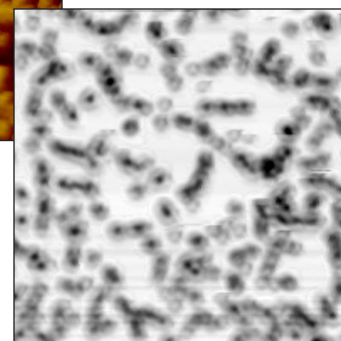
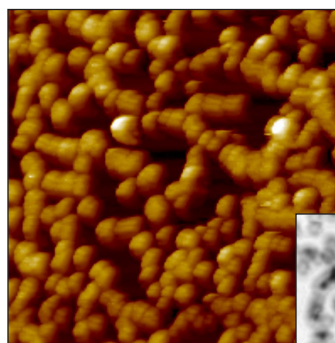
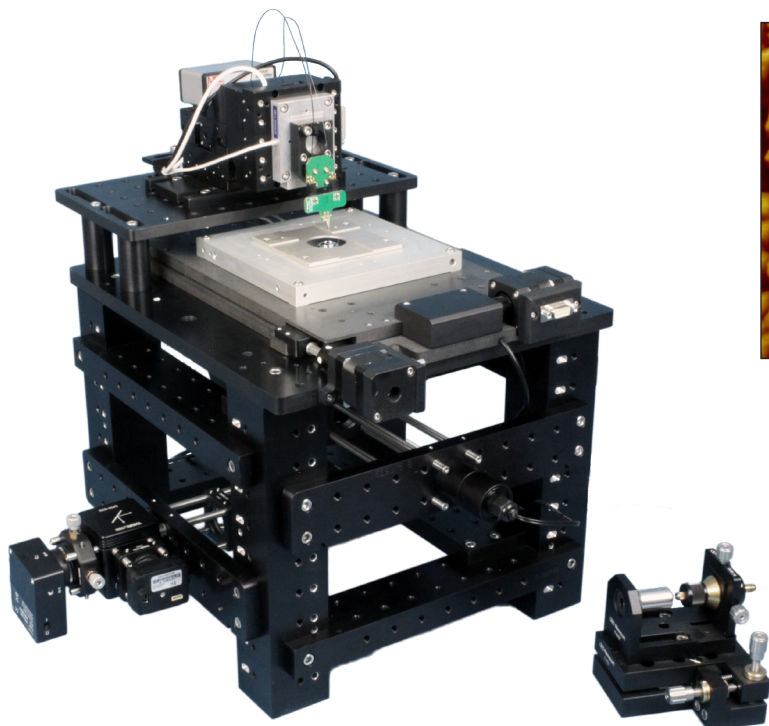


Features

- ▶ Complete inverted optical microscope
- ▶ Six axes of motorized control
- ▶ Closed loop nanopositioning in XYZ
- ▶ Independent automation for fiber alignment to optical axis
- ▶ Alignment camera and detection APD included
- ▶ Software included

Other Applications

- ▶ Aperture-less NSOM
- ▶ Resonant probe AFM
- ▶ Near field spectroscopy
- ▶ Fluorescence & epifluorescence microscopy



▲ 50 μm x 50 μm images of 500nm diameter polystyrene beads on a glass coverslip.

Images taken using Mad City Labs AFM (left) and NSOM (below). NSOM: Transmission mode using 640nm light with 100x, 1.25 N.A. objective lens and avalanche photodiode.

Product Description

The MCL-NSOM is a fully operational near field scanning optical microscope. It has been built on Mad City Labs versatile RM21™ microscope which allows users to convert between NSOM, SPM, and fluorescence optical microscopy techniques.

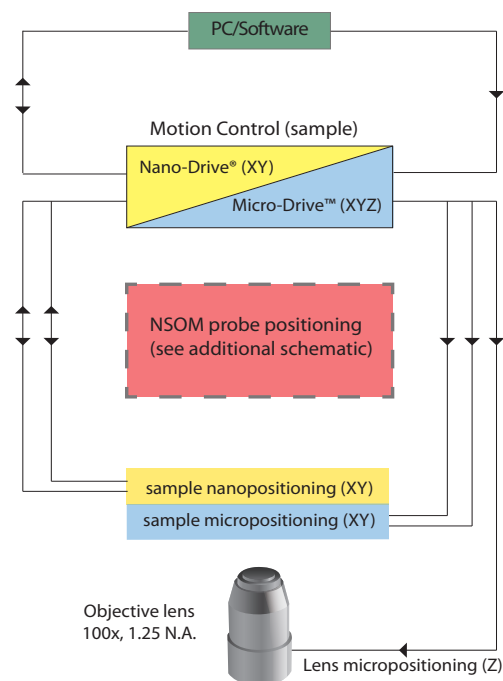
The MCL-NSOM builds on our successful resonant probe SPM and incorporates common elements such as the MadPLL® phase lock loop controller. The NSOM also exploits our expertise in precision motion control by including six axes of motorized positioning, for the sample and NSOM probe, and three axes of closed loop nanopositioning to provide exceptional position resolution and accuracy.

The MCL-NSOM also includes a 635nm laser excitation source, fiber launch, objective lens (20x, 0.4 N.A.), CMOS alignment camera and avalanche photodiode detector. The microscope configurable design allows researchers to tailor the instrument for many different optical microscopy techniques including near field spectroscopy.

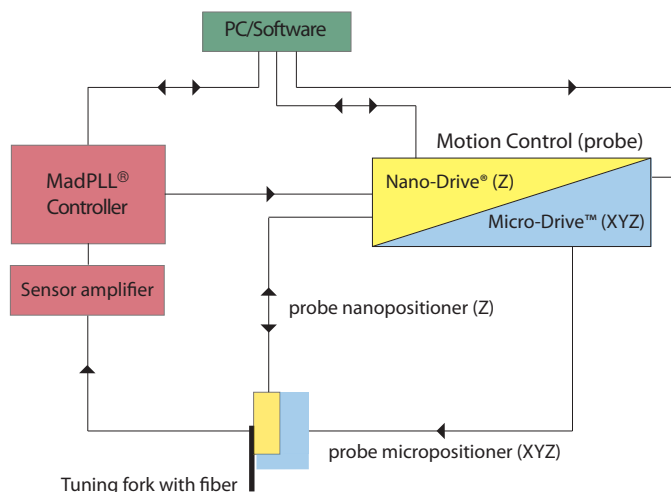
The MCL-NSOM is operated in aperture mode with shear force feedback. The standard 5 modes are supported: illumination, collection, illumination and collection, reflection and reflection collection. We supply a LabVIEW based software package which automates the motion control features.

Technical Specifications

Motion Control	
Sample micropositioning (XY)	25 mm
Lens micropositioning (Z)	50 mm
Fiber micropositioning (XYZ)	25 mm
Micropositioning step size	95 nm
Micropositioning controller	Micro-Drive
Nanopositioning range of motion (XYZ)	200 μm \times 200 μm \times 30 μm
Resolution	0.4 nm (XY), 0.06 nm (Z)
Step size	0.2 nm (XY), 0.03 nm (Z)
Nanopositioning controller	Nano-Drive®
Communication	USB 2.0
DAC/ADC	20 bit
TTL outputs	4 channels
NSOM	
NSOM operation	Aperture
Feedback	Shear Force
Phase lock loop controller	MadPLL®
Software	AFMView™
Software compatibility	LabVIEW™
Objective lens	20x, 0.4 N.A. (Infinity corrected)
Excitation and detection	635nm, 5mW laser diode with fiber launch
	0.3MP fiber alignment CMOS camera
	Avalanche photodiode (200nm-1000nm, 1mm active area)
Supplied accessories	Coaxial illuminator (LED)
	Tuning fork with attached single mode fiber for NSOM
	Tuning forks with etched tungsten tips (3)
	Tuning forks (10)
Power supply	90 - 260 VAC (50/60Hz)
Operating system	Windows Vista/7/8/10



Instrument overview of MCL-NSOM hardware



Schematic of the probe positioning element