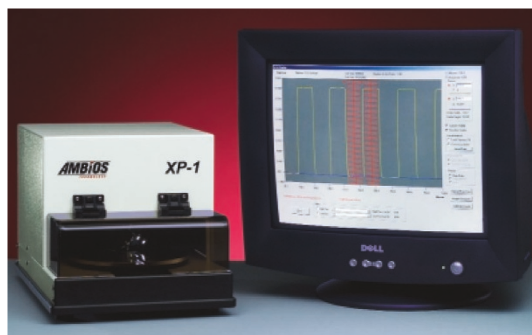
Surface profiling to scanning probe microscopy



XP-1

Ambios Technology www.ambiostech.com

Surface profiler

Ambios Technology announce the introduction of a low-cost, high-performance stylus profilometer, the XP-1, designed for precision step height, thin-film stress, film thickness and surface roughness measurements. The stylus comes in a range of sizes of 0.2 mm – 5 mm radius, and the low-force mechanism is ideally suited for measurement of soft or delicate films without risk of surface damage. The 170 mm diameter stage, with a scan length of 25 mm, is designed to accommodate a variety of samples including semi-conductors, glass, thin-film magnetic heads and disks, precision machined surfaces, polymers and micro-electromechanical systems. Collection of 50,000 data points ensures high lateral resolution, and a total z range of 100 mm make it useful for surface measurements in the nanometre to micro-metre range.

CRYSTALLOGRAPHICA SEARCH MATCH

Oxford Cryosystems www.crystallographica.com

Search Software

Crystallographica, the software unit of Oxford Cryosystems, announce the re-launch of the improved and upgraded software suite, Crystallographica Search Match (CSM). This is a search programme for use with the International Centre for Diffraction Data's Powder Diffraction File, and is also the basis for the algorithms behind the Panalytical (formerly Philips Analytical) search-match software, X'Pert HighScore. The software offers a powerful search algorithm for multiphase identification; fast search using raw data, peak data or a combination of the two; fully integrated Boolean PDF card retrieval and display; user database, with interface to Crystallographica; fully integrated peak search and background subtraction tools; powder-pattern simulation, including multiphase mixtures. Reports are written directly to Microsoft Word. A free trial version can be downloaded from the website — this is the full version of the software, and so can be used on real data and is time-limited to 90 days.

COATMASTER 550

EDAX www.edax.com

Measurement of large-area coatings

The Coatmaster 550 from EDAX is an X-ray fluorescence system designed specifically for measuring the thickness of coatings on large parts used in industries such as automotive and aerospace, for example, brake pads, motherboards, electronics and wrenches. Measurement of large-sized plates is made possible due to features such as the large 60-cm-wide and 35-cm-high chamber, a heavy-duty load stage that can accommodate up to 20 kg weight, and a high-precision x–y motorized stage, with movement in the z direction using a moveable head. The automated multicollimator changer is capable of holding up to four collimators of different sizes for rapid analysis of different sized samples. The system performs sophisticated peak deconvolution that provides increased accuracy and precision, with a four times higher count-rate and greater throughput than previous instruments. It can obtain thickness measurements of a single element, multiple layers or alloys as well as concentration measurements with or without the use of standards. The GUI is Windows-based, allowing for fast, user-friendly operation.

JSPM-5200

JEOL www.jeol.com

Combined AFM/STM

The JSPM-5200 from JEOL combines high-resolution atomic force microscopy (AFM) and scanning tunnelling microscopy (STM) in one instrument, allowing images to be obtained that are not possible under conventional scanning probe microscopes. Control over the imaging environment allows cooled or heated samples to be examined in fluid, controlled air, ambient air or vacuum. Samples can be heated to 500 °C or cooled to –123 °C using the interchangeable hot and cold stages. Open and hermetically sealed in-fluid observation cells are available. The samples can also be observed under vacuum in a glass bell jar — 7×10^{-7} torr can be achieved through simple one-button operation. More than 20 types of measurement are possible for quantitative and qualitative analysis of sample surfaces, including contact, non-contact and tapping mode AFM, STM, nano-indentation, scanning Kelvin probe and magnetic force microscopy. During scanning, four different signals can be collected and displayed simultaneously, and a combination of signals allows a wide variety of measurements to be performed.

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

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