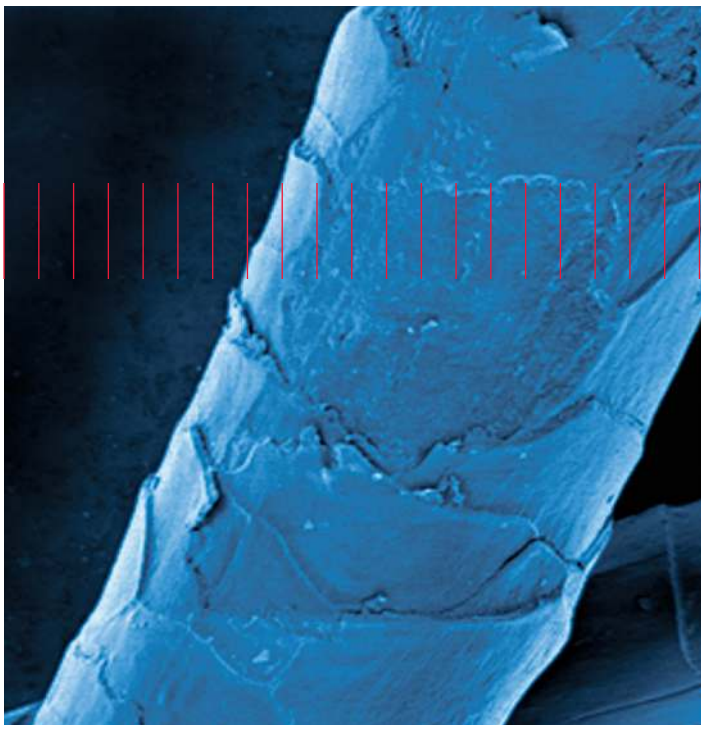
Keysight Technologies
Advanced Nanomeasurement Solutions



KEYSIGHT TECHNOLOGIES

Advanced Nanomeasurement Solutions for Research, Industry & Education

Keysight Technologies meets your unique nanomeasurement requirements with a variety of flexible scientific-grade solutions

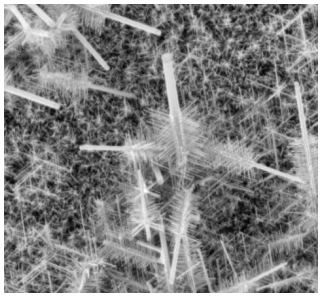
Whether your application requires a high-resolution system that offers modularity and cross-platform compatibility for atomic force microscopy (AFM) and scanning probe microscopy (SPM), a nanoindenter or universal testing machine (UTM) optimized for high-precision nanomechanical characterization, or a compact, low-voltage system that delivers exceptional field emission scanning electron microscopy (FE-SEM) performance, Keysight Technologies, Inc. is committed to providing the right state-of-the-art instrumentation for your work.

When you choose Keysight, you're choosing a reliable partner with a long history of nanomeasurement innovation. Keysight was the first to offer SPM for imaging in fluids and controlled environments, a technological legacy that continues to manifest itself in a wide range of superior solutions for in-fluid and soft-sample imaging. We hold more than 40 AFM-related patents and our leading-edge R&D is committed to the pursuit of advancements that will make atomic force microscopy easier to use. More than 2,500 peer-reviewed papers have been published using Keysight AFM technology, further validating its high performance and versatility.

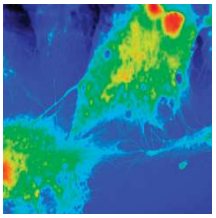
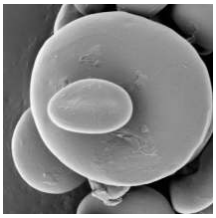
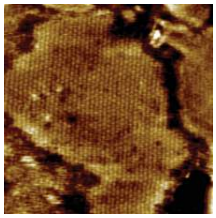
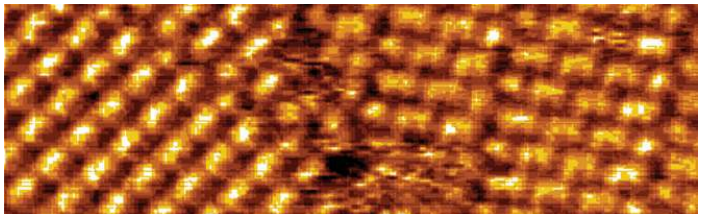
The pedigree of our nanomechanical test instrumentation is equally impressive. For instance, the seminal paper authored by Warren Oliver and George Pharr has now surpassed 5,000 citations, making it the most frequently cited paper for nanomechanical properties of materials.

Every Keysight nanomeasurement solution is backed by a team of knowledgeable application scientists and technical service personnel, all of whom strive to provide outstanding support to our customers around the world. We offer invaluable application expertise for life science, materials science, polymer science, electrochemistry, and cross-disciplinary nanoscale research.

Our driving goal is to help you be the first to see, the first to understand, and the first to publish!



Advanced Nanomeasurement Solutions for Research, Industry & Education (Cont'd)

Materials Science

Life Science

Polymer Science

Electronic Materials

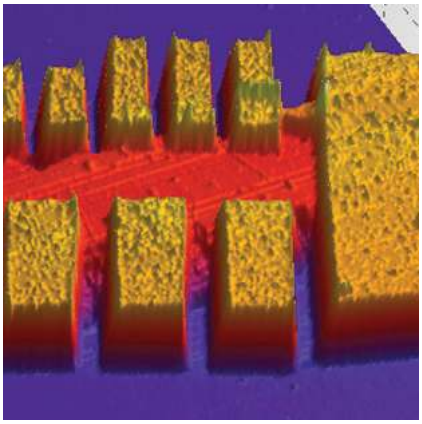
Electrochemistry

Cross-Disciplinary Nanoscale Research

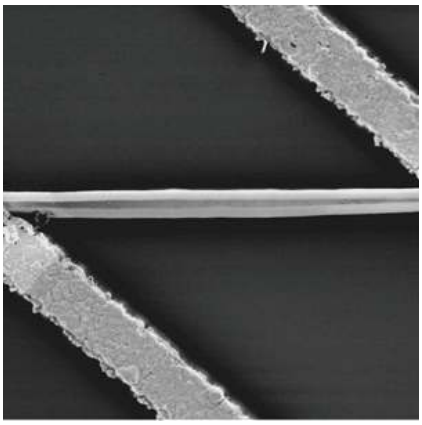
Applications

Materials Science

Ideal for large and small samples alike, the Keysight 5600LS AFM is a large-stage atomic force microscope compatible with our unique scanning microwave microscopy (SMM) mode, which allows highly sensitive calibrated electrical and spatial characterization. MAC Mode III, which enables Kelvin force microscopy (KFM) and electric force microscopy (EFM), is available on most Keysight AFMs. The 7500 AFM with temperature and environmental control gives users the advantage of dynamic *in-situ* imaging. Meanwhile, the new Keysight 8500 FE-SEM allows nanoscale features to be observed on a wide variety of nanostructured materials, including thin films and other energy-sensitive samples, on any substrate.



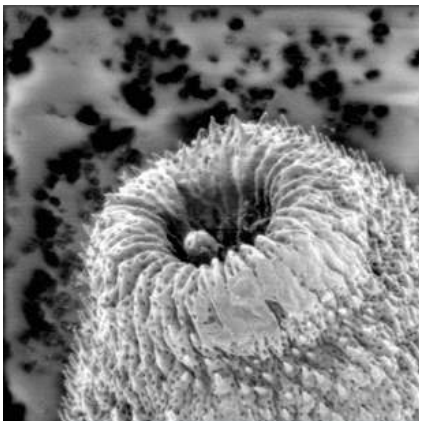
For nanomechanical testing, Keysight Nano Indenter G200 and G300 systems offer accurate and repeatable results compliant with the ISO 14577 standard, along with "low-load first then high-load" capabilities. Additionally, the Keysight T150 UTM enables researchers to understand dynamic properties of compliant fibers and composites via the largest dynamic range and best resolution on the market.



- AFM applications such as electromagnetic measurement
- Nanoindenters and low-voltage FE-SEM for measuring DLC thin films, MEM structures, and nanocomposite fibers

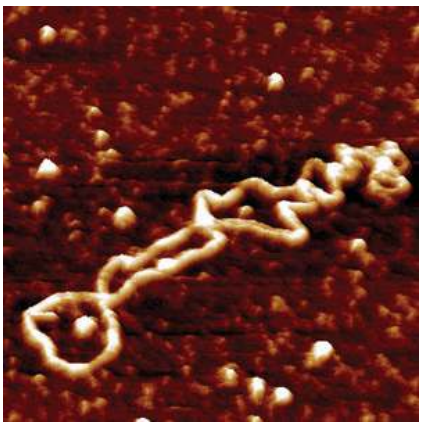
Life Science

The Keysight 7500/5500 series AFM systems facilitate life science investigations by offering a broad array of capabilities, including unrivaled in-fluid imaging (via patented MAC Mode) and industry-leading temperature/environmental control. As new techniques simplify the preparation and handling of diverse sample types, the use of a powerful class of in-situ AFM techniques is becoming increasingly prevalent in biological research.



We now offer two choices of AFM on an inverted light microscope, the 5500ILM and the new 6000ILM. The 6000ILM has many ease-of-use features with high-resolution imaging for studies of single DNA/RNA strands, proteins, single molecules, surface structure of cells, and much more. Use of our innovative PicoTREC enables real-time recognition imaging.

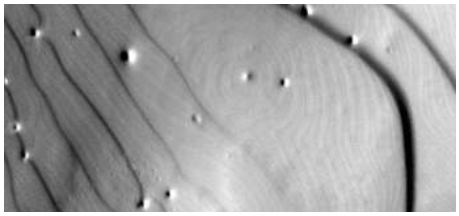
In addition, our new 8500 FE-SEM offers several imaging techniques for enhancing surface contrast and allowing nanoscale features to be observed on a broad range of biomaterials on any substrate, even glass.

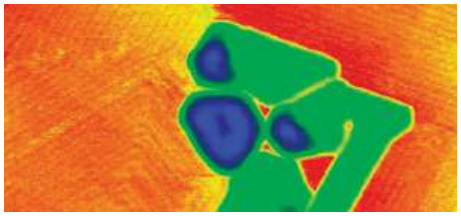


- Exceptional in-fluid imaging with MAC Mode
- Real-time recognition imaging with PicoTREC
- Low-voltage FE-SEM imaging of cells, tissue, bacteria, and more

Discover & Create at the Nanoscale...

Polymer Science



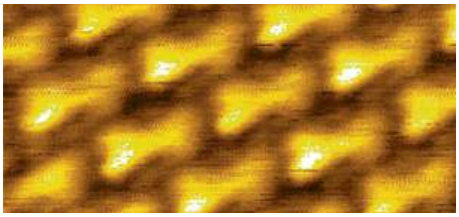


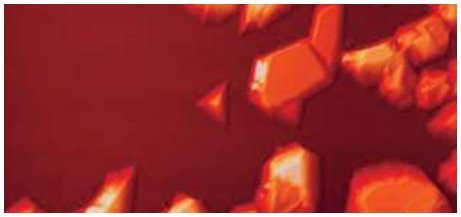
Keysight AFMs are used for studying nanoscale composition mapping and materials properties of various polymers under environmental and temperature control. These AFMs adapt to provide phase, friction, and electrical property measurements at atomic-scale resolution over long-range scans utilizing advanced techniques such as MAC Mode III and high-resolution KFM imaging. What's more, researchers can now take advantage of the capabilities of our new 8500 FE-SEM, which has been engineered specifically for low-voltage imaging of nanoscale features on polymers on any substrate.

Polymer studies can also benefit greatly from the use of Keysight Nano Indenter G200 and G300 systems. These high-precision nanomechanical test instruments are configurable with our low-noise, ultra-low-load Dynamic Contact Module II (DCM II) option, which provides loading capability up to 30mN max load, easy tip exchange for quick removal and installation of application-specific tips, and a full 70µm range of indenter travel.

- AFM and low-voltage FE-SEM for studying surface molecular composition of block copolymers, bulk polymers, thin-film polymers, polymer composites, and polymer blends
- Nanoindenters for ultra-low-load nanomechanical testing of polymers

Electrochemistry



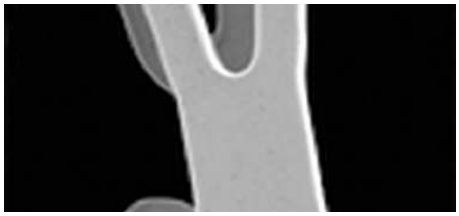


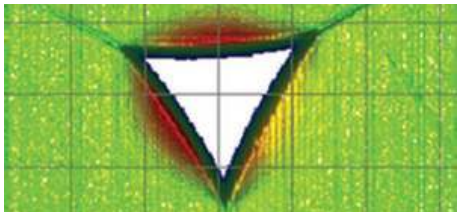
We offer a highly versatile, easy-to-use option for Keysight 5500 AFM users who want to conduct studies involving electrochemistry. A single Keysight electrochemistry unit has modules that allow *in-situ* scanning tunneling microscopy (STM), AFM, and conducting-probe capabilities – without compromising atomic resolution. Our unique environmental chamber protects sensitive samples from harsh elements, controls reactive gases, and provides the flexibility required to control a range of parameters during the course of a given experiment. For example, 7500 AFM users can perform closed-loop lithography with complete environmental and electrochemistry control.

- Imaging in liquids with patented MAC Mode
- Built-in, high-performance potentiostat/galvanostat
- State-of-the-art environmental and temperature control

Discover & Create at the Nanoscale... (continued)

Cross-Disciplinary Nanoscale Research





In nanotechnology and nanomanufacturing research, the control, resolution, and adaptability afforded by Keysight 7500, 5500, 5600LS, and 5420 AFMs, as well as by the new Keysight 8500 FE-SEM, enable success in areas including drug discovery, nanotubes, advanced opto-electronic devices, and a diverse range of industrial applications. For example, our AFMs have been used in the development of new approaches to fabricate self-assembled monolayers.

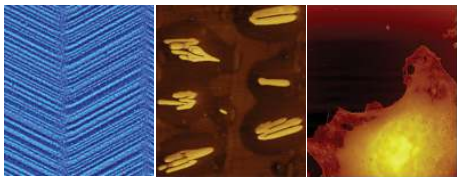
To perform high-precision nanomechanical testing in cross-disciplinary nanoscale research, Keysight Nano Indenter G200 and G300 systems can be configured with our DCM II option, a fully dynamic indentation head for ultra-low-load mechanical properties characterization. Additionally, the T150 UTM allows researchers to characterize nanomechanical properties using the largest dynamic range with outstanding sensitivity.

- AFM and low-voltage FE-SEM for nanolithography, nanowires, and nanotubes
- Nanoindenters for structural biomaterials
- Universal testing machine for yield, tensile, and compression studies

The Keysight Atomic Force Microscope Solutions

Keysight 7500 AFM Series

The Keysight 7500 AFM establishes new functionality, versatility, and ease-of-use benchmarks for nanoscale measurement, characterization, and manipulation. This next-generation system extends the forefront of atomic force microscopy, offering outstanding 90um closed-loop scanning resolution, industry-leading environmental control, ultra-high-precision temperature control, an unrivaled range of electrochemistry capabilities, and much more. The clever, compact design of the 7500 gives researchers quick, convenient access to their samples. A half-dozen distinct AFM imaging modes are supported by the system's standard nose cone, which can easily be interchanged with specialized nose cones as needed, extending capability effortlessly.



MFM image of video tapes. 20µm scan.

AFM phase image of PDES. 10µm scan.

Contact mode image of cell showing nucleus. 50µm scan.

Advantages

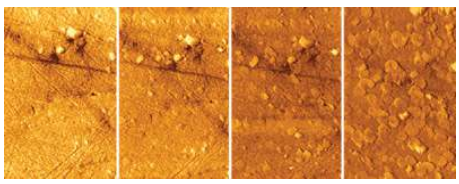
- Atomic scale imaging with closed loop 90µm scanner
- Exceptional environmental and temperature control
- Superior scanning in fluids, gases, and ambient conditions
- Single-pass nanoscale electrical characterization
- Unprecedented electrochemistry (EC) capabilities
- Standard nose cone supports expanded set of imaging modes

Applications

- Life Science
- Materials Science
- Polymer Science
- Electrochemistry
- Nanolithography

Keysight 5500 AFM

The Keysight 5500 is a powerful multiple-user research system for AFM. In addition to atomic-scale resolution, true modularity enables you to add capability-enhancing options as the need arises. An intelligent design permits the simple integration of numerous imaging modes and easy-to-use, application-specific sample-handling plates. Our balanced-pendulum, top-down multipurpose scanners – both open and closed loop – come in a range of sizes, all offering outstanding linearity and accuracy.



Corrosion study of a polished metal surface.

Advantages

- The utmost flexibility from a highly modular system
- Exceptional environmental and temperature control
- Superior scanning in fluids, gases, or ambient conditions
- High resolution over a large scan range
- Convenient vertical sample approach

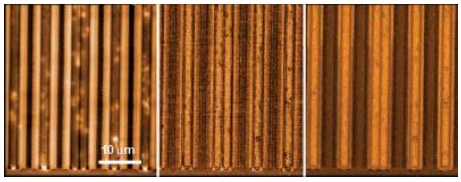
Applications

- Life Science
- Materials Science
- Polymer Science
- Electrochemistry
- Nanolithography

The Keysight Atomic Force Microscope Solutions (continued)

Keysight 5420 AFM

Based on the popular Keysight 5400 AFM, the 5420 has been re-engineered to provide lower noise, better performance, and greater versatility. Featuring a new ergonomic design and improved electronics, this scientific-grade microscope delivers atomic-scale resolution at a remarkably affordable price. In addition, the 5420 offers users new electrical single-pass microscopy (ESPM) mode, which enables high-resolution KFM/EFM, as well as scanning microwave microscopy (SMM) mode, which allows highly sensitive calibrated electrical and spatial characterization.



SMM images of simultaneous topography, capacitance, and dC/dV images of SiGe transistor device.

Advantages

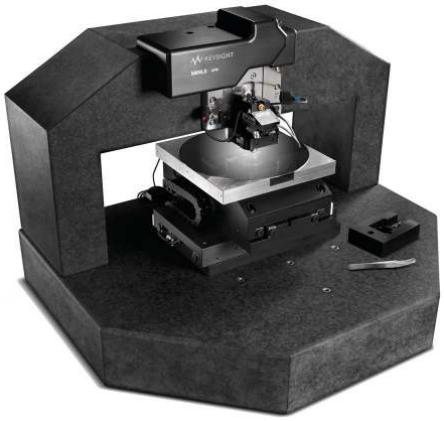
- Scientific-grade instrument delivers atomic resolution
- Value-priced platform offers simple upgrade path
- Open-access design provides ultimate ease of use
- New electronics and techniques

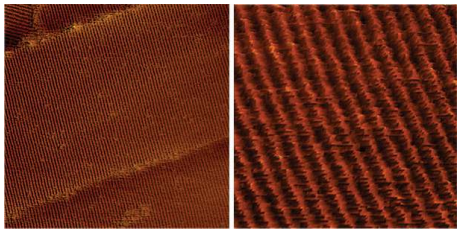
Applications

- Electronic Materials
- Materials Science
- General Surface Characterization
- Education

Keysight 5600LS AFM

The versatile 5600LS is the world's only commercially available AFM that allows high resolution imaging of both large samples (in air) and small samples (in air, or in liquid under temperature control) with an AFM or STM scanner. Samples up to 8 inches in diameter and 30mm tall are easily accepted by the 200mm vacuum chuck. The stage can accommodate a 300mm wafer with repositioning. Temperature control is available.





AFM topographic image of n-C36H74 on graphite. Left: Scan size: 350nm × 350nm. Right: Scan size: 55nm × 55nm.

Advantages

- Fully addressable and programmable
  200 mm x 200 mm stage
- Atomic-resolution imaging of small samples using an AFM or STM scanner
- Simple point-and-shoot AFM imaging based on optical view
- Accurate location mapping ensures reproducibility

Applications

- Electronic Materials
- Semiconductor
- Storage Media
- Materials Science
- Polymer Science

Keysight AFMs for Light Microscopes

The NEW 6000ILM AFM

This microscope seamlessly integrates the capabilities of an atomic force microscope with those of an inverted light microscope or an inverted confocal microscope, letting life science researchers go beyond the optical diffraction limit to achieve nanoscale resolution without any special sample preparation.

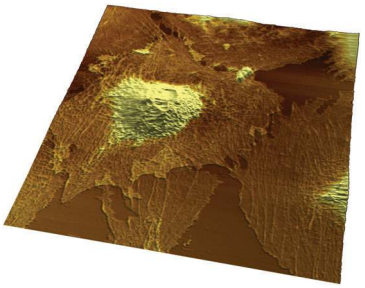
The 6000ILM allows molecular imaging, live-cell imaging, force studies, and mechanical stimulus studies to be conducted with a single-system solution, all while preserving an efficient, natural workflow. It is ideal for studying cell membranes, single DNA/RNA strands, individual proteins, single molecules, and biopolymers.

Advantages

- Easy-to-use solution integrates ILM and AFM capabilities
- Simple point-and-shoot AFM imaging based on optical view
- High-precision overlays of light microscopy and AFM images
- Motorized stage directs movement of sample beneath AFM tip

Applications

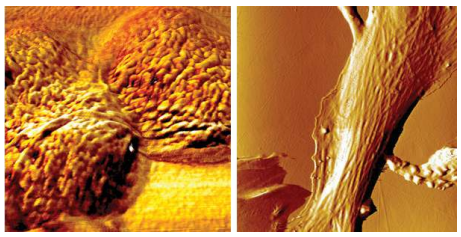
- Life Science



6000 ILM AFM topography image of cell.

Keysight 5500ILM AFM

The ILM adapter combines high-resolution AFM imaging with the direct optical viewing capability of an inverted light microscope to provide both atomic force and optical microscopy data. Designed to allow the 5500 AFM to sit on top of an inverted microscope and under the top illumination pillar, the Keysight 5500ILM delivers excellent optical contrast in its images. It also enables a wide range of complementary techniques, such as fluorescence resonance energy transfer (FRET), darkfield, and brightfield imaging.



Left: E-coli bacteria. Right: MAC Mode image of a living endothelial cell in water.

Advantages

- Simultaneous AFM and optical (or fluorescence) imaging
- Easy imaging in fluids via MAC Mode and sample plates
- Design gives users open access to sample plates
- Enhanced AFM flexibility through modular options

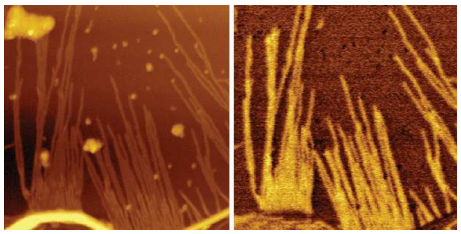
Applications

- Life Science
- Polymer Science
- Nanobeads

Extended Your AFM Capabilities with Keysight's Options for Materials & Life Sciences

MAC III/Auxiliary Signal Access

Keysight's MAC Mode III is a technique for AFM that has been designed for imaging extremely delicate samples in high resolution. MAC Mode III enables imaging of submolecular structures for local mechanical properties and electromagnetic response. For advanced electrical characterization the auxiliary signal access box, enables single-pass, high resolution imaging with AC mode, Kelvin force microscopy (KFM) or Electric force microscopy (EFM), piezo force microscopy and higher harmonic modes of the cantilever – all simultaneously.



CdTe topography image (left) and (right) surface potential. Scan size 1µm.

Advantages

- Allows one-pass multichannel detection for high resolution EFM and KFM
- Three configurable lock-in amplifiers afford superb versatility
- Multifrequency range, up to 6 MHz, allowing higher harmonic modes
- Built-in Q-control further enhances the resonance peak

Applications

- Electrical Characterization
- Polymers
- Biology

SMM Mode

Keysight Technologies' unique scanning microwave microscopy (SMM) Mode combines the comprehensive electrical measurement capabilities of a vector network analyzer (VNA) with the outstanding spatial resolution of an AFM. SMM Mode outperforms traditional AFM-based scanning capacitance microscopy techniques, offering far greater application versatility, the ability to acquire quantitative results, and the highest sensitivity and dynamic range in the industry.

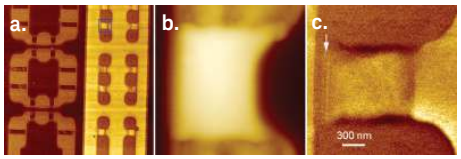


Image in SMM Mode of SRAM: (a) dC/dV, (b) topography of small area, and (c) dC/dV image of small area. The underneath n-type (bright area) and p-type doped structure is clearly identified.

Advantages

- Provides exceptionally high spatial and electrical resolution
- Enables complex impedance (resistance and reactance), calibrated capacitance, dopant density and topography measurements
- Works on all semiconductors: Si, Ge, III-V (e.g., GaAs, InAs, GaN), and II-VI (e.g., CdTe, ZnSe) – does not require oxide layer

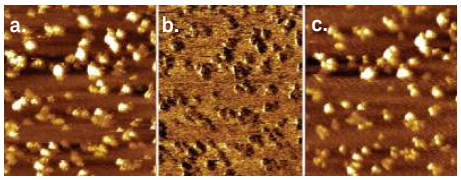
Applications

- Semiconductors
- Polymers
- Ceramics
- Metals
- Organic Films

Extended Your AFM Capabilities with Keysight's Options for Materials & Life Sciences (continued)

PicoTREC

PicoTREC is a system that allows researchers to quickly identify molecules that are engaged in binding events and generate a recognition map along with an AFM topography image of the sample. The system enables many advanced AFM spectroscopy applications such as force-distance studies, generates surface adhesion and molecular recognition profiles.



Avidin topography (a) and biotin-avidin recognition (b,c) images of avidin molecules under physiological conditions.

Advantages

- Identifies molecules and regions involved in binding events
- Screens compounds/molecules by binding interactions
- Improves speed and precision of results

Applications

Interactions of

- Antibody-antigen
- Ligand-receptor
- Drug-receptor
- DNA-protein
- DNA-DNA

Keysight FE-SEM for Low-Voltage, High-Performance Imaging

The NEW 8500 FE-SEM

About the size of a laser printer, this scientific-grade system provides capabilities and performance to researchers in ordinary labs that previously were only available with much larger, more costly FE-SEMs installed in centralized facilities. Installation of the new system is quick and simple. No dedicated facilities are required, only an AC power outlet.

The innovative, easy-to-use 8500 embodies the successful miniaturization of the core technology found in a scanning electron microscope. Optimized for low-voltage imaging and sub-10nm resolution, its thermal field emission electron source provides high signal-to-noise ratios and consistent, long-lasting performance, while secondary and backscatter electron detection capabilities provide a rich data set for each sample.

The novel system offers several imaging techniques for enhancing surface contrast and allowing nanoscale features to be observed on a wide variety of nanostructured materials, including polymers, thin films, biomaterials, and other energy-sensitive samples on any substrate, even glass.

The 8500 has been engineered to deliver consistent, reproducible performance and the industry's lowest total cost of ownership for an FE-SEM.

Advantages

- Resolution and imaging equal to that of conventional FE-SEMs
- Variable low voltage (500 to 2000V) eliminates charging and the need for sample coating
- Programmable X, Y, Z stage allows user to set precise coordinates, scan, and save information
- Miniature electrostatic lens design ensures repeatable performance without constant re-tuning
- Compact size enables easy installation in any research lab and does not require special facilities

Applications

- Polymers
- Thin Films
- Biomaterials
- Nonconductive Samples
- Energy-Sensitive Materials
- Glass Substrates

Keysight FE-SEM for Low-Voltage, High-Performance Imaging (continued)

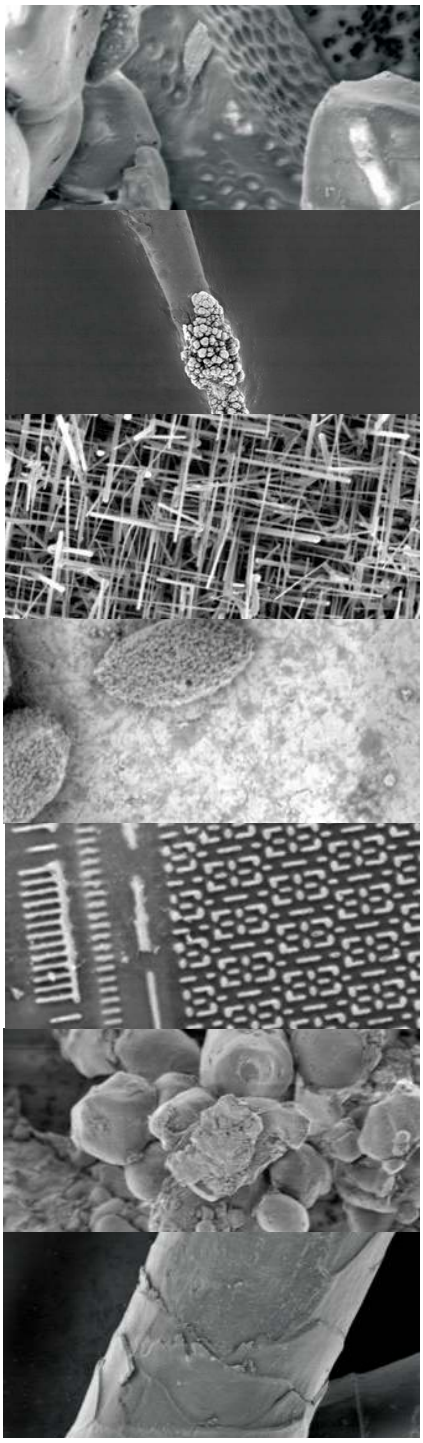
Options/Accessories:

Keysight has created a special SEM startup kit so that when your 8500 FE-SEM is delivered you will have everything you need to start imaging.

The kit includes a specimen mount adapter pin (M4 thread), a multi-unit spec mount (4 x 3.2mm), a package of 100 12mm Pelco tabs, standard SEM pin mounts, a Pelco Swiss-style #7 tweezer, a Pelco mount tweezer, a storage container for SEM mounts, a specimen holder, and a 1/16” ball driver.

The following items are also offered for use with the 8500:

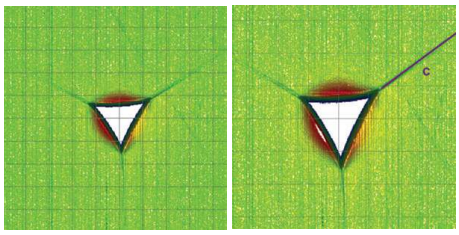
- Specimen mount adapter pin (M4 thread): attaches to the sample holder; used to adjust the working distance of the sample mount
- Standard SEM pin stub mount: 12.7 x 8mm pin height; aluminum with grooved edge
- Tilt cylinder mount: 9.5 x 9.5mm, 45° specimen mount (package of 10)
- Cylinder mount: 9.5 x 9.5mm specimen mount (package of 50)
- Multi specimen cylinder mount holder: holds up to five 9.5mm cylinder mounts; machined aluminum with stainless steel Allen set screws
- Multi 4-pin stub holder: accommodates up to four standard 12.7mm (1/2”) pin stubs, with 3.2mm (1/8”) diameter pin; machined aluminum with stainless steel Allen set screws



Nanomechanical Test Equipment

Keysight Nano Indenter G200

The Nano Indenter G200 is the most accurate, flexible, user-friendly instrument commercially available for nanomechanical testing. Electromagnetic actuation allows unparalleled dynamic range in force and displacement. The G200 lets researchers measure Young's modulus and hardness in compliance with the ISO 14577 standard. It also enables measurement of deformation over six orders of magnitude (from nanometers to millimeters). Users are able to quantify the relationship between structure, properties, and performance of their materials quickly and easily with minimal sample preparation.
Express Test allows the Nano Indenter G200 to be operated in controlled-force or controlled-displacement mode. Testing is simple, just "point-and-shoot".



Advantages

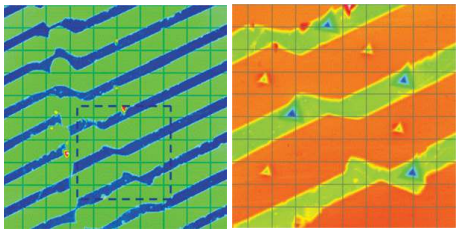
- Award winning Express Test for ultrafast testing capabilities (up to 100 indents at 100 different surface sites in 100 seconds)
- Accurate, repeatable results compliant with ISO 14577
- Unparalleled dynamic range in force and displacement
- Dynamic properties characterization via continuous measurement of stiffness by indentation depth

Applications

- Semiconductor
- Thin Films
- MEM Structures
- Hard Coatings
- DLC Films
- Biomaterials

Keysight Nano Indenter G300

The Nano Indenter G300 utilizes a stage that supports samples with diameters up to 300mm. An excellent long-term investment for industrial users, it provides a fast, reliable method for acquiring mechanical data on uncut silicon wafers. The G300 permits testing of multiple layers, facilitating product development and failure analysis. Electromagnetic actuation allows unparalleled dynamic range in force and displacement and the instrument lets researchers measure Young's modulus and hardness in compliance with the ISO 14577 standard.



Advantages

- Sample stage for specimens with diameters up to 300mm
- Full testing automation lets instrument run unattended
- Flexibility and upgradability for repeatable or new applications
- Dynamic properties characterization via continuous measurement of stiffness by indentation depth
- Accurate, repeatable results compliant with ISO 14577

Applications

- Semiconductor
- MEM Structures
- Thin Films
- Composite Materials
- Metals
- Ceramics

Nanomechanical Test Equipment (continued)

Keysight T150 UTM

The T150 UTM is a state-of-the-art universal testing machine that offers researchers a superior means of nanomechanical characterization by utilizing a nanomechanical actuating transducer head to produce tensile force. The T150 enables researchers to understand dynamic properties of compliant fibers via the largest dynamic range in the industry and the best resolution on the market (five orders of magnitude of storage and loss modulus).

Advantages

- Load cell delivers high sensitivity over large range of strain
- Largest dynamic range and best resolution
- Flexibility and upgradability for repeatable or new applications
- Real-time control and easy test protocol development

Applications

- Dynamic studies of fibers and biological materials
- Tensile and compression studies of polymers
- Yield of compliant fibers and biological materials

Keysight NanoSuite Software and NanoVision

NanoSuite software lets users run tests and manage data with unprecedented ease. Through the elegant and intuitive interface, you can set up and run experiments quickly – changing test parameters as often as desired – with just a few clicks.

NanoVision software allows you to create quantitative high-resolution images using a Keysight Nano Indenter with a high precision closed-loop stage. User can target indentation test sites with nanometer-scale precision, and examine residual impressions in order to quantify material response phenomena.

Advantages

- Survey scanning of areas up to 500µm x 500µm
- Custom test development methods
- Superior experiment data analysis
- Simulation mode for offline sample setup, sample runs, method writing, and data analysis
- Quantitative, high-resolution topographical images
- Quantification of pile-up, deformed volume, and fracture toughness

AFM Options & Accessories

We offer a wide selection of AFM options and accessories, each of which quickly extends the capabilities of your Keysight atomic force microscope

With our modular platform, these components are simple to integrate.

Among the most useful of all of Keysight's AFM accessories is MAC Mode. This patented option provides industry-leading performance for in-fluid and soft-sample imaging, allowing you to capture sub-molecular structures that cannot be resolved with any other AFM technique. Advanced MAC Mode III provides three lock-in amplifiers and allows single-pass imaging concurrent with KFM/EFM. It also supports the use of higher resonance modes of the AFM cantilever, enabling higher harmonics and the collection of additional information about mechanical properties of the sample surface.

Another important AFM accessory is Keysight's exclusive scanning microwave microscopy (SMM) mode, the first and only technique to combine the calibrated, complex electrical measurement capabilities of a performance network analyzer with the high spatial resolution of an atomic force microscope. This mode enables complex impedance (resistance and reactance), calibrated capacitance, calibrated dopant density, and topography measurements.

Additional accessories include our industry-leading environmental isolation chamber (EIC), which lets you control humidity levels, monitor and control oxygen levels, and control the flow of reactive gases during experiments; open- and closed-loop multipurpose scanners, interchangeable nose cones, and PicoTREC molecular imaging.

Options/Accessories

MAC Mode

MAC Mode III

SMM Mode

Environmental Control

Multipurpose Scanners

Nose Cones

Sample Plates

PicoTREC

Electrochemical SPM

Temperature Control

Pico Image Software

Break-out Box

Glove Box

Acoustic Isolation Chamber

Liquid Cells

Vibration Isolation

Video Microscope

Consumables

Nanomechanical Options & Accessories

We offer many options and accessories to enhance the capabilities of your Keysight nanoindentation system or universal testing machinee

Our modular platform makes these components simple to integrate. We continue to optimize advanced technologies as we strive to push performance even further.

The Keysight Dynamic Contact Module II option, for instance, offers 3x higher loading capability than our original Dynamic Contact Module option. It also offers easy tip exchange for quick removal and installation of application-specific tips, in addition to a wider range of indenter travel. As a fully dynamic indentation head designed for low-noise, ultra-low-load mechanical properties characterization, the DCM II extends the range of load-displacement experimentation down to the surface contact level. When applying the Keysight Continuous Stiffness Measurement technique, which provides a means of separating the in-phase and out-of-phase components of the load-displacement history, the DCM II delivers the complete benefits of dynamic nanoindentation testing.

Our popular High Load option, on the other hand, expands the load capabilities of Keysight Nano Indenters up to 10N of force, allowing the complete mechanical characterization of ceramics, bulk metals, and composites. Another popular choice, our Lateral Force Measurement option, provides three-dimensional quantitative analysis for scratch testing, wear testing, and MEMs probing. We also offer a precision heating stage designed specifically for the Nano Indenter G200 (standard XP head configuration) to facilitate the study of materials of interest as they are heated from room temperature to as high as 350°C.

Keysight T150 UTM users can utilize our Continuous Dynamic Analysis option. This technology offers a direct, accurate measurement of the specimen's stiffness at each point in the experiment, enabling mechanical properties to be determined continuously as the specimen is strained.

Options/Accessories

Dynamic Contact Module II (DCM II)

Continuous Stiffness Measurement (CSM)

High Load

Lateral Force Measurement (LFM)

Continuous Dynamic Analysis (CDA)

Heating Stage

Nanovision Software

Indentation Kit

Consumables

Be the First to See, Understand, & Publish

Keysight Technologies nanotechnology measurement division has established itself as a leading provider of atomic force microscopes and nanomechanical testing systems. And, Keysight recently introduced the first compact field emission scanning electron microscope (FE-SEM) which will further enhance the portfolio of nano-measurement instruments. Nanotechnology spans many disciplines, including physics, material science, chemistry, life science, computer science/information technology, and electronics. It is a common denominator between the two chief areas of Keysight's business – electronic measurement and life science groups.

Keysight is dedication to innovation; trust, respect, and teamwork; and uncompromising integrity. Added to these are speed, focus, and accountability to meet customer needs and create a culture of performance that draws on the full range of people's skills and aspirations.

Keysight is in an excellent position to keep our customers at the forefront of this exciting science thanks to development partnerships with Keysight Labs, collaborations with university research programs, and an experienced worldwide staff committed to superior products, science, and service.

Keysight's nanotechnology measurement instrumentation lets scientists image, manipulate, and characterize a wide variety of nanoscale behaviors. Our growing collection of nanotechnology instruments, accessories, software, services, and consumables can reveal clues researchers need to understand the nanoscale world. Our driving goal is to help you be the first to see, the first to understand and the first to publish.

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:
www.keysight.com/find/contactus

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