NanoScanTechnology

reasoned innovations

Catalog

Scanning Probe Microscopy

AFM

SPM

MFM

TERS

STM

Confocal

Cryo

Microscopy

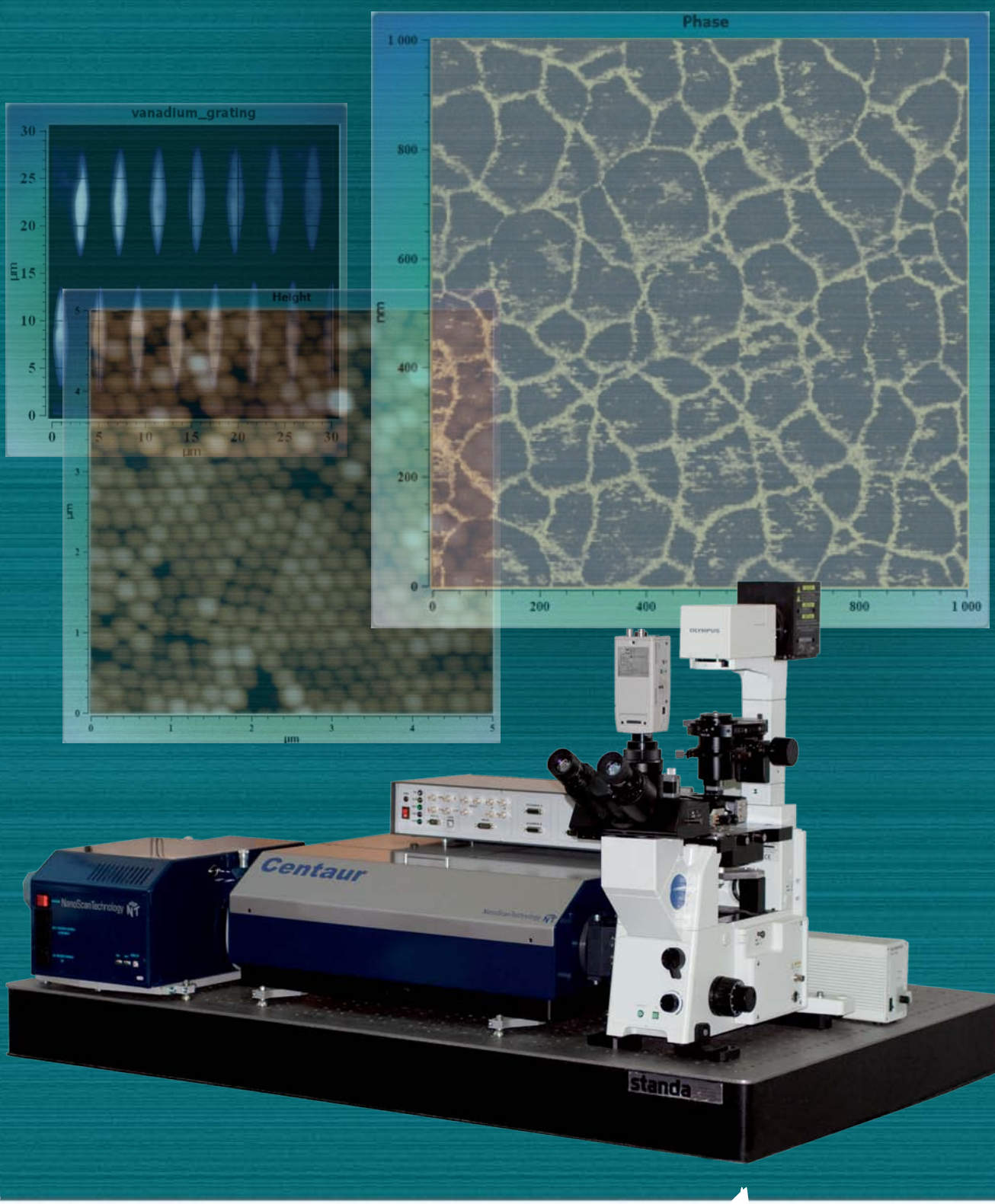
Tip

Atomic

Raman

Force

Probe

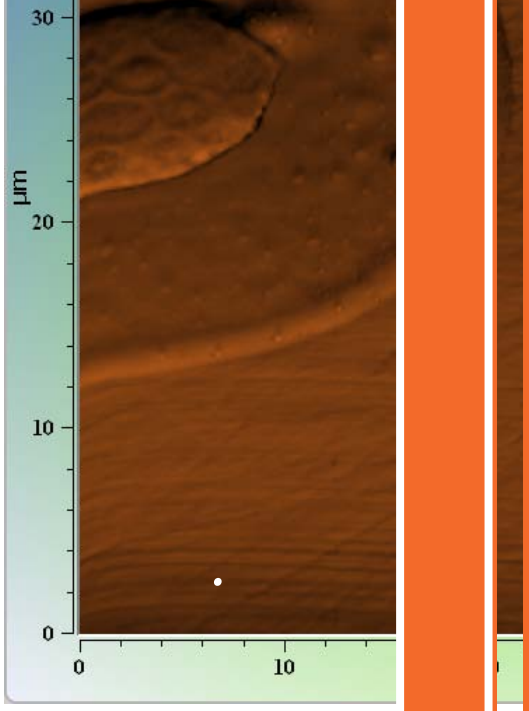


web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Where to use:

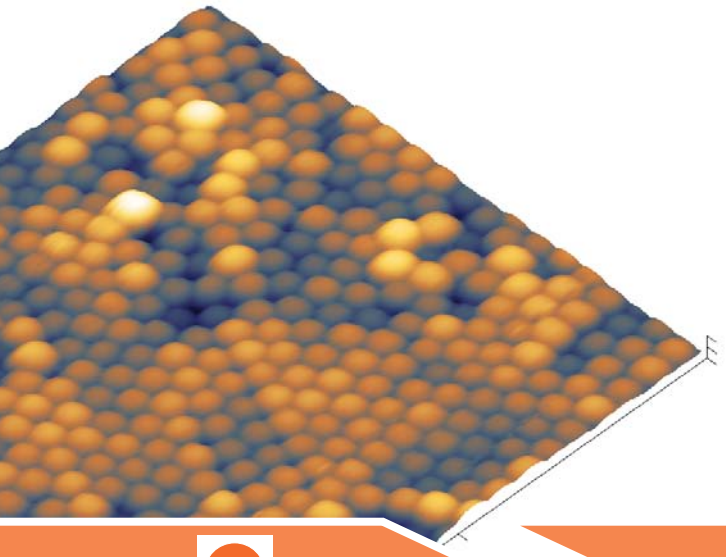
- ► Biology
- ► Chemistry
- ► Physics
- ► Interdisciplinary research:

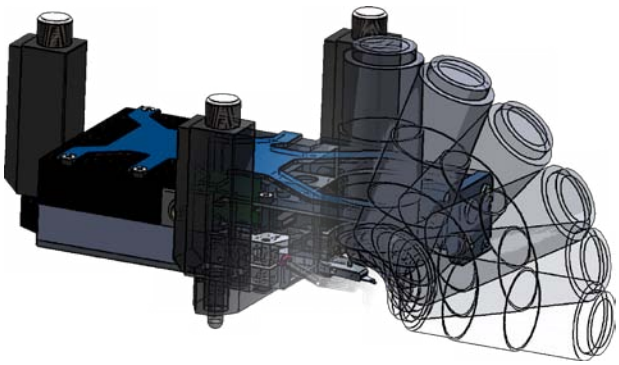
  - ▼Nanotechnology
  - ▼Material Science
  - ▼Pharmaceutics
  - ▼Microelectronics



Products:

- ► Centaur
- ► Centaur HR
- ► Snotra
- ► Certus Optic
- ► Certus Standard
- ► Certus Light
- ► Ratis



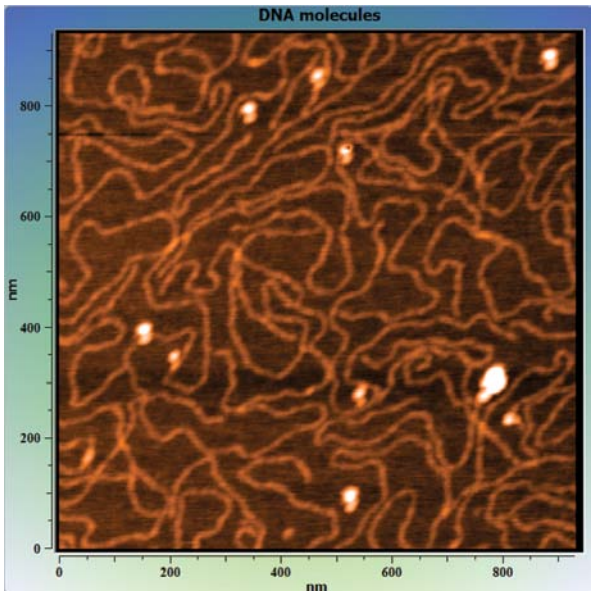


0,17 µm
0,00 µm

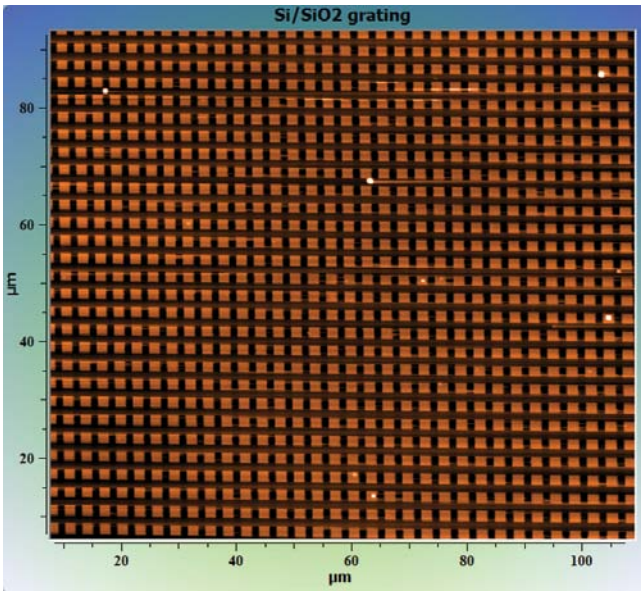
web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Applications:

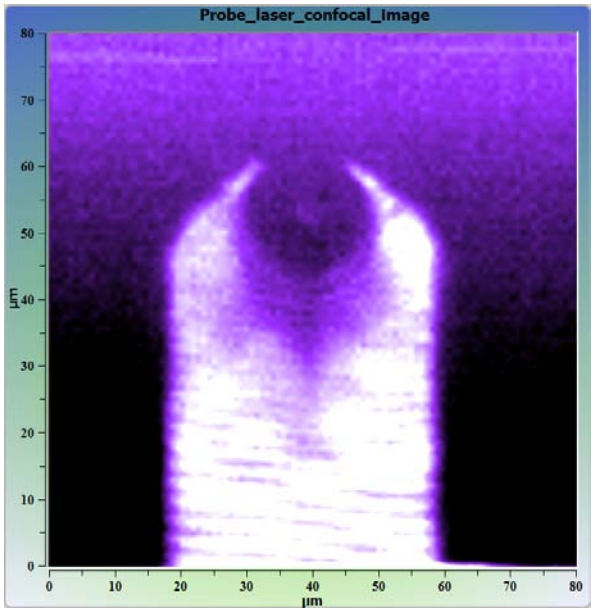
- ► Scanning Probe Microscopy
- ► Optical microscopy
- ► Confocal Raman Microscopy (Spectroscopy)
- ► Fluorescent Confocal Microscopy (Spectroscopy)
- ► Laser Confocal Microscopy
- ► Scanning Near-field Optical Microscopy
- ► Positioning / Scanning



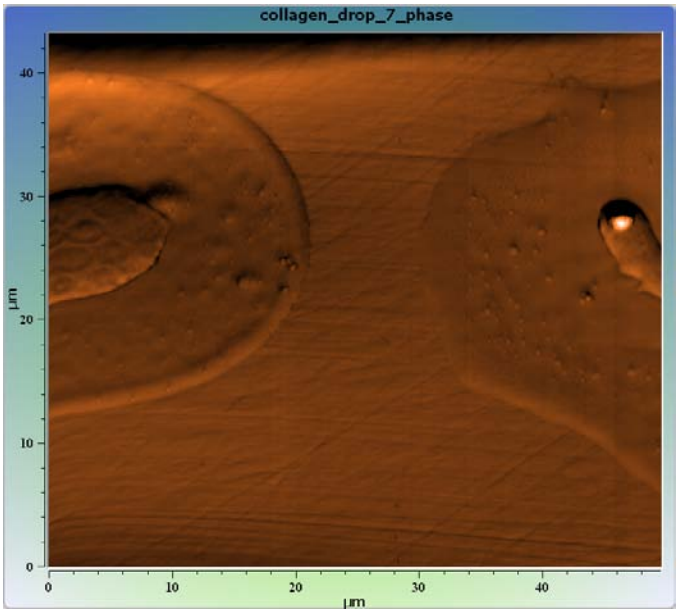
The image of DNA molecules on mica. Semi-contact mode. Topography. 0.9x0.9 µm, 512x512 points.



The Si/SiO_2 periodic structure. Contact mode. Topography. 100x90 µm, 1024x1024 points.



Confocal laser image of cantilever. 80x80 µm. 300x300 points.

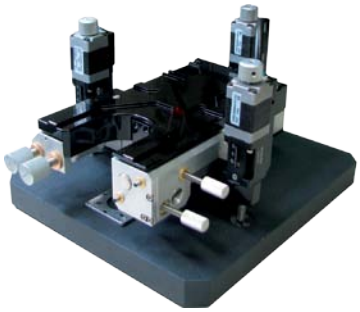


Drops of collagen on silicon wafer deposited by bioprinting. Semi-contact mode.
Phase image. 50x50 µm. 300x300 points.

Centaur - Scanning Probe Optical Microspectrometer

Certus Optic
Scanning Probe Microscope + Optical Microscope

Certus Standard
Scanning Probe Microscope

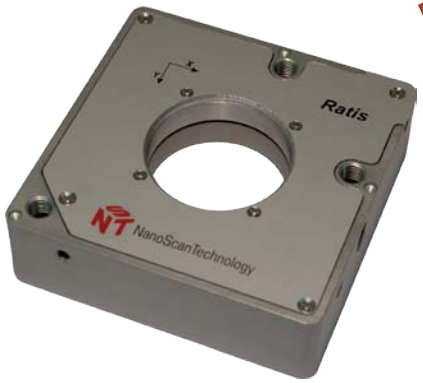


Certus Light
Scanning Probe Microscope

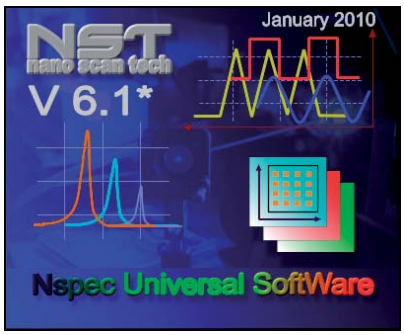
web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Snotra
Scanning Probe Microscope
+
Cryo-Ultramicrotome

Ratis
Piezo Scanning Stage



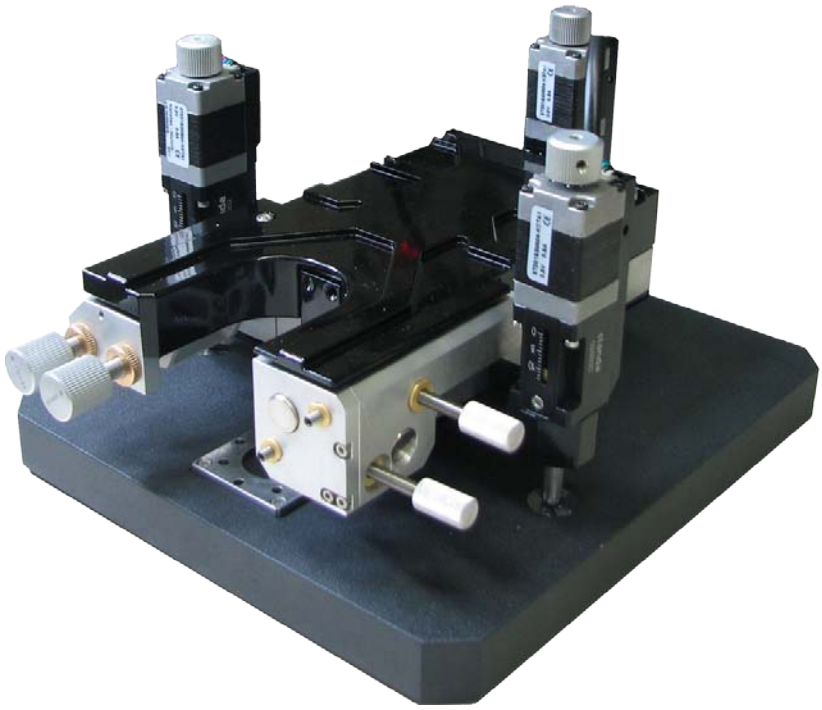
EG-3000
SPM Controller

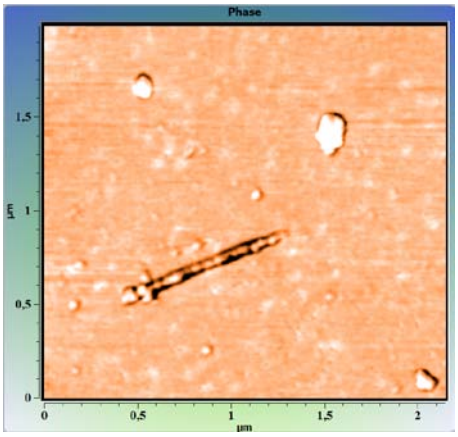


NSpec – Universal software to control all NST devices.
NSpec controls all EG-3000 functionality, and all devices connected to controller (SPM Certus, scanning stage Ratis, stepping motors etc.). Software is capable to operate CCD detectors and spectrometers, connected to PC workstation.

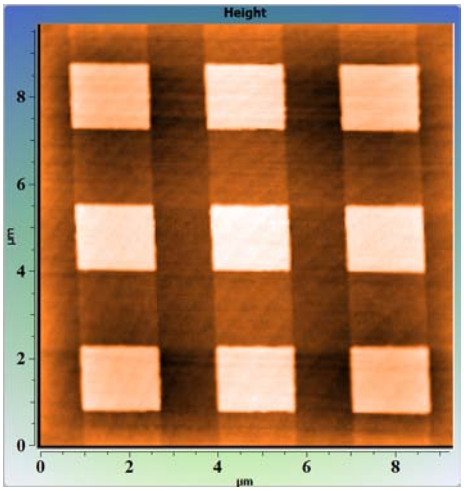
► Our R&D team has 10-years experience in the field of scanning probe microscopy.
► Products have a flexible configuration for diverse applications.
► Unique combination of drive electronics system and the NSpec software will enable you to carry out your experiments at earliest possible date.

Certus Light
Entry Level Scanning Probe Microscope (SPM)





Single-walled nanotube deposited on mica. Image size 2.2x2 mkm. 200x200 points. Phase Image.



The Si/SiO_2 periodic structure. AFM contact mode. Topography. Image size 9x9 µm, 200x200 points.

Certus Light system includes:

► Scanning head Certus;
► Digital SPM controller EG-3000;
► NSpec software package;
► Head approach system with one motorized actuator;
► Simple stand for sample and SPM head.

Certus Light features:

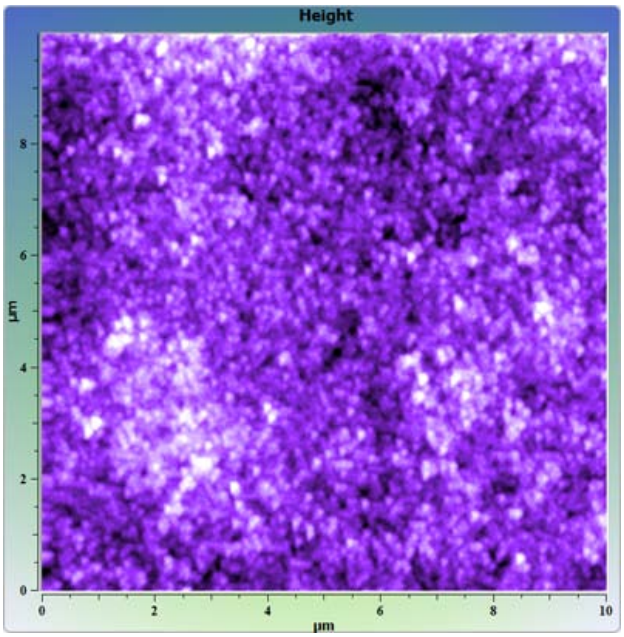
► Support of all basic SPM techniques: Atomic Force Microscopy (AFM, contact and non-contact), shear force AFM, force spectroscopy, Scanning Tunneling Microscopy (STM) etc.
► Plane-parallel scanning (in X-Y plane) allows imaging with minimal distortion;
► Open design of scanning head simplifies observation of the sample and probe at any angle from 0° to 90°;
► Certus Light is suitable for installation on the optical microscope (upright or inverted), and can also be modified to Certus Standard, Certus Optic and Centaur.

Reasonable price and reliable design of Certus Light make it a valid choice for teaching purposes and time-to-time research tasks. Certus Light could also be interesting for those who have an idea to add SPM functionality to their existing experimental setup.

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

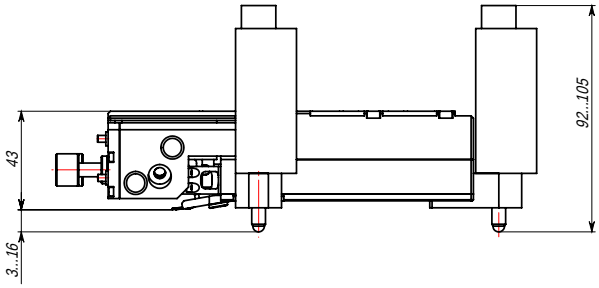
Certus Light
Basic Datasheet

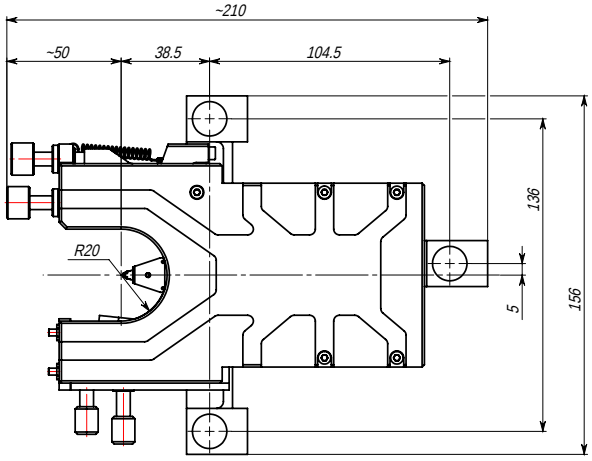
	Main parameters	
1	SPM head	
1.1	Built-in XYZ scanner	
1.1.1	Scanning/positioning XYZ range	100x100x15 µm
1.1.2	XY stage resonant frequency	1 кHz
1.1.3	Z rezonant frequency	7 кHz
1.1.4	SPM resolution (XY lateral)	<1 nm
1.1.5	SPM resolution (Z vertical)	<0.1 nm
1.1.6	Residual nonlinearity	<0.3%
1.2	Displacement sensors	
1.2.1	Sensors type	Capacitance
1.2.2	Measuring principle	Time-to-digital convertion
1.3	Scanning head approach system	
1.3.1	Coarse approach implementation	Stepper motors and precision screws
1.3.2	Stepper motors	1
1.3.3	Precision screws	2
2	Sample positioning	Manual



Latex microspheres deposited on glass surface. Semi-contact mode.
Image size 10x10 µm, 300x300 points. Topography.

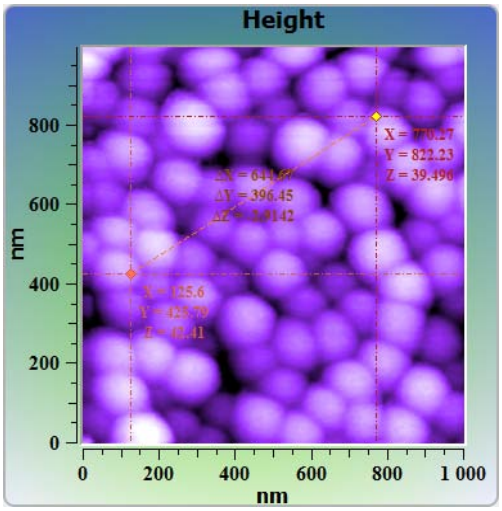
Certus Light Head Dimensions:



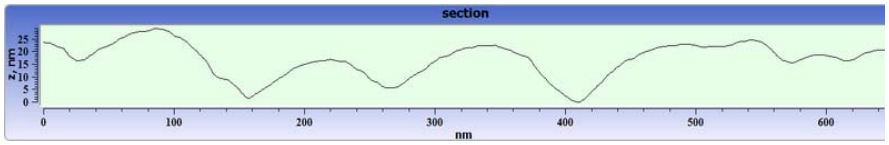


Certus Standard
Basic Configuration of Scanning Probe Microscope

Certus Standard -
basic configuration of scanning probe microscope, designed to solve a wide range of research and analytical tasks.



▲ Latex microspheres on glass surface, dehydrated sample. Semi-contact mode.
Images size 1x1 μm, 300x300 points. Topography and profile in arbitrary cross-section.▼



Certus Standard includes:

►Scanning head Certus;
►Video microscope with USB camera;
►Integrated mechanical XY-stage for sample adjustment;
►Digital SPM controller EG-3000;
►NSpec software package;
►Head approach system with 3 motorized actuators.

Certus Standard features:

►Implementation of all basic SPM techniques: Atomic Force Microscopy (AFM, contact and non-contact), shear force AFM, force spectroscopy, Scanning Tunneling Microscopy (STM) etc.
►Plane-parallel scanning (in X-Y plane) allows imaging with minimal distortion;
►Parallel head approach system;
► Open design of scanning head simplifies observation of the sample and probe at any angle from 0° to 90°;
► Certus Standard is suitable for installation on the optical microscope (upright or inverted), and can also be modified to Certus Optic and Centaur.

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Certus Standard is the best choice for everyday laboratory SPM measurements. Certus Standard could also be interesting to researchers planning to integrate scanning probe microscope with optical and spectral equipment.

Certus Standard
Basic Datasheet

	Main parameters	
1	SPM head	
1.1	Built-in XYZ scanner	
1.1.1	Scanning/positioning XYZ range	100x100x15 µm
1.1.2	XY stage resonant frequency	1 кHz
1.1.3	Z rezonant frequency	7 кHz
1.1.4	SPM resolution (XY lateral)	<1 nm
1.1.5	SPM resolution (Z vertical)	<0.1 nm
1.1.6	Residual nonlinearity	<0.3%
1.2	Displacement sensors	
1.2.1	Sensors type	Capacitance
1.2.2	Measuring principle	Time-to-digital convertion
1.3	Scanning head approach system	
1.3.1	Minimum step	1 µm
1.3.2	Coarse approach implementation	Stepper motors
1.3.3	Number of stepper motors	3
1.4	Sample positioning	
1.4.1	Sample coarse positionig range	5x5 mm
1.4.2	Positioning	Micro screws
1.4.3	Positionig accuracy	~ 5 µm
2	Optical microscope	
2.1	Visualisation	Digital video microscope
2.2	Magnification adjustment	Manual
2.3	Fine adjustment range	5 mm
2.4	Image visualisation	Color digital video camera
2.5	Illumination	Fiber illuminator
2.6	Optical parameters	
2.6.1	Numerical aperture	0.3
2.6.2	Camera sensor size	1/3”
2.6.3	Camera sensor resolution, px	1280x1024
2.6.4	Magnifiacation	85x/1050x
2.6.5	View field	4.50/ 0.37 mm
2.6.6	Interface	USB

Certus Optic
Integrated optical and scanning probe microscope

Certus Optic includes:

► Scanning head Certus;
► XY-scanning stage Ratis;
► Optical microscope (upright or inverted);
► Integrated mechanical XY-stage for sample adjustment;
► SPM controller EG-3000;
► NSpec software package.

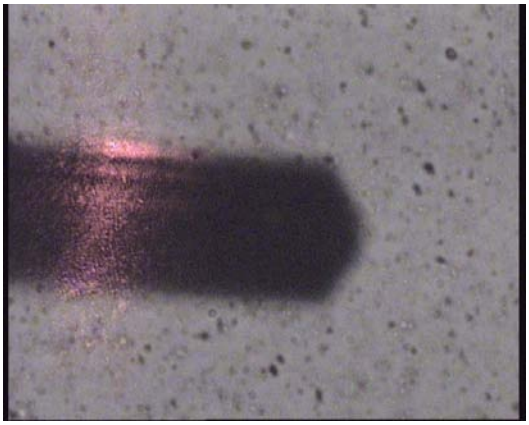
Advantages of Certus Optic:

► Scanning stage Ratis can position the sample with sub-nanometer accuracy;
► Two scanning modes: XY sample scanning with stage and Z scanning with head scanner, or XYZ probe scanning with head scanner;
► Plane-parallel scanners in head and base allows measurements without distortion typical for tube scanners;
► Study both transparent and non-transparent samples (depending on the microscope type);
► Optical microscope makes it possible to use all traditional observation techniques for sample studying. So one can easily find appropriate area on the sample and position the tip over it. Certus Optics can be equipped with brand new microscope or adopted for the customer is one;
► Independent systems of sample and probe positioning give a possibility to put the sample in the middle of field of view and install probe over it;
► Certus Optic can be integrated with spectroscopic devices and can be upgraded to Centaur or Centaur HR.

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Certus Optic is indispensable tool to study physical and chemical properties of the surface in such areas as:

- ► Chemistry;
- ► Physics;
- ► Biology;
- ► Interdisciplinary researches.



Cantilever above surface of polymer.
Optical image. Objective 40x.

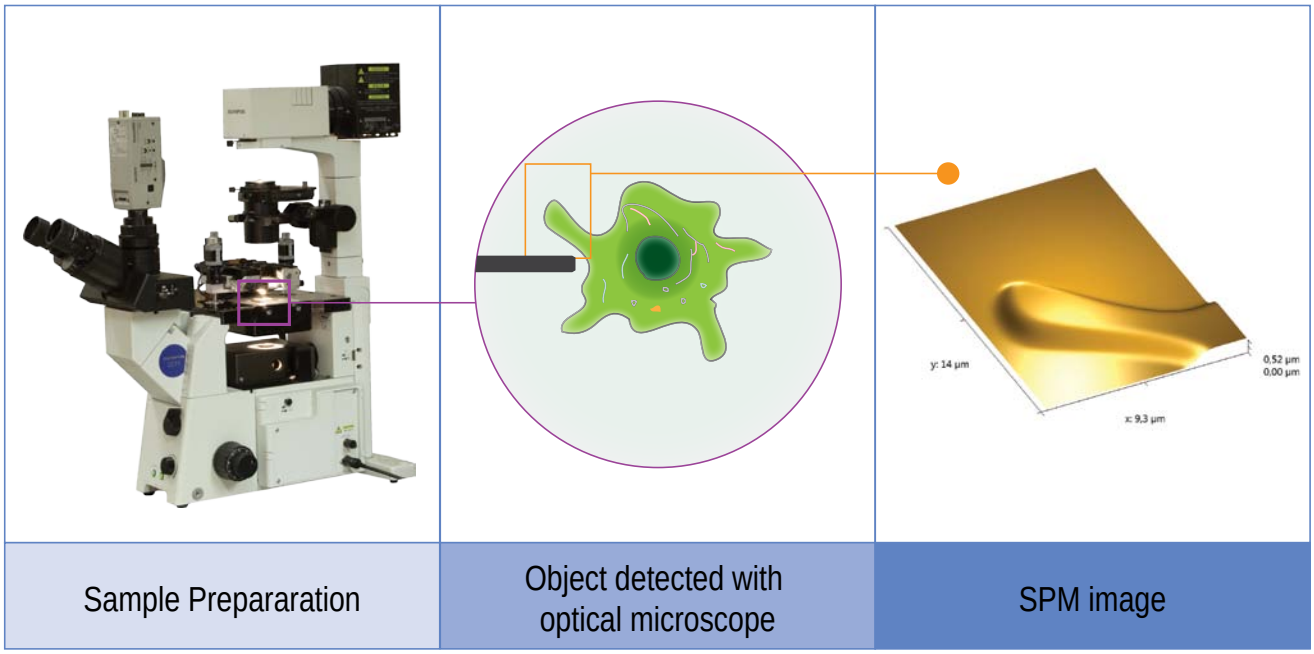
Advanced applications:

- ► Coatings;
- ► Polymers (including liquid crystals and composites);
- ► Semiconductors;
- ► Biological objects (especially in combination with fluorescent microscopy);
- ► MEMS and other electronic components.

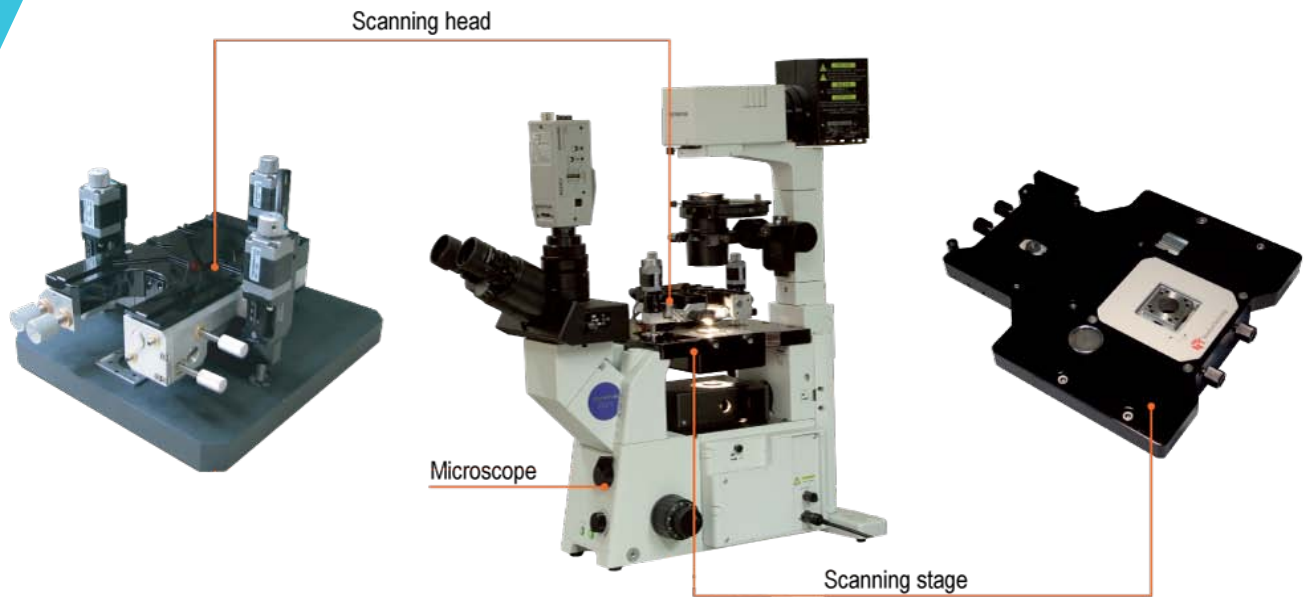
Certus Optic can be easily upgraded to our Centaur (HR) SPM-Confocal-Spectroscopy system.

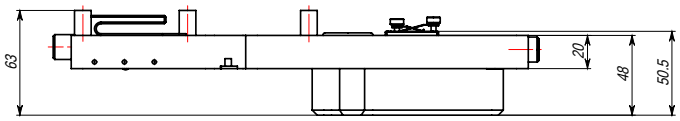
Certus Optic idea:

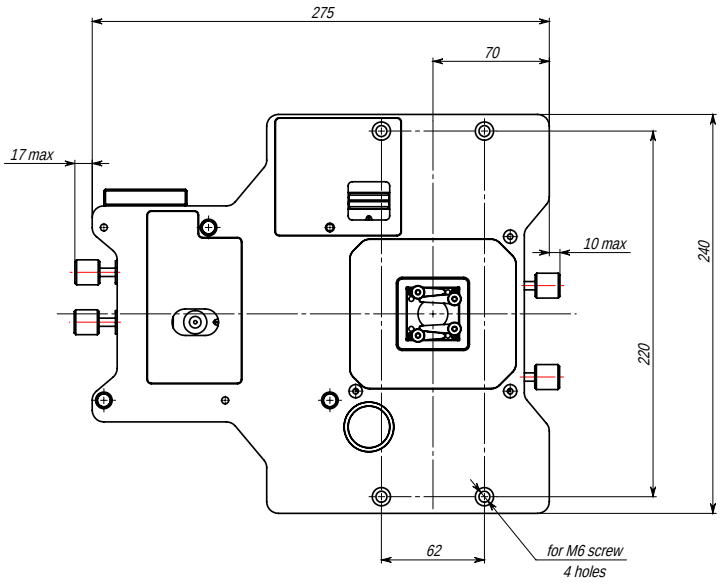
- ► High resolution optical microscope allows easy object detection;
- ► Scanning probe microscope alows to obtain object 3D image;
- ► Samples can be studied being in native state.

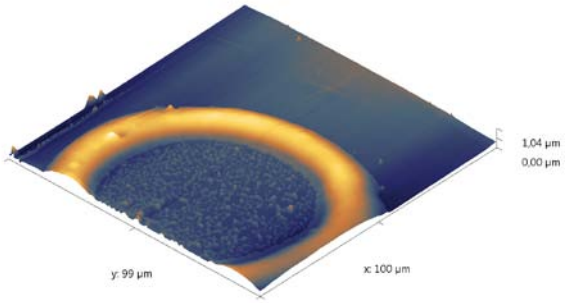


Sample Prepararation	Object detected with optical microscope	SPM image

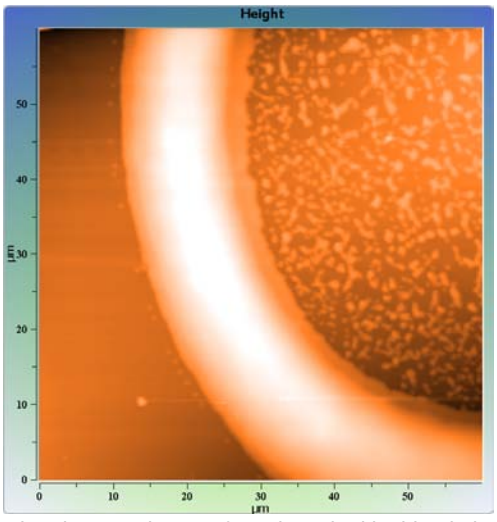




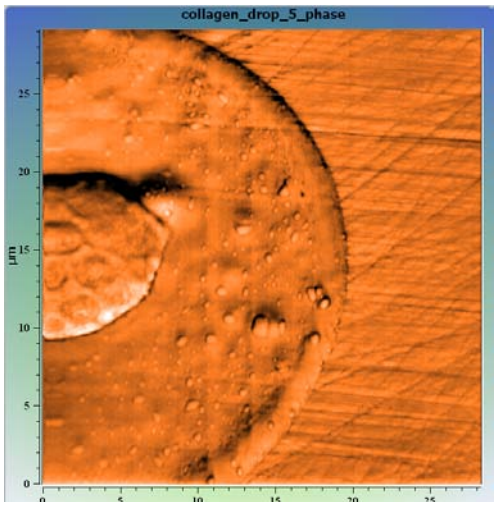




Glue drop on glass surface deposited by bioprinting. Semi-contact mode. Topography 3D.
Image size 100x99 µm. 600x600.



Glue drop on glass surface deposited by bioprinting. Semi-contact mode. Topography.
Image size 60x60 µm. 600x600.



◄ Collagen drop on silicon wafer deposited by bioprinting.
Image size 30x30 µm. 300x300.
Phase image.

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Certus Optic
Basic Datasheet

1	Main parameters SPM	
1.1	SPM head	
1.1.1	Built-in XYZ scanner	
1.1.1.1	Scanning/positioning XYZ range	100x100x15 µm
1.1.1.2	XY stage resonant frequency	1 кHz
1.1.1.3	Z rezonant frequency	7 кHz
1.1.1.4	SPM resolution (XY lateral)	<1 nm
1.1.1.5	SPM resolution (Z vertical)	<0.1 nm
1.1.1.6	Residual nonlinearity	<0.3%
1.1.2	Displacement sensors	
1.1.2.1	Sensors type	Capacitance
1.1.2.2	Measuring principle	Time-to-digital convertion
1.1.3	Scanning head approach system	
1.1.3.1	Minimum step	1 µm
1.1.3.2	Coarse approach implementation	Stepper motors
1.1.3.3	Number of stepper motors	3
1.2	Scanning Basement	
1.2.1	Built-in XY plain-paralllel stage	
1.2.1.1	XY scanning range	100x100 µm
1.2.1.2	XY resonant frequency	1 kHz
1.2.1.2	Residual nonlinearity	≤0.3%
1.2.2	Displacement sensors	
1.2.2.1	Sensors type	Capacitance
1.2.2.1	Measuring principle	Time-to-digital convertion
1.3	Sample positioning	
1.3.1	Sample coarse positionig range	5x5 mm
1.3.2	Positioning	Micro screws
1.3.3	Positionig accuracy	~ 5 µm
2	Optical microscope	
2.1	Type, manufacturer and specifications of the microscope	Optionally, in accordance with the terms of the specification either upright or inverted microscope

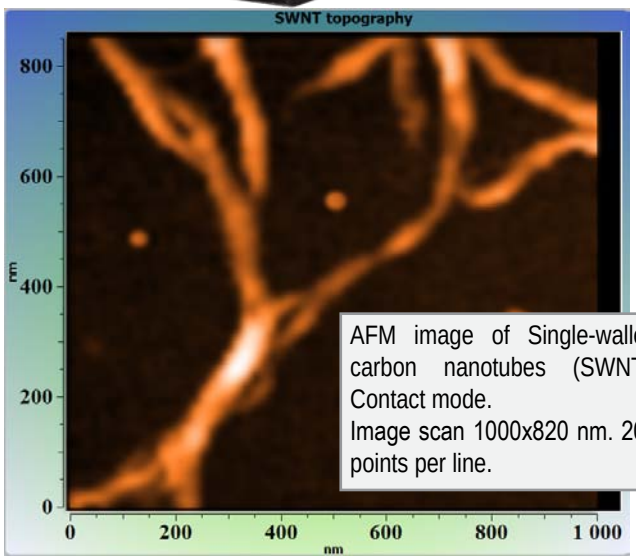
Centaur and Centaur HR
Scanning Probe Optical Microspectrometers

Centaur and Centaur HR combine:

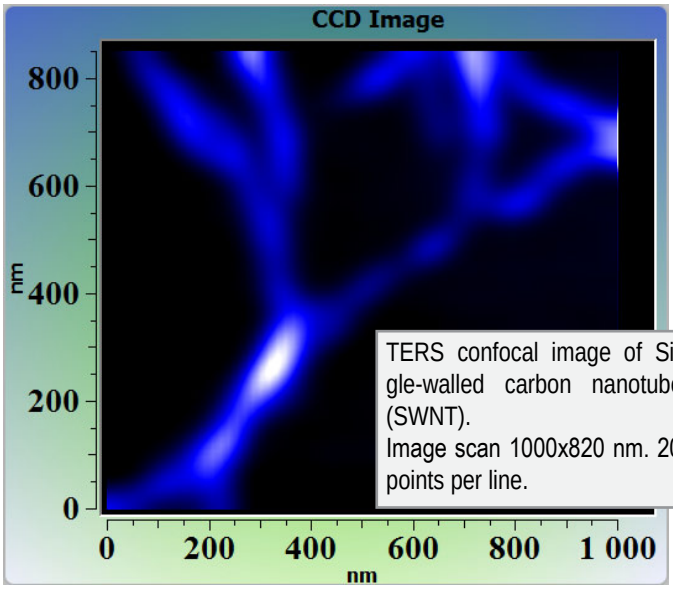
- ► Scanning Probe Microscope;
- ► Inverted or Upright Optical Microscope;
- ► Laser Confocal Microscope;
- ► Raman Confocal Microscope;
- ► Fluorescence Confocal Microscope.

Applications:

- ► Scanning Probe Microscopy;
- ► Raman Confocal Microscopy;
- ► Fluorescence Confocal Microscopy;
- ► Near-Field Scanning Microscopy;
- ►Tip-Enhanced Raman Spectroscopy (TERS);
- ► Tip-Enhanced Fluorescent Spectroscopy (TEFS).

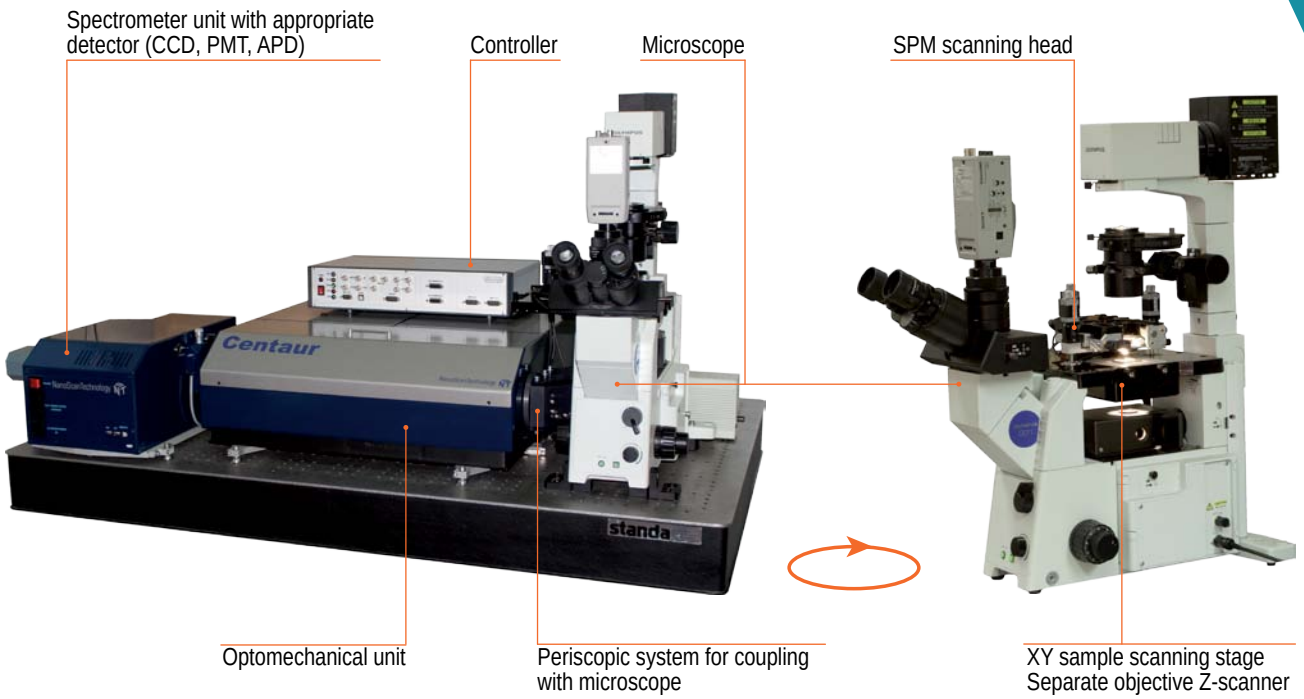


AFM image of Single-walled carbon nanotubes (SWNT). Contact mode.
Image scan 1000x820 nm. 200 points per line.



TERS confocal image of Single-walled carbon nanotubes (SWNT).
Image scan 1000x820 nm. 200 points per line.

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru



Where to use:

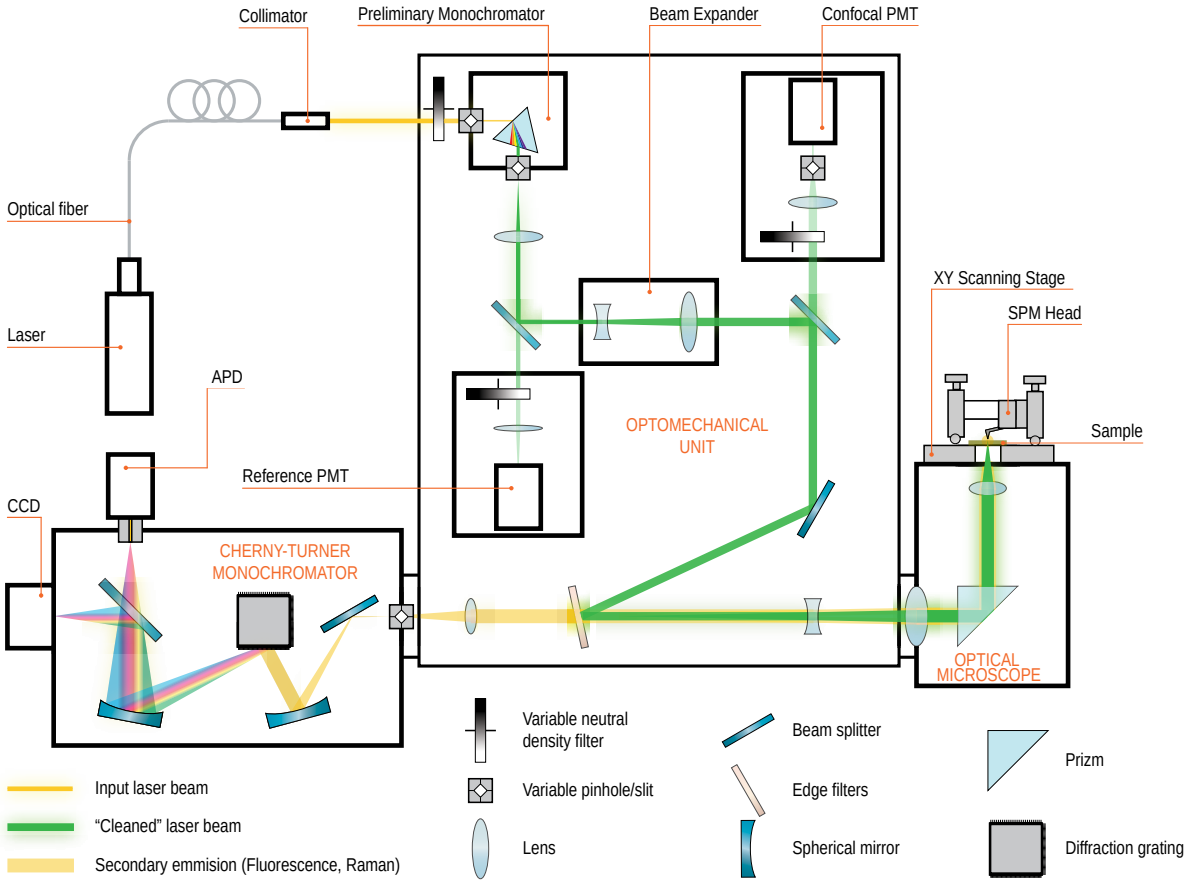
► Chemistry. Combination of methods of scanning probe microscopy and Raman spectroscopy allows the analysis of the composition and structure of organic and inorganic substances, traditional and composite materials;
► Physics. Investigation of physical characteristics of surface and subsurface layers of substances and materials;
► Biology. Study of tissues, cells and their structures, biological molecules and the interactions between them;
► Interdisciplinary research. Research in the field of nanotechnology, pharmaceuticals, materials science, mineralogy, geology, forensic, analysis of art and many others.

Advantages of Centaur:

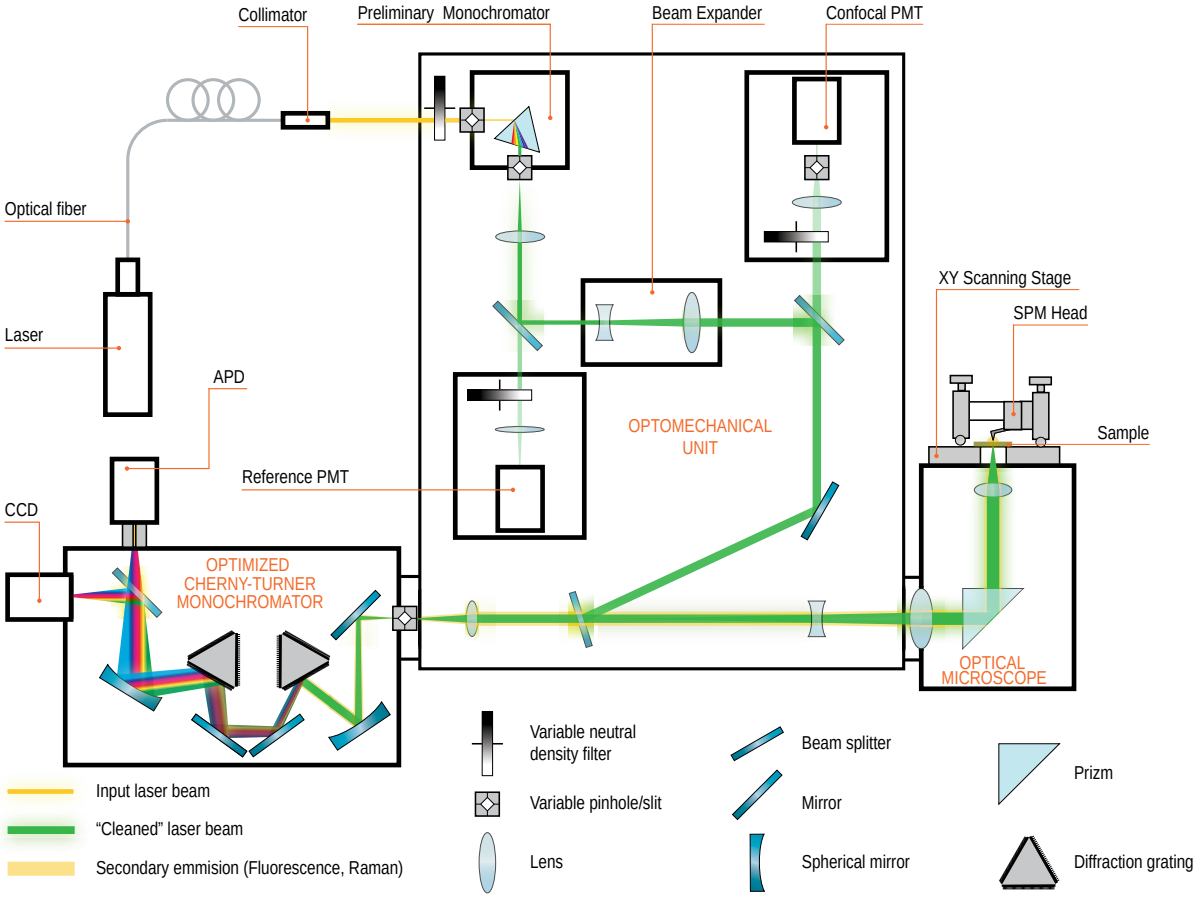
► Dual independent scanners (in head and base);
► Multiple simultaneous signal recording (confocal, spectra, topography, phase etc.);
► Full spectra recording in each scan point;
► Integration with virtually unmodified upright or inverted optical microscopes to work with transparent and none transparent samples;
► Modern cross-platform software (for all the Centaur units).

Centaur HR (High resolution) includes high-aperture double dispersive monochromator/spectrograph whose compact design combines high spectral resolution intrinsic for long-focus devices and extremely low stray light peculiar to double schemes. It is possible to measure Raman lines up to 20cm^{-1} from excitation line with spectral resolution up to 0.01 nm which is different to the devices based on interferometric filters with typical values of 100-200 cm^{-1}. Also it is possible to observe Stocks and Anti-Stocks lines simultaneously.

Centaur - layout:



Centaur HR - layout:



web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

Centaur
Basic Datasheet

1	Main parameters	
1.1	SPM resolution (XY lateral)	<1 nm
1.2	SPM resolution (Z vertical)	<0.1 nm
1.3	Field of view of SPM (scanning range) when scanning with probe	100x100 μm
1.4	Field of view of SPM (scanning range) when scanning with sample	100x100 μm
1.5	Z range	15 μm
1.6	Residual nonlinearity of the scanner	<0.3%
1.7	Optical resolution in the a confocal microscope mode	~2/3 λ
1.8	Field of view (scanning range) in confocal mode	100x100 μm
1.9	Spectral resolution:	
	Grating 200 lines/mm	1.45 nm
	Grating 600 lines/mm	0.45 nm
	Grating 1200 lines/mm	0.22 nm
1.10	Spectral range:	
	Grating 200 lines/mm	330 - 1300 nm
	Grating 600 lines/mm	400 - 1200 nm
	Grating 1200 lines/mm	400 - 870 nm
1.11	Optical transmission within the spectral range	≥ 60%
1.12	Signal-to-noise ratio at the peak of the luminescence spectra *(for the luminescence signal of the dye with a quantum yield of not less than 50% at a concentration of 10^{-5} mol/liter and the shift of the maximum of the luminescence line relative to the maximum excitation lines not less than 5 nm).*	≥100
1.13	Signal-to-noise ratio at the peak of the Raman spectra *(for the Raman signal from the oscillator strength of the benzene molecule at a frequency of 607 cm^{-1} and the frequency shift of not less than 200 cm^{-1})*	≥100000
2	Scanning Probe Microscope unit	
2.1	SPM head	
2.1.1	Built-in flat XYZ scanner	
2.1.1.1	Scanning/positioning XYZ range	100x100x15 μm
2.1.1.2	XY stage resonant frequency	1 кHz
2.1.1.3	Z rezonant frequency	7 кHz
2.1.1.4	Residual nonlinearity	<0.3%
2.1.1.5	SPM resolution (XY lateral)	<1 nm
2.1.1.6	SPM resolution (Z vertical)	<0.1 nm
2.1.2	Displacement sensors	
2.1.2.1	Sensors type	Capacitance
2.1.2.2	Measuring principle	Time-to-digital convertion
2.1.3	Scanning head approach system	
2.1.3.1	Minimal step	1 μm

2.1.3.2	Coarse approach implementation	Stepper motors
2.1.3.3	Number of stepper motors	3
2.2	Scanning stage	
2.2.1	Built-in flat XY scanner (XY stage)	
2.2.1.1	Dynamic range scanning / positioning XY	150x150 μm
2.2.1.2	Resonant frequencies of XY	1 kHz
2.2.1.3	Residual nonlinearity	≤0.03%.
2.2.2	Sensors	
2.2.2.1	Sensors type	Capacitance sensor
3	Optical unit	
3.1	Pre-monochromator to filter spurious modes of laser source	
3.1.1	Spectral range	400..800 nm
3.1.2	Spectral resolution	< 1 nm
3.1.3	Variable pinhole diameter range	0..1 mm
3.2	Motorized ND filter to adjust the power of the input laser	
3.2.1	ND filter range	0..4
3.2.2	Number of gradations	256
3.3	Expander / collimator beam unit	
3.3.1	Diameter of the input beam	1 mm
3.3.2	Output beam diameter	3..15 mm
3.4	Signal PMT unit	
3.4.1	Positioning	Three coordinate motorized objective
3.4.2	Focal plane	At the intersection of the slit
3.4.3	Resolution of laser confocal images	~2/3 λ
3.4.4	PMT control	Software
3.5	Reference photomultiplier unit	
3.5.1	Input laser intensity calibration	PMT and software
3.6	Confocal laser line selection unit	
3.6.1	Filter type	Edge filters
3.6.2	Half-width of the recession curve of the transmission filters	3 nm
3.6.3	Angle of incidence on the filters	5-16°
3.6.4	Ability to measure the line of the secondary spectrum	to 80 cm^{-1} from the line excitation
3.7	Objective	Three-axis motorized focusing objective
3.8	Monochromator unit	
3.8.1	Focal length	F=260 mm
3.8.2	Spectral range	200-1000 nm
3.8.3	Grating 1	1:1 (mirror)
3.8.4	Grating 2	200 lines/mm (blaze 500 nm)
3.8.5	Grating 3	600 lines/mm (blaze 600 nm)
3.8.6	Grating 4	1200 lines/mm (blaze 600 nm)
3.8.7	Crossed entrance slit range	1x1 mm
3.8.8	Entrance slit accuracy	1 μm
3.8.9	Output slit range	1 mm
3.8.10	Accuracy of the output slit	1 μm
3.8.11	Slits, mirrors, shutters and gratings mechanic	All-around automation

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

3.8.12	Interface	USB 2.0
3.9	Periscope unit	
3.9.1	Integration with upright or inverted microscope	Implemented
3.10	CCD (basic)	
3.10.1	Cooling	Buid-in Peltier element
3.10.2	Minimum temperature cooling	-30°C
3.10.3	Dark current	1 count/sec per pixel
3.10.4	Quantum yield	95% over the entire spectral range
3.10.5	Spectral range	400-1000 nm
3.10.6	Number of pixels	1024x256
3.10.7	Interface	USB 2.0
3.11	Excitation laser source (basic)	
3.11.1	Wavelength	473 nm
3.11.2	Output power	25, 50 mW
3.11.3	Spectral linewidth	<1 MHz (<0.01 pm)
3.11.4	Spatial mode	TEM00 M^2 <1.1
3.11.5	Beam diameter at aperture	700 μm
3.11.6	Beam divergence (full angle)	<1.2 mrad
3.11.7	Noise, 20 Hz -20 MHz (pk-pk)	<2%, typical <1.5%
3.11.8	Noise, 20 Hz -20 MHz (rms)	<0.25%, typical <0.15%
3.11.9	Long-term stability (8 hr)	<2% (±3°C)
3.11.10	Beam pointing stability (over 10-40 °C)	<10 μrad/°C, typical 5 μrad/°C
3.11.11	Polarization ratio	>100:1 linear
3.11.12	Total system power consumption	<25 W, typical <15 W
3.11.13	Operating temperature	10-40°C
3.12	Vibration protection	
3.12.1	Type of vibration protection	Passive
3.12.2	Implementation of the system of vibration protection	Optical plate
3.12.3	Dimensions of the optical plate, WxDxH	900x1800x200 mm
3.12.4	Thread diameter	M6
3.12.5	Cells step	25 mm
4	Optical microscope	
4.1	Type, manufacturer and specifications of the microscope	Optionally, in accordance with the terms of the specification either upright or inverted microscope

Ratis
Scanning Stage

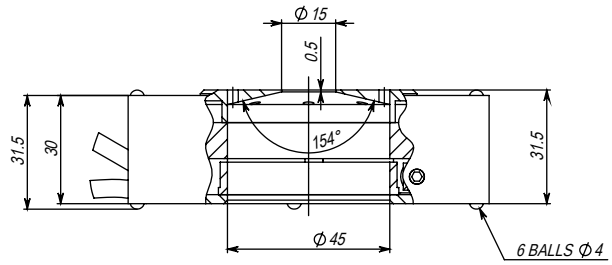
► **Ratis** – plane-parallel device for positioning/scanning.

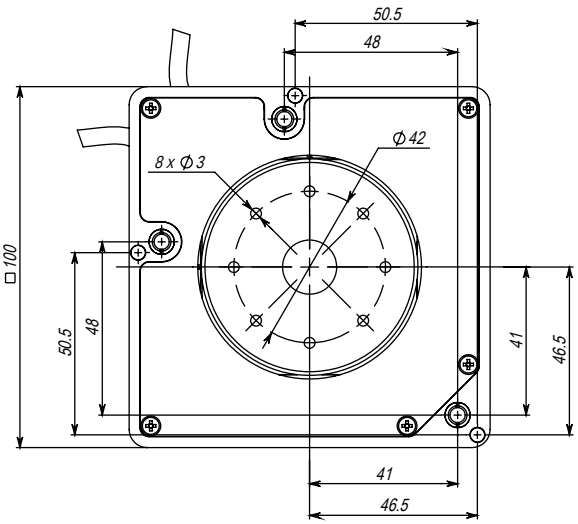
► Scanning stage is made of solid metal bar processed with EDM wire-cutting and precise CNC machining. Movable central part hangs on flexible springs and is driven with piezo actuators. Ratis design provides excellent linearity and flatness of the movement, in contrast to the classical scanners based on piezoelectric tubes, where the scan surface is a sphere. In addition, plane-parallel scanners have higher mechanical strength, compared with fragile piezoelectric tubes.

► Ratis multi-axes scanners are equipped with capacitive displacement sensors for digital feedback loop. It provides high accuracy and linearity of movement and eliminates tthe creep effect of piezoceramics. Capacitance measurements are made with TDC (time-to-digital conversion) chips located as close as possible to sensors. Such a design leads to the low noise and high speed displacement control.

►To control Ratis scanning stage universal controller EG-3000 and NSpec software are used.

► Ratis is applicable for use in the field of scanning probe microscopy, positioning, metrology, biology research, microelectronics, micromanipulation and etc.

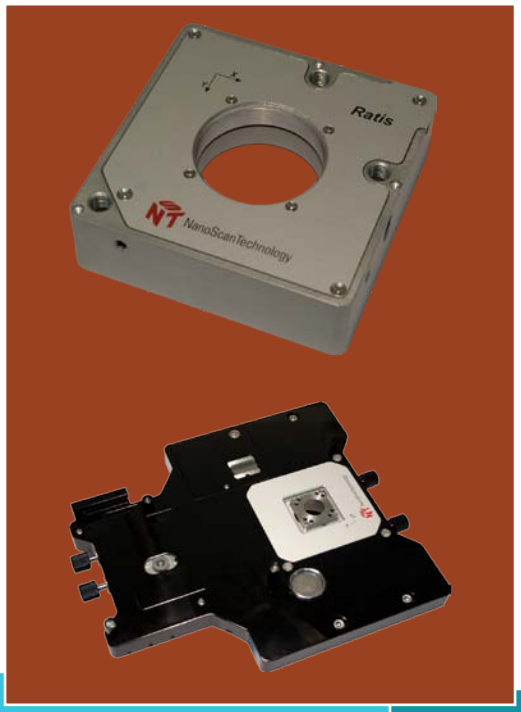




web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

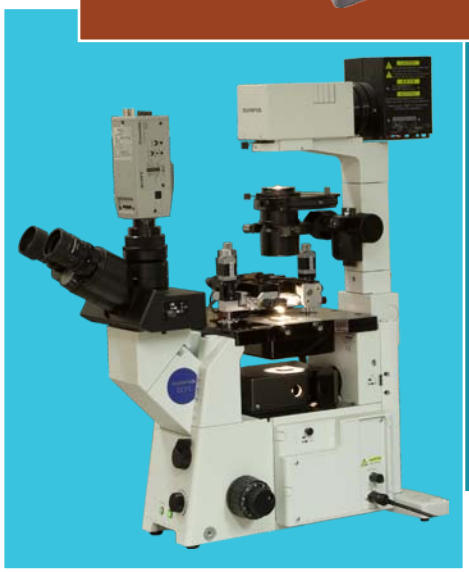
Ratis
Basic models

Parameter	X10Y10	X15Y15	X10Y10Z25	X15Y15Z25
XY range, µm	100x100	150x150	100x100	150x150
Z range, µm	-	-	25	25
Minimum scan step, nm	0,1	0,1	0,1	0,1
Angle tilting over the full range, nm	< 0.01 °	< 0.01 °	< 0.01 °	< 0.01 °
Resonant frequency XY, kHz	1	1	1	1
Resonant frequency Z, kHz	-	-	3	3
Maximum scanning speed, Hz (line/sec)	10	10	10	10
Maximum sample weight, g	100	100	100	100



Ratis scanning stage is a part of:

- Certus Optic
- Centaur
- Centaur HR



EG-3000
SPM drive digital controller

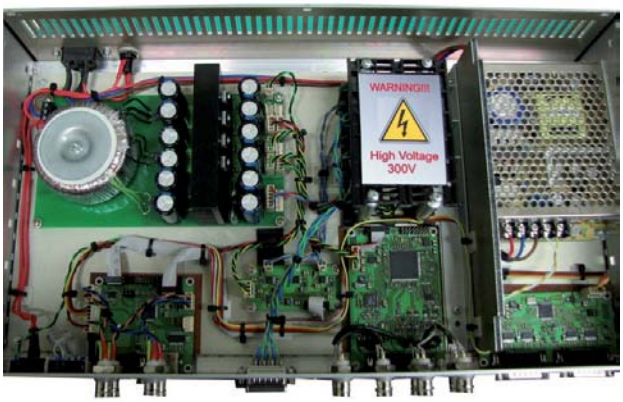
►Electronic controller EG-3000 is designed to control SPM or scanning confocal microscope. Controller provides data acquisition from internal sensors and external devices, applies control voltage to scanners piezoelectric actuators. All obtained information is transferring to PC workstation for visualization and processing.

►One of the most important parts of the EG-3000 controller is closed loop feedback system realized by means of 20-bit TDC (Time-to-Digital Convertion) to measure displacement capacitance sensors. Controller is capable to operate 6 channels with feedback simultaneously, which allows to independently scan with tip and sample both.

►Any available system signal can be used for SPM feedback.

►EG-3000 SPM controller contains 2-channel lock-in amplifier to provide resonant SPM techniques, for example non-contact SPM mode. Lock in amplifier includes high stable voltage generator based on digital frequency synthesizer. High speed data processing is implemented using programmable logic (FPGA). This allows to perform high quality lock-in detection up to 1.5 MHz band.

►EG-3000 has multy channel (up to 12) control for stepper motor with micro step option, for example, for adjustment of scanning head (stage).



►Controller has analog inputs and outputs for external equipment connections, synchronization inputs and outputs and USB interface for connection with PC. Controller is managed with NSpec software.

Compatibility:

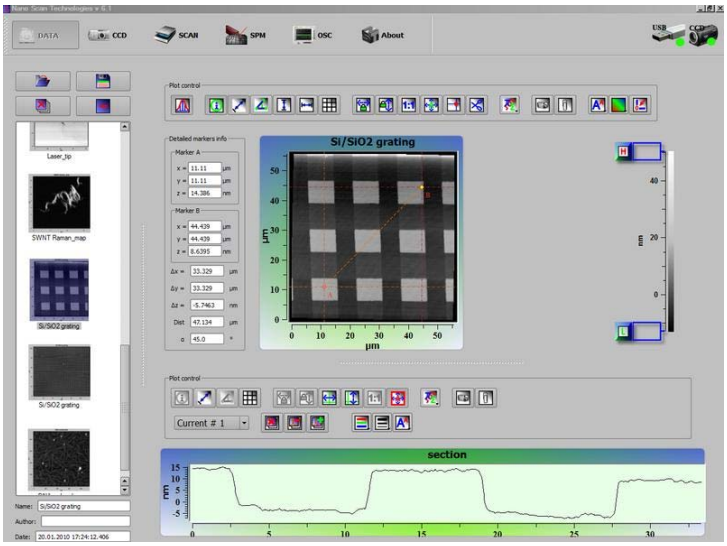
► Centaur and Centaur HR
► Snotra
► Certus Optic
► Certus Standard
► Certus Light
► Ratis

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

EG-3000
Basic Datasheet

1	Functional data	
1.1	General characteristics	
1.1.1	CPU	32 bit; RISC
1.1.2	PC Interface	USB 2.0
1.1.3	Other interfaces	RS 232, RS485, SYNC I/O
1.2	High-voltage outputs	
1.2.1	Voltage	-10..150 V
1.2.2	Noise	< 5 ppm.
1.2.3	Number of channels	3 or 6
1.2.4	Resolution (digital-analog converters)	18 bit
1.3	Stepper motors control unit	
1.3.1	Number of channels	4/8/12
1.3.2	Power supply	24V, 3A
1.3.3	Microstepping mode support	1/1, ½, ¼, 1/16 step
1.4	Lock-in amplifier	
1.4.1	Number of channels	2
1.4.2	Preamplifier gain	1-100
1.4.3	Input voltage range	±10 V
1.4.4	ADC resolution	16 bit
1.4.4	Frequency range of input signals	0-1,2 MHz
1.4.6	Frequency range of main oscillator	10 Hz – 3 MHz
1.4.7	Output voltage amplitude	10 mV-10 V
1.4.8	Frequency stability	< 5 ppm
1.4.9	Additional channels ADC / DAC	
1.4.9.1	Number of input channels	2
1.4.9.2	Voltage Range	±10 V
1.4.9.3	ADC resolution	16 bit
1.4.9.4	Number of output channels	2
1.4.9.5	Voltage range	±10 V
1.4.9.6	DAC resolution	16 bit

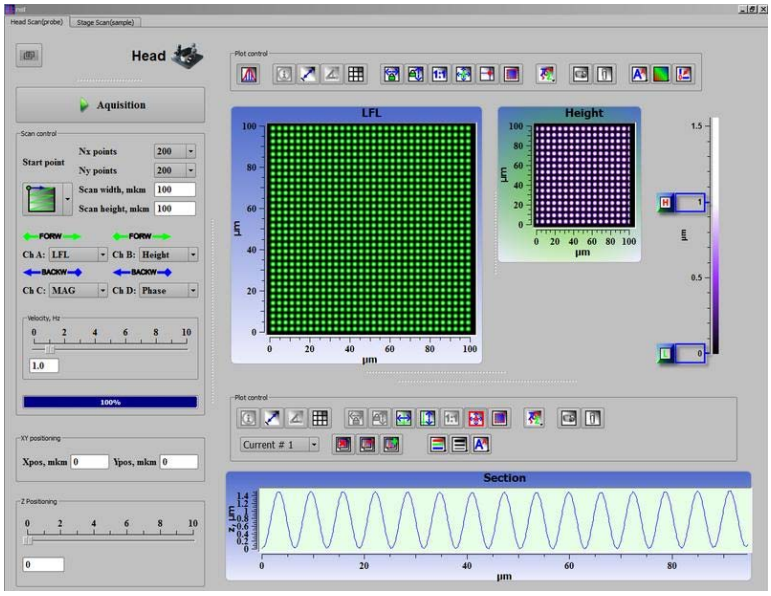
NSpec
Universal SPM software



NSpec – Universal software for all NST devices. Nspec controls all EG-3000 functionality, and all devices connected to controller (SPM Certus, scanning stage Ratis, stepper motors etc.). Software has capability to operate CCD detectors and spectrometers, connected to PC workstation. Multithread core of the program is build with modern crossplatform compiler (GCC4) and interface part based on QT4 toolkit. Software is compatible with all modern versions OS Windows (XP, 2003, Vista, 7). Version for Linux, *BSD or MacOS X available by customer request.

NSpec features:

- ► Control of SPM head Certus parameters and functions;
- ► Control of scanning with SPM head or Stage;
- ► Full control of Centaur system, including spectrometer and CCD camera;
- ► Stepper motors control;
- ► Basic data processing.



Please note that only basic data processing functions are implemented in NSpec Software. Specialized data processing (such as Gwyddion http://gwyddion.net) software is recommended for more detailed and powerful data processing. Special spectroscopy data processing software (e.g. GRAMS) is recommended for spectral data processing and filtering. NSpec Software has direct data export to ASCII, gwy (gwyddion), spc (GRAMS) formats.

web: www.nanoscantech.com
e-mail: info@nanoscantech.ru

NanoScanTechnology
reasoned innovations

Contact:

Russia
141700, Dolgoprudny, Zavodskaya St, 7

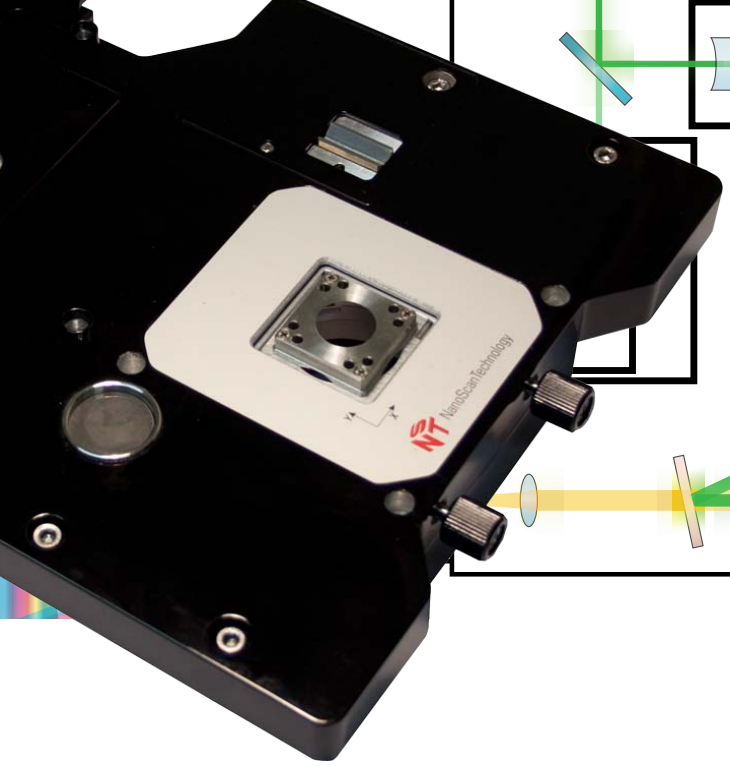
Phone: +7 (495) 642-40-68
+7 (495) 642-40-67

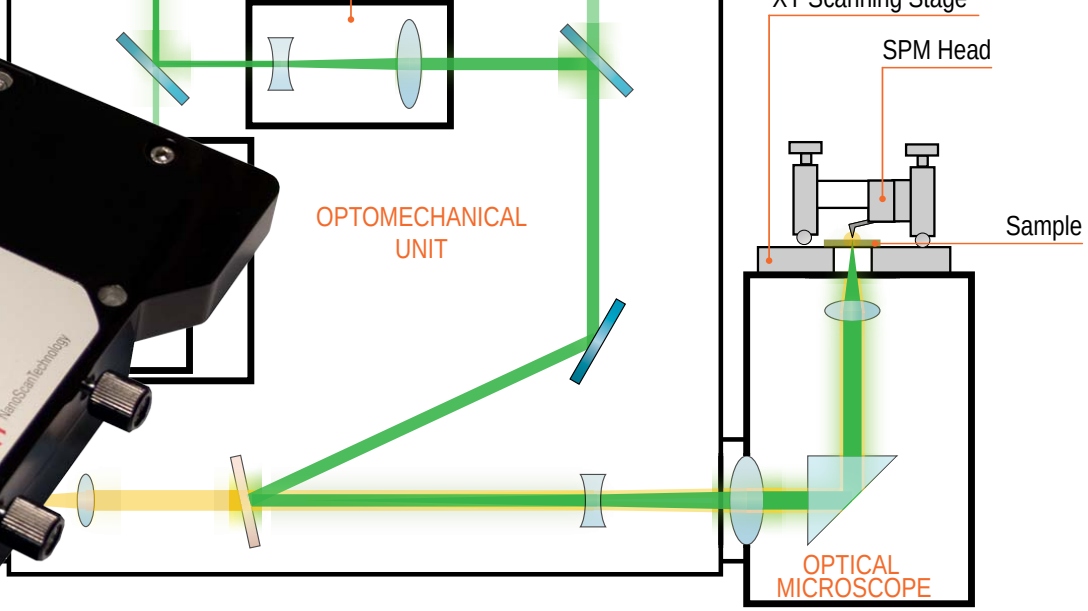
Skype: NanoScanTech

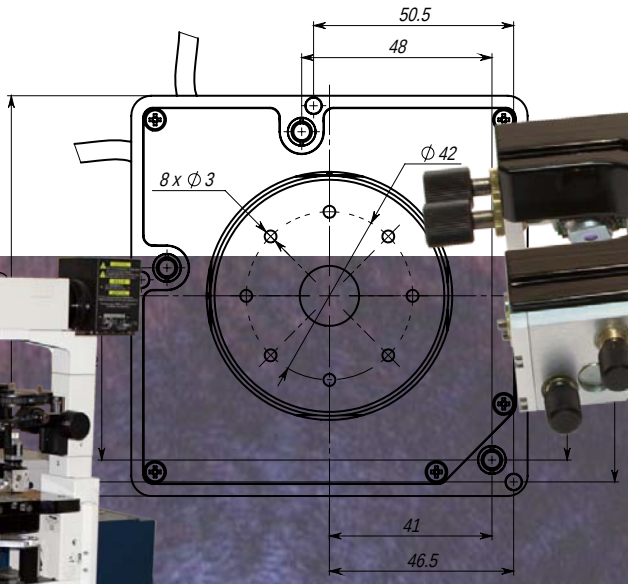
E-mail: info@nanoscantech.ru

web: www.nanoscantech.com

Nano Scan Technology Ltd.




XY Scanning Stage
SPM Head
Sample
OPTOMECHANICAL UNIT
OPTICAL MICROSCOPE


50.5
48
8 x ∅ 3
∅ 42
41
46.5

Ratis
X
NanoScanTechnology