

NEW PRODUCTS

Focus on materials, semiconductors, vacuum, and cryogenics

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. For more information about a particular product, visit the website at the end of the product description. For all new products submissions, please send to Rnanna@aip.org.

Andreas Mandelis



Elastomeric primer and adhesive system

Master Bond X21Med is a single-component elastomeric compound that passes ISO 10993-5 tests for cytotoxicity. It was developed as a primer to promote adhesion between polyolefins and other surfaces such as metals, ceramics, composites, and other kinds of plastics, but it can also bond two polyolefin materials. Easy to use, X21Med has a

low viscosity of less than 250 cps. It cures at ambient temperatures; with heat, it cures more rapidly. It is serviceable from -51°C to 93°C . As a primer, X21Med should be applied in a thin layer to the surface and then the solvent allowed to evaporate. When used as an adhesive, it should be applied to both substrates and then mated. The maximum area of bonding effectiveness is about 1 inch squared. Once cured, the clear- to light-amber-colored product is tough but not rigid. It is a reliable electrical insulator and has a volume resistivity exceeding 10^{14} ohm-cm. The compound has applications in medical device, aerospace, electronics, specialty OEM, and other fields. It is available in pints, quarts, gallons, and five-gallon containers. **Master Bond Inc.**, 154 Hobart St, Hackensack, NJ 07601, www.masterbond.com

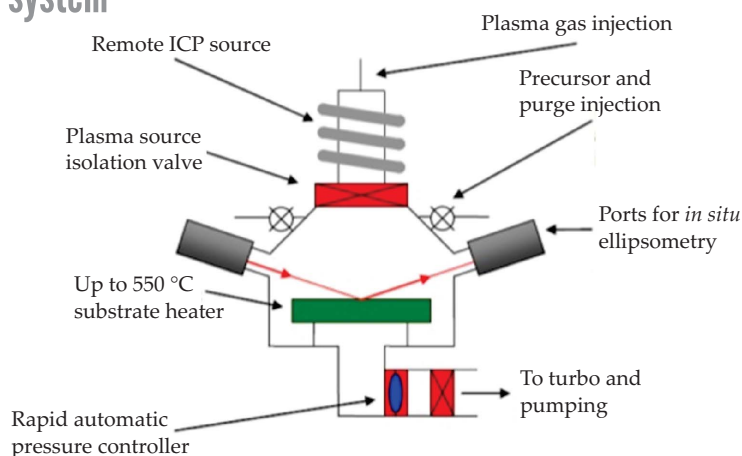
Cold cathode vacuum transducer

The MKS Granville-Phillips 523 wide-range cold cathode vacuum transducer is suitable for applications that require an economical cold cathode with limited accuracy for simple, repeatable pressure measurement. It combines diverse materials and two types of discharge. The 523 covers a wide pressure range from 10^{-7} torr to atmosphere without the use of a conventional heat-loss Pirani sensor. A high-pressure discharge cell makes a second vacuum sensor unnecessary. The device can be mounted in any orientation, has a simple analog output, and complies with Restriction of Hazardous Substances and CE standards. Applications include analytical equipment such as mass spectrometers, scanning electron microscopes, industrial coating systems, and general vacuum-based pressure measurement apparatus. **MKS Instruments Inc.**, 2 Tech Dr, Ste 201, Andover, MA 01810, www.mksinst.com



Atomic layer deposition plasma-processing system

Oxford Instruments has announced the novel FlexAL-2D system for atomic layer deposition (ALD) of 2D transition-metal dichalcogenides for nanodevice applications. The FlexAL-2D system implements plasma-enhanced ALD to synthesize layers of 2D molybdenum disulfide films with tunable morphologies—namely, in-plane and vertically standing nanoscale architectures on CMOS-compatible silicon dioxide and silicon substrates. The wide parameter space offered by the ALD system allows 2D transition-metal dichalcogenides to be grown at lower temperatures than those used in chemical vapor deposition furnaces. With atoms, high temperatures can increase their diffusion on semiconductors and make it harder to place them at the right spot. According to the company, the FlexAL-2D system yields materials of high quality with precise digital thickness control over large-area, 200 mm wafers. **Oxford Instruments plc**, 300 Baker Ave, Ste 150, Concord, MA 01742, www.oxford-instruments.com



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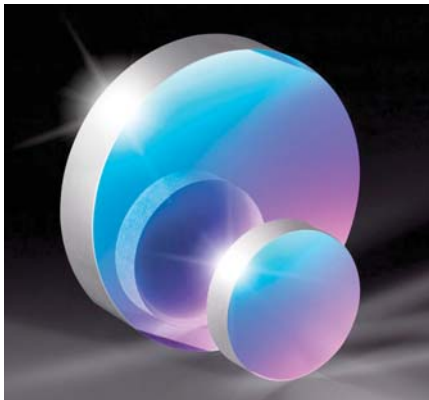
X-ray fluorescence system

Bruker has announced its S8 Tiger Series 2 wavelength dispersive x-ray fluorescence (WDXRF) system for advanced quantitative elemental analysis in academic and industrial research and materials quality control. Measurement times are reduced, sample throughput is increased, and time to result is improved, typically by 25% over the previous model. The S8 Tiger Series 2 features XRF² small spot mapping for detailed maps of elemental distributions in materials. With a 300 μm spot size, XRF² offers the highest spatial resolution available in WDXRF, according to Bruker. The system introduces the company's novel HighSense technology, which offers a wide linear dynamic range to enable higher precision levels for process and quality control. The x-ray optics improves sensitivity and spectral resolution to benefit a wide range of applications, including recognition of foreign particles and analysis of material properties in metals, minerals, semiconductors, glass, ceramics, and nanotechnology. **Bruker AXS GmbH**, Oestliche Rheinbrueckenstr 49, 76187 Karlsruhe, Germany, www.bruker.com



Solder paste for fine-feature printing

Indium Corp has developed an air and nitrogen reflow, no-clean, lead-free solder paste to meet the fine-feature printing requirements of mobile manufacturers. The Indium11.8HF-SPR (T5-MC) paste is formulated for use with type 5 powder. It delivers high-stencil print-transfer efficiency on a broad range of processes while maintaining high reflow performance, and it is halogen free, per the International Electrochemical Commission's standard 61249-2-21 test method EN14582. It offers high transfer efficiency through small apertures less than or equal to 0.66 AR and a long stencil life greater than 12 h. Since the paste eliminates hot and cold slump, it inhibits bridging and solder-beading defects. An oxidation barrier avoids the potential for head-in-pillow and graping defects. **Indium Corporation**, 34 Robinson Rd, Clinton, NY 13323, www.indium.com



Precision UV mirrors

Edmund Optics offers its TechSpec precision UV mirrors in deep-UV (DUV) and new vacuum-UV (VUV) enhanced coatings. They are suitable for use in numerous optical setups to reflect UV light, including fluorescence microscopy and spectrometry, and for various commercially available light sources. The mirrors with DUV coating offer excellent reflection from 190 nm to long-wave IR (LWIR), and the VUV-coated mirrors provide optimized reflection from 120 nm to LWIR. Designed for 0° angle of incidence, TechSpec precision UV mirrors exhibit greater than 78% reflectivity at their specified design wavelength. The mirrors are manufactured from a fused silica substrate and feature aluminum-based coatings for low polarization sensitivity. A surface flatness of $\lambda/10$ and a surface quality of 10-5 provide for maximum precision. Six models are available in 12.5 mm, 25 mm, and 50 mm diameters. **Edmund Optics Inc**, 101 E Gloucester Pike, Barrington, NJ 08007-1380, www.edmundoptics.com



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Process for diamond-like coatings

By incorporating plasma activation, Intlvac has enhanced the reaction kinetics of its diamond-like carbon (DLC) coating machines that use chemical vapor deposition technology. Coupling a dense plasma to carbon-based precursor gases creates the favorable reaction energetics needed to form diamond-like material, including tantalum carbide ceramic microstructures. Using the company's new process recipe, the machines produce hard, wear-and-abrasion-resistant DLC coatings to protect substrates, including temperature-sensitive ones, exposed to harsh environments. The smooth coatings are suitable for

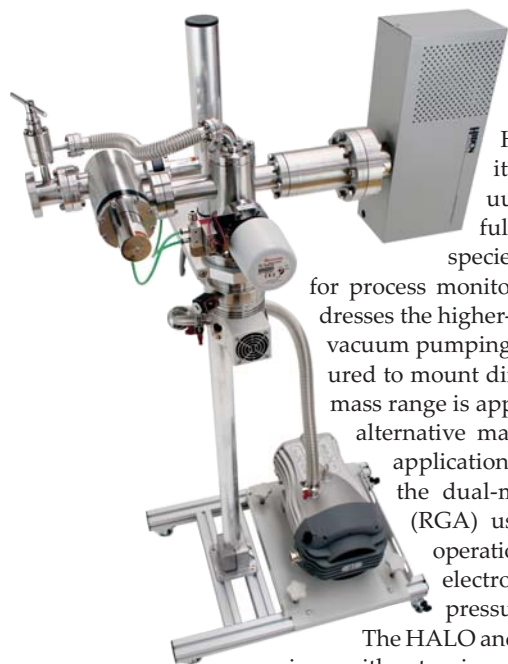
low-friction applications. They are chemically inert and appropriate for *in situ* biomedical uses. The standard Intlvac platform can produce DLC thicknesses from several microns to 10 nm on various substrate materials. Those include silicon, germanium, optical glasses, chalcogenides, sapphire, metals, and plastics. **Intlvac Thin Film Corporation**, 1401 Duff Dr, Unit 600, Fort Collins, CO 80524, www.intlvac.com

Liquid transfer pump

KNF has designed an economical solenoid-driven diaphragm pump for OEM users.



The FL 10 pump features a nominal liquid flow rate of 100 mL/min against atmospheric pressure, simple linear flow rate adjustment, and a maintenance-free expected lifetime of 10000 h. It can be operated to 14.5 psig (1 bar). Spring tension in the linear solenoid drive keeps the flow through the FL 10 tight in both directions when turned off and makes additional check valves unnecessary. Built to operate in demanding environments such as wet or dusty areas, the pump has an IP65 protection rating. Sealing between the pump housing and the linear drive ensures safe operation. In case of a ruptured diaphragm, liquid is kept away from other areas of the system. Chemically resistant flow-path materials in the FL 10 allow for reliable transportation of aggressive media. The company's novel diaphragm technology transports liquid gently, so its pumps can handle sensitive fluids. **KNF Neuberger Inc**, 2 Black Forest Rd, Trenton, NJ 08691-1810, www.knfusa.com



NEW LITERATURE Vacuum process monitoring brochure

Hidden Analytical has released a brochure on its quadrupole mass spectrometers for vacuum process monitoring. Systems cover the full pressure range from UHV for background species and leak detection to the millibar regime for process monitoring and control. The HPR-30 system addresses the higher-pressure regimes. It features integrated dry vacuum pumping and overpressure protection and is configured to mount directly to the process chamber. The 300 amu mass range is applicable to most process environments, with alternative mass range options available for specialized applications. At lower pressures below 5×10^{-3} millibar, the dual-mode Hidden HMT residual gas analyzer (RGA) uses a Faraday detector for high-pressure operation. It works from low pressures to UHV with electron multiplier detection and offers partial pressure detection sensitivity to 2×10^{-13} millibar.

The HALO and HAL RGA series operate at lower-pressure regimes with extensive mass range options up to 1000 amu and minimum detectable partial pressures down to 5×10^{-15} millibar. **Hidden Analytical Inc**, 37699 Schoolcraft Rd, Livonia, MI 48150, www.hiddeninc.com

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NEW PRODUCTS

Ellipsometer for thin-film measurements

According to Horiba Scientific, its Uvisel Plus modular ellipsometer includes a new generation of the FastAcq acquisition technology, which can measure thin-film samples faster and more accurately than previously possible. The technology features new electronic data processing and a high-speed monochromator. Samples from 190 nm to 2100 nm can be measured within 3 min at high resolution. The technology al-

lows for continuous adjustment of the spectral resolution along the measurement range. The Uvisel series phase modulation technology can deliver pure, efficient polarization modulation for accurate and sensitive ellipsometric parameter measurements, such as critical thin transparent layers deposited onto glass substrates. The Uvisel Plus is considered a reference ellipsometer for materials science. It is suitable for thin-film thickness and optical constant measurements in materials research and processing, flat-panel displays, microelectronics, and photovoltaics. **Horiba Scientific**, 3880 Park Ave, Edison, NJ 08820, www.horiba.com



Specialized vacuum gauges and controllers

Edwards has released a range of passive gauges and controllers to meet the needs of users with specialized applications in the high-energy physics and UHV fields. The de-

vices are suitable for a wide range of applications, from UHV systems to process industries, and for when an active gauge cannot be used. The passive gauges range from Pirani and Penning gauges to Bayard-Alpert and extractor ion gauge heads. They are used in conjunction with a passive gauge controller to display pressure and serve as an interface. Pressure ranges of 10^{-9} mbar to 1000 mbar are covered by the PGC201 controller together with Pirani and Penning gauges, and pressure ranges of 10^{-12} mbar to 1000 mbar are covered by the PGC202 controller together with an integrated Pirani and ion gauge. **Edwards**, Innovation Dr, Burgess Hill, West Sussex, RH15 9TW, UK, www.edwardsvacuum.com



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