A summary of new products and services for materials research...

Rheometer Software: RHIOS integrated operational software and RHECALC enhanced calculation program software from Rheometrics can be used to perform sophisticated analyses quickly and automatically on rheological and other test data, such as DSC, TGA, and TMA. RHIOS controls the rheometer and manages data collection, storage, display, and transfer. Using a unique 3-D spreadsheet, data can be stored and handled in pages as in a lab notebook. Data generated from a rheometer or other analytical instrument can be manipulated using such features as plotting, overlaying, graph annotating, and curve smoothing, or exported to other analysis software such as Lotus 1-2-3® or Microsoft® Excel. Module 1 of RHECALC software's two modules generates master curves automatically by time-temperature superposition using both vertical and horizontal shift factors. Data can be shifted automatically or manually. Module 1 can fit data to predefined and user-defined models and can calculate errors associated with both measured and calculated data. Module 2 calculates complex mathematical operations rapidly and performs rheological transforms such as transformations of dynamic and transient data to relaxation and retardation spectra.
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AFM Imaging Services: Imaging Services, an independent lab, offers AFM/STM services using Digital Instruments' Nanoscope equipment, eliminating the need to purchase expensive equipment. A variety of samples including silicon, polysilicon, thin film magnetic storage disks, and optical disk stampers can be imaged for surface roughness, grain size, and specific topographic measurements. Scan sizes range from the atomic scale to 125 x 125 μm, and the resulting images provide true 3-D resolution at the nanometer scale. High-quality topographic representations can be produced to customer specifications.
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CD-ROM Databases with Abstracts: The bimonthly Materials Science Citation Index™ and Biomedical Engineering Citation Index™ from the Institute for Scientific Information® are CD-ROM databases that offer complete coverage of significant journal literature in materials science and biomedical engineering, respectively, plus unique search capabilities. The Materials Science Citation Index™ abstracts span applied physics, ceramics, composites, metals and metallurgy, polymer engineering, semiconductors, thin films, and more. Complete bibliographic data and cited references in the materials index cover 90,000 items per year. The Biomedical Engineering Citation Index™ abstracts cover 30,000 items per year, encompassing areas such as prostheses, biosensors, biocompatibility, rehabilitation engineering, and computer applications in medicine. Both indexes contain searchable English-language author abstracts, as well as a Related Records™ feature that links articles sharing one or more bibliographic references and automatically increases the number of articles retrieved within a particular search. The indexes are also searchable by keywords, title words, abstracts, journal titles, cited works, cited authors, author addresses, and more. An IBM microcomputer or 100% compatible computer may be used, or a NEC 9800 Series microcomputer. A Macintosh version will be available soon, with networking for the IBM and Macintosh.
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Spectroscopic Data Archive in Surface Science: The American Vacuum Society's new quarterly journal electronically records spectra of solid surfaces having technological and scientific interest. The peer-reviewed *Surface Science Spectra* generates a hard-copy record of all significant surface spectra accepted into the database. Subscribers may also obtain individual records in digitized form for direct comparison on a terminal, workstation, or PC. Data draws on Auger and XPS spectroscopies but also captures all spectra classes, including reference, comparison, and technical spectra.
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Separation Science Catalog: Free 1992 catalog and reference guide from J&W Scientific features 75 new gas chromatography (GC) chromatograms; a description of each GC column phase; GC and solid phase extraction (SPE) manufacturers' cross-reference guides; SPE methods; and accessories. The 300-page catalog includes 12 chapters, each with its own table of contents in English, German, French, and Japanese. The color-coded chapters cover GC, high performance liquid chromatography (HPLC), capillary electrophoresis, and SPE. Chromatograms are organized and listed by markets, with new chromatograms clearly identified.
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Disposable IR Spectroscopy Sample Cards: The Disposable IR Card from 3M replaces traditional salt plates for many infrared spectroscopy applications and improves efficiency. Designed for qualitative mid-range IR analysis, its small 5 x 10 cm size conforms to major FTIR spectrometers. A 2-cm aperture in the card's center exposes a thin, microporous substrate to which samples may be applied directly, enabling fast evaporation and drying. The card may be used for analyzing organic liquids, substances that are soluble in organic solvents, and semi-solids. Multiple samples may be prepared quickly and easily, and sample information may be written right on the card's rigid cardboard frame.
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European Inorganic Coating Services and Products: Materials Technology Publications' *European Advanced Inorganic Coatings Directory 1992* provides detailed information on inorganic coating services and products offered by European firms. The directory lists current information on the diverse range of advanced inorganic coatings and methods commercially available for industrial applications. More than 1,000 companies are detailed, with addresses, telephone and fax numbers, contact names, associated companies, and more. Coating types listed include metallic, ceramic, diamond and diamond-like, superconductor, composite coatings, optical coatings, pyrolytic carbon coatings, and inorganic paints. Coating methods include plasma and flame spray, chemical and physical vapor deposition, ion beam implantation and plating, and vacuum sputtering. Products and services are also cross-referenced under five main categories for quick and easy identification.
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Semiconductor Materials Modeling Program: ProtoHype's BandOffs 1.0 aids in design of semiconductor heterojunction materials made from silicon-germanium or gallium arsenide-aluminum arsenide. The easy-to-use program is based on a globally convergent solution for Poisson's equation. Users may assemble a semiconductor structure containing one to 20 layers, each of which is doped p- or n-type to any desired level and assigned one or both of the semiconductor components of the heterostructure. The effects of strain are included for constructing SiGe Type II structures and can be arbitrarily distributed in layers by specifying a relaxed alloy substrate layer. The output of the calculation includes a diagram of the conduction and valence bands, the electron and hole carrier profiles, the potential, and the field throughout the structure. The output can also be saved to an ASCII file for manipulation using standard graphics packages. Minimum hardware configuration is a Macintosh SE with 500K of memory.
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