

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

High-Temperature Imaging Pyrometer:

Mikron Instruments' M9000 Series features a solid-state detector array camera and operates in the near-IR spectrum to minimize measurement errors. The device offers a 640×480 pixel image for high resolution and a temperature range of $500\text{--}3000^\circ\text{C}$. A 30-frames-per-second response permits real-time imaging of dynamic processes. Four levels of system modularity enable users to choose from a basic detector unit and video processor for calibrated imaging to a multi-range, computerized turnkey system.

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Thin Film Measurement System:

Pacific Lightwave's TMS-10 complete turnkey system can be used to automatically measure thickness, refraction index, and absorption of dielectric films used in silicon, III-V, and LCD fabrication. The system also models and characterizes complex multilayer optoelectronic structures. The TMS-10 can be configured for patterned or unpatterned films, and for *in situ* measurements. Windows-based software is standard, with Macintosh-based versions available.

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Ellipsometer Software:

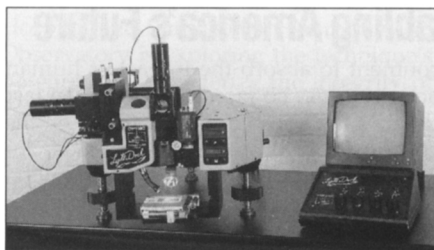
FilmEllipse from Scientific Computing International facilitates analysis and acquisition of ellipsometric data. Users can find solutions to applications not typically covered by software bundled with commercially available ellipsometers. The software combines ellipsometric and spectrophotometric data collected at multiple wavelengths and angles of incidence to simultaneously solve for complex indices ($n + ik$) and thicknesses of multilayer film structures. Experimental data, solutions, and user-defined fields are automatically saved and grouped for later analysis.

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Raman Imaging Microscope:

Renishaw offers a microscope that combines scanning spectroscopy and 2-D imaging in one system. The instrument scans to a spatial resolution of $1\ \mu\text{m}$ and a spectral resolution to $0.2\ \text{cm}^{-1}$, providing graphic output in the form of 2-D Raman images, and 2-D and 3-D spectral plots. The standard microscope uses a 25 mW laser and has a scanning range of $200\text{--}4000\ \text{cm}^{-1}$. Optional extensions provide ranges of $100\text{--}4000\ \text{cm}^{-1}$ and $5000\text{--}7000\ \text{cm}^{-1}$. Users can customize the instrument for remote analysis, high-temperature measurement up to 1500°C , low-temperature measurement down to 4 K, and large-area scanning without stitching.

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Portable Excimer Laser Machining System:

The LightDeck system from OPTEC enables researchers to use excimer lasers to investigate the interaction of uv light on materials in applications such as surface modification, surface cleaning, material activation, annealing, or thin film deposition. The PC-controlled system measures $500 \times 600\ \text{mm}^2$, but is compatible with most excimer laser sources. Features include a folded optic rail, automatic demagnification control, optic position indicators, beam homogenization, and a confocal vision system.

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Liquid Nitrogen Level Controller:

Teragon's LC3 can maintain the LN_2 level between user-defined setpoints in dewars or cold traps. The liquid level is measured with a capacitive probe and displayed with 0.1% precision. The unit controls the level using a cryogenic solenoid valve, and an alarm activates an auto-dial phone system. The RS-232 interface facilitates remote monitoring and control.

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Single-Crystal Substrate for Deposition of III-V Compounds:

Marketech International offers a ScMgAlO_4 single-crystal substrate for deposition of GaN thin films. The material is a potential substrate for blue LEDs and lasers because its lattice constant of $3.24\ \text{\AA}$ has a close lattice match with GaN—a mismatch of 1.8%. The substrate also has a suitable chemistry, a melting point of 1900°C , and a good thermal expansion match. Standard diameters of 30 mm, 1.0 in., and $10 \times 10\ \text{mm}^2$ are available.

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Terephthalic Resin: PolyLite® 33480-00 from Reichhold chemicals is a terephthalic acid-based resin offering an HDT of 200°F (92.4°C) and improved toughness compared to traditional high-reactivity isophthalic resins. The material is isophthalic acid-free and offers hydrolytic stability in ambient temperature services. The resin can be used in processes such as filament winding, hand lay-up and spray-up, and cold-press molding.

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Housings for Rolled Filters: A free filter housing is available to test SPIRAL-TEK™ filters from Osmonics. The rolled filters are suitable for applications requiring absolute filtration and clarification, high dirt-holding capacity, gel slug retention, handling of viscous fluids, or encapsulation. A semicrossflow mode increases contaminant loading by six times per square foot of media and reduces gel slug extrusion. The thin media/membrane provides low pressure drop with no pleat collapse.

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Diffusion-Bonded Titanium Targets:

Tosoh's Prelude® titanium target assembly for the Applied Materials Dura-source™ TN and TTN Cathode has a high-strength, aluminum backing plate to provide higher thermal conductivity than a monolithic titanium target. The Prelude target runs cooler than a monolithic target during operation, with less distortion and deflection at high powers. With a grain size reduced by 50%, an ultrafine microstructure and crystallographic orientation ensure thin film uniformity and consistent performance.

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Inlet System for Analysis of Organic Compounds in Solids:

The ThermEx™ Inlet system from Ruska Instrument is suitable for analysis of organic compounds in solids or semi-solids by gas chromatography (GC) or GC/mass spectrometry. Solventless thermal extraction or pyrolysis of the sample is provided in less than 10 minutes, with analysis in less than one hour. Sample capacity ranges from 0.1 to 450 mg. All surfaces contacting the sample are fused quartz for complete inertness and no sample carryover. The device interfaces to most GCs without alteration of the GC.

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One-Part Silver Adhesive: Ferro's Electronic Materials Division offers a silver adhesive for attachment of microetch silicon. The single-part adhesive offers shelf stability, no bleed through, and low stress over a wide temperature range. The adhesive can be used in lead and die attach applications requiring high electrical conductivity, low voiding upon cure, and excellent adhesion to substrates. It is suitable for use in harsh environments where chemical and thermal shock resistance are required.

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