

Interferometer



Used to determine the profile of an object by using interferometry instead of a stylus. The technique, known as optical profilometry, is rapid and non-destructive and makes use of the interferometer for the characterization of surfaces, providing high-resolution 2D and 3D surface measurements without contact, from sub-nanometer roughness to millimeter-high steps.

It has two measurement modes:

Vertical Shift Interferometry (VSI), based on white light vertical scanning interferometry, which is a bright and dark pattern resulting from splitting a beam where one part is reflected against a reference mirror surface and the other against the sample. After reflection, the beams are recombined in the interferometer, producing interference fringes. The interferometric objective moves vertically to scan the surface at varying heights. VSI

mode is used for measuring features in the range of 140 nm to several nm.

Phase Shift Interferometry (PSI), based on optical phase shifting, uses the difference in intensity as an alternative to fringes. It also uses filtered light, and the reference surface is translated instead of the objective. PSI mode is dedicated to roughness measurements and to generate 3D images of surfaces. Small features (1 to 140 nm) can be measured.

Technical specifications

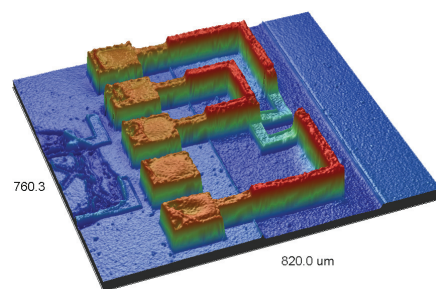
- Automated stitching stage for large area coverage.
- Light Source: tungsten halogen lamp. Its brightness can be adjusted.
- 2 objective lenses included with the interferometer: Michelson (5.0X) and Mirau (50X).
- Field-of-View (FOV) Lenses: 0.5, 1.0 and 2.0. FOV are lenses placed between the camera and the objective lens to adjust the field size of view.
- CCD camera to transfer the images to a computer for analysis.
- Software Vision32®. Enables advanced calculations of various surface parameters and image processing.

Performance:

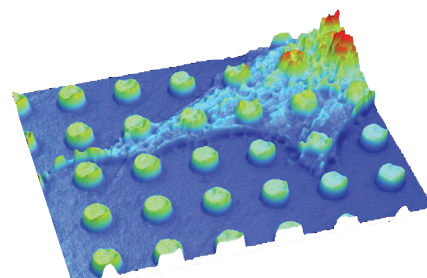
- Vertical measurement range: 0.1 nm to 1 mm
- Vertical resolution: $1 < 1 \text{ \AA}$ Ra
- Vertical scan speed up to 7.2 $\mu\text{m}/\text{sec}$
- Lateral spatial sampling 0.08 to 13.1 μm
- Field-of-View 8.24 mm to 0.05 mm (larger areas with data stitching mode)

Contact person:

Marina Cazorla
mcazorla@ibecbarcelona.eu



3D view of microelectrodes



Cells on a surface microstructured with PDMS pillars

Manufacturer

Veeco Instruments

Model

WYKO NT1100

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PLATFORM

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nanotechnology@ibecbarcelona.eu