

Agilent 7500 ILM: AFM Imaging on an Inverted Light Microscope

Data Sheet

Features and Benefits

- High-resolution atomic force microscope on an inverted optical microscope allows simultaneous AFM and fluorescence imaging
- Top down, tip scanning design enables intuitive, effortless setup and imaging
- Inverted optical view, open-top viewing access, and top illumination provide superior optical contrast
- Patented, rigid stage mounting provides low noise floor for sub-nanometer resolution
- Patented MAC Mode option provides gentlest, nondestructive AFM imaging of delicate samples in fluid
- PicoTREC option delivers real-time, simultaneous topography and molecular recognition imaging
- Sample-handling plates available to facilitate easy imaging in fluids or ambient air
- Easy Quick Slide sample-loading mechanism makes sample preparation simple
- Applications include DNA, cell biology, proteins, polymers and thin films

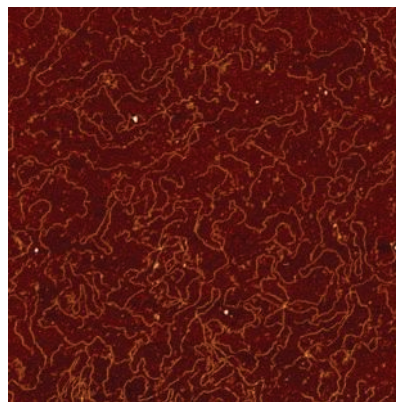
Overview

Agilent's 7500 inverted light microscope (ILM) system combines the power of a high-resolution atomic force microscope

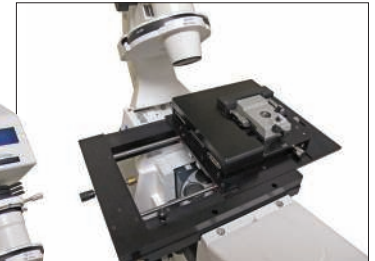
(AFM) with the direct optical viewing capability of an inverted optical microscope.

The Agilent ILM offers unparalleled performance and ease of use for imaging in fluids. It extends AFM utility in order to encompass studies of single molecules, polymers, cell membranes, whole cells, and much more. Atomic force and optical (or fluorescence) microscopy data can be obtained simultaneously with the Agilent ILM.

The ILM's patented mounting design incorporates a rigid structure that provides the low noise floor needed to obtain sub-nanometer resolution. Furthermore, the advanced design allows the AFM to sit on top of an inverted



Topography image of DNA in MAC Mode in liquid with a top MAC nose cone. Scan size is 2 μm x 2 μm .



QuickSlide sample-loading mechanism.



microscope and under the illumination pillar, resulting in superior optical contrast for the images.

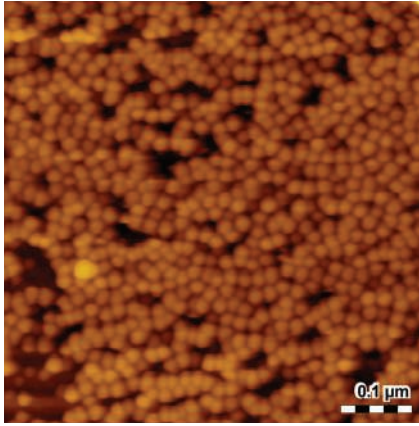
Agilent's QuickSlide sample-loading mechanism and a flexible sample-handling plate make sample preparation easy. The AFM is mounted on the QuickSlide assembly, allowing the user to change samples and/or solutions without affecting the alignment of the AFM or the optical microscope.

Imaging Options

Optimized for use with Agilent's 7500 AFM the ILM allows researchers to take advantage of the many powerful features that are available only with Agilent's AFM instruments. For instance, Agilent's patented MAC Mode, the most gentle imaging mode available for any AFM platform, provides unparalleled



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Topography image of protein ferritin in MAC Mode in liquid with a top MAC nose cone. Scan size 600nm x 600nm.



Sample plates.

performance in fluids. Flow-through liquid cells and precise temperature control options allow users to image soft biological samples under controlled physiological conditions. Agilent's proprietary sample plate stability further supports high-resolution AFM. Additionally, the unique PicoTREC option delivers real-time, simultaneous topography and recognition imaging.

A wide range of complementary techniques can be performed with the ILM system including FRET, fluorescence, darkfield and brightfield microscopy.

Multiple Use Platform and Industry-Standard Compatibility

The Agilent ILM is a modular, multiple-user platform. The open-architecture design permits easy access, manipulation, setup, and modification of samples while experiments are being performed. Convenient access to the sample plate and familiar sample preparation techniques make the ILM ideal for life science and other applications that require intensive sample preparation. A variety of sample plates are available including, glass slide, petri dishes and liquid cell.

7500 ILM Specifications

Please refer to the 7500 AFM data sheet for full specifications.

Scanner	
Scan range	90 μm x 90 μm
Z range	> 12 μm
Sample Size	
Max sample diameter	~ 25 mm
Max sample height	~ 8 mm
Microscopes Supported	
Zeiss AXIO Observer series	
<ul style="list-style-type: none"> • Only every other turret can be populated (limited to 3 objectives) • Condenser needs to have a 70 mm working distance or larger (0.3NA or 0.4 NA) 	
Nikon TE2000/Ti Eclipse series	
<ul style="list-style-type: none"> • All turret positions can be filled (all 6) • Condenser needs to have at least a 70 mm working distance 	
Olympus IX series (53/73/83)	
<ul style="list-style-type: none"> • All turret positions can be filled (all 6) • Condenser needs to have at least a 70 mm working distance 	

AFM Instrumentation from Agilent Technologies

Agilent Technologies offers high-precision, modular AFM solutions for research, industry, and education. Exceptional worldwide support is provided by experienced application scientists and technical service personnel. Agilent's leading-edge R&D laboratories are dedicated to the timely introduction and optimization of innovative and easy-to-use AFM technologies.

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