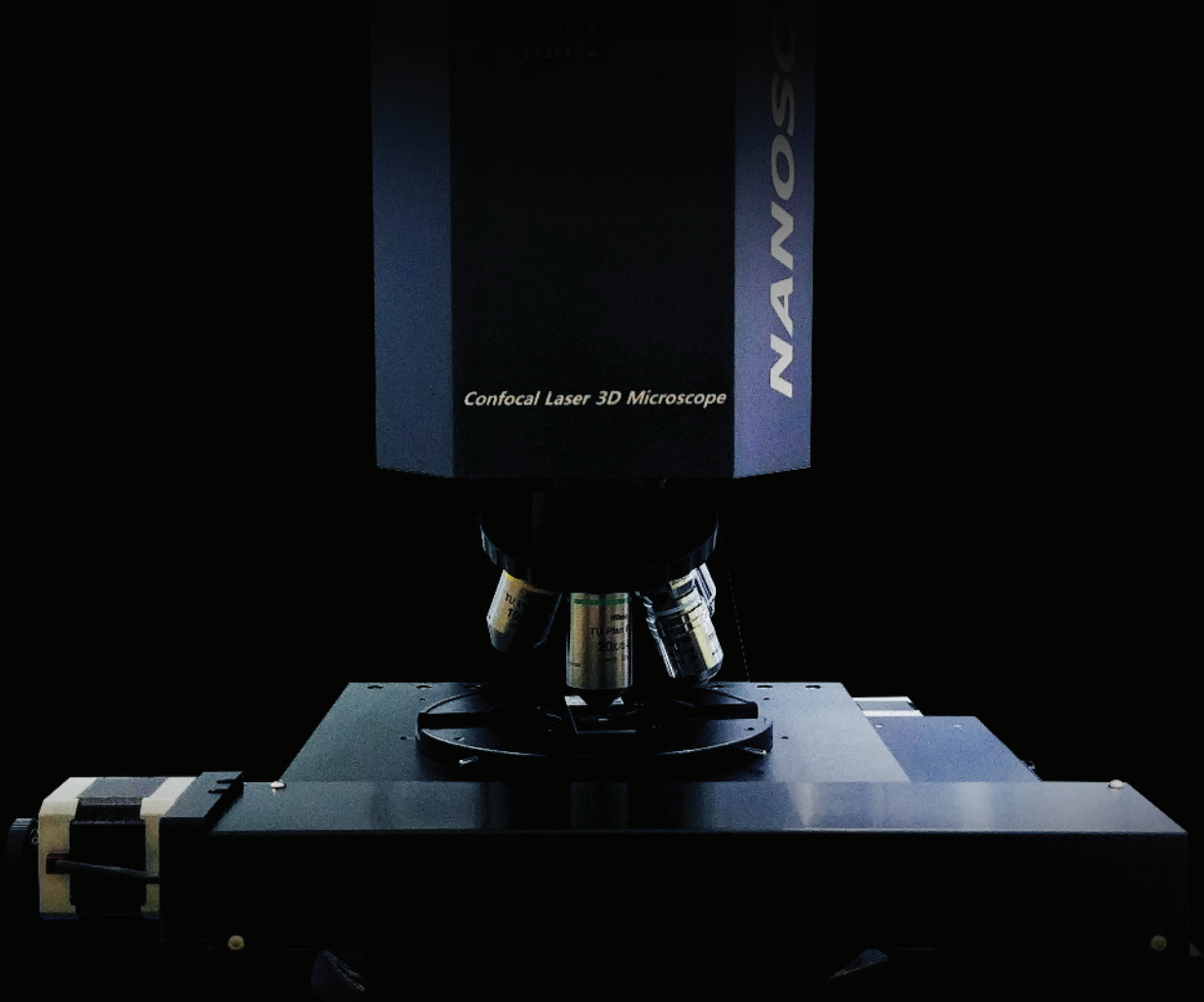


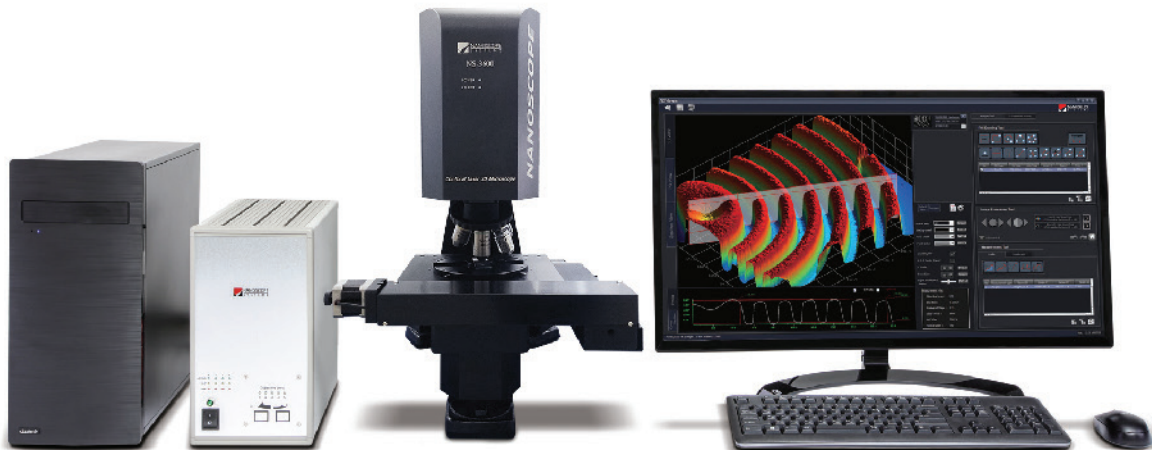
NS-3600

High Speed 3D Laser Confocal Microscope



High speed laser confocal microscope

NS-3600 is a high-speed confocal laser scanning microscope (CLSM) for precise and reliable 3-dimensional (3D) measurement. A real time confocal microscopic image is achieved by fast optical scanning modules and signal processing algorithms. It is a promising solution to measure and inspect the microscopic 3D structures such as semiconductor wafers, FPD products, MEMS devices, glass substrates, and material surfaces.



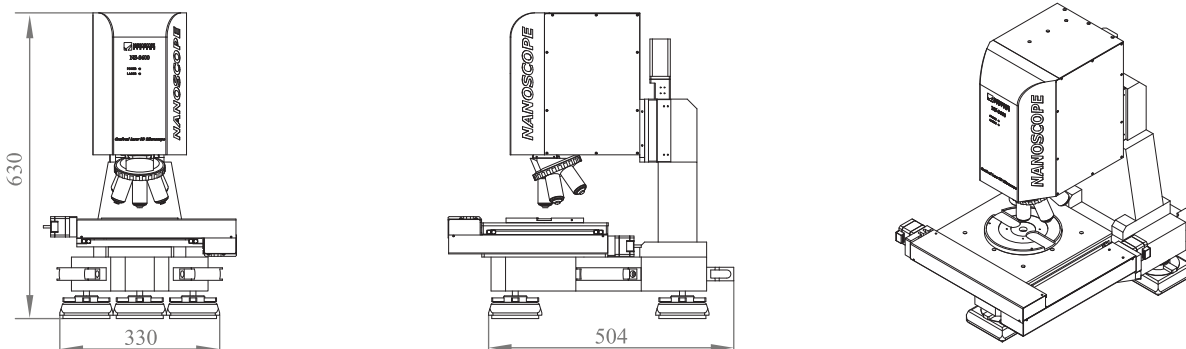
Real time confocal imaging with simple operation

Features & Benefits

- High resolution nondestructive optical 3D measurement
- Real time confocal imaging
- Various optical zoom
- Simultaneous bright field and confocal imaging
- Inclination compensation
- Easy analysis mode
- Precise and reliable high-speed height measurement
- Inspection of features through semi-transparent substrate
- No sample preparation
- Image stitching for wide range inspection

Dimensions

[Unit : mm]

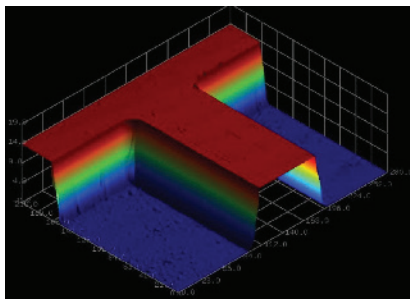


Application field

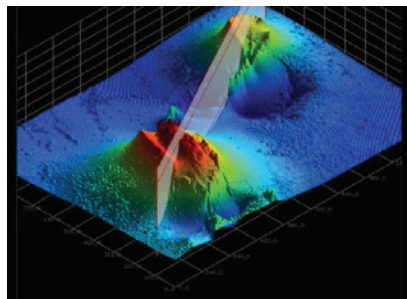
NS-3600 is a promising solution for the measurement of height, width, angle, area, and volume of micro and submicro structures such as

- Semiconductor – IC pattern, bump height, wire loop height, defect inspection, CMP process
 - FPD product – Touch panel screen inspection, ITO pattern, LCD column spacer height
 - MEMS device – 3D profile of structure, surface roughness, MEMS pattern
 - Glass surfaces – Thin film solar cell, solar cell texture, laser pattern
 - Material researches – Tooling surface inspection, roughness, crack analysis
-

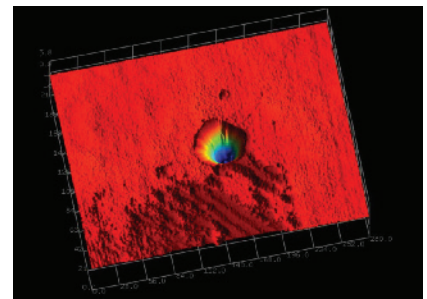
Sample images



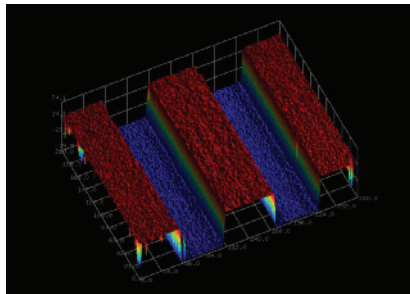
VLSI height standard
FOV : 280 × 210 μm (50×)



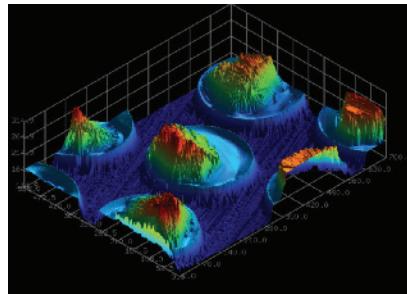
OLED glass protrusion
FOV : 280 × 210 μm (50×)



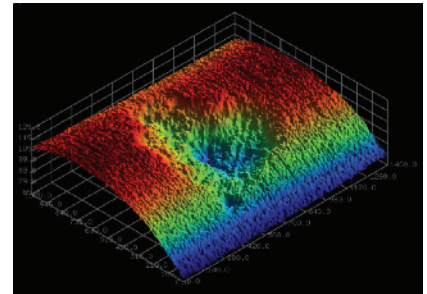
OLED laser processing
FOV : 280 × 210 μm (50×)



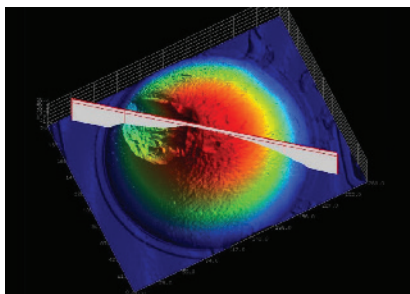
Quartz pattern
FOV : 280 × 210 μm (50×)



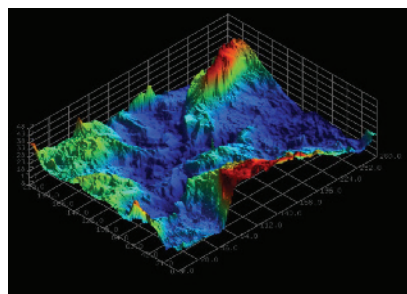
Diamond tool
FOV : 700 × 525 μm (20×)



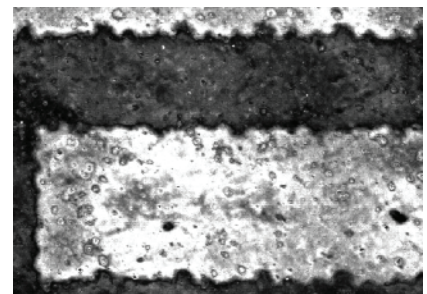
Metal pillar
FOV : 1400 × 1050 μm (10×)



Bump
FOV : 280 × 210 μm (50×)



Graphene
FOV : 280 × 210 μm (50×)

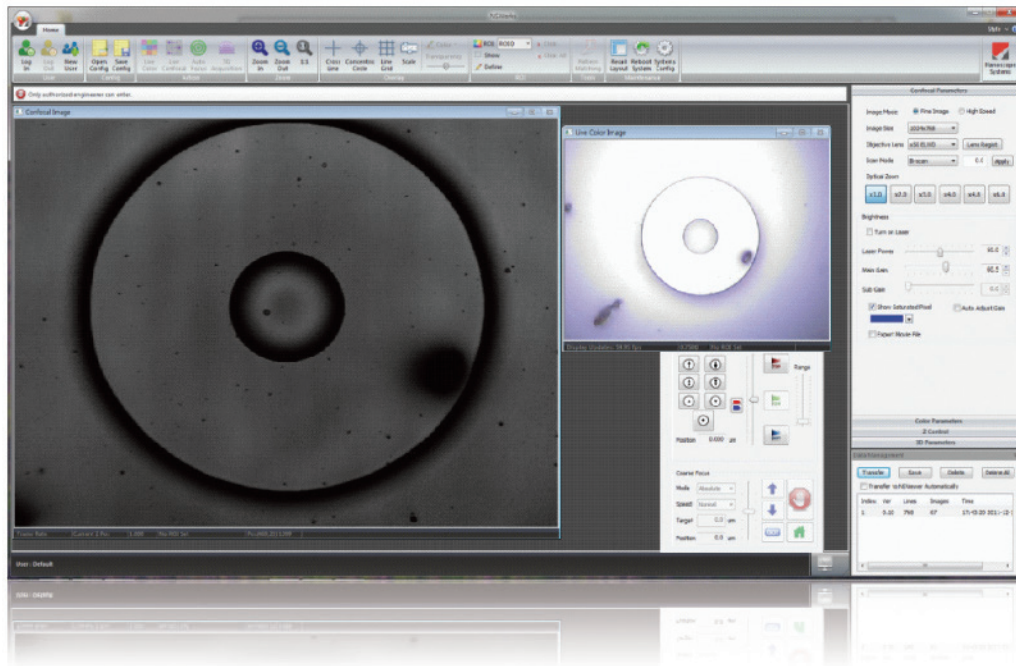


ITO pattern
FOV : 1400 × 1050 μm (10×)

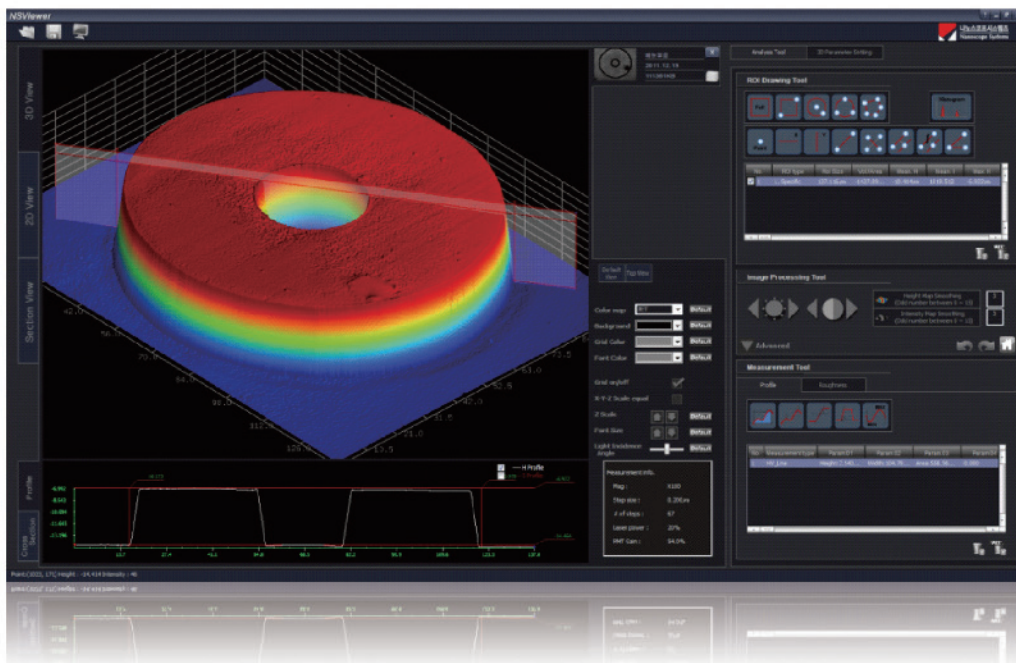
User interface software NSWorks & NSViewer

- Simple and plain operation even to a first-time user.
 - A CCD image, a confocal image, and a main control panel are displayed in one operation window.
 - Various adjustable parameters are provided for the advanced application.
 - A real-time confocal image provides the immediate feedback from hardware.
 - Separated analysis window with the convenient graphical reporting tools.
 - The 3D graphical view makes a user easily recognize the microscopic structure of a sample.
-

Operation software NSWorks



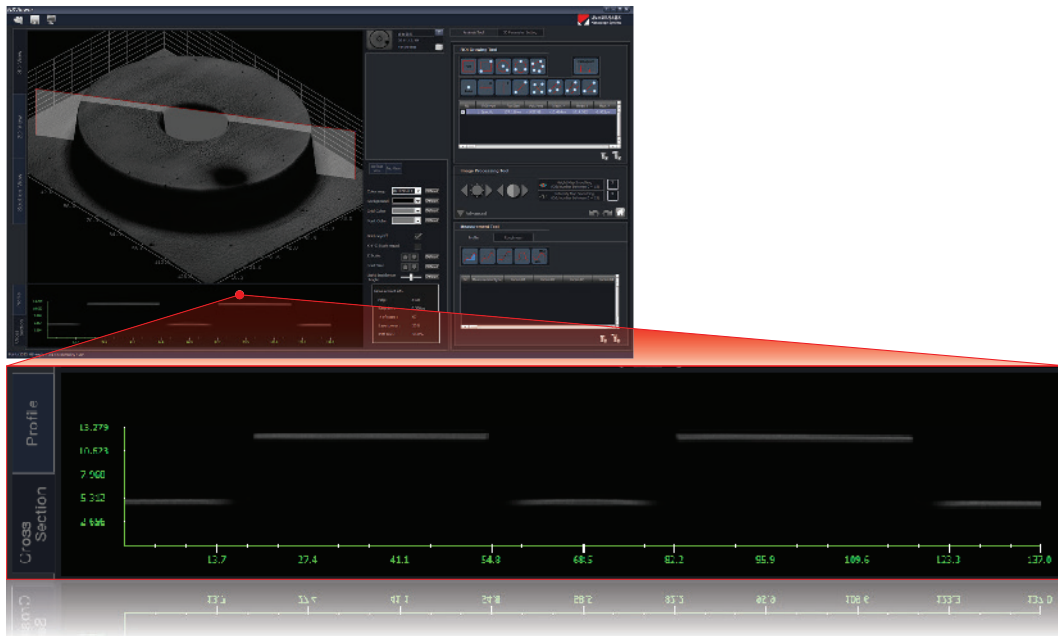
Analysis software NSViewer



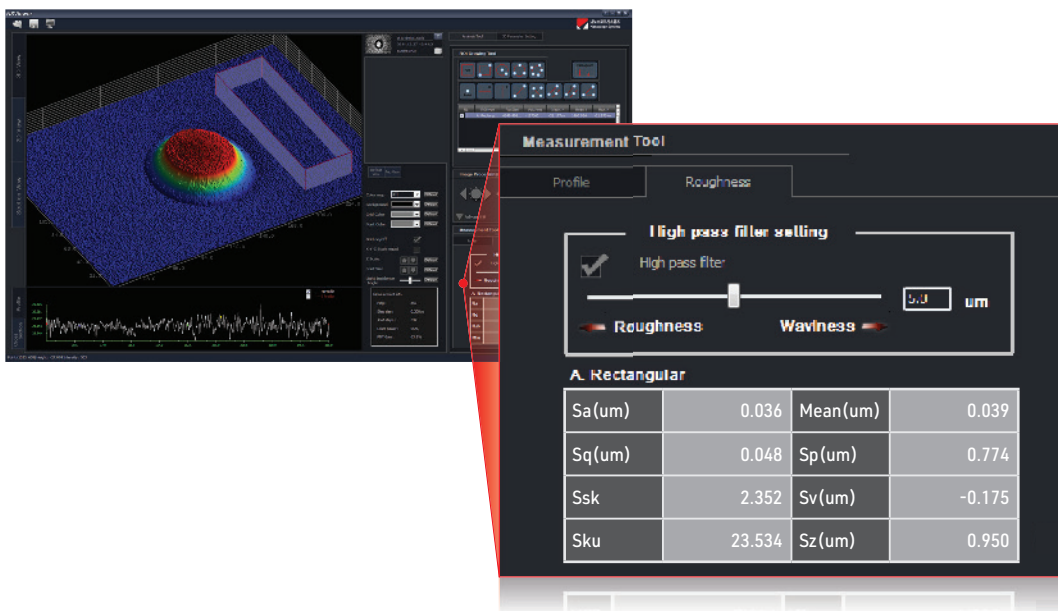
Most reliable optical 3D measurement & Roughness analysis

The 3D measurement of NS-3600 is based on the most reliable real-time confocal image definitely superior to the image from the other optical technologies. It provides three-dimensional descriptions of target objects from a series of optically sectioned images using a very straightforward algorithm, with which the cross-sectional image is directly converted to the 3D profile data. User can see the raw cross-sectional image in NSViewer, which is intuitively interpretable. NS-3600 can be used for most kinds of 3D profiling applications. Specifically, it is ready to be used for the surface roughness measurement. The roughness analysis of the measured data can be easily performed with many convenient function tools.

Cross sectional image display



Roughness measurement for specified ROI (region of interest)



Powerful and convenient optical solution

With powerful and unique performance of NS-3600, the application area of optical microscope imaging is enlarged. The image of the features under the transparent or semi-transparent layers can be clearly inspected, and the surface image of light-emitting or highly-heated materials can be distinctly monitored, which are not possible with the conventional optical microscope technology. NS-3600 is widely proven as a final and successful optical solution in the various application fields.

Film thickness measurement

If transparent, or semi-transparent such as a film-coated surface, NS-3600's cross sectional image directly shows how the layers are constituted, and its thickness can be measured directly from this cross sectional image.

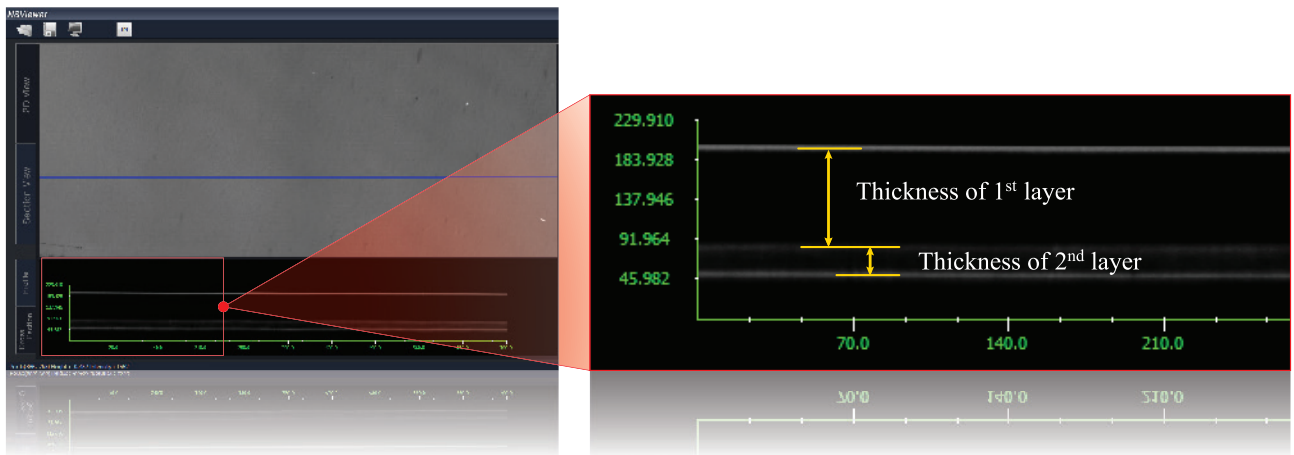
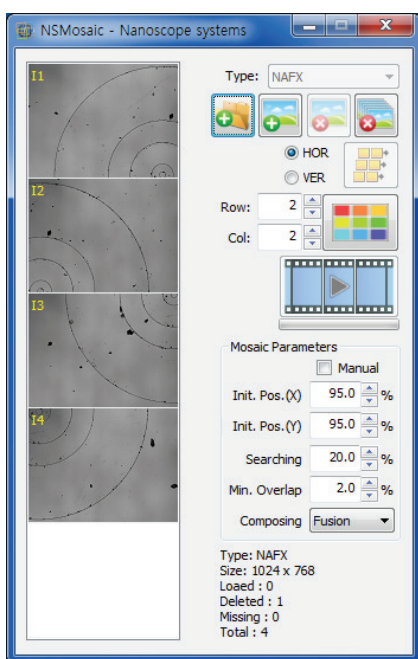


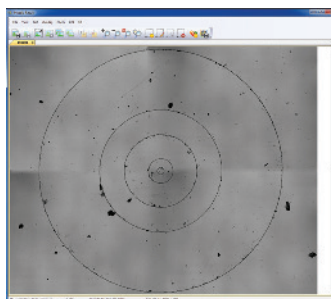
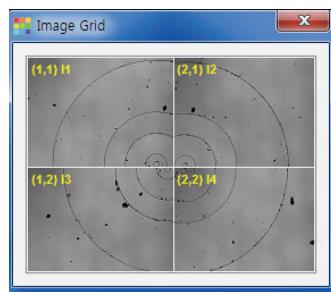
Image stitching

For wide range inspection, the consecutive measurement and image tiling of pre-defined area is available with the motorized XY stage and NSMosaic, the image stitching software of NS-3600. The stitched image can be analyzed as one single measurement result.

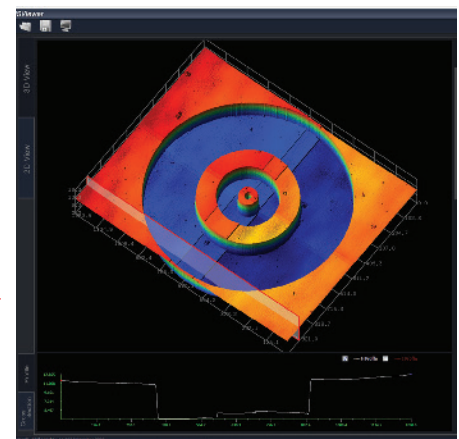


NSMosaic for image stitching

Matrix formation of images



Automatic boundary searching



Analysis of stitched image in NSViewer

Specifications

Model	Microscope	NS-3600				Remark
Objective lens magnification		10x	20x	50x	100x	
Observation / Measuring range	Horizontal (H): μm	1400	700	280	140	
	Vertical (V): μm	1050	525	210	105	
Working distance: mm		17.5	4.5	1.0	1.0	
Numerical aperture (N.A.)		0.30	0.45	0.80	0.90	
Optical zoom		x1 to x6				
Optical system for observation/measurement		Pinhole confocal optical system				
Height Measurement	Measuring scan range	10 mm				
	Display resolution	0.001 μm				
	Repeatability σ	0.02 μm				Note 1
Width measurement	Display resolution	0.001 μm				
	Repeatability 3σ	0.03 μm				Note 2
Frame memory	Pixel count	1024x1024, 1024x768, 1024x384, 1024x192, 1024x96				
	For monochrome image	12 bit				
	For color image	8-bit for RGB each				
	For height measurement	16 bit				
Frame rate	Surface scan	20 Hz to 160 Hz				
	Line scan	~8 kHz				
Laser beam light source for confocal measurement	Wavelength	Red laser, 638nm				
	Output	~2mW				
	Laser Class	Class 3b				
Laser light-receiving element		PMT (Photomultiplier Tube)				
Light source for optical observation	Lamp	LED				
Color camera for Optical observation	Imaging element	Color CCD image sensor				
	Recording resolution	1296 x 966				
Data processing unit		Dedicated PC				
Power supply	Power-supply voltage	100 to 240 VAC, 50/60 Hz				
	Current consumption	500 VA max.				
Weight	Microscope	Approx. ~50 kg (Measuring head unit : ~12.5 kg)				
	Controller	~8 kg				
Vibration isolating system		Pneumatic isolator				Option

Note 1 : 100 times measurement of standard sample (1 μm step height) with 100 \times / 0.9 objective.

Note 2 : 100 times measurement of standard sample (5 μm pitch) with 100 \times / 0.9 objective.

NS-3600

High Speed 3D Laser
Confocal Microscope



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