

## RESOURCES

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

### 300-mm Resistivity Measurement

**Tool:** The OmniMap RS-100 from KLA-Tencor is a 330-mm resistivity measurement system that can correct for temperature variations affecting long-term repeatability, accuracy, and system-to-system matching. The system is based on the four-point probe technology and provides sheet resistance measurements at throughputs as high as 100 wafers. It is suitable for wafer characterization and production monitoring in applications where film thickness and sheet resistance are critical, such as ion implantation and epitaxy.

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### Laser Power Measurement System:

Labsphere offers two models of optical power meters to measure the total output of lasers and laser diodes. The LPMS-400 is designed for application over the 300–100-nm wavelength region, and the LPMS-400N is designed for NIR applications covering the 800–1800-nm wavelength region. Each system consists of a laser power measurement sphere, a detector assembly, and an SC-5500 integrating sphere system control. Applications include optical bench detection and measurement of collimated light sources.

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### Precoating for Solder Joining of Electronic Devices:

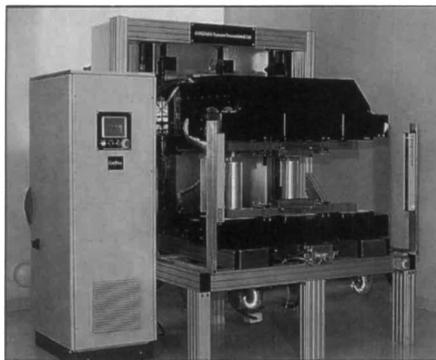
Materials Research International's SolderBond 500™ is an active, low-temperature tin-silver-titanium alloy that directly wets metals, carbides, graphite, diamond, oxides, nitrides, and other composites without use of fluxes or special atmospheres. It is applied as a molten metal layer directly to the joint surfaces as a precoated or metallized layer to which conventional solder can wet and bond. The one-step precoating alloy eliminates the need for conventional, multistep premetallizing techniques and results in joint shear strengths of 4,000–6,000 psi.

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### 1000-Hz High-Cycle Fatigue Test System:

MTS Systems offers a servohydraulic test system for fatigue testing of materials at frequencies to 1000 Hz. The uniaxial system maintains high wave form fidelity while running at high frequency. It provides accurate control with a static load capacity of 5.5 kip, and mechanical durability is achieved through voice coil servovalve technology. Phase Amplitude Control software increases the effective frequency range for 1000-Hz sustained testing. The system can perform a one-billion-cycle test in 11 days.

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### Heat Treating Process:

The CoreFlux™ Uniform Magnetic Heating system from Mitsubishi generates heat by using the hysteresis losses that result from stressing magnetic and paramagnetic metal parts under a fluctuating magnetic field. With this technology, domains on crystalline structures align and strain in the direction of the field (for ferrous metals) or in the opposite direction of the field (for nonferrous metals). Hysteresis losses propagate rapidly and evenly through the part.

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### Helium Leak Detector:

The Qualy-Test™ from Pfeiffer Vacuum Technology uses a twin flow design to permit faster testing capability due to a permissible high inlet pressure of 25 mbar and a pumping speed of 2.1 l/s. Small leaks with a detection limit of  $5 \times 10^{-12}$  mbar l/s can be located. Three versions of the detector are available: one for clean applications, one for general vacuum applications, and one for use in an existing vacuum pump.

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### Polypropylene Guidebook:

Plastics Design Library offers a 432-page user's guide and databook for polypropylene. The book examines the science, technology, engineering, properties, design, processing, and applications, including recycling methods and health and safety aspects of polypropylene to other thermoplastics. A directory of suppliers and grades is included.

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### Monochrome Camera System:

The SP-Eye from Photonic Science can produce high-quality images from video rate (25 frames/s) brightfield and integrated low-light fluorescence applications. A Peltier cooled CCD sensor improves signal-to-noise ratio and allows on-chip image integration of weak fluorescence signals for many seconds. The camera is supplied with a high-performance (PCI bus) digital interface and image acquisition, enhancement, and database software.

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### Molybdenum Disilicide Heating Element:

Micropyretics Heaters International's molybdenum disilicide heating element in the 6-mm class can save up to 31% in energy loss per heating element and is available for element temperature up to 1900°C. A traditional heating element in this class has a 6-mm diameter heating section size and a 12-mm diameter terminal section size. By reducing the cold section size to 10 mm, less heat is conducted away from the furnace by the terminal while no perceptible change occurs in electrical characteristics.

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### Fluorescent Image Software:

Media Cybernetics' Fluoro-Pro software, a module for Image-Pro-Plus, provides an automated method to acquire and process multichannel fluorescent data. The software facilitates acquisition of multicolored fluorescent samples (i.e., fluorescence *in situ* hybridization) and provides auto exposure support for analog and digital cameras. Image captures are repeatable, and automation capabilities minimize photobleaching. Captured images can be archived into the Image-Pro Plus database.

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### PIV Laser System:

The Gemini PIV from New Wave Research is a dual-head Nd:YAG laser system designed for particle image velocimetry (PIV) applications. The system is composed of two independently fired laser heads mounted on one baseplate, two control panels, and two power supplies. Featuring 100-mJ pulses at 532 nm and a repetition rate of 15 Hz, the system provides three trigger controls: single-shot, continuous, and TTL. To study widely variable flow rates, users can vary the delay between pulses.

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### High-Temperature Polyimide for Solder Dam Coating:

Epoxy Technology's EPO-TEK 600 can be screened for 1–5 mils; 2–10 mils can be achieved by stencil printing. The material can be screen printed on copper metallized, ceramic substrate in a "window" configuration to create a "solder dam." EPO-TEK 600 contains the solder paste during solder reflow and can withstand the 400°C reflow temperature. Other properties include dielectric constant of 2.4, CTE of  $10 \times 10^{-6}$  in./in./°C,  $T_g$  of 240°C, and 550°C degradation temperature. The polyimide remains stable at room temperature for longer than a year.

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