Wednesday, May 11, 2022

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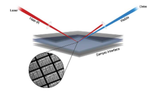
A New Generation of Femtosecond Lasers Packs Practicality with Precision



To say that femtosecond laser technology has undergone a transformation in recent years is an understatement that not only minimizes the huge strides made in technical terms, but especially so the improvements in accessibility. Complex tabletops crowded with user-built assemblies and myriad discrete optics requiring daily attention have given way to single-box systems tailored to meet the fast-changing world of femtosecond applications. Early examples of this transition are tunable lasers for multiphoton microscopy, rapidly followed by powerful industrial one-box lasers developed to support micromachining applications ranging from stent cutting to OLED processing.

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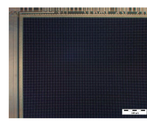
Single-Photon Avalanche Diodes Sharpen Spatial and Temporal Resolution



As their name implies, single-photon avalanche diodes (SPADs) detect single particles of light, and they do so with picosecond precision. Single-pixel SPADs have found wide use in astronomy, flow cytometry, fluorescence lifetime imaging microscopy, particle sizing, quantum computing, quantum key distribution, and single-molecule detection. Over the last 10 years, however, SPAD technology has evolved through the use of standard complementary metal-oxide-semiconductor technology. This paved the way for arrays and image sensor architectures that could increase the number of SPAD pixels in a compact and scalable way.

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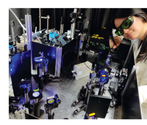
Raman Spectroscopy's Signals and Future Continue to Get Brighter



Spurred by the passage of state legislation last fall, the Southern California Coastal Water Research Project issued a methodology for monitoring microplastics in drinking water. The California regulation was the first of its kind in the U.S. to address widespread microplastic pollution in the environment. In response, an international group of scientists came together to develop guidelines for implementing the regulation, and they identified Raman spectroscopy as a key technique for the chemical identification of microplastics in water.

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.: Featured Products

PhaseCam MWIR

4D Technology Corporation

PhaseCam MWIR is a dual-port, midwave infrared interferometer that measures optical surface shape and wavefront error at a 3.39 µm infrared wavelength with incredibly fast acquisition for vibration and turbulence immunity.

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High Performance Line Beam LiDAR Tx

Focuslight Technologies Inc.

Coupled with a mechanical rotating mirror and a novel SIPM or SPAD array on the detector end, Focuslight BeamRazor™ series LiDAR transmitter family enables a new generation hybrid solid-state high-resolution beam steering LiDAR of line beam concept.

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DYAD Dual-Beam Laser Module

Sheaumann Laser Inc.

This is a fiber-coupled module featuring an operational beam and an optical red aiming beam. It's well suited for many medical applications as well as range-finding, illumination systems, and industrial marking. Internal thermistor and photodiode.

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Single-channel Picosecond EOM Driver

Highland Technology Inc.

The T130 is a USB/RS-232 enabled pulse generator suitable for driving LiNbO3 Mach-Zehnder and similar electro-optical devices. It has a built-in edge-triggered width generator that is adjustable for delay and width, spanning 250 picoseconds to 300 nanoseconds across three ranges.

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Fully Automated Raman Imaging

WITec GmbH

The new WITec alpha300 apyron now takes 3D Raman imaging automation to the next level. It combines ease-of-use and ultimate capability for reproducible results with unrivaled speed, sensitivity, and resolution. It can self-align and self-calibrate for speed and consistency while also substantially reducing the...

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Precision LiDAR Lens Assembly

Hyperion Optics USA

Hyperion offers real-time dynamic centering techniques during lens assembly, which dramatically improve the accuracy of the LiDAR lens to match the intended design performance, with results guaranteed by quantitative MTF measurements. Our capabilities include assembly, metrology, and volume capacity for high-precision...

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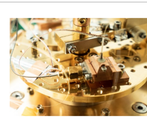
.: In Case You Missed It

Modular Waveguide Represents Step Toward Faster Quantum Computers



Researchers at the University of Tokyo generated strongly nonclassical light using a modular waveguide-based light source. The demonstration, which the researchers said is the first of its kind, is poised to benefit future work aimed at creating faster and more practical optical quantum computers.

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Rotating Laser Enables Faster, Longer Imaging of Cells

A microscopy method developed at the University of Freiburg is able to resolve cellular-level detail without fluorescence, enabling observations 100 to 1000× longer and 10 to 100× times faster, with almost double the resolution. The technique is called rotating coherent scattering (ROCS).

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Light-Scattering Phenomenon Could Improve Optical Communications

A phenomenon observed in a miniature light-scattering system composed of an ultrathin layer of silicon nitride on a chip could lead to improved optical communications and sensors. Researchers at the National Institute of Standards and Technology studied such a system, which was additionally etched with a series of closely spaced, periodic grooves. The grooves created a grating that scatters different colors of light at different angles, while the silicon nitride acts to confine and guide incoming light as far as possible along the 0.2-cm length of the grating.

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.: Upcoming Webinars

Optical Solutions for Spectroscopic Water Analysis

Thu, May 19, 2022 1:00 PM - 2:00 PM EDT

Light can be used in many ways to understand, study, and spectroscopically characterize the components that may exist in water. Stephane Butron and Erik Mesa of Hamamatsu Corp. discuss the various markets that benefit from such measurement, the photonic tools currently available to perform such measurement, and how users can select tools for specific applications. They then present a live demonstration that shows how measurement can be done with Hamamatsu Photonics K.K.'s spectrometers and xenon flash lamp modules. Presented by Hamamatsu Corp.

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Features

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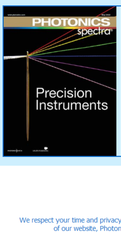

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