**General information:**

[The Dimension Icon AFM](http://www.bruker.com/products/surface-analysis/atomic-force-microscopy/dimension-icon/overview.html) is reserved for advanced AFM-based functions, particularly for nanomechanical and nanoelectrical measurement.

For instrument protection, liquid samples are NOT allowed on the Icon.

For general topographical measurement, please use the Multimode AFM.

To become a user of the Icon, you are required submit to [Bruce](mailto:bsb@caltech.edu) Brunschwig a one-page proposal describing your purpose of using the Icon and the experiments you wish to perform. It is helpful to discuss your application with the GLAs first.

**System overview (**[**More details**](http://mmrc.caltech.edu/AFM-STM%20software/Icon%20Mannual/Content/System%20Overview/System%20Specifications.htm)**):**

|  |  |
| --- | --- |
| XY Scan Range | 90 μm x 90 μm typical; 85 μm minimum |
| Z Range | 10 μm typical in imaging and force curve modes; 9.5 μm minimum |
| Sample Size/Holder | 210 mm vacuum chuck for samples ≤ 210 mm in diameter and ≤ 15 mm thick |
| Microscope Optics | 5-Megapixel digital camera; 180–1465 μm viewing area; |

The gas kit allows us to do ambient control.

**AFM Modes on this Icon (**[**More details**](http://mmrc.caltech.edu/AFM-STM%20software/Icon%20Mannual/Content/Imaging%20Modes.htm)**):**

**Topography:**

* ScanAsyst, self-optimizing scan mode
* Contact AFM, including Lateral Force Mode
* Tapping Mode AFM

**Nanoelectricity:**

* Magnetic Force Microscopy (MFM)
* Electric Force Microscopy (EFM)
* Applications Modules
* Current/resistivity measurement: Peak-Force TUNA, TUNA, SSRM, C-AFM
* Surface potential detection (Kelvin-Probe AFM): AM-KPFM, FM-KPFM, Peak-force AM-KPFM, Peak-force FM-KPFM, HV-KPFM
* Scanning capacitance measurement.

**Nanomechanics:**

* Nanomechanical Mapping (Peak-force QNM)
* Piezoresponse Force Microscopy
* Force Spectroscopy
* We are fund-raising for the NanoMan which allows the manipulation of nanomaterials and nanolithography while measuring the force properties

**Other resources:**

[Manuals for Icon](http://mmrc.caltech.edu/AFM-STM%20software/Icon%20Mannual/DIcon_webhelp.htm)

[Bruker webinars](http://www.bruker.com/en/service/education-training/webinars/afm.html) highlights:

* Nanomechanical AFM Measurements on Biological Samples
* [Measuring Absolute Values of Modulus of Elasticity for Soft Materials with AFM](https://www.youtube.com/watch?v=NzNA0PcZVwk&feature=player_detailpage)
* [High Resolution Quantitative Kelvin Probe Force Microscopy](http://www.bruker.com/fileadmin/user_upload/8-PDF-Docs/SurfaceAnalysis/AFM/Webinars/High_Resolution_Quantitative_KPFM_PeakForce_webinar_slides_120822.pdf)
* [Recent Progress in AFM and Nanomedicine - Applications of Force Spectroscopy and Peak Force Tapping](http://www.youtube.com/watch?v=nXXy5d9uvtc&list=PLB5D5D53F0D2A85DE&feature=player_detailpage)
* [Atomic Imaging with Peak Force Tapping](http://www.bruker.com/fileadmin/user_upload/Videos/SurfaceAnalysis/AFM/Atomic_Imaging_with_Peak_Force_Tapping_webinar_20120613.wmv)
* [The Powerful Diversity of the AFM Probe](http://www.youtube.com/watch?v=BmQ-5yBDn5M&list=PLB5D5D53F0D2A85DE&feature=player_detailpage)
* [ScanAsyst and PeakForce Tapping](http://www.bruker.com/fileadmin/user_upload/Videos/SurfaceAnalysis/AFM/ScanAsyst_and_PeakForce_Tapping_AFM_webinar-110323.wmv)
* [Simultaneous Electrical and Mechanical Property Mapping at the Nanoscale with PeakForce TUNA](http://www.bruker.com/fileadmin/user_upload/Videos/SurfaceAnalysis/AFM/PeakForce_TUNA_webinar_English_version-110223.wmv)