

Size, depth and thermal characterization

DEEPVIEW

Carl Zeiss

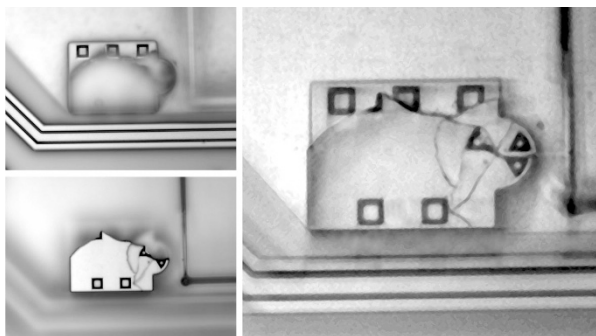
www.zeiss.com

Clear definition in every plane

The DeepView technique introduced by Carl Zeiss offers an extended depth of focus for conventional light microscopes — until now only possible with scanning electron microscopes. The technique permits fast defect recognition and failure analysis of tilted and

depth-extended MEMS (microelectromechanical systems) components, the structures of which lie in different planes, without any loss of optical information. The structures and their entire depth can be visualized at a glance in quasi-real time without any need for refocusing. A wavefront modulator inserted in the

nosepiece position for differential interference contrast superimposes a nonlinear phase difference on the primary intermediate image. After spatial filtering (deconvolution), a clearly defined microscopic image is created on the monitor in quasi-real time and with almost diffraction-limited quality; its depth of focus is about 18 times better than the wave-optical depth of focus. The module is offered for use with the Axioskop 2 Mat, Axioplan 2 imaging and Axiovert 200 Mat microscopes, for combination with the AxioCam digital microscope camera and the AxioVision DeepView software.



HYPERDSC

Perkin Elmer

www.perkinelmer.com

Superfast thermal analysis

The HyperDSC (differential scanning calorimeter) method from Perkin Elmer offers sample information within seconds — claimed to be up to ten times faster than standard DSC methods. The technique uses linear-controlled scanning rates, and real sample temperature measurement. It can only be used with their

Diamond DSC — a power-compensated instrument with two small, low-mass furnaces that heat and cool rapidly in the range 0.01 to 500 °C min⁻¹. Better resolution and higher sensitivity is claimed, offering detection of transitions that can be missed in conventional heat-flux systems; changes such as recrystallization, melting and decomposition,

which can be induced in slow scanning, are also avoided. This technique has advantages for applications in polymers, pharmaceuticals and forensics for properties such as polymorphism and the thermal screening of enzymes. The fast rate and small microgram sample size also offers the possibility of high-throughput screening.

GENESIS XMS

EDAX

www.edax.com

X-ray microanalysis

EDAX introduce the GENESIS XMS series of products as the “next-generation” of X-ray microanalysis systems. More functionality in parameters such as

process times are offered, with input count rates in excess of 500,000 counts per second being possible. New detectors have also been added to the range, including the LN Free Si(Li) Detector, a Silicon Drift Detector along with

two new WDS (low-energy X-ray) spectrometers to complement the LN Cooled Si(Li) Detector. All the detectors can be fully integrated into the GENESIS XMS and are compatible with Pegasus EDS-EBSD systems.

DAWN EOS

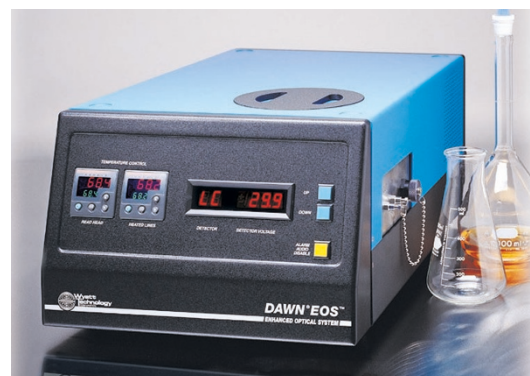
Wyatt Technology

www.wyatt.com

Absolute mass and size detector

The DAWN EOS from Wyatt Technology is an 18-angle light scattering detector for absolute molecular weight and size determinations of polymers and biopolymers. It may be connected in series to any chromatographic fractionation system to determine absolute molar masses without the use of reference standards or column calibration. The instrument incorporates a special 30 mW gallium arsenide laser operating at a wavelength of 690 nm. This laser, together with its unique optical collimator, produces light-scattering signals comparable to those obtained with an argon-ion laser. The patented laser stabilization electronics and a proprietary optical system create a beam with intensity stability and spatial mode purity that is claimed to rival the best gas lasers. The combination of the increased power of the laser, precision amplifiers

and on-board 16-bit digital signal processing chips ensures that signal resolution is preserved even at very low sample concentrations. Precise sample temperature control is possible from -30 to 150 °C, or from ambient to 210 °C. They are easily integrated with the Waters Alliance 2000, Waters 150C and CV, as well as the PL 220 for the characterization of polyolefins and other thermoplastic polymers. Other new instruments are the miniDAWN, a three-angle detector that allows the user to study solution behaviour of polymers including aggregation, kinetics and reaction rates. The Eclipse particle fractionator can separate submicrometre particles in a heterogenous sample, and when integrated with the DAWN EOS detectors, allows determination of the size distribution and has a resolution that is frequently better than one nanometre. Applications include emulsions, liposomes and latex particles.



These notes are compiled in the Nature Materials office from information provided by the manufacturers.