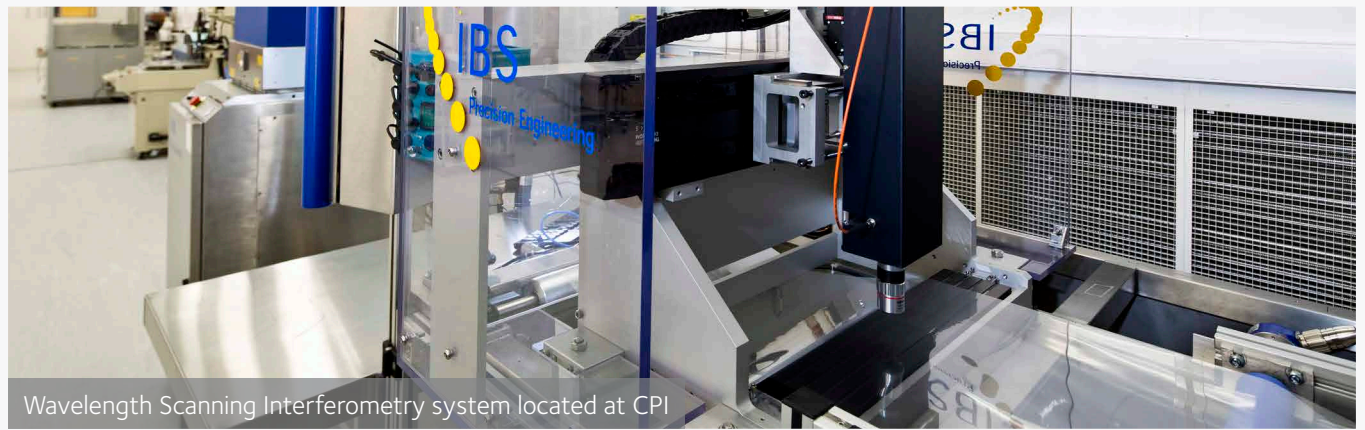


Ultra-high precision metrology of 3D surfaces with Wavelength Scanning Interferometry (WSI)



CPI, IBS Precision Engineering and the University of Huddersfield are collaborating in the development of a new optical interferometry system for fast areal surface measurements. With WSI, micro- and nanoscale surfaces can be measured, where environmental noise is compensated by the measurement system. Wavelength scanning interferometry can be used to measure both smooth surfaces and those with large step heights.

The WSI has three main features:

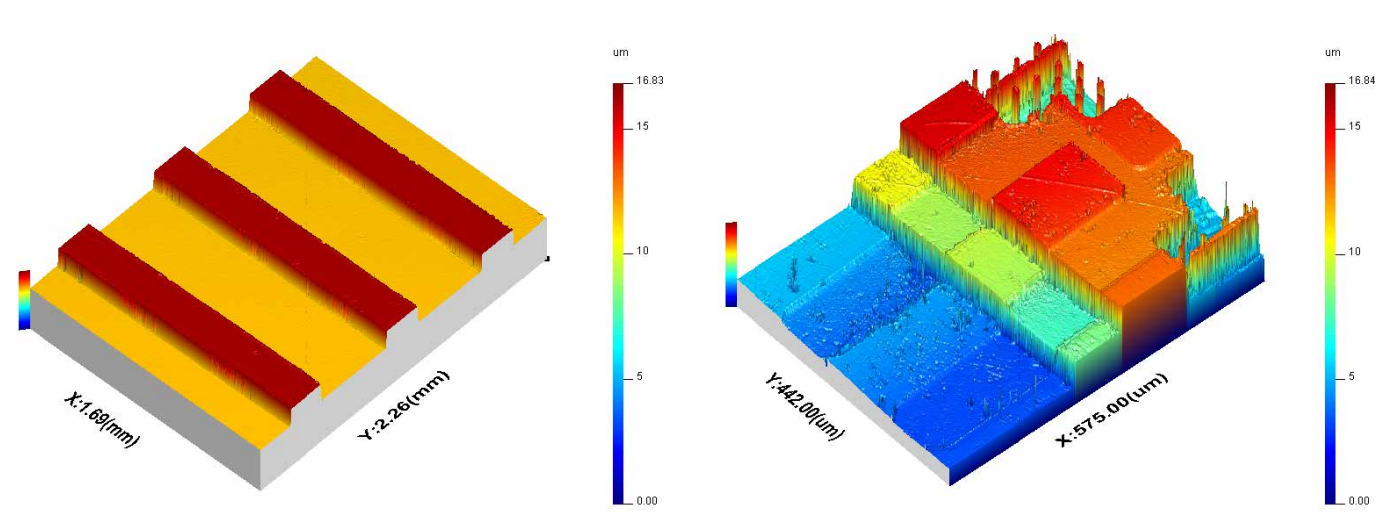
- Aerial measurement with large vertical range (up to 200 μm , lens dependent) and fine vertical resolution (2nm)
- Fast interferometry measurement
- Robust measurement capability

Specification:

WSI specifications	Value	unit
Vertical range (lens dependent)	96 (2X)	μm
Lateral range (lens dependent)	2.8x2.8 (2X)	mm
Pixels over FOV	1024x1024	pixel
Vertical resolution	2	nm
Measurement time (typically)	<1	sec
Stabilisation bandwidth	<500	Hz

Commercialisation:

The WSI technology is protected by pending patents derived from PCT/GB2010/050063 also published as US2012026508(A1).



Measurement results of a 4.707 μm step height and a multi-step integrated circuit

Markets/Potential Application:

The WSI system is designed for the evaluation of surface topography. Main applications for on-line/ in-process surface metrology include:

- Large ($>\lambda$) discontinuous step heights measurement
- V-groove measurement
- Topography measurement on multi-layer, thin or thick films
- Thickness measurement of thin and thick films
- Defect detection and identification of ALD coating
- Measurement of MEMS/NEMS systems
- Measurement of optics

As part of NANOMEND, the WSI system will be implemented at the Centre for Process Innovation (CPI) as a demonstrator sensor for the detection of defects in polymer film. This will be a showcase of the fast, large range, nanometre resolution and robust capabilities of the WSI.

Contact:

If you are interested in using the WSI system for the measurements of micro/nanoscale surface features at industrial scale please contact:

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www.nanomend.eu

Full project title: Nanoscale Defect Detection, Cleaning and Repair for Large Area Substrates



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