

RESOURCES

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

Time-Resolved Optical Emission Spectrometer: From Thermo Jarrell Ash, the TJA 281 allows selective integration at any portion of a spark signal in 5 μ s intervals, providing better signal-to-noise ratio, linearity, and dynamic range, and lower detection limits than other optical emission spectrometers. The TJA 281 allows consistent firing precision through an optical electronic link between source and computer. Voltages are maintained to greater than 99.9% accuracy, and contamination is eliminated from the electrode. A spectrum shifter permits the user to see a specific wavelength.

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Materials Referral System and Hotline: New service offered at no charge by Ames Laboratory's Materials Preparation Center provides assistance in locating sources of unique materials or in obtaining services and information regarding their preparation and characterization. The computerized database centers largely on the capabilities at U.S. Department of Energy National Laboratories and other specialty sources, but also includes commercial sources. In addition, an extensive network of researchers has been established to aid in answering inquiries.

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Sonic, Nondestructive Materials Characterizer: Grindo-Sonic MK5 instrument from J.W. Lemmens nondestructively tests elastic properties of materials—modulus of elasticity, modulus of rigidity, Poisson's ratio, and damping. Measurements show excellent correlations with strength, porosity, wear rate, and thermal shock resistance, classifies substances by these properties, and optimizes their use in practical applications. The MK5 is compatible with equipment described in ASTM standards based on measurements of resonant frequencies (C623, C848, C747, C215, C666).

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On-Line Market Studies: Information retrieval system allows computer user to retrieve table of contents, executive introductions, summaries, and brochure information from a wide range of BCC market research reports free of charge. The reports cover plastics and polymers, new materials and technologies, electronics, chemical technology, and more. Users can find out which reports are available on certain topics, their prices, and the specific subject matter. Newsletters are available to subscribers. Free conference information is also available.

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Computation of Materials Properties: Journal from Elsevier will begin publication in fall 1992 on computational studies of both existing and new advanced materials and their applications. It aims to enhance communication between experimental materials research and computational work by covering numerical calculations and simulations of all properties of materials, including electronic, dynamical, mechanical and thermodynamic processes, and behavior studied at an atomic, molecular, or mesoscopic level.

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Microcomputer IR Pyrometers: Quantum Logic's QL3700 series of microcomputer pyrometers use short wavelengths (0.89-1.08 μ m) for IR measurements of Si or GaAs wafer temperatures in R&D and production. Reflected and stray radiation is compensated for. The QL3700s avoid errors caused by dramatic variances in emissivity values of silicon and gallium arsenide occurring at wavelengths longer than about 1 μ m. An on-board microcomputer accurately reads temperatures from 300 to 2300°C, and calibration is stable. Clear viewing of target diameters 0.7 mm is possible. Housing is rugged yet light and configured for fixed or tripod mounting. Values are LED-displayed within an optical viewfinder.

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Custom Vacuum Chambers: Huntington Laboratories' design automation service lets vacuum system users develop custom ultrahigh vacuum chambers much more quickly than before. Users specify the chamber dimension parameters, port configurations, and other specifications, and do not go through a time-consuming two-dimensional design stage. A software program linked to a CAD system rapidly translates the customer's raw chamber "idea" into an actual 3-D view with an accurate cost quotation, all without any manufacturing operations. Chamber documentation is also available on tape, disk, or plots.

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Directory of Advanced Material Professionals: Industry directory from CEMS lists names and titles of engineers, scientists, professors, research professionals, marketing professionals, and consultants. It is a useful guide for researchers, librarians, marketing executives, and employment counselors. The directory contains over 14,000 listings cross-referenced by company, profession, region, and alphabet, and is published four times a year.

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Adhesive for Flip-Chip Bonding: From 3M, a specifically formulated adhesive allows clock rates of 1 GHz in an unpackage and unbumped gallium arsenide integrated circuit, flip-chip bonded to a test substrate. Input/output signal fidelity from the circuit is unmodified by the new bonding technique. The adhesive is electrically conductive only in the vertical axis. A clean, low-resistance interconnect is achieved between the pads on the chip and corresponding pads on the substrate. Complete electrical isolation is maintained between adjacent pads. Additional applications include flex circuit and TAB-to-glass for flat panel displays, flex-to-flex, and flex-to-board. The adhesives bond at relatively low temperatures, require no post-process cleaning, and are very stable.

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Journal of High Temperature Chemical Processes: Publication of the French Society of High Temperature Chemical Processes will focus on plasma and laser processing, materials engineering, high temperature processes, diagnostics of thermal processes, modeling transport phenomena, and chemical mechanisms. The bi-monthly journal will first be issued in early 1992, primarily as a forum to promote European exchange in these fields, and will present new materials production processes, and address issues related to thermal chemical synthesis under high temperature conditions, such as pyrolysis, waste destruction, radicals production, and heterogeneous reactions.

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Quartz Halogen Heater for Thin Film Processing: QH1000 quartz halogen heater from Microscience uses technology similar to rapid thermal processing to produce a heater suitable for general vacuum processing of thin films. The 2,400 W heater with its array of halogen lamps can produce substrate temperatures up to 1000°C and can be used in both UHV and oxygen environments. Applications include superconducting films, PECVD processing, sputtering, and other thin film processes requiring heated substrates in the 50-1000°C range. Options include bellows drive adjustable insertion length, substrate holder with rotation, mounting plates for transparent substrates, and integral shutter.

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