

NEW PRODUCTS

Focus on analytical equipment, sensors, and instrumentation

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 ptpub@aip.org.

Andreas Mandelis



Two-stage rotary vane pump

The Pascal 2021 HW two-stage rotary vane pump from Pfeiffer Vacuum is suitable for applications that generate water vapor, such as low-temperature sterilization and drying. An optimized design and gas ballast system allow large volumes of vapor to be pumped before

the vapor can condense in the mechanism, which prevents accumulation of fluid that could adversely affect the service life of the pump and the oil. The company claims the Pascal 2021 HW has the highest vapor capacity in its class. The materials used in its manufacture make the pump resistant to aggressive chemicals such as hydrogen peroxide. Temperature management by the user can prepare the pump to deliver vapor in just a few minutes. If the steam capacity is inadvertently exceeded, a safety device prevents water from flowing into functional sections. **Pfeiffer Vacuum Inc**, 24 Trafalgar Sq, Nashua, NH 03063-1988, www.pfeiffer-vacuum.com

UV-visible spectrophotometer

Agilent designed its Cary 3500 UV-Vis spectrophotometer system to help life sciences, pharmaceutical, and academic researchers accurately and efficiently characterize new biological entities before their adaptation into therapeutic products. The system can also monitor the quality of those products throughout their development. It is available in several configurations, including a multizone multicell that optimizes laboratory productivity by allowing up to four simultaneous temperature experiments across eight cuvette positions. Rapid and accurate temperature control permits experiments at faster ramp rates than ever before, according to Agilent. Using solid-state digital Cary temperature probes that control experimental temperature from inside the cuvette, researchers can ramp the sample's temperature to 30 °C/min. **Agilent Technologies Inc**, 5301 Stevens Creek Blvd, Santa Clara, CA 95051, www.agilent.com



Arbitrary function generator

The AFG31000 arbitrary function generator (AFG) series from Tektronix features a nine-inch capacitive touch screen—the largest screen available on an AFG, according to the company. The series offers advanced capabilities for efficiently and economically characterizing a device under test (DUT). Those include the InstaView feature, which monitors and displays the waveform under study at the DUT with no need for additional cables or instruments. The advanced-waveform-sequencer mode allows the instrument to segment its waveform memory, which can be up to 128 Mpts, into up to 256 entries. Users can drag and drop both long and multiple waveforms into the sequencer and define how they are outputted. The ArbBuilder tool allows arbitrary waveforms to be created and edited directly on the instrument instead of on a PC. **Tektronix Inc**, 14150 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com

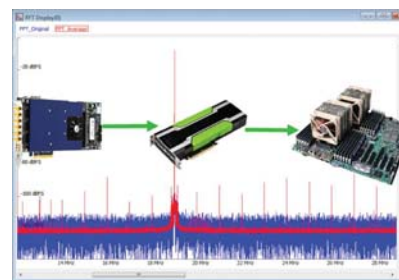
Pulsed high-intensity light systems

Xenon has introduced its XS-Series scalable pulsed light systems for room-temperature printed electronics (PE) sintering of conductive inks on flexible substrates. According to the company, the systems deliver high peak power with low heat and let users work with large coverage areas with high uniformity. The XS-Series models X-1100, S-2200, and S-2210 are built on a common platform with a common user interface. The economical X-1100 delivers up to 9 joules/cm² of radiant energy per pulse. Users can set up pulsed-light profiles and test processes critical to the success of new PE applications. With high peak radiant power of up to 4 kW/cm², the S-2200 provides state-of-the-art thermal management for researchers working with new nanomaterials on heat-sensitive substrates that require rapid sintering. The compact S-2210 is designed to treat wide areas (150 mm × 150 mm) with high-intensity pulsed light for applications that require high uniformity of up to 3%. It delivers a maximum pulse energy output of 18 kJ/cm² with a long pulse duration of 100–5000 μs. **Xenon Corporation**, 37 Upton Dr, Wilmington, MA 01887, www.xenoncorp.com



Signal enhancement package for digitizers

A new signal-averaging package from Spectrum combines a digitizer and a CUDA graphics card. CUDA is a parallel computing platform and programming model created by Nvidia for general computing on graphical processing units (GPUs). The package uses Spectrum's CUDA Access for Parallel Processing (SCAPP) and latest digitizer products to harness the power of CUDA-based GPU cards. Using remote direct memory access transfers, SCAPP users can port data directly to the GPU, where high-speed time- and frequency-domain signal averaging can be performed without the length limitations typically found in averaging products. The package is suitable for applications that involve low-level signals or have signal details that are lost due to high amounts of noise. Such applications include mass spectrometry, radar, LIDAR, sonar, radio astronomy, and biomedicine. **Spectrum Instrumentation Corp**, 15 Warren St, Ste 25, Hackensack, NJ 07601, <https://spectrum-instrumentation.com>



Compact FTIR spectrometer

Bruker has launched its Invenio S FTIR research spectrometer for advanced routine analysis and spectroscopic research. It replaces the previous Tensor spectrometer series. The Invenio S features Bruker's permanently aligned RockSolid interferometer, CenterGlow IR source, temperature-controlled deuterated triglycine sulfate detector, and fail-safe diode laser. The optional Transit Channel provides an additional, easily accessible sample space and allows instantaneous, software-controlled switching between measurement techniques. The compact design provides bench space for external accessories that can expand the instrument's capabilities to include IR microscopy and imaging, thermogravimetric analysis, high-throughput screening, and vibrational circular dichroism. **Bruker Optics Inc**, 40 Manning Rd, Billerica, MA 01821, www.bruker.com

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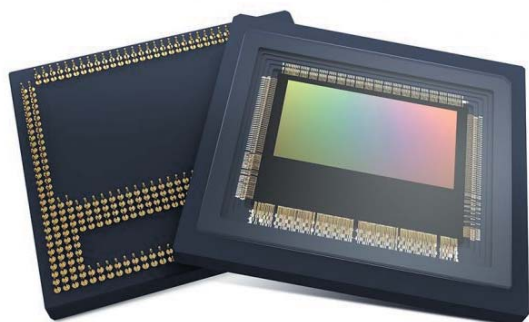
FACULTY AND POSTDOCTORAL POSITIONS
SCHOOL OF PHYSICS AT NANJING UNIVERSITY, CHINA

The School of Physics at Nanjing University invites application for tenured/tenure-track faculty positions and postdoctoral positions in the fields of theoretical and experimental condensed matter physics, optics and photonics, acoustics, artificial intelligence and quantum physics, particle and nuclear physics, biophysics, soft matter physics, atomic and molecular physics, computational physics, as well as artificial intelligence and quantum physics.

Positions and Qualifications: We are seeking outstanding candidates for all levels of faculty positions, including tenured full/associate professors, tenure-track research professors as well as qualified candidates for postdoctoral positions. Candidates should have a Ph.D. in a relevant discipline and an exceptional record of research accomplishments. The individual's work experience and research achievements will determine the position offered.

Salary and Benefits: All newly hired tenured faculty members will be provided sufficient startup resources and necessary research infrastructures. Annual salaries for tenured full professors range from US\$72600-US\$131000. Annual salaries for tenured associate professors range from US\$58000-US\$72600. Generous housing and start-up packages will also be offered. Annual salaries for research assistant professors and postdocs range from US\$21800-US\$43600. Rank and salary will be commensurate with work experience and research performance. Two-year initial contracts are renewable. Outstanding performers will be invited to join in faculty.

To apply: Application materials including a cover letter, a full CV with the publication list, a statement of future research plans, and three letters of recommendation should be sent to Prof. Baigeng Wang (Email: bgwang@nju.edu.cn; Tel: +86 25-83686486).



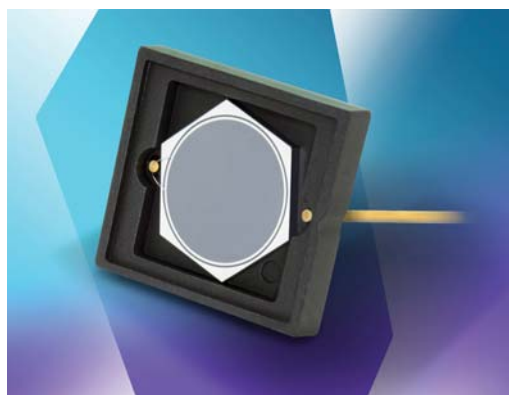
High-speed multispectral imaging sensor

Teledyne e2v has added an 11 MP detector to its Lince image sensor family. The Lince11M CMOS image sensor is designed for applications that require 4K resolution at

very high shutter speed. The standard sensor combines 4K resolution at 710 fps in an advanced photo system type-C format. The Lince11M can be used for high-throughput in-line inspection and with strobed lighting for imaging that is multispectral or multifield, including bright field, dark field, and backlight. It can serve as an alternative to line-scan sensors to improve defect classification where uniform image sharpness across all directions is critical. The sensor offers a peak quantum efficiency of 60% and a large full well capacity to maximize the signal-to-noise ratio in shot-noise-limited applications. **Teledyne e2v US Inc**, 700 Chestnut Ridge Rd, Chestnut Ridge, NY 10977, www.teledyne-e2v.com

Terahertz spectrometer

The Newport THz-TDS from MKS Instruments is a state-of-the-art system for terahertz time-domain spectroscopy and femtosecond spectroscopy with UV to near-IR pump and far-IR probe. It incorporates Newport's quality optics, optomechanics, balanced detector, vibration control, delay-line stages, and LabVIEW-based software. The THz-TDS supports various ultrafast amplifiers and optical parametric amplifiers as sources. It features a broad pump-probe delay range and high pump-probe delay resolution. A high-speed stage allows rapid acquisition of terahertz waveforms, and Newport's Suprema series optical mounts reduce thermal fluctuations. The instrument can be tailored to meet users' needs and can be upgraded and reconfigured to support other ultrafast spectroscopy techniques as research needs evolve. **MKS Instruments Inc**, 2 Tech Dr, Ste 201, Andover, MA 01810, www.mksinst.com



Circular photodiodes for radiation detection

Opto Diode, an ITW company, has released its AXUV20A circular photodetectors for radiation, electron, and photon response in the extreme-UV, visible, and near-IR wavelength ranges. The devices have an active area of 5.5 mm diameter and are sensitive to elec-

trons with energies as low as 100 eV. The minimum photodiode shunt resistance is 100 MΩ. Reverse breakdown voltage is typically 10 V, with a minimum of 5 V. Other features include capacitance typically at 4 nF, with a maximum of 10 nF, and a rise time of 2 μs. Operating and storage temperatures range from -10 °C to 40 °C in ambient environments and from -20 °C to 80 °C in nitrogen or vacuum. A cover plate protects the photodiode chip and wire bonds. **Opto Diode Corporation**, 1260 Calle Suerte, Camarillo, CA 93012, <https://optodiode.com>

DIGITAL PULSE PROCESSORS



Digital Pulse Processor
Shaping Amplifier
MCA
Power Supplies

Features of the PX5:

- Compatible with all Amptek detectors & detectors from other manufacturers
- 80 MHz ADC
- Trapezoidal and CUSP shaping
- Reduced ballistic deficit
- High count rate capability & stability
- High throughput & pile-up rejection
- MCA with 8 k channels
- USB, RS232 & Ethernet interface
- Free software for instrument control, data acquisition, and analysis
- Free Software Developer's Kit (SDK)
- Oscilloscope mode

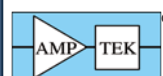


Size: 3.5 in. x 2.5 in.

Features of the DP5:

- 80 MHz ADC
- Replaces both shaping amplifier and MCA
- Supports both reset and feedback preamplifiers of either polarity
- 16 SCAs
- Configurable for use with PMTs
- For OEM or custom laboratory use
- Highly configurable

OEM's #1 Choice



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FACULTY POSITION

**School of Natural Sciences
Institute for Advanced Study
Princeton, New Jersey**

The Institute for Advanced Study intends to make a new professorial appointment in physics in the School of Natural Sciences. Only candidates with distinguished scholarly accomplishments in this field will be considered.

We invite applications and nominations for this position. These should contain a curriculum vitae and bibliography, and be sent by June 30, 2019 to Michelle Sage, Administrative Officer, School of Natural Sciences, Institute for Advanced Study, Einstein Drive, Princeton, New Jersey 08540, USA. Email: michelle@ias.edu. All communications will be held in strict confidence. The Institute for Advanced Study is an equal opportunity institution, and we especially welcome applications or nominations from under-represented groups.

High Resolution AFM



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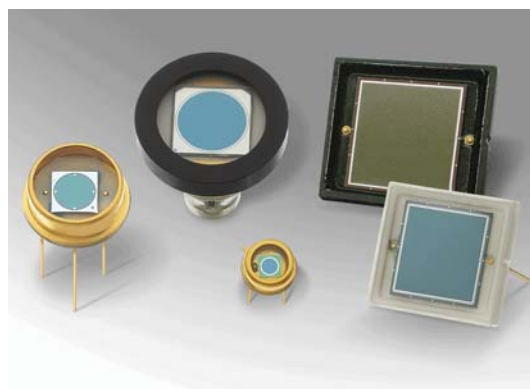
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NEW PRODUCTS

Planar-diffused silicon photodiodes

OSI Optoelectronics offers UV-enhanced planar-diffused silicon photodiodes designed for low-light-level detection in the UV spectral range. According to the company, its UVD and UVE photodiodes provide advantages over inversion-layer and other photodiodes. For example, they deliver lower capacitance and faster response times.

The UVD photodiodes peak at 970 nm; the UVE devices peak at 720 nm and suppress the near-IR, so they can be used for applications that require blocking that spectral region. Both products can be biased for lower capacitance, wider dynamic range, and high-speed response times. They can be operated in the photovoltaic (unbiased) mode for situations that require low drift with temperature variations. Applications include spectroscopy, fluorescence, medical instrumentation, pollution monitoring, and UV exposure meters. **OSI Optoelectronics Inc.**, 12525 Chadron Ave, Hawthorne, CA 90250, www.osioptoelectronics.com



Motorized 3D/4D stage

Applied Scientific Instrumentation's precise, compact 3D/4D motion control system is designed to move samples around fixed optics. Three linear stages include XYZ translation elements and travel options of 25, 50, 100, or 200 mm. Each axis can be chosen separately. The linear stages' smooth, accurate motion is achieved through the use of closed-loop DC

servomotors, crossed-roller bearings, high-precision lead screws, and high-resolution encoders for positioning feedback. The stages can move uniformly at very slow speeds for in-motion acquisition. An optional motorized rotating stage can be employed for a theta axis. The company offers various compatible stage controllers that provide automatic backlash correction and can communicate with a host computer by RS-232 or USB connection. **Applied Scientific Instrumentation**, 29391 W Enid Rd, Eugene, OR 97402, www.asiimaging.com

NEW LITERATURE

Hexapod positioning systems catalog

Physik Instrumente has published a catalog on its parallel-kinematic motion and positioning systems for precision automation and alignment applications in fields such as optics, photonics, aerospace, medical engineering, and laser technology. Its 130 pages provide background information and feature various hexapod motion and positioning systems, known as Stewart platforms, with six degrees of freedom, high resolution, and repeatability in the submicrometer and nanometer range. The hexapods offer travel ranges from a half-inch to several hundred millimeters and load ranges from 0.5 kg to several tons. The multiaxis systems can be optimized for high load, speed, and precision. The load, speed, and precision class determine the type of drive used, whether electrodynamic, electromechanical, or piezoelectric.

Physik Instrumente LP, 16 Albert St, Auburn, MA 01501, www.pi-usa.us

