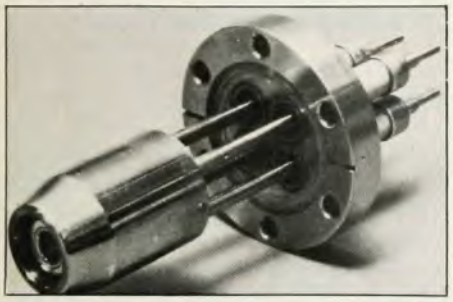
# new products

**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.

## Gallium ion source

Nova's Culham ion source and control unit provides intense beams of metallic ions from sources not easily ionized by conventional means. It produces a high-brightness, high-purity beam of gallium ions at currents from 5 to 100 microamps in high-vacuum installations. Utilizing field-ionization techniques, the liquid-metal gallium ion source has a lifetime of hundreds of hours. It is intended as a research and development system.

The Culham ion source is mounted on a standard 70-mm ultra-high-vacuum flange, with a 35-mm port. At the moment Nova has only the gallium source available, but they tell us that other metal-ion sources are under development. Their low-ripple control unit/power supply, which is adjustable from the front panel, is intended to be compatible with these future metal-ion sources. The gallium system is priced at $12 500. *Nova Associates, 133 Brimball Ave., Beverly, Massachusetts 01915*



**Circle No. 140 on Reader Service Card**

## Picosecond diode

Coherent Inc claims that their new model-CR-299 picosecond diode employs a combination of the fastest commercially available avalanche diodes, mounted in a precision 50-ohm coaxial assembly. The frequency response of the picosecond diode provides a photodetection system with a bandwidth greater than 5 GHz. In a typical application, with a CW picosecond dye laser, the CR-299 supplies pulses of about one volt peak output into the matched 50-ohm line. The rise time is less than 120 picoseconds.

The time resolution of the diode allows an ion laser to be optimally mode locked, to eliminate pulse degeneration or twinning from the ion laser through frequency mismatch. The performance of the CR-299 is claimed to be adequate to match the cavity length of a CR-590 dye laser to that of the ion laser. It eliminates the need for time-resolution autocorrelation techniques in applications where it is not necessary to reduce the laser pulse width below 10 picoseconds.

Coherent asserts that the gain and sensitivity of the CR-299 make it competitive with conventional photomultipliers for high-speed photodetection, at a much lower cost. Furthermore, it requires neither precision mounting nor focusing optics. Prices start at $2000. *Coherent, 3210 Porter Drive, Palo Alto, California 94304*

**Circle No. 141 on Reader Service Card**

## Ionization tube

Varian's Model 564 ionization gauge tube is designed to operate up to higher pressures than standard Bayard–Alpert-type gauge tubes. Its wide pressure range makes it suitable for use in a variety of vacuum-sputtering and evaporation processes.

The extended range, $10^{-1}$ to $4 \times 10^{-10}$ torr for argon, is achieved by scaling down the standard Bayard–Alpert geometry. This reduces the rate of gas-molecule recombination at high pressure. Furthermore, a thin platinum layer coating the inside of the glass envelope is grounded through an extra pin in the base of the tube. This innovation prevents the collection of ion current on the tube walls at high pressure, thus avoiding the non-linear characteristics of Bayard–Alpert tubes.

The model 564 has a thoria-coated iridium filament, which is claimed to be resistant to vibration and to burnout from accidental exposure to atmosphere. It can be mounted either horizontally or

# new products

vertically, and can be degassed from either position. *Varian Associates, Lexington Vacuum Division, 121 Hartwell Avenue, Lexington, Massachusetts 02137*

**Circle No. 142 on Reader Service Card**

## Pulse generators

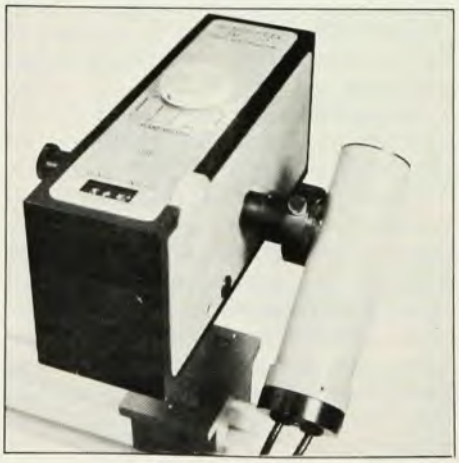
Avtech's new AVM series of miniature pulse generators offer rise and fall times of less than 100 picoseconds (models AVM-1 and 2) or 600 picosec (AVM-3), when triggered by low-level, slow-speed pulses such as one gets from transistor-transistor logic gates. With such fast rise and fall times, these solid-state units are claimed to be suitable for propagation and switch-time testing of fast-logic families, and a variety of applications in nuclear physics, optical communications and the testing of semiconductor devices. The output amplitude is variable from 0 to 5 volts (AVM-1) or 0 to 15 volts (AVM-2 and 3). Pulse widths (in nanoseconds) can be varied from 0.2 to 6.0 (AVM-1), 0.2 to 2.0 (AVM-2), or 2 to 15 (AVM-3). Output pulse width and amplitude are controlled by single-turn pot controls.

The units include a dc offset feature, and they are capable of pulse repetition frequencies up to 25 MHz. The standard package size is 4.25″ × 2.63″ × 1.71″, and the prices range from $1000 to 1400 (US). *Avtech Electrosystems Ltd, P.O. Box 5611, Station F, Ottawa, Ontario, Canada K2C 3M1*

**Circle No. 143 on Reader Service Card**

## Spectroradiometer

Schoeffel's model HR-S-200 spectroradiometer achieves high resolution and noise suppression by employing a double grating monochrometer. The device is useful for the analysis of fluorescence



emission spectra, especially when one needs to resolve out a high level of background. The manufacturer claims that the double monochrometer arrangement reduces stray light, background and noise a factor of a thousand better than does a comparable single monochrometer. This permits one to select higher levels of photomultiplier sensitivity.

The use of a double grating cage with a single drive mechanism eliminates problematic mechanical linkages, providing the performance of a tandem monochrometer system in a single unit of practical dimensions. Schoeffel claims that theirs is the smallest double monochrometer available. The single unit, they tell us, solves the problems of optical alignment, interconnection, and wavelength agreement that plague tandem systems.

The HR-S-200 has a manual wavelength drive, but another model is available (HR-2S-200) with a 10-speed motorized scanning drive, with analog output. This automates the measurement of emission spectra. Both configurations include the monochrometer, an ultraviolet/visible photomultiplier tube with housing, a multirange photometer, and all appropriate optics.

Depending on the choice of gratings, the spectrometer has three different wavelength ranges in the visible and ultraviolet regions, from 180 to 700 nanometers. With an in-line design, the system can be installed on an optical bench layout. *Kratos Inc., Schoeffel Instruments Division, 24 Booker St., Westwood, New Jersey 07675*

**Circle No. 144 on Reader Service Card**

## Plotter controller

Special Systems Inc offers a language-independent plotter controller, called SLIP, which is claimed to have unusually economical and powerful plotting and graphics capabilities. It is to be installed between a computer and its terminal, and connected to an X-Y plotter. The user program can be in any of the popular programming languages (Fortran, Cobol, etc.). It need only put out a list of integer coordinates to be plotted. SLIP functions independently of the formatting constraints of the language, with any ASCII channel. No special installation software is required, allowing a given program to produce the same plot when run at different facilities.

The X and Y outputs from SLIP to the plotter are selectable over a wide range of voltages, to accommodate the input requirements of most X-Y recorders. Pen control is selectable as a TTL logic signal or contact closure. SLIP's microprocessor provides internal vector and character-generation features to maximize plotting with a minimum of data exchange. Uninterrupted two-way communication between user and computer is possible during plotting, and an offline mode assists layout.

With SLIP, any teleprocessing site with standard RS-232 serial communications

can, in a few minutes, be made into a remote graphics facility. The price is $1465. *Special Systems, 8045 Newell St., Silver Springs, Maryland 20910*

**Circle No. 145 on Reader Service Card**

## Signal recorder

EG&G Princeton's model-4102 signal recorder digitizes analog signals to 11-bit accuracy, and stores the results in 2048 words of metal-oxide-semiconductor memory. It can then manipulate and transfer the data to CRT's, chart recorders or digital peripherals. The signal recorder can be used to deal with data from such instruments as spectrometers, lock-in amplifiers and polarographic or thermal analyzers. It also extends the usefulness of ordinary oscilloscopes and chart recorders by providing them with memory, time translation and computational flexibility.

Two input channels permit two concurrent signals to be acquired, either as functions of time or of one another. A built-in arithmetic unit allows two curves in memory to be added, subtracted or divided. It can also compute the logarithm of the ratio. A digital display provides amplitude and address information for any chosen cursor-intensified word. Signal sampling rates are varied by means of the internal time-base clock or from an external programming signal. The maximum sampling rate is one word per 25 microseconds.

An optical microprocessor card provides additional computing power (differentiation, integration, curve smoothing), and RS232C and GPIB (IEEE 1975) interfacing. The base price is $4995. *EG&G Princeton Applied Research, P.O. Box 2565, Princeton, New Jersey 08540*

**Circle No. 146 on Reader Service Card**

## Memory-parity card

International Product Development is offering a memory-parity card, whose function is to maintain a continuous check on a computer's memory while a program is executing. The card stops a program as soon as the central processor fetches a data byte with a parity error. This may avert the destruction of other data resident in memory or on a disk.

The memory parity card consists of parity generating circuitry and a random-access memory. Whenever a byte of data is written into the computer's memory, a parity bit is generated and stored by the card. When the byte is retrieved from the computer's memory, the card checks its parity against the stored parity.

The user has several options in case of a parity discrepancy. They include various kinds of interrupts, waits, resets and force instructions. The address of the memory failure is read by the central processor. An optional hexadecimal display shows the failure location. The 4-K static random-access memory is available up to 64 K on the memory-parity card. These 4-K RAM blocks can be enabled anywhere within 64 K, in 4-K increments. The card also has a high noise-immunity bus interface. The data are sampled on the same clock edge as is the CPU.

The memory card, model MP 100, meets IEEE S-100 signal standards, and is available only as an assembled, tested card. *International Product Development, 1195 Eureka Ave., Los Altos, California 94022*

**Circle No. 147 on Reader Service Card**

## New Literature

**Auger microprobe.** Varian has published a 20-page brochure describing its $A^2M$ automated Auger microprobe. In the analysis of surface composition, Auger spectroscopy can detect any element heavier than helium present in concentrations greater than one atom per thousand within 30 angstroms of a surface. The brochure describes Varian's system in detail, its data-handling and display features, and applications notes displaying various Auger spectra. *Varian Associates, 611 Hansen Way, Palo Alto, California 94303*

**Time-resolved spectroscopy.** Tracor Northern offers an application note describing a technique for the accurate analysis of rapidly varying spectra. Using the rapid-scan capabilities of their DARSS spectrometer together with the automatic memory selection of Tracor's TN-1710 sequential-scan module, all spectral lines in a source can be simultaneously investigated at sampling rates as fast as 2.6 microseconds. *Tracor Northern, 2551 Beltline Highway, Middleton, Wisconsin 53562*

**Laser catalog and handbook.** Metrologic has a new 47-page laser catalog and handbook. The catalog announces a new steel-ceramic laser tube, with hard-seal mirrors for long life. Other offerings include a digital laser power meter, and an improved beam-focusing and positioning device. The 32-page handbook reference section discusses laser specifications, characteristics and applications. *Metrologic Instruments, 143 Harding Ave., Bellmawr, New Jersey 08031* □