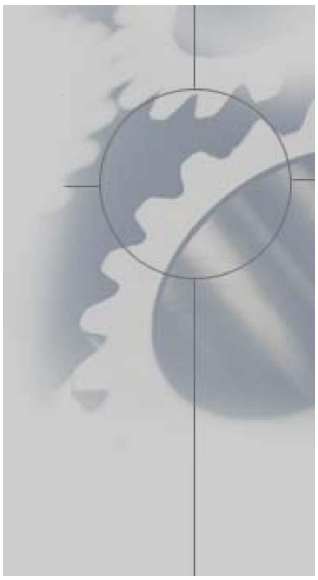
optoSURF

OPTICAL PROFILER STATION

Analysis of roughness, topography, profiles of surfaces with sub nanometers resolution.

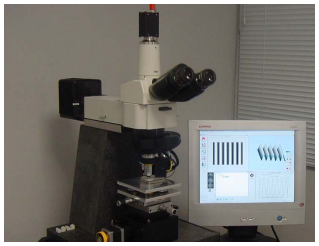


On a basis of microscope, this system combines several technologies to extend the range of measurements from nanometer to hundred microns to measure all kind of surfaces.

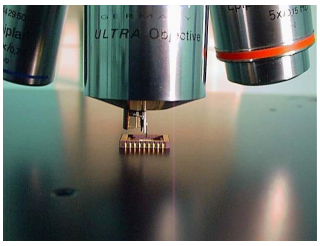
This unique combination of technologies, whose AFM, offers an excellent precision as well in vertical as lateral on a large variety of applications.

The Key features of the optoSURF system:

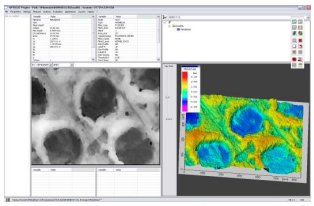
- o High performances measurement in few seconds;
- o Measurement using several techniques at the same sample location:
  - ✓ Atomic Force Microscopy,
  - ✓ Phase shifting interferometry,
  - ✓ Wave shifting interferometry,
  - ✓ Phase contrast interferometry;
- o Digital camera with up to 1384 x 1036 pixel and digital zoom guarantees the highest resolution;
- o Different architectures for small or large samples;
- o Powerful software for acquisition and surface evaluation;
- o Possibility of measurement automation;
- o Intuitive user interface, easy to use;



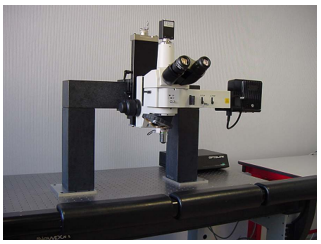
Small sample system



AFM head



optoPHIA software

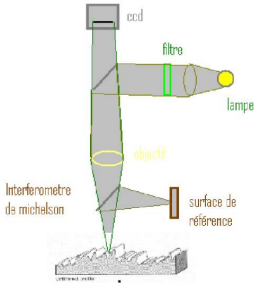


Large sample system

The visualisation and analysis of the measured data can be performed, depending on the application, according to various available criteria :

- o Standard, roughness parameters are available
- o In addition to these, other characteristics concerning roughness (waviness, profile) can be quantitatively measured.
- o Unique surface alignment using geometric convergence algorithms for stitching or comparaison
- o Filtering, editing, comparaison of data
- o Exportation to other data format and 3D data

Calibration traçability available



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Preliminary specifications

optoSURF

HIGH PERFORMANCES, ALL IN ONE!

Technical Data

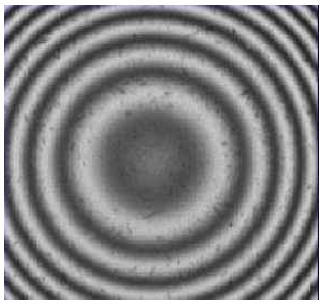
Image processing	
Host computer	Intel Pentium IV, ≥3 GHz, ≥ 512 MHz RAM, ≥ 80 GB
Image data interface	IEEE 1394-Interface (FireWire®)
Operating system	Windows 2000, XP
Measurement Software	OPTOPHIA *for Windows®*
Data interface	SDF, ASCII, STL, BRE
Station	
Microscope	Nikon, Leica
Light Source	100 Watts halogen source
Phase shifter	PZT 100 µm
Imaging	high resolution CCD digital camera
Digitization	782 x 582 or 1384 x 1036 Pixel
Depth resolution	< 0.1 nm
Acquisition time	≈3 - 4 sec
Filters	~ 550 nm
Options	
Host computer	Notebook or Laptop
Software Options	TOPOSURF
Positioning equipment	X,Y tip/tilt table Manual or motorized

optoSURF Specifications:

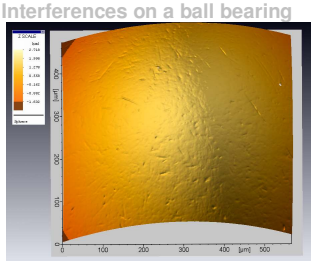
Magnification	5XTI	10XDI	50XDI
Measurement field [mm]	1.28 x 0.96	0.64 x 0.48	0.15 x0.1
Depth of focus [µm]	27	4.4	1.0
Operating distance [mm]	9	7.4	3.4
Digitization [pixel]	782 x 582 / 1384 x 1036 Pixel		
Sampling [µm]	1.6/0.9	0.8/0.45	0.2/0.1
Lateral resolution [µm]	2.8	1.1	0.5
Phase mode			
Depth resolution [nm]		< 0.1	
Repeatability [nm]		1	
Wave mode			
Depth resolution [nm]		< 1	
Repeatability [nm]		1	
Contrast mode			
Depth resolution [µm]		< 0.25% (range)	
Repeatability [µm]		1% (range)	

Specifications: AFM Modules

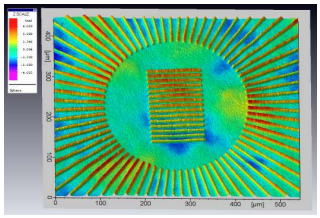
Heads	Area	Z Range	XY Range	Z Resolution
UO-20	20 x 20 µm	2.0 µm	< 0.1 nm	< 1 nm
UO-40	40 x 40 µm	4.0 µm	< 0.1 nm	< 1 nm
UO-80	80 x 80 µm	8.0 µm	< 0.1 nm	< 1 nm
UO-200	200 x 200 µm	12.0 µm	< 0.1 nm	< 1 nm



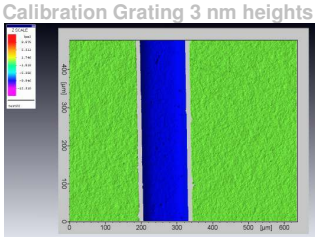
Interferences on a ball bearing



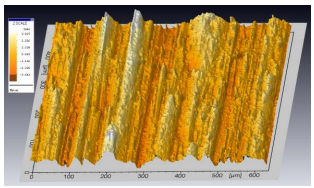
Ball Bearing



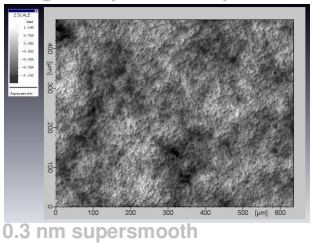
Calibration Grating 3 nm heights



9 µm step



Rough sample ~ Ra 0.6µm



0.3 nm supersmooth

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April 2006, technical data are subject to change without notice

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