

RESOURCES

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

Optical Fiber Assembly: MMR Technologies has designed an optical fiber system for use with its Variable Temperature Micro Probe system. Users can couple light into the probe chamber from outside sources, or couple light out of the probe chamber to outside sensors. The fiber can be installed in a micro probe manipulator located inside a vacuum enclosure to facilitate precise optical interrogation of materials and devices as a function of *x-y* position on the sample or the array or devices under test.

Circle No. 61 on Reader Service Card.

Horizontal Internal Quench Vacuum Furnaces: The HIQ line of furnaces from VFS provides the least restrictive gas flow path for improved efficiency and quenching ability. Moly or GraForm™ curved graphite heating elements provide heating uniformity of +10°F (~12.1°C) or better between 1000 and 2500°F (~532.4 and 1357.4°C). The TruLock™ autoclave-type door maintains positive pressure to 10 bar to ensure safety. Other features include a near maintenance-free hot zone, a double-walled water-cooled vacuum chamber, and ThreadFast venturi-shaped quench nozzles.

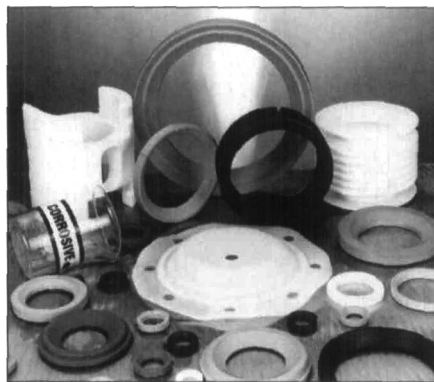
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AFM Pulsed Forced Imaging: Topo-Metrix/Thermo Microscopes offers a Pulsed Force Mode (PFM) option that extends the measuring capabilities of atomic force microscopes (AFM). The PFM allows the AFM to measure surface properties such as local stiffness and adhesion, with the same resolution expected from topography images. The PFM avoids surface damage caused by contact AFM on soft sample surfaces, and it has been applied successfully to a variety of samples.

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Specialty Alloy with High Strength-to-Weight Ratio: AerMet™ 310 from Carpenter Technology can achieve an ultimate tensile strength (UTS) of 315 ksi. AerMet 310 has a 1.10 mega-inch strength-to-weight ratio. By comparison, AerMet 100 has a specific strength-to-weight ratio of 1.01 mega-inches; Ti-6Al-4V alloy has a strength-to-weight ratio of 1.00 mega-inches, and Custom 465™ stainless has a strength-to-weight ratio of 0.92 mega-inches. AerMet 310 also provides a 10% increase in strength-to-weight ratio over AerMet 100, with good ductility. Production heats for AerMet 310 averaged 14.5% elongation and 63.1% reduction in area.

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Flow Control Products: Engineering Plastics' Teflon® (PTFE) flow control products are suitable for use in applications requiring high corrosion and temperature resistance. The custom-engineered seals, seats, diaphragms, and components are impervious to moisture, chemicals, and corrosives, and can withstand continuous temperatures up to 500°F (~257.4°C). Seals range from 3/8- to 60-in. (~0.95–152.4 cm) diameters and incorporate slots, grooves, and multidiameter surfaces with +0.002-in. (~0.005 cm) accuracy. Diaphragms range from 3/4- to 12-in. (~1.9–30.5 cm) diameters in flat, convex, and corrugated shapes, with reinforced backings.

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Positioning and Scanning Slide Assemblies: Velmex's 60-page catalog features more than 235 motor-driven UniSlide assemblies for use in scanning, feeding, or incremental positioning. Users select base width, length, lead screw pitch, motor type, and control. The assemblies are available in eight cross-section sizes from 1.5 to 9 inches (~3.8–22.9 cm) wide and travels from 0.5 to 86 in. (~1.27–218.4 cm). Design specifications and prices are included. Velmex also offers a 40-page catalog for UniSlide manually controlled assemblies and a 160-page catalog of the MiniTec profile system for building custom items.

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Self-Sealing Bolts and Screws: Zago Manufacturing's self-sealing fasteners provide an airtight, leakproof seal against liquids, air, and other gases, in environments that are pressurized, vacuumed, moist, dusty, or otherwise contaminated. Each is designed and manufactured with a groove under the head to accommodate a rubber O ring which, when compressed, forms a complete seal and permits full metal-to-metal contact. The fasteners can be removed from equipment and reused without destroying the sealing action.

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XPS Instrumentation: The Sigma Probe from VG Scientific is designed to analyze small surface features quickly and precisely. The system includes a zoom microscope and CCD camera to locate the analysis position. An electron flood gun compensates for any positive charging at a nonconducting sample surface. The monochromator can focus an x-ray beam into a <15- μ m spot; the spot size may be increased for larger analysis. The toroidal crystal is temperature controlled to maintain stability of x-ray photon energy and spot size at the sample. Samples up to 25-mm thick can be accommodated; 12-in. (~30.5 cm) wafer capability is optional.

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Cylindrical Magnetron System: The automated Cyclone™ from Ion Tech uses a cylindrical magnetron design for efficient target utilization. Because the targets are formed of rolled cylinders, they are inexpensive to fabricate. Only minimal cleaning and maintenance are required because most of the deposition material that is not deposited on the substrate is redeposited on the target. The system management software features a touch screen and graphical interface with animated movements, as well as custom system maintenance schedules. Process recipes facilitate consistent production, but recipe changes can be made at any time.

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Remote Control for Dry Pumps: A remote control package from Vacuum Research Corporation is available for VRC dry pumps. From this panel, operators can control pump parameters from up to 90 m away, including power on/off, soft start, pumping speed, vacuum level, and gas ballast flow. Values of all parameters are displayed on the panel, and outputs are available for process logging. The package can be operated on almost any power line: 220, 240, 300, or 460 V, one- or three-phase; 50 or 60 Hz.

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Noncontact Optical Profiler: Burleigh Instruments' Horizon™ enables users to nondestructively image smooth or rough surfaces with an X,Y scan range up to 1.75 mm and a Z range up to 100 μ m. The profiler provides vertical resolution on the Angstrom scale. Included are a smooth mode of operation for samples with Z values less than 1.2 μ m, and a texture mode for rough or discontinuous samples with Z values up to 100 μ m. The software operates under Windows 95, and an interactive CD-ROM training program is included.

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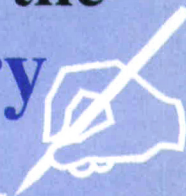


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