

RESOURCES

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

Data Acquisition and Instrumentation Control:

Benzwin 2000 software from Benz Materials Testing allows users to acquire 5 to 100 test samples/s. The software can automatically adjust and run several tests simultaneously, and can run tests for days without operator-defined file sizes. Data entry follows standard procedures, and the data is automatically saved as it is entered. Users can configure test parameters and later adjust them to reorganize test results for other needs.

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High-Vacuum Components:

Ceramaseal offers a 20-page catalog of components for thin-film coatings and other high-vacuum applications. The catalog features baseplate feedthroughs, crystal sensors, crystal sensor feedthroughs and assemblies, and accessories such as cables, plugs, and contacts. All components are made with 304 stainless steel and are TIG-welded. Component connections are made with ceramic-to-metal seals for high-vacuum compatibility.

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Micromachining Service:

Burr-Free Microhole Division of Optimization drills round, precise, calibrated holes via micro electro discharge machining (EDM). Drilled holes from 10 μm and higher with an L:D ratio of 10:1 are possible. Air slits, micro cavities, precise tapers, and complex configurations are available. Applications include laser apertures, optical masks, aerosol studies, sensors, fiber optics, x-ray, cameras, and medical devices.

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Rotary Vane Vacuum Pumps:

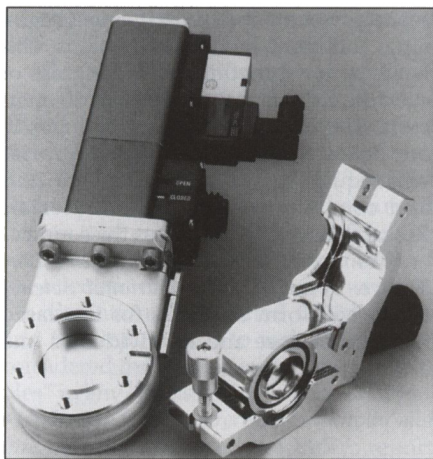
Vacuum Research Corporation's two-stage rotary vane vacuum pumps are available in four models, with pumping speeds ranging from 100 l/min (3.5 CFM, 6 m³/h) in the Model 100-3.5, to 800 l/min (28 CFM, 48 m³/h) in the Model 800-28. Applications include backing turbo pumps, vacuum ovens and furnaces, electron microscopes, freeze dryers, cluster load locks, and sputter and deposition systems.

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Nanovoltmeter:

Keithley's 2182 Nanovoltmeter offers low noise at high speed, typically 15 nV p-p at 1s response time. Measurements can be coordinated with a reversing current source up to 8 Hz. The unit provides 110 db NMRR and minimizes the effect of ac common-mode currents. Using the second voltage channel, users can read directly the ratio of an unknown resistance to a reference resistor.

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Miniature UHV Gate Valves:

VAT Series 01 Mini Gate Valves feature conventional CF, ISO-KF flanges, or a quick-change flange design. Valve bodies range from 5/8-in. to 2-in. (~1.6 cm–5 cm) I.D. Gate valves with aluminum bodies feature Vatlock[®] sealing to evenly distribute sealing forces. Stainless steel valves feature Monovot[®] sealing with only one moving part in vacuum. The valves provide 50,000 cycles before first service, offer manual and pneumatic actuators, and are rated for operation in the 1×10^{-10} mbar to 2 bar pressure range.

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In Situ Temperature Measurement Sensor:

Luxtron's TrueTemp 7250 can measure wafer temperatures down to 40°C during plasma-enhanced wafer processing steps such as PVD, CVD, and reactive ion etch. The instrument measures these extreme back-side wafer temperatures *in situ*. The low-temperature options can make measurements without interrupting processing, which is important for manufacturing complex devices at geometries of 0.18 μm and lower, and for metal layers such as copper. Temperatures as low as 230°C can be measured on bare silicon.

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Frequency-Doubled Ion Lasers:

Coherent's INNOVA[®] FRED (Frequency-Doubled) ion lasers deliver continuous wave, deep-uv in the 229- to 264-nm wavelength band, with output powers from 10 mW to 1 watt. The INNOVA 90C FRED features 100 mW output at both 244 and 257 nm, with four other wavelengths available from 229 to 264 nm. Applications include precision optics evaluation and testing, fiber Bragg grating writing, deep-uv resonance Raman spectroscopy, and capillary electrophoresis.

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Microanalysis System: The Phoenix from EDAX provides energy dispersive x-ray microanalysis that includes digital signal processing and EDAX PCI bus architecture. The EDAX Data Acquisition Module provides eight processing times to allow users to achieve optimum resolution and throughput up to 100,000 counts/s. EDAX Sapphire Series x-ray detectors are part of each system. Systems are available for TEM and SEM applications, with or without digital imaging capabilities.

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Bright Blue LED: EMCORE has developed commercial-quality InGaN-based materials technology used in blue spectrum light-emitting diodes (LEDs). Power output is greater than 1 mW at a wavelength of 470 nm, with a forward voltage of ± 4 V.

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Automated Sorbent Characterization Equipment:

Hidden Analytical's HP-ABR High Pressure Automated Breakthrough Rig is a lab-scale system for assessing vapor filtration and gas separation processes. The instrument operates in dynamic mode and enables measurement of the breakthrough curve or other process-specific parameters for packed bed volumes up to 2 liters. Features include pressure control up to 30 bar and gas flow control up to 100 l/min with gas/vapor mixing governed by computer control.

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Optical Emission Monitor:

Sycon Instruments' INTELLUX 400 is a transducer-type microprocessor-based multichannel optical monitor with RS-485 and DeviceNet interfaces. The unit accommodates up to four independent optical inputs processed through common or individual band pass filters ranging from 200 to 1000 nm. Using high-sensitivity uv-enhanced silicon detectors, each channel can handle a range of optical signals. Custom fiber optic interfaces are available.


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X-Ray Generator:

The Microsource Division of Bede Scientific Instruments has made a low-power x-ray generator that embodies a magnetically focused sealed x-ray tube designed for close coupling with x-ray focused optics. In conjunction with focusing x-ray mirrors from Reflex s.r.o., the system provides the performance given by large rotating anode generators for single crystal x-ray diffractometry at a fraction of the size and power consumption.

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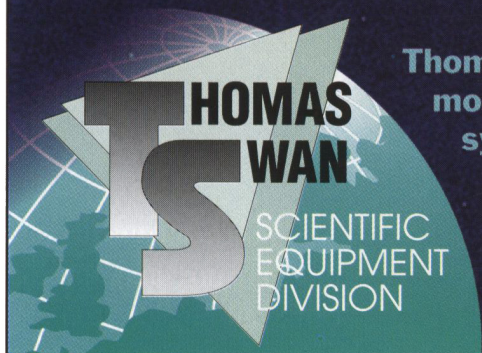
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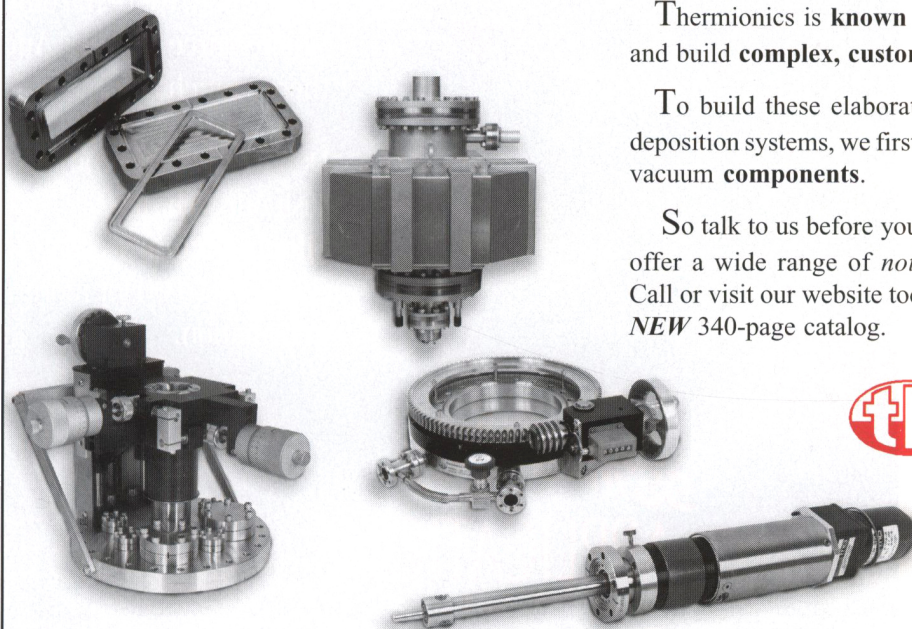
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An open letter to microscopists:

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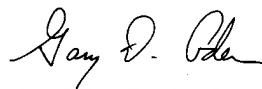
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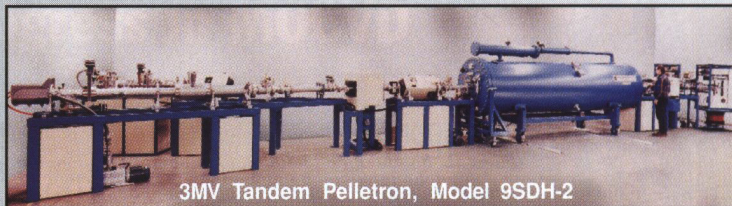
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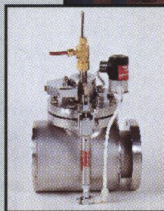
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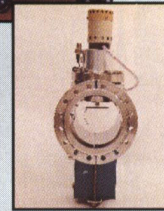
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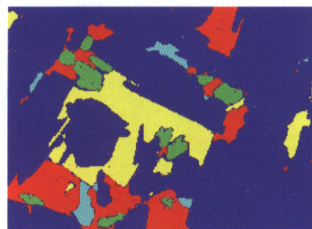
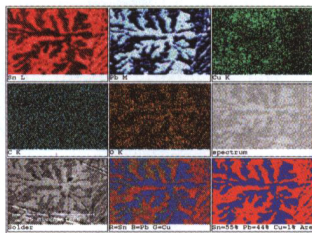
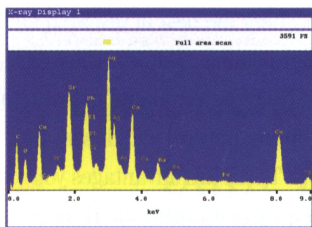
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