ostec
corporate group

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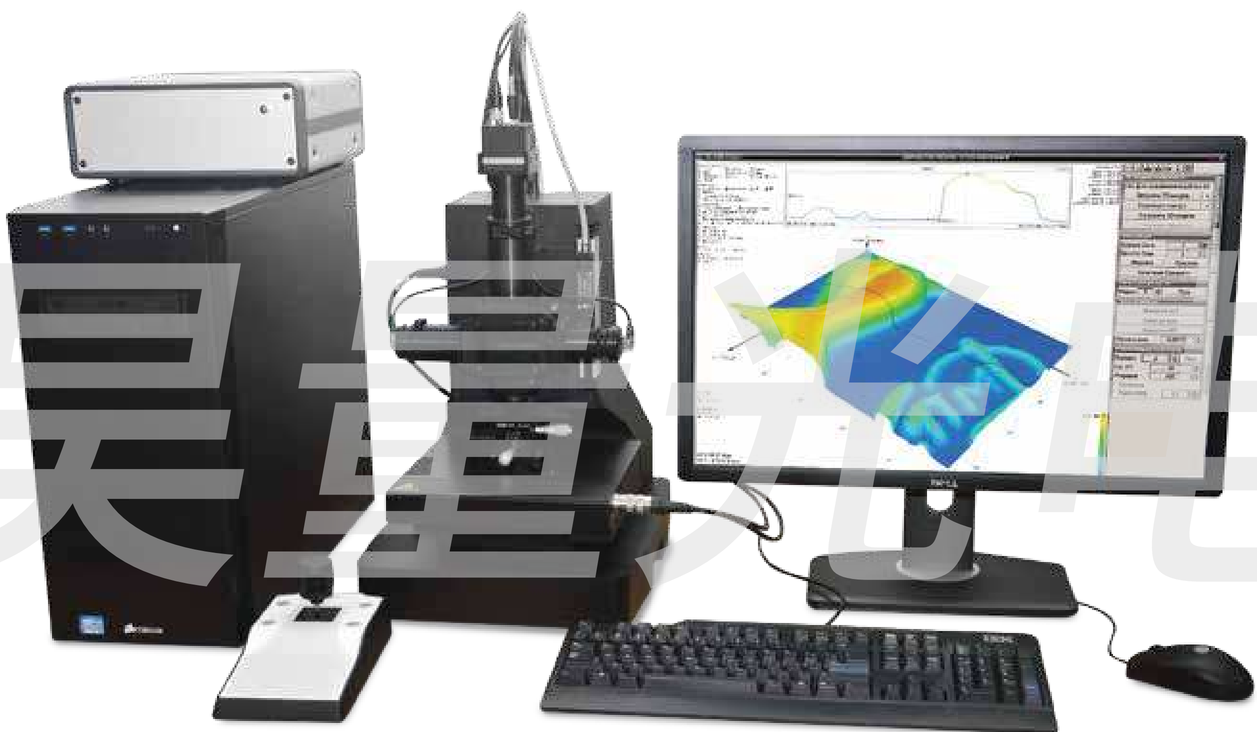
NEW! Revolution in Z resolution!

IMOS Interference microscope – nanoprofilometer



IMOS enables precise, quantitative, ISO-compliant, non-contact surface measurement and characterization of micro- and nano-scale surface features, capturing up to two million data points in just seconds. Choosing the right optical profilometer system depends on your application's requirements, including speed, precision, vertical range, automation, and flexibility.

IMOS optical surface profiler provides powerful versatility in non-contact optical surface profiling. With the system, it is easy and fast to measure a wide range of surface types, including smooth, rough, flat, sloped, and stepped. All measurements are nondestructive, fast, and require no special sample preparation.

At the core of the system is interference of partially coherent light technology which delivers sub-nanometer precision measures a wider range of surfaces more precisely than other commercially-available technologies, thus optimizing your return on investment.

Performance, Value, and Versatility:

IMOS profiler offers exceptional value with applications as varied as flatness, roughness and waviness, step heights and more.

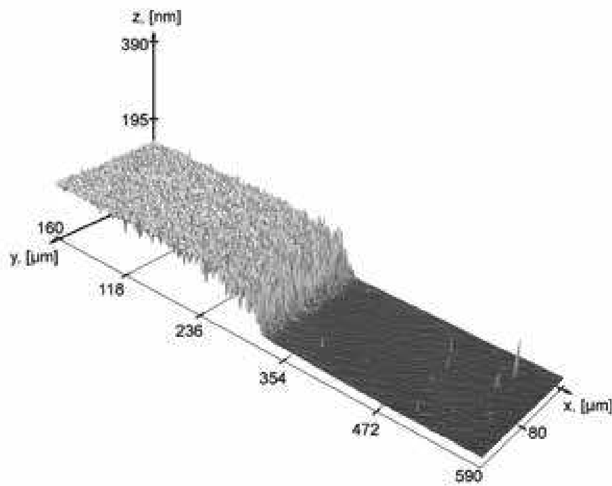
IMOS profiler are equipped with a zoom head which can be populated with discrete zoom optics tailor made for the system. Sample staging configurations range from completely to fully automated with encoded travel.

This universal system offers high-accuracy measurements, ease of use, and fast measurements, all at an attractive price point that make it the ideal choice for versatility and value in 3D optical profilers.

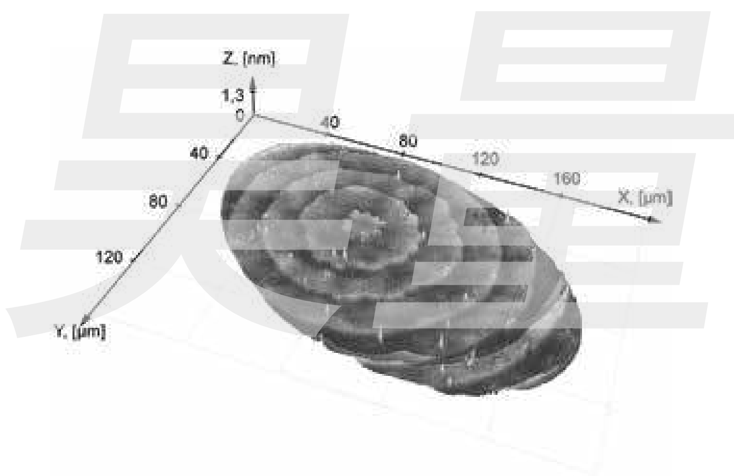
Main advantages:

- Z-resolution in the nanorelief mode:
  ~ 30 pm (with atomically smoth mirror)
  ~ 0.3 μm in the microrelief mode;
- Compact;
- Fast response;
- Resistance to external vibrations;
- High degree of automation of the measurement process;
- Special user-friendly interface;
- High quality graphical interface to work with many-planned 3D-representations of measurement results;
- Wide possibilities of configuration of the microscope for various morphological-logics of measured surfaces;
- Ability to work in two modes: microrelief and nanorelief;
- Positioning of the object of measurement in three coordinates;
- Ability to measure large areas by cross-linking the results individual measurement;
- Unique system of storage and systematization of measurement results.

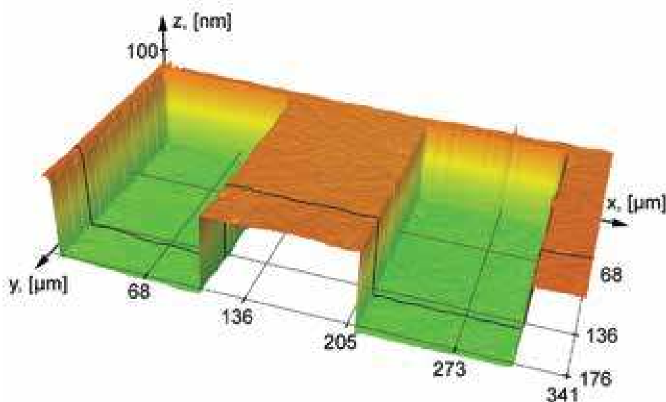
Measurement results obtained in the nanorelief mode



Pd film on Si substrate, height 100 nm



Terraces on the surface of Si crystall, height 0,314 nm



Certified caliber, nominal value of height is 101 nm ± 3%

IMOS system compound

Photodetector*
CCD-matrix 1392x1040 px

Light source*
LED (λ_{eff} = 630 nm)

Microobjectives*
20ˣ (or 10ˣ, 5ˣ) 2 items
without changing magnification

Scanner
Piezoelectric ceramic element

Stages
- 1d (Z) range 50 mm
- 2d (XY) range 75x50 mm

Controllers
- CCD-camera frame grabber
- Stages controller
- Device control unit

Personal computer
Standard

Software
- Software for working with IMOS
- System / MS Windows

* – as agreed with the customer

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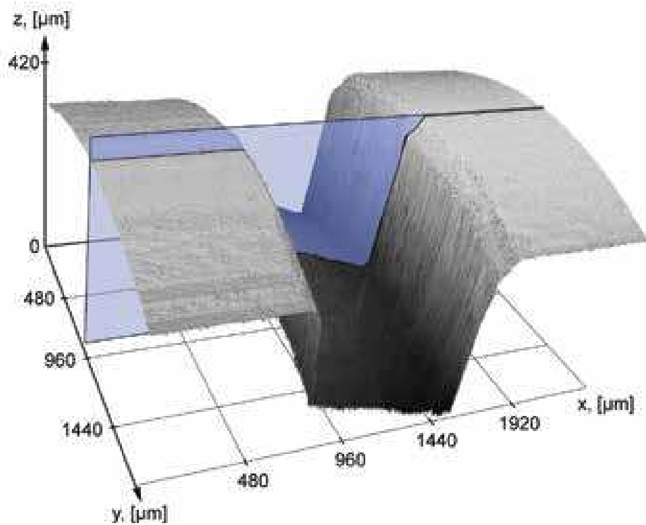
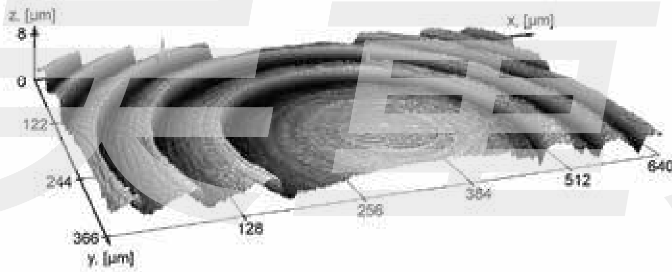
Measurement results obtained in the microrelief mode



Certified caliber, height 40 ± 1,2 µm



Diffraction element, height 3,7 µm

Technical features

Measurement area
0,4x0,3 mm^2 (for 20^x)

Pixel size in the measurement area
0,3 µm (for 20^x)

Lateral resolution
Not worse 1 µm

Measurement mode
- Microrelief mode
- Nanorelief mode

Height resolution
- Microrelief mode ~ 0,3 µm
- Nanorelief mode ~ 30 pm (with atomically smoth mirror)

Measurement range
- Microrelief mode up to 50 mm
- Nanorelief mode up to 20 µm

Measurement productivity
- Microrelief mode ~ 4 µm/sec
- Nanorelief mode ~ 20 µm/10 sec

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