Wednesday, August 25, 2021

BIOPHOTONICS
BRINGING LIGHT TO THE LIFE SCIENCES®

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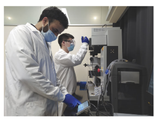
Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at Photonics.com/subscribe.

Liquid Crystal Sensors Provide Rapid COVID-19 Diagnosis

The global outbreak of COVID-19 has prompted scientists worldwide to focus their research on the virus over the last year, particularly those who work with optical and sensing technologies. Some have concentrated on understanding fundamental aspects of the virus, such as its replication and transmission, while others have worked on creating vaccines or therapeutics. Many researchers and clinicians began to search for a reliable method to rapidly test a large proportion of the population to diagnose infected individuals as quickly as possible.



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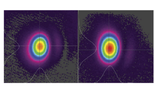
Quantum Cascade Lasers Boost Life Science Research

Over 20 years have passed since the first quantum cascade laser (QCL) sources were commercialized. QCLs that operate at room temperature using thermoelectric cooling are now ubiquitous. These lasers ushered in a new era of infrared spectroscopy. In recent years, there have been many advancements in the stability, power, spectral range, tunability, and overall performance of QCLs. Such developments in the infrared spectrum have led to the creation of a wide variety of very powerful light sources for spectroscopists. As a result, several new applications that make use of coherent mid-infrared light sources have been demonstrated in medicine and industry.



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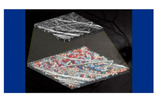
AI-driven Method Developed to Diagnose Neurodegenerative Diseases

A combination of OCT, adaptive optics, and neural networks has the potential to enable better diagnosis and monitoring for eye and brain diseases, such as glaucoma, that damage neurons. The combination is part of an AI-drive process developed by biomedical engineers at Duke University as leaders of a multi-institution consortium that can easily and precisely track the number and shape of retinal ganglion cells in the eye.



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.: Featured Products

RM-1250 GEN II STAGE

Applied Scientific Instrumentation Inc.

The RM-1250 XY stage is the culmination of designing and manufacturing automated XY stages for demanding customers. A flat top, flat bottom, and multiple mounting configurations make it easy for laboratories and manufacturers to integrate it into existing systems.

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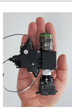

Compact Fluorescence Imaging Modules for your Instrumentation Project

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You have discoveries to make, theories to be proven, and challenges to overcome. Who'd have thought that the Pulsed Light tool to provide such big answers could come in such a small package. The X-1100 Benchtop Pulsed Light System is XENON's ground-breaking research tool...

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Keylight™ OEM Microscopy Light Source

Phoseon Technology Inc.

KeyLight™ illumination sources for fluorescence microscopy are the perfect solution to integrate into your equipment. Phoseon's proprietary LED solutions offer intense, broad-spectrum wavelengths for various colors from UV through visible into the infrared.

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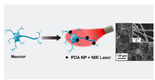
.: In Case You Missed It

Photothermal Process Irradiates Nanoparticles to Control Cell Activity

Using nanoparticles as photothermal nanotransducers, scientists at Washington University in St. Louis demonstrated reversible modulation of electrical activity in excitable nerve and heart muscle cells. The biocompatible, minimally invasive approach to controlling electrical activity in cells could be a valuable tool for neuroscientists and neuroengineers.



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Mechanoradical Coupling Strategy Ups Generic Polymers' Value

A Hokkaido University research team has developed a method to give luminescent properties to generic polymers, potentially transforming existing commodity polymers into more valuable functional materials. The technique is based on mechanical force, bypassing sophisticated organic synthetic methods for the preparation of luminescent polymers — which are used in applications such as organic lasers (lasing), solar cells, sensors, and bioimaging.

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Cranial Windows Allow Simultaneous Imaging of the Brain's Different Regions

Researchers from Tsinghua University have developed a way to image multiple areas of the brain at the same time, both on the brain's surface and deep inside the brain. Since brain processes often span multiple regions of the brain, researchers say the new approach could lead to a more complete understanding of how the brain works in health and disease.

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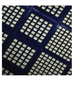
.: Upcoming Webinars



AuSn Thin-Film Technology and AuSn Pre-deposited Substrates for Optoelectronics

Wed, Aug 25, 2021 10:00 AM - 11:00 AM EDT

AuSn thin film is a critical technology to enable an optoelectronic device to ensure durability, anti-oxidation ability and reliability compared with Indium, SnPb, SnBi, and others. In this webinar, Allen Liu of Focuslight Technologies Inc. explains the design, key processes, and application data of high-power laser diode devices. Presented by FocusLight Technologies Inc.

Register Now

Freeform Optics for Imaging: Mid-Spatial Frequency Errors

Thu, Aug 26, 2021 1:00 PM - 2:00 PM EDT

Residual mid-spatial frequency (MSF) surface errors are common byproducts of the computer-controlled sub-aperture manufacturing techniques needed for fabrication of freeform optics. In this presentation, Thomas Suleski, Ph.D., provides an overview of MSF surface error signatures, specification methods, and performance impacts. Part 3 of the 2021 Freeform Optics Series.

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Features

In Vivo Imaging Techniques, Near-Infrared Imaging, Spectroscopic Prototypes, and more.

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