Wednesday, January 26, 2022

BIOPHOTONICS
BRINGING LIGHT TO THE LIFE SCIENCES®
PHOTONICS MEDIA photonics.com

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.

Miniaturization in NIR Spectroscopy Reshapes Chemical Analysis

Near-infrared (NIR) spectroscopy has been used in groundbreaking research in many of the life sciences due to its capacity to rapidly determine and analyze the composition of materials. Bulky instruments with limited portability, however, have kept the technology from being used in field applications. Current trends in miniaturization, however, have opened up new realms in which NIR spectroscopy would never have functioned years ago, providing on-site, flexible, and accurate tools for agricultural and environmental analysis and food quality inspection. This is especially true in the herbal medicine and food industries, where smartphone-operated sensors can be easily used in remote locations for rapid on-site analysis — for example, for in-field monitoring of medicinal plants.

Read Article

Optical Filters Help PCR Tests Quickly Diagnose COVID-19

The need to implement technology that can rapidly diagnose diseases and pathogens accurately has never been greater than it is now, as the COVID-19 virus continues to spread around the world. Prior to 2020, most people working outside the field of molecular biology would not have been aware of polymerase chain reaction (PCR) testing and its ability to amplify the presence of biomarkers to enable the optical detection and identification of genetic material from specific organisms, such as viruses. Since millions around the world have become infected with the coronavirus, the broader community has become increasingly aware of PCR as a tool that facilitates the accurate diagnosis of the disease, helping to inform infected persons so that they can subsequently isolate, seek care if needed, and prevent transmission of the virus to others.

Read Article

AI Imaging Method Provides Biopsy-free Skin Diagnosis

A deep learning-enabled imaging technology, developed by UCLA professor Aydogan Ozcan and colleagues, provides a noninvasive way to rapidly diagnose skin tumors, allowing earlier diagnosis of skin cancer. The technology bypasses reliance on skin biopsies, which are invasive, cumbersome, and time-consuming. It can take days to receive the results of a biopsy.

Read Article

.: Featured Products

New CELESTA Quattro Light Engine

Lumencor Inc.

The CELESTA quattro Light Engine delivers four lasers with brightness, stability, and longevity. It's designed to provide high performance solid-state illumination with which our CELESTA is synonymous, yet it has been refined from seven to four outputs for enhanced value.

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Light Sheet for Cleared Tissue

Applied Scientific Instrumentation Inc.

The ct-dSPIM is a flexible and easy-to-use light sheet microscopy configuration optimized for imaging large cleared tissue samples. The sample is mounted on a motorized XYZ stage and imaged via stage scanning. Two multi-immersion or other objective lenses are held in an upright "V" geometry for light sheet illumination and detection.

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Alluxa Ultra Series Filters and Coatings

Alluxa

Alluxa Ultra Series Filters, including Narrowband, Dichroic, UV, IR, and Notch filters, provide the highest performance optical thin film solutions available today. For example, the Ultra Series Flat Top Narrowband filters offer the narrowest bandwidths and squarest filter profiles in the industry.

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High-speed 8-channel LED Triggering

CoolLED Ltd.

CoolLED has enabled high-speed and affordable imaging with its 8-channel pE-800 Series Illumination Systems and USB controlled TTL trigger boxes. The pE-800 Series Illumination Systems sees LEDs take centre stage as the widefield illumination method of choice. Versatile, simple to use, and backed by CoolLED's...

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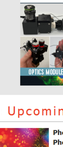

Product Development through Manufacturing and Assembly

Optikos Corporation

Optikos brings 40 years of engineering expertise to serve the development needs of a diverse portfolio of life science clients—from design through manufacturing and assembly in our extensive clean facilities.

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Prospective MPX - First User-Friendly Multiphoton Microscope

Prospective Instruments

The first completely integrated two-photon microscope with built-in (tunable) femtosecond laser. Ideal for biologists, neuroscientists, etc., who want to focus on their research, not on optics. Fast installation, typically within 10 minutes ready to image. Easily movable to other locations...

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Optical Biomedical Imaging

Photonics Media

At last, a reference work has been compiled that offers in one place a broad survey of technologies, applications and markets for optical biomedical imaging, as only Photonics Media could produce it. This collection is a practical resource for those engaged in the research and development...

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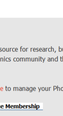

Compact Fluorescence Imaging Modules for your Instrumentation Project

Etaluma Inc.

Our powerful commercial-ready fluorescence microscope modules use modern LED excitation, multi-bandpass filters, and CMOS cameras to solve your custom imaging needs. We provide easy integration in the minimum space for analytical and clinical instrumentation development.

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.: In Case You Missed It

Enhancing Lanthanide-Doped Nanocrystal Upconversion Luminescence Could Improve Bioimaging, Displays

At the National University of Singapore (NUS), researchers amplified upconversion luminescence in protein-size lanthanide-doped nanocrystals. The group reconstructed the surface of the crystal to prevent surface-associated energy loss.

Read Article

Dual-Axis OCT Gets Under the Skin

Optical coherence tomography (OCT), long considered the gold standard for imaging and diagnosing diseases of the eye, could be used to identify and evaluate conditions deep beneath the skin. A team led by Duke University's Adam Wax has developed a method to increase the depth at which light can penetrate skin. The team adapted dual-axis OCT for this purpose and increased the imaging depth of conventional OCT by almost 50%, providing depth penetration in skin imaging at 1.3 µm.

Read Article

Biosensor Barcodes Track Cancer Cell Communications

Johns Hopkins University researchers have developed a method for identifying and tracking cells in a manner similar to the way barcodes are used to identify and track products. The team used the method to study the way that cancer cells "talk" with one another.

Read Article

.: Upcoming Webinars

Photon Counting for Low-Light Applications: SiPM, SPAD, SNSPD, PMT, TES, and Photon-Resolving Camera Technologies

Wed, Feb 16, 2022 1:00 PM - 2:00 PM EST

This webinar overviews six types of single-photon photodetectors for low-light conditions: photomultiplier tubes (PMTs), single-photon avalanche photodiodes (SPADs), silicon photomultipliers (SiPMs), superconducting nanowire single-photon detectors (SNSPDs), superconducting transition edge sensor (TES), and photon-resolving cameras. All of these detector technologies are becoming more popular as developers and suppliers aim toward satisfying the increasing demand for 'modern' photonic applications, including quantum computing, lidar, dark matter detection, and more. Presented by Hamamatsu Corporation.

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Features

Hyperspectral Imaging, Optofluidics, PARS Microscopy, and more

Photonics Media is currently seeking technical feature articles on a variety of topics for publication in our magazine *BioPhotonics*. Please submit an informal 100-word abstract to Senior Editor Doug Farmer at Doug.Farmer@Photonics.com, or use our online submission form www.photonics.com/submitfeature.aspx.

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