NanoTech America

NEWS FROM……

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Solver MFM debuts at Materials Research Society

(Springfield, MA, Dec 1, 2003). The advent of nanotechnology and the rise of MEMs (micro-electrical mechanical systems) are spurring new developments in magnetic materials. Characterizing these materials on the molecular and nano-scale has become increasingly critical, calling for new devices to map and measure these properties. Nanotech-America, Inc. is proud to announce Solver MFM, an advanced tool for mapping and measuring local magnetic fields, above or near a sample surface, with nanometer resolution.

Using sophisticated scanning probe technology (SPM), Solver MFM maps and measures the magnetic domains for either hard or soft materials. It is particularly applicable to investigations of magnetic films, magnetic micro- or nano-structures, data storage and spintronics devices, or naturally occurring biological and geological samples.

Developed by NT-MDT (Zelenograd, Russia) for maximum versatility, Solver MFM scans by moving sample, probe, or both (DualScan™ mode). Probe scanning is especially useful for large or heavy samples. Covering fields up to 100x100x5 microns, this mode can handle samples as large as 21mm in diameter with external magnetic field or 100mm without.

Coupling probe scanning with sample scanning extends the horizontal (XY) scan to 150μm and the vertical (Z) to 7.5μm. An innovative closed loop equivalency (CLE) module improves scanner linearity (Z non-linearity to less than 3%) increases the potential Z scan depth to 15 μm. The CLE also increases scan speed as much as 3.5 fold, significantly shortening experimental

time.

For external field studies, the MFM is fitted with an external electromagnet that can vary the applied in-plane field up to +/- 2kGauss. When the external field is kept constant, the MFM produces 2D maps of the static magnetic field at the surface. When the field is varied, the MFM images the response of the local surface magnetization to the external field.

Solver MFM also operates in all of the standard SPM modes, including contact, semi-contact, or non-contact Atomic Force Microscopy (AFM), Adhesion Force Imaging, Electrostatic Force Microscopy (EFM), Force Modulation mode (viscoelasticity), Lateral Force Microscopy (LFM), Spreading Resistance Imaging (SRI), Scanning Capacitance Imaging (SCI), and Scanning Kelvin Probe Microscopy. Nanomanipulation and nanolithography, using either AFM or current control, are also standard.

For further information on Solver MFM, visit www.ntmdt.com.

Solver MFM. Proudly distributed through Nanotech-America. Inc: www.nt-america.com

For further details, visit www.nt-america.com or call Barbara Foster at 413-693-0010.

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Scanning probe microscopy encompasses a family of surface measurement and analysis techniques. The SPM "feels" the surface by means of a special, cantilever-mounted probe. The name of each technique in the family is derived from the probe-surface interaction. For instance, Atomic Force Microscopy (AFM) senses and maps the tiny atomic attractions and repulsions between the tip and the surface while Magnetic Force Microscopy (MFM) senses and maps the magnetic interactions. SPMs can image and quantify the following surface characteristics: adhesion, friction, viscoelasticity (including Young's modulus), magnetic domains, spreading resistance, voltage, capacitance, thermal response (Scanning Kelvin Probe Microscopy), and scanning tunneling energy. Depending on the technique, these measurements can be made in air or liquid or under external magnetic fields.