

NEW PRODUCTS

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. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

LAWRENCE G. RUBIN

FOCUS ON PHOTONICS

Channel Photomultiplier

PerkinElmer Optoelectronics has announced a line of channel photomultiplier (CPM) products that exhibit high sensitivity, fast time response, and very low background (dark current in the low picoampere range). The decrease in the detector's noise floor translates directly to an increase of over 100 times in its dynamic range. The new CPMs are said to be useful in both DC-mode and single photon counting applications, where they exhibit a narrow pulse height distribution and a high peak-to-valley ratio. The tubes are available in a variety of spectral ranges: 115–200 nm, 165–320 nm, 165–650 nm, 300–650 nm, and 165–850 nm. For each range, the photocathodes are processed and hermetically sealed using the vacuum transfer technique. They are produced in a 75×10.5 mm shock-resistant cylindrical package that requires no vacuum tube socket. *PerkinElmer Optoelectronics, 2175 Mission College Boulevard, Santa Clara, California 95054*

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Detector for Near-Infrared Spectroscopy

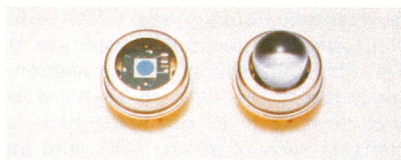
The Princeton Instruments OMA V:InGaAs from Roper Scientific is a new system in the company's OMA line of photodiode array (PDA) detectors. It is a 512-element linear indium gallium arsenide PDA with silicon multiplex readout electronics. InGaAs provides excellent response in the near infrared (NIR) from 0.8 to $1.7 \mu\text{m}$ with peak quantum efficiency of greater than 80%. The 16-bit detector offers high sensitivity and dynamic range for applications such as NIR transmittance, reflectance, and absorbance, and Raman spectroscopy. The OMA V:InGaAs includes an electronic shutter and an integration time of 20 μs to hours. It operates at

a 1-MHz scan rate (a spectral acquisition rate of 1800 spectra/s); its shielded detector controller and cryogenically-cooled camera head can be situated up to 2 km from the host computer. The system runs under the company's WinSpec 32-bit Windows software. *Roper Scientific, 3660 Quakerbridge Road, Trenton, New Jersey 08619*

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Silicon Photodiode with Preamplifier

Hamamatsu has introduced the S7516 silicon p-i-n photodiode that incorporates a wide-bandwidth pre-



amplifier (frequency cutoff at 170 MHz). The photodiode's large 3-mm-diameter active area and its wide bandwidth make it useful for spatial light transmission applications. The S7516 features a spectral response range of 320 to 1060 nm with a peak sensitivity at 840 nm; responsivity is typically 85 V/W. The noise equivalent power of the photodiode is 0.14 nW/Hz^{1/2}. A TO-8, 5-pin package encapsulates the S7516 and amplifier chip. *Hamamatsu Corp, 360 Foothill Road, P.O. Box 6910, Bridgewater, New Jersey 08807*

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150-mm Diameter Image Intensifier

A 150-mm-diameter visible light zoom-image intensifier from Photek is based on a design used in the company's earlier 40- and 80-mm-diameter tubes. Photoelectrons from its bialkali photocathode are focused onto the input surface of a 40-mm microchannel plate multiplier (MCP)

Multichannel Analyzer World's Smallest 'Pocket MCA'

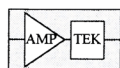


Size: 6.5" x 2.8" x 0.8"
(165mm x 71mm x 20mm)
Weight: <300 grams (including batteries)

The **MCA8000A** is a full featured, low power Multichannel Analyzer intended to be used with a wide variety of detector systems.

- 16k data channels
- Stores up to 128 spectra
- 24 hours of continuous data acquisition from two 1.5V AA batteries
- Conversion time $\leq 5 \mu\text{s}$ ($\geq 200,000$ cps)
- Two stage input analog pipeline
- Differential nonlinearity $< \pm 0.6\%$
Integral nonlinearity $< \pm 0.02\%$
Sliding-scale linearization
- Two peak detection modes:
First peak after threshold (nuclear spectroscopy)
Absolute peak after the threshold (aerosol particle detection)
- Two TTL compatible gates for coincidence & anticoincidence
- Stand-alone data acquisition
- Date-time stamp - Y2K Compliant
- Stored spectra protection via software security & serial ID number
- 115.2 kbps serial interface

Free Windows & DOS software



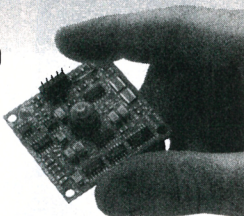
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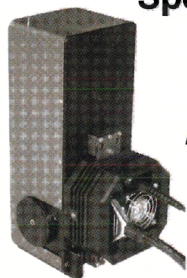
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- 700 Series – microradian resolution
- 900 Series – 0.01 degree resolution

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Affordable Echelette Spectrograph



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- No moving parts
- Low scattered light
- Many supported CCD cameras

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and phosphor screen assembly. Each input photon produces, on average, a million visible photons that can be subsequently mapped onto a CCD camera, where the signal is well above the noise even in uncooled, fast-frame-rate cameras. The tubes can be made without an MCP for coupling to high dynamic range CCD cameras, with a single MCP for low video flux video applications, or with a double MCP for photon counting. The intensifiers are gateable with exposure times down to about a microsecond; this enables synchronization with pulsed radiation sources. *Photek Ltd, 26 Castleham Road, St. Leonards on Sea, East Sussex TN38 9NS, England*

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Reflective Microdisplay

A new reflective microdisplay is part of a joint venture between CRL and MicroPix Technologies. The RXGA1C, measuring less than 16 mm diagonally, is a 1024×768 resolution microdisplay consisting of a liquid crystal display (LCD) and an interface printed circuit board. The devices use a ferroelectric liquid crystal CMOS silicon backplane technology, operate at 180 Hz, and employ a color-sequential format. The LCD characteristics include a $12 \times 12 \mu\text{m}$ pixel pitch, a contrast ratio of about 100:1, and an effective aperture ratio of greater than 75%. The microdisplays come with a PC video graphics array interface and can be used in applications such as night vision systems, heads-up displays, and wearable information systems. *CRL, Dawley Road, Hayes, Middlesex UB3 1HH, England*

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Radiometer/Photometer System

International Light has announced the IL1715 Research Radiometer/Photometer system, combining the company's IL1705 radiometer and 1710 photometer into a single measurement system. The IL1715 includes the company's IL1700 research radiometer, an SED033 detector, an F flat response filter, a W "wide eye" cosine diffuser, and a Y composite filter designed to match the CIE (Commission Internationale d'Éclairage) photopic curve within a total area error of 1%. The new system has a radiometric dynamic range of $1 \times$



10^{-9} to $2 \times 10^{-1} \text{ W/cm}^2$ and a photometric dynamic range of 5×10^{-4} to 1×10^6 lux. NIST traceable calibrations are available in both lux (lumens/m²) and foot-candles (lumens/ft²). The instrument features automatic zeroing and ranging during exposure integrations over an 8.5 decade range above nW/cm² and 5 millilux. *International Light Inc, 17 Graf Road, Newburyport, Massachusetts 01950*

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Infrared Light Source

The *reflectIR* line of broadband IR light sources from Ion Optics provide stable IR emissions for the ranges 2–5, 2–12, and 2–20 μm . They feature a tightly wound spiral filament mounted along the axis of a parabolic reflector for increased optical coupling, along with a light radiation pattern that is independent of the rotation of the reflector. The light sources are used in nondispersive IR gas and chemical sensor systems. Compared to competing products, the *reflectIR* sources are said to provide greater IR power above 4 μm while maintaining cooler operating temperature (less than 850 °C); the lower-temperature operation reduces the chance of igniting combustible gases and reduces the parasitic heating of the optics and detectors. The light sources can be used for DC operation, but also can be pulsed at rates from 0.5 to 10 Hz. *Ion Optics Inc, 411 Waverly Oaks Road, Suite 144, Waltham, Massachusetts 02452*

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LED Spectral/Angular Analyzer

Labsphere has introduced the LED-1100, an instrument designed for optical analysis of LED performance. Its optical system offers a combination of a diode array spectrometer and a calibrated large-area silicon photodiode radiometer. The spectrometer has a spectral range from 350 to 1050 nm, with a wavelength accuracy of better than 0.5 nm. The

radiometer measures the light intensity from the LED.

The LED-1100 incorporates two measurement apertures. The spectral aperture measures photometric, radiometric, and colorimetric parameters. The angular aperture measures an intensity profile using a moving sensor that sweeps a 160° arch about the LED, which fits into a measurement socket assembly. That assembly accepts a variety of standard and optional sockets for different types of LED packages. *Labsphere Inc., P.O. Box 70, Shaker Street, North Sutton, New Hampshire 03260*

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Optical Channel Analyzer

The WA-7000 Multi-line Wavemeter from Burleigh Instruments combines the company's scanning Michelson interferometer-based technology with advanced digital processing to measure and differentiate the absolute wavelengths of up to 200 discrete optical signals. The accuracy of those measurements is ± 1.5 ppm with a spectral resolution as high as 50 ppm. The WA-7000 can simultaneously measure the individual power of each optical signal with an accuracy of ± 0.5 dB, and can calculate parameters



such as channel spacing, drift, and signal-to-noise ratios for complete dense wavelength division multiplexing (DWDM) channel analysis. It is said that the ability to measure the wavelengths of the many optical carriers present on a single optical fiber is necessary to characterize and optimize DWDM components and transmission systems. *Burleigh Instruments Inc., Burleigh Park, Fishers, New York 14453-0755*

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Intensified CCD Imaging System

The Cooke Corporation has introduced the DiCam-PRO, an intensified CCD imaging system with 12-bit dynamic range that can achieve a

gating time (or exposure time) of 1.5 ns with a 1280 × 1024 CCD format; long exposure times of up to 1000 s are also possible. The system features excellent signal-to-noise ratio, single photon detection and spectral sensitivity from UV to near IR. With its short exposure time and light intensification capability, the DiCam-PRO is said to be able to study very short duration events that exhibit both low- or high-level characteristics. Light sources such as pulsed lasers can be synchronized with this system to image the dynamics of events from ballistics to hypervelocity flows. Other applications include imaging of fluorescence and chemiluminescence, electrophoresis, and fuel injection, and in high-resolution microscopy and time-resolved spectroscopy. *The Cooke Corporation, 1091 Centre Road, Suite 100, Auburn Hills, Michigan 48326-2670*

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Hand-Held Radiometer/Photometer

New from Solar Light is the PMA2200 Radiometer/Photometer that features a 6.5-digit dynamic range, a sampling rate of 3/s, a screen refresh rate of 10/s, and a display of minimum, maximum, and average readings. A range of more than 30 NIST-traceable detectors covers the UV-A, UV-B, UV-C, visible, and IR wavelength ranges. The PMA2200 is detector programmable, based on the company's Intelligent Detector Technology, which downloads configuration information from any detector attached to the unit. As a photometer, with visible light irradiance detectors, applications include light level monitoring in photographic film studios, museums, and industrial and residential interiors. *Solar Light Co, 721 Oak Lane, Philadelphia, Pennsylvania 19126-3342*

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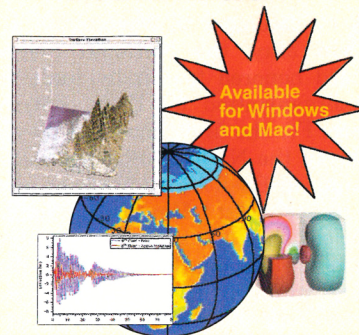
New Literature

Moletron's new product catalog has information on fan-cooled and laser power probes, laser power meters and energy detectors, and joulemeter instruments. *Moletron Detector Inc., 7470 S.W. Bridgeport Road, Portland, Oregon 97224*

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