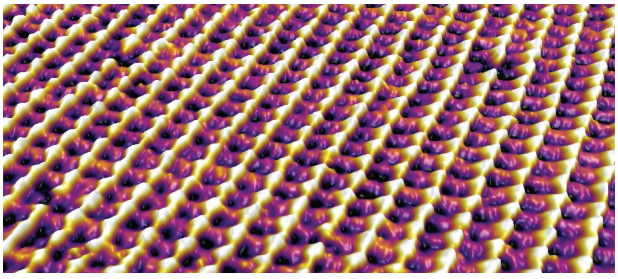
Asylum Research has done extensive research in engineering glovebox configurations for maximum AFM performance.

These configurations feature, but are not limited to:

- Integrated H_2O and O_2 purification system for <1 ppm gas impurities
- A choice of either large and small airlocks
- Hermetic feed throughs for easy cabling for MFP-3D or Cypher AFMs

Superior AFM Performance with No Compromises

- Gas purification system with variable speed blower is separated from the glovebox to minimize vibrational coupling
- Sturdy, super stiff table support to minimize vibration isolation
- Atomic resolution is easily and routinely achieved with the Cypher AFM while vacuum pumps and gas purification are in full operation – without requiring any additional vibration isolation equipment (see image below)



Atomic point defects in calcite taken with the Cypher inside the glovebox with the pumps on and off. There is no significant change in the signal when the pumps are switched on half way through our image, demonstrating the superior noise-rejection capability. The image was acquired in water in a glovebox environment of <0.1 ppm O_2 and 30% relative humidity.

Cypher AFM in MB200 customized glovebox shown with full instrument translation stage, air temperature control, and humidity control option.

Easy to Use, Flexible Configurations

Asylum Research-engineered gloveboxes provide amazingly easy access to the AFM. They can be customized with a wide range of features including:

- Raised glove ports for improved AFM access
- A sliding platform allowing the instrument to be moved inside the glovebox with minimal effort
- Manual or automatic airlocks
- Humidification while maintaining sub-ppm O_2 levels

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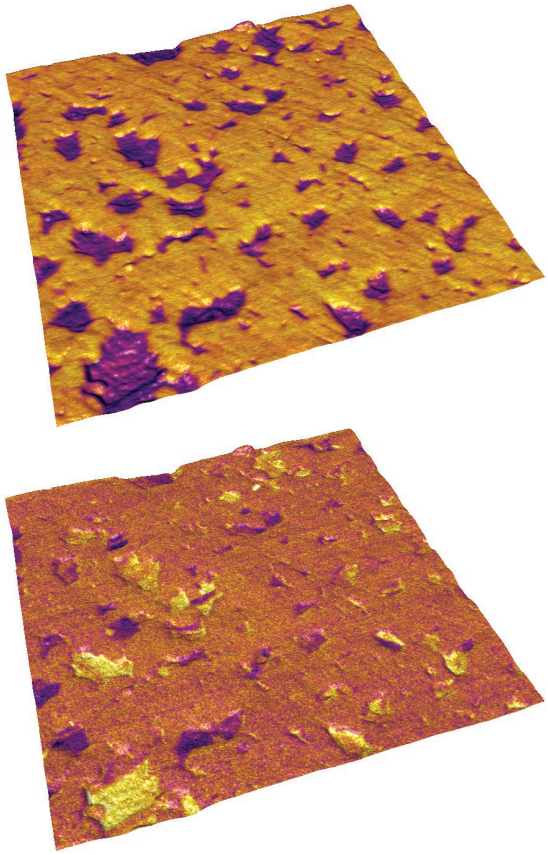
We understand the complexity of doing experiments in challenging environments and that one solution may not fit everyone. Our engineers and scientists are here to assist you with our unmatched customer support, every step of the way – before, during and after you have installed your Asylum Research AFM system.



Li Glass Electrode. Top image: Contact resonance stiffness measured in DART mode. Bottom image: Ionic activity measured with Electrochemical Strain Microscopy, simultaneously acquired with sample stiffness (above), 3.5 µm scan. T. Arruda et al. Nano Lett. 11, 4161–4167 (2011).

MFP-3D AFM in MB200 glovebox shown with air temperature and humidity control option. The images to the left were made with the MFP-3D in a glovebox.

Visit **www.AsylumResearch.com** to learn more

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