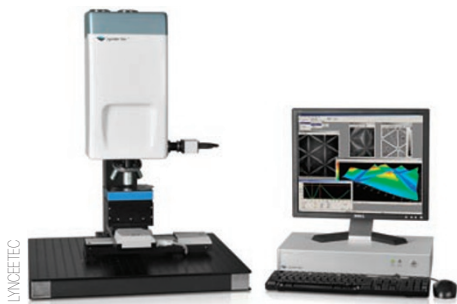


## Digital holographic microscope has nanometre resolution



[www.lynceotec.com](http://www.lynceotec.com)

The Swiss company Lyncee Tec has developed a digital holographic microscopy instrument (DHM R1000) that combines nanometre-scale resolution with real-time, non-invasive three-dimensional observation. Its acquisition and digital reconstruction rate (15 frames per second) enables real-time imaging, and the short acquisition time (a few microseconds) makes the method almost insensitive to external vibrations. This enables stable measurements over long time periods for the detection of weak and slow deformations or movements. It features an interferometry-based axial resolution of less than 1 nanometre along the vertical (*z*) axis and a transverse resolution (in the *xy* plane) defined by the numerical aperture of the microscope objective lens (up to 300 nm with oil immersion objectives). Lyncee Tec says that only low-power visible-light sample illumination is required, and there is no contact with the specimen surface. Biological specimens can be observed without contrast agents, thus avoiding any type of chemical or physical disturbance.

## In-fab wafer non-contact metrology tools measure multilayer films

[www.zygo.com](http://www.zygo.com)

The US company ZYGO has introduced Advanced Film Capability (AFC) to its line of fully automated in-fab wafer metrology tools. This new technology module enables measurement of multilayer films in addition to topography of complex film stacks for in-line process control during semiconductor fabrication. By adding ellipsometric measurements of film thickness as well as its optical characteristics, AFC extends the functionality of ZYGO's single sensor, non-contact, and fully automated wafer metrology equipment. At present, chipmakers and thin-film

head manufacturers use several tools to monitor process control of topography and the thickness of complex film stacks. Technologists at ZYGO have addressed the challenges of thin-film effects and material dispersion by integrating AFC into its single-sensor platforms. The combination of subångström topography measurement with high-resolution ellipsometric film metrology provides ZYGO semiconductor customers with a means to make accurate measurements and maintain control of their processes. The company's AFC delivers multi-angle, multiwavelength ellipsometric film-thickness metrology with an industry-leading, small spot size. This provides the additional benefit of allowing customers to use smaller test targets for production monitoring at the 32-nm process node and beyond, thereby allowing improvement in both process yield and chip density.

## Profiler makes measurements of solar-cell topography and stress

[www.zebraoptical.com](http://www.zebraoptical.com)

Sunrise Optical has added the Zebra OptoProfiler G3 to its product range. It is a user-friendly solution for solar-cell topography and stress measurements.

The Zebra OptoProfiler is capable of measuring rough-structured, painted and diffuse reflective surfaces, commonly encountered in solar-cell manufacturing. It has the capability of measuring solar cells at almost every step of the manufacturing process and can calculate a variety of wafer topography parameters, such as bow and warp. The bow measurement range exceeds 10 mm, does not depend on the wafer diameter, and has an accuracy and reproducibility exceeding 10 sigma for a typical multicrystalline solar-cell manufacturing process. The stress-tensor calculation is also provided as an optional software upgrade. The data collected by Zebra OptoProfiler can be exported in raw-point cloud format for display and analysis using popular third-party stress and design packages.

## Telecentric topography systems measure larger areas

[www.polytec.com](http://www.polytec.com)

Polytec's telecentric TopMap Metro.Lab and In.Line white-light interferometer systems now have the optional capability of measuring the topography of objects even larger than the measurement field. This powerful feature is accomplished by new hardware accessories and extended

software functionality, which automates the sequential measurement of the complete sample, and then combines the individual measurements into a single data set. All the models of the company's TopMap series are equipped with the necessary TMS Software.

TopMap Metro.Lab is an affordable, high-precision, non-contact topography measurement system with a wide field of view and a large *z*-axis dynamic range, designed to characterize flat and curved surfaces. The Metro.Lab can measure flatness and general topography with 20-nm resolution and determine parallelism of two or more surfaces separated by as much as 70 mm. Designed as a compact, industrial inspection system, the TopMap In.Line interferometer can be installed on a manufacturing line and rapidly verifies production-part specifications for flatness and topography.

## Interferometers are insensitive to vibrations and air turbulence



[www.4dtechnology.com](http://www.4dtechnology.com)

The PhaseCam laser interferometers have been designed for accurate surface and wavefront measurements at wavelengths of 1.053, 1.064, 1.300 and 1.550  $\mu\text{m}$ . PhaseCam laser interferometers use 4D Technology's dynamic interferometry technology to acquire measurement data in less than 30 microseconds. Because the acquisition time is so short, the instruments are insensitive to vibration and air turbulence, enabling use in difficult environments such as production floors, clean rooms and environmental testing chambers. Beam ratio adjustment ensures maximum fringe contrast, enabling measurement of optics with reflectivity from 1–100%. Turnkey PhaseCam near-infrared (NIR) systems include 4Sight advanced wavefront analysis software, providing extensive two- and three-dimensional analysis and visualization tools, as well as comprehensive filtering, masking, database and import/export functions. Applications for PhaseCam NIR systems include measurement of optics for astronomy, surveillance, guidance and directed energy applications.