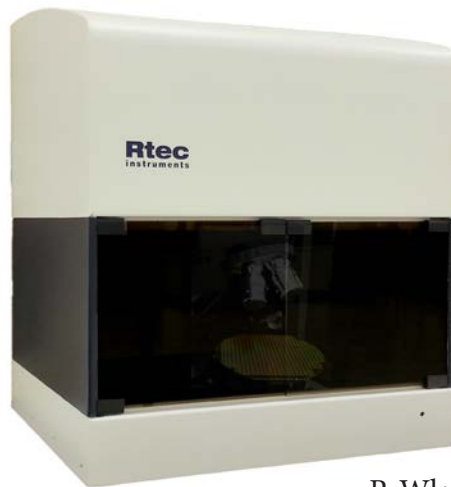




Dual Mode 3d Profilometer



R-Wlafm

White Light Optical Interferometry + Atomic Force Microscopy

Universal Combination Profiler for Research & Development and Industry

Multiple techniques are brought together for comprehensive data collection and analysis. The same area of sample automatically moves between white light interferometer head and atomic force microscope head. Low machine & floor noise, high end electronics, ease of use, high resolution imaging backed by our network of support and after sales service makes this profiler stand apart in its class.

Sub nm resolution in XYZ

Fully automated

3D Imaging

Flexible

Low cost of ownership

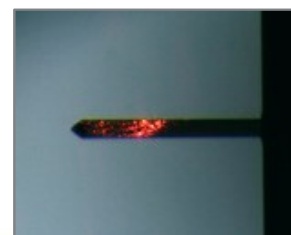
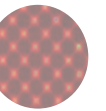
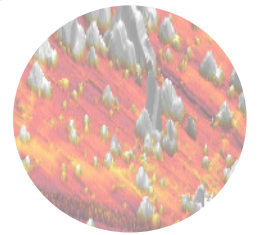
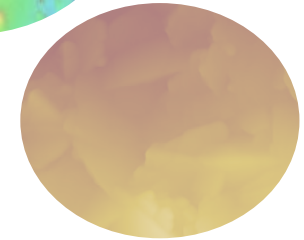
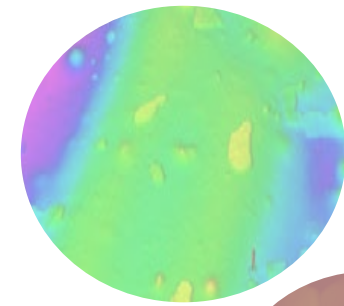
Universal and powerful

Best of both worlds

Unlimited benefits

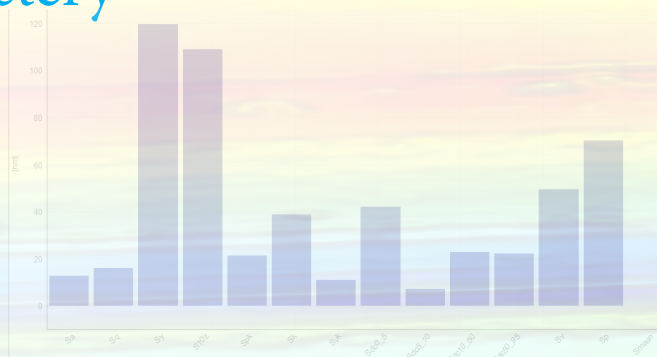
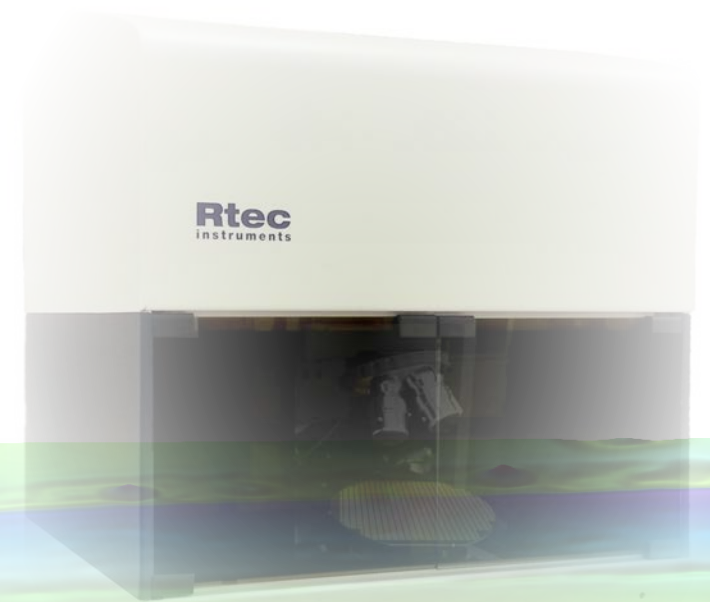
Unique

- Surface roughness
- Film thickness
- Step height
- Atomic level images in XYZ
- Wear track, volume wear
- Radius of curvature
- Cracks, features, defects



Atomic Force
Microscopy

White light
Interferometry



White light Interferometer

Industry leading sensitivity

Multiple wavelength

High throughput

Technique

Rtec's white-light interferometry involves capturing light intensity data at a series of positions along the vertical axis, determining where the surface is located by using the shape of the white-light interferogram, the localized phase of the interferogram, or a combination of both shape and phase.

Intuitive Operation

Superior algorithm, precision, high measuring speed and easy to use software allows rapid analysis and report creation.

Multiple Objectives

The tester comes with up to 6 objective turret that includes multiple objectives (long distance, short distance, different numerical apertures, transmissive lenses etc.) .

Electronics

Advanced controllers, low

machine noise, self calibrating system, option to choose selective working wavelength, 64 bit parallel processor, standard resolution up to 1920x1920, cool and silent system sets the tester apart and defines its own class.

Hardware

High end lens from Nikon, high intensity multi color LED, fine finish on parts and components, low power consumption, small foot print, remote access, active lighting etc. makes this a potent tool in hands of the user and is suited for both research and manufacturing environment.

Highlights

- Internal self calibration
- 5 million pixel
- 64 bit processor
- Low machine noise
- Multiple color LED
- 6 objective turret
- Flexibility



Technique

Rtec's AFM consists of a cantilever with a sharp tip (probe) at its end that is used to scan the specimen surface. This probe is moved across the surface in contact or non contact modes. The deflection of the probe during this scan is measured using laser.

Modes

This atomic force microscope has all of the important features and benefits expected from a light lever AFM. Standard scanning modes included with the system are (i) vibrating mode - used for high resolution and soft samples and (ii) non-vibrating mode - that is used for routine scanning. Also included with the system are phase and lateral force modes.

Software

Control software, is simple and intuitive to use. Different windows walk users through the process: A pre-scan window helps align the AFM

probe, a scanning window aids in acquiring images, a force position window gathers images, and finally, a system window assists in altering system parameters

Video Microscope

A video optical microscope in an AFM serves two functions. First it is used for aligning the laser onto the cantilever in the light lever AFM. Secondly, the optical microscope is useful for locating surface features for scanning.

Options

- Liquid cell
- MFM mode

Highlights

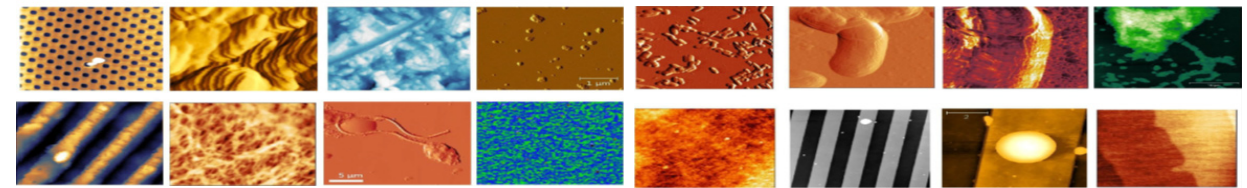
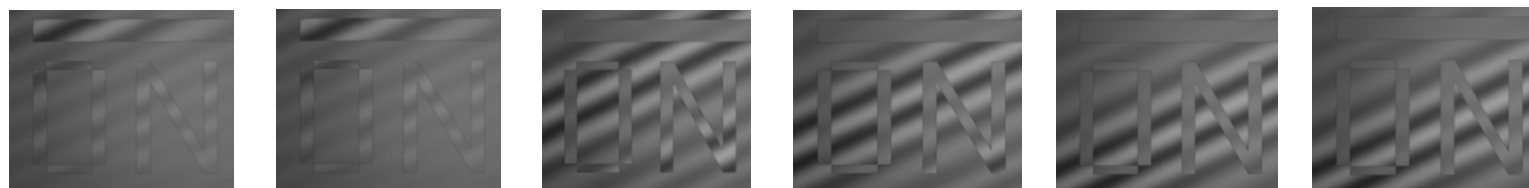
- Mount any commercially available tip
- Easy to use
- Easy to change tips
- Several modes
- Tip scan on a large XY stage allows to image any sample
- Sub nm resolution

Atomic Force Microscope

Ease of use

Tip Scanning

Large XY Stage



Applications

Markets

The versatility and ease of use gives the Rtec profiler application across industries ranging from hitech to the traditional industries. It can be used for thin or thick films, smooth or rough surfaces, flat or non flat surfaces, transparent or opaque surfaces, nano or macro scale, coating or bulk materials.

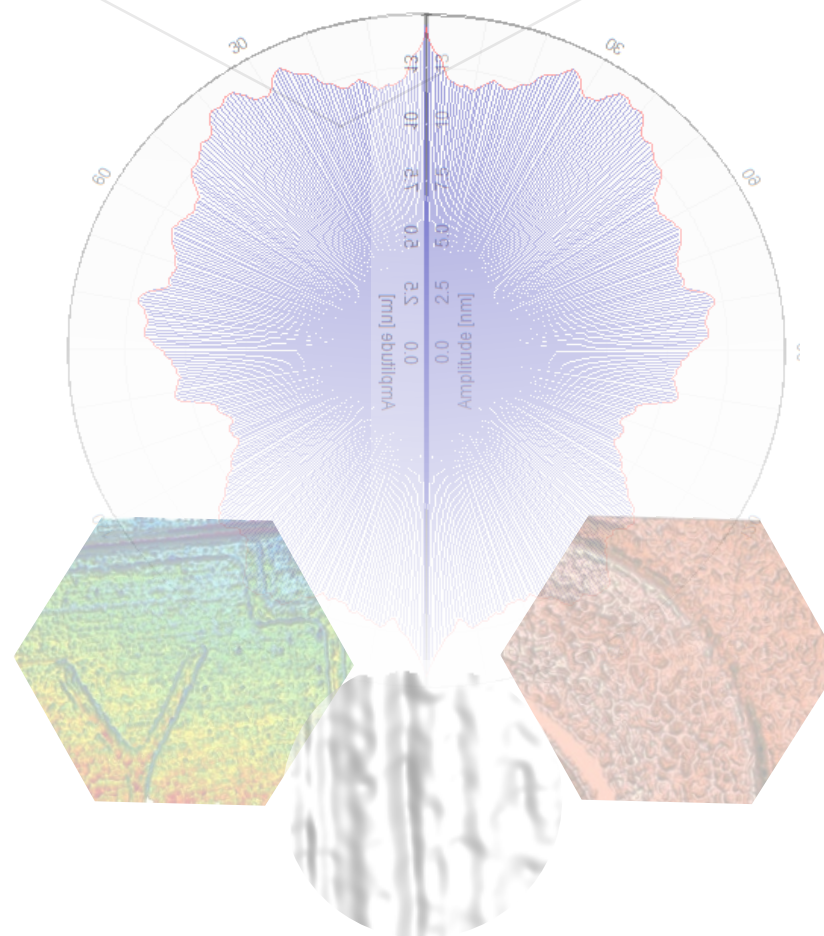
The ease of use allows this profiler to a important role in several industries from hi tech to traditional industries. The tester can be used for both research and routine analysis for production and quality control.

Tribology wear, volume wear, scar, erosion, corrosion, radius of curvature...

Miscellaneous biomedical devices, stent, joints, lens...

Materials roughness, indent depth, defects, scratch...

Research coatings, thin films, CVD, PVD, exotic materials, solar cells, polymers...



Semiconductor wafer, pcb, mask, insulation, MEMS, bumps...

Software

The profiler comes with powerful operating and image analysis software. Operating software is windows based and is very easy to learn and operate. Software allows for automatic positioning and motion of same sample area between both imaging heads. The image analysis software allows rapid reporting of several standard parameters as well as customisation of reports.

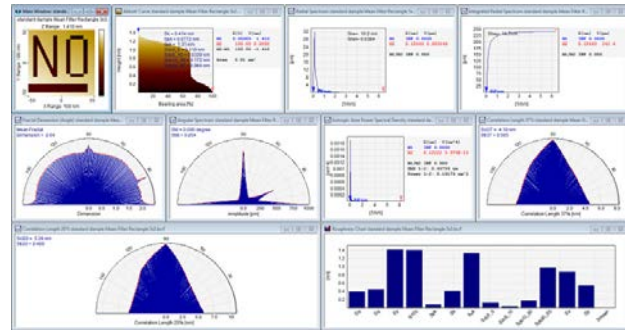


Image analysis software features

- Plane correction (flattening)
- Cross-section profile analysis
- Histogram analysis
- Fourier transform
- Auto correlation
- Cross correlation
- Gradient images
- Image addition and subtraction
- Color manipulation
- Contrast enhancement
- Zoom
- Mirror and rotation
- Copy, print and save
- Customizable user interface
- Calibration
- Tip characterization
- Reduce noise features
- Correlation averaging
- Extended Fourier analysis
- Roughness & hardness analysis
- Particle & pore analysis
- Force curve analysis
- 3D visualization studio
- Movie & time series analysis
- Gain productivity
- Batch processing

Highlights

- Counter intuitive and easy to use software
- Fully automatic motions
- Compliant with several ISO/ ASTM standards
- Fast data reporting
- Advanced and basic algorithms
- Set of features to analyze any kind of sample
- Automatic data analysis

Specification Summary

Platform Summary

- Table top standing, floor standing optional
- Dual head frame design with up-gradable for more measurement heads
- Standard motorised stage 150x150mm (Option 310x310mm)
- XY resolution 0.1um
- Tip tilt stage 6 degree
- Theta stage optional
- Anti-vibration table optional

Atomic Force Microscope

- Z Actuator Type: Piezo
- XY Scan: 70x70 um scan Area
- XY Linearity: <1%
- XY resolution < 3nm closed loop <0.3nm open loop
- Z Range: > 7 um
- Z Linearity: < 5%
- Z Feedback noise: < 0.15nm
- Several standard modes available
- High resolution scanner available

Data Generated

- Surface roughness
- Radius of curvature
- 3D and 2D imaging
- Film thickness
- Step height
- Rotational and molecular information

Facility

- Voltage: 90 - 240 VAC, 50/60Hz
- Humidity: 10-80%, relative humidity, non-condensing
- Vibration: < 90 Micro-in/sec (velocity)
- Acoustic: < 60dB-A
- Compressor air: 40-80 psi

White light interferometer

- WLI Mode
- PSI Mode
- RMS repeatability: < 0.008 nm
- 0.1nm Z resolution
- Vertical range 0.1 nm to 10mm
- Up to 6 objective turret
- 2.5x to 100x interference objective lens
- Multi band long life LED

Nikon Interferometric Objective lens specification

Objective Magnification:	100x	50x	20x	10x	2.5x
Numerical Aperture:	0.7	0.55	0.40	0.30	0.075
Field of View (mm)	0.25	0.5	1.25	2.5	10
Resolving pwer (µm):	0.4	0.50	0.69	0.92	3.67
Working distance (mm):	2	3.4	4.7	7.4	10.3
Depth of focus (µm):	0.56	0.9	1.71	3.04	48.6

* Specifications are subject to change. Please contact us for latest specifications.
 ** Dependent of several factors

About us

Rtec-Instruments develops and manufactures advanced imaging solutions for research and industrial applications. These include several areas that require fast, accurate, three-dimensional visualization and measurement with deep-submicron resolution and precision. Rtec-instruments has deep roots in surface science metrology. Our company, is also a leading provider of mechanical test instrumentation such as tribometer, nanoindenter, stress tester, etc. We share with them a philosophy that embraces collaboration and partnering with customers and other leaders in academia and industry to ensure that our products answer real needs with innovative solutions. Our San Jose, California headquarters houses all research, development, manufacturing and factory support operations. In addition to our talented staff of scientists, engineers and technicians, we maintain an extensive network of well-qualified local representatives who are ready to provide advice and support whenever it is needed.

Other Products

Stress Tester
Universal Tribometers
Profilometers
Nano Indenter
Nano Tribometer
Scratch and Indentation Tester
Polishers
High Temperature Indentation
Coating Deposition



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