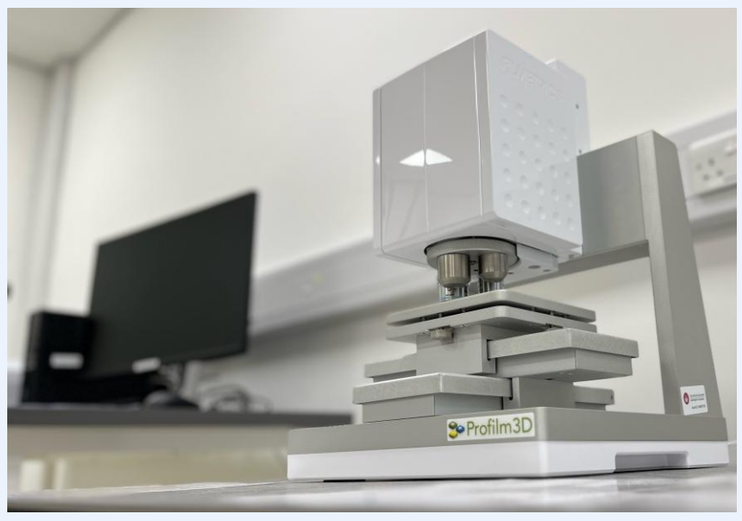
Advanced Makerspaces for PiLot production by micro-Enterprises

White Light Interferometry

High Resolution Surface Imaging

Introduction

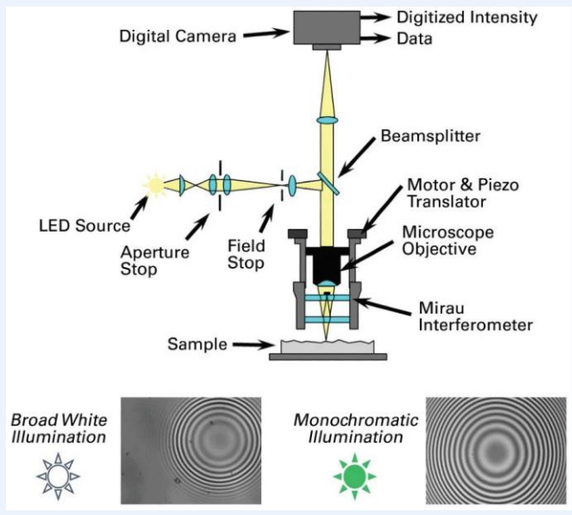
White light interferometry, a powerful non-contact surface metrology technique, is a cornerstone in nanotechnology. It's based on interference between white light beams, offering sub-nanometre precision in 3D surface profiling.



Profilm White Light Interferometer

Applications

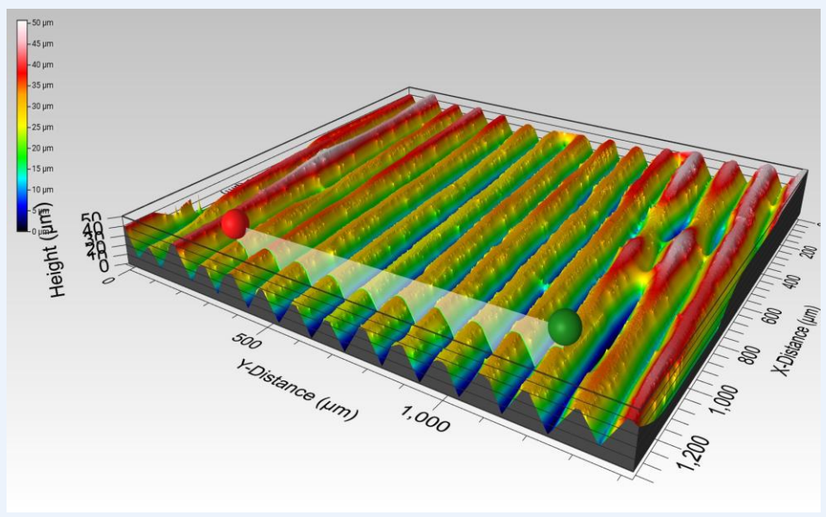
- Detect defects, measure critical dimensions, and evaluate thin films.
- MEMS and NEMS Research: Characterise microscale and nanoscale devices.
- Materials Science: Study material surfaces, thickness, and wear properties.
- Life Sciences: Analyse cellular topography, biomaterials, and microfluidics.



Basic Operation of Interferometer

How Does it Work?

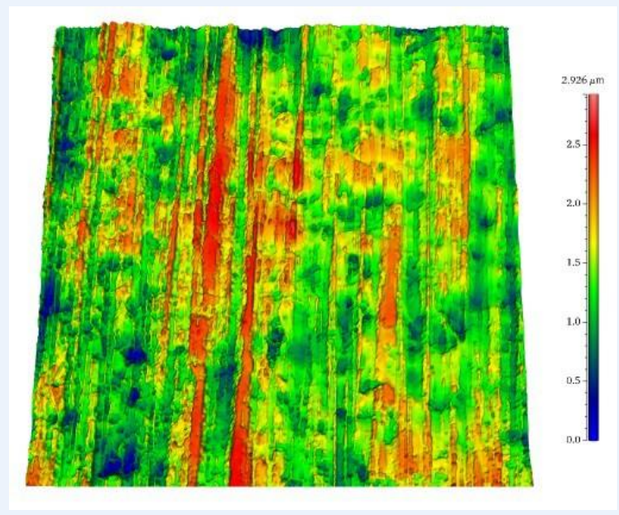
White light interferometry creates a 3D surface profile by measuring the optical path difference between a reference and sample beam. Interference patterns produce high-resolution topography maps.



Surface Profile of 3D Printed PEKK Structure

Technical Specifications

- Suitable Materials: metals, polymers, and biological samples.
- 100×100 mm scan area
- Measure surface profiles and roughness down to 0.05µm
- Works well with reflective samples, but transparent or highly absorptive materials may pose challenges.



Example Surface Roughness Analysis

Interreg
Co-funded by the European Union
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AMPLE
Ollscoil na Gaillimhe
University of Galway