

# new products

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

## Ion gun systems for sputtering and imaging

Modern Instrumentation Technology has introduced three new Colutron ion gun systems: System I is a sputter-cleaning gun for surfaces. It is a differentially pumped gun consisting of a Coultron ion source, a so-called "einzel" lens and an  $E \times B$  mass filter, complete with power supplies. The major difference between this and other commercially available ion guns for sputter cleaning, we are told, is that one can mass-select the desired ionic species to bombard the sample surface. This avoids possible contamination of the surface by  $O_2^+$ ,  $N_2^+$ ,  $H^+$ , and  $H_2O$ , which are almost always present in any ion beam. Typical ion current is about 5 microamps with a 1-mm-diameter beam spot at 7 keV. Optical raster scanning of the ion beam is available.

System II is a scanning ion probe for SIMS. It is a differentially pumped ion-probe system consisting of a Coultron ion source, two einzel lenses, an  $E \times B$  mass filter and raster-scanning plates, complete with power supplies and an electronic raster-gate system. It also has a pair of deflection plates for rejecting neutrals in the beam. This system is designed specifically for SIMS depth-profiling and imaging. Its 2.75" conflat flange will interface with almost any existing vacuum chamber. At a typical beam energy of 7 keV, corresponding beam currents and spot diameters are: 25 nanoamps for 10 microns, 0.5 microamps for 50 microns and 1.2 microamps for 100 microns.

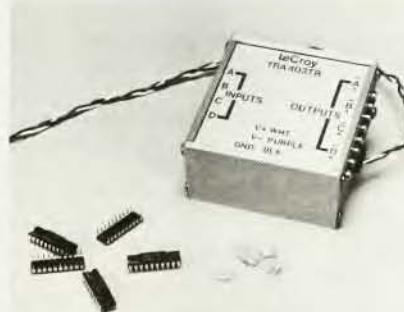
System III is a differentially pumped ion beam system suitable for low energy operation—less than 1 keV. It consists of a Coultron ion source, an einzel lens, an  $E \times B$  mass filter and decelerator with power supplied. Typical beam current on target is about 10 nA at 1 keV. Optional raster scanning is available. This system is designed for sputtering studies with minimal damage to the sample surface. The three systems

can be interfaced with vacuum chambers fitted with 2.75" conflat ports. *Modern Instrumentation Technology, 444 E. College Ave., Suite 470, State College, Pennsylvania 16801*  
Circle number 140 on Reader Service Card

## Compact microamplifier for high-energy detectors

Offering high gain and fast response, the four-channel, monolithic model TRA403 from Lecroy is an extremely compact, wide-band, low-noise amplifier. High gain (330 mV/ $\mu$ A) is provided, we are told, without compromising a fast 7-nsec response time. This new microamplifier has been designed with low power as an important consideration; it dissipates less than 25 mW per channel. Minimal noise levels of less than 25 nA rms are maintained.

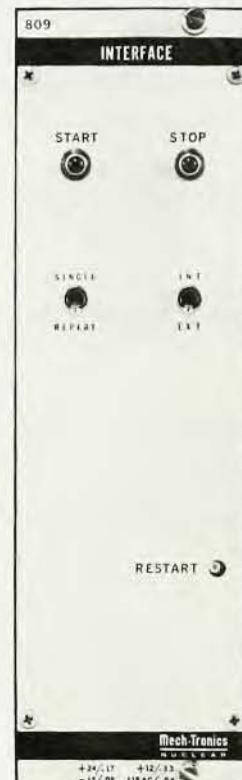
The TRA 403 microamplifier is said to be well suited for small current pulses obtained from low-capacitance devices of 20 pF or less; it may be used with solid-state detectors for radiation



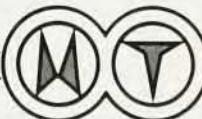
and light, proportional detectors, multiwire proportional chambers or drift chambers.

The microamplifier is offered as a standard 20-pin DIP or (where smaller packaging is required) as an 18-pin leadless chip carrier. Requiring a minimum of support components, it is ex-

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## new products

tremely compact in practical applications. For evaluation and prototyping applications, the TRA403 DIP is available pc mounted with inputs and outputs via lemo connectors and with an aluminum enclosure to provide rf shielding. The price is \$35 for small quantities. *LeCroy Research Systems*, 700 South Main Street, Spring Valley, New York 10977

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### Tunable uv generator for dye lasers

Molectron has introduced a new tunable ultraviolet generator system for dye lasers. Designed to be mounted inside the firm's DL18 or DL19 dye lasers, this frequency-doubling and mixing system provides automatic tracking with a dynamic range of greater than 100. It also includes a new frequency-separation device that nondispersively separates the ultraviolet light generated by the mixing and doubling process from the fundamental ir and uv beams. The separated uv beam can therefore be scanned in frequency without displacing the beam. The operating wavelength range is from 217 to 420 nm. This tunable uv system is built from a group of interchangeable modules so that configurations can easily be changed. A separate package is provided for use with lasers from other manufacturers. Prices start at \$4 300. *Molectron*, 177 N. Wolfe Road, Sunnyvale, California 94086

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### Partial pressure controller for plasma processing

The new Quadrex partial-pressure controller from Inficon Leybold-Heraeus provides closed-loop control for up to six gases within a process chamber. The instrument is said to improve the quality of critical plasma processes, particularly those of a reactive nature, because it responds to individual, internal gas level variations rather than to gross chamber pressure changes or to mass flow rates. This, we are told, ensures a precise control of critical process gas levels, in spite of changes in gas consumption rates.

The controller also includes the analytical capabilities of a microprocessor-based residual-gas analyzer. It monitors a 100-amu-wide spectrum for constituents that could cause plasma process failures (such as high water-vapor level, high oxygen levels, or air leaks), while simultaneously controlling the partial pressure of process

gases. The Quadrex PPC has a built-in video monitor and six display formats, including tabular, bar graph, analog, leak check, bar graph spectra subtraction and control-system response. Its menu format permits rapid switching between analysis and control-mode displays. Operator-selectable gain, set point, damping and slew rates tailor partial-pressure control to specific process conditions. A secondary set of operating parameters can be called from memory.

The partial-pressure controller can be linked to the vacuum system control circuitry through its rear-panel I/O options. The controller can be operated directly through the front-panel keyboard or remotely through a variety of interface options. The Quadrex PPC consists of a control unit, Faraday cup sensor, sensor control and interconnecting cables. A stainless steel solenoid or piezoelectric valve package can be specified to meet the requirements of a particular process. In addition, the optional IPC-1 turbo-pumped pressure converter is available for processes where the chamber pressure is  $10^{-4}$  torr or greater. *Inficon Leybold-Heraeus*, 6500 Fly Road, East Syracuse, New York 13057

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### Infrared microscope for mask alignment

Research Devices offers the new KV-1 split-field, infrared video microscope for mask alignment on silicon, GaAs, InP and other semiconductor materials and substrates. Primarily designed for transmission infrared illumination, the KV-1 may be used with the firm's model K or other mask aligners that provide collimated transmitted infrared light. The microscope operates in the wavelength range between 8000 Å and 2.0 microns. Magnifications of the KV-1 may be set between 25 $\times$  and 200 $\times$  by changing objectives. Split distances between  $\frac{3}{4}$ " and 2" may be obtained with the model K mask aligner or other aligners that provide proper illumination. For use with small samples of GaAs field-effect trans-



sitors, small pieces of ternary or quaternary lasers or light-emitting diodes, the KV-1 may be used in a single-field mode when necessary. *Research Devices, 616 Springfield Avenue, Berkeley Heights, New Jersey 07922*

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## Foreline traps for mechanical vacuum pumps

Shrader Scientific is offering a new line of vacuum foreline traps specifically designed for efficient oil-vapor trapping from mechanical vacuum pumps. There are three types available: the



optically dense anti-migration trap is easily cleaned and returns condensed oil to the vacuum pump; the coaxial trap contains a mesh that keeps oil from backstreaming into the vacuum system; the molecular-sieve trap ensures effective trapping by absorbing the hydrocarbons and water vapor. An electric heater is provided with the molecular-sieve trap for regeneration. Various sizes are available for small- to large-capacity pumps. All the traps are constructed of stainless steel and are available with any of the standard vacuum flanges and tubing ends. *Shrader Scientific, 23588 Connecticut Street, Hayward, California 94545*

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## Optical multichannel analyzer for plasma monitoring

EG&G Princeton Applied Research has introduced the model 1451 plasma monitor, an optical multichannel analyzer specifically designed for plasma-monitoring applications in the semiconductor manufacturing industry. Optical multichannel-analyzer technology allows the user to capture an entire optical spectrum simultaneously, without mechanical scanning. The manufacturer, therefore, expects that

the system will find wide use in other research and industrial areas, wherever the properties of a light source must be evaluated and controlled. The plasma monitor system includes a precision spectrograph that disperses the light to be examined onto the focal plane of a photodiode array detector. The model 1451 console allows control of data acquisition and display. It also provides TTL outputs for use in controlling external equipment.

The console is described as "extraordinarily powerful and easy to use." Complete spectra can be acquired and stored every 50 milliseconds, so that dynamic optical systems can be completely evaluated. Simple keystroke programs allow the system to make decisions based on intensities of up to six peaks in the spectrum. For instance, as the optical emission from the spectral line crosses a preset intensity level, the console can change the status of one of six TTL outputs bits. The system is RS232C-compatible for external computer control. Three different photodiode array detectors are available: The 1024-channel photodiode array offers simultaneous detection over a 500-nanometer range with a resolution of 0.5 nanometers per channel. The 512-channel array allows more sensitive detection over the 250 nanometer range, while an image intensified version of the 512-channel diode array provides the highest sensitivity. Accessories include a fiber-optic light guide and a CRT for real-time monitoring. *EG&G Princeton Applied Research, PO Box 3565, Princeton, New Jersey 08540*

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## Ultralow-noise charge-sensitive preamp

The model A-225 charge-sensitive preamplifier from Amptek exhibits ultralow noise—less than 280 electrons rms, we are told. It includes a shaping amplifier within its 14-pin hybrid DIP. The instrument also offers single-supply voltage (+4 to +25 Vcd) and low power dissipation (10 mW).

This hybrid preamplifier can be used with solid-state detectors, proportional counters, photomultiplier tubes and other high-resolution charge-producing detectors for pulse-height analysis. The A-225 can be mounted close to a detector, thus simplifying complex multi-detector systems. In situations where power, weight and space must be minimized, it can replace large units that consume more power. Applications include particle detection, imaging, radiation monitoring, electro-optical systems and aerospace. The price is \$210 in quantity. *Amptek 6 De Angelo Drive, Bedford, Massachusetts 01730*

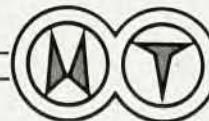
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NEW

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