Wednesday, March 23, 2022

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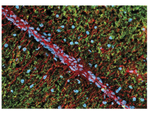
Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at Photonics.com/subscribe.

LEDs and Optical Filters Expand Live-Cell Imaging Capability



The light source of a wide-field fluorescence microscope is often overlooked by scientists who perform live-cell imaging experiments. However, innovations such as transistor-transistor logic triggering, which enhances on/off speed, and inline excitation filters that allow for fast imaging in specific wavelengths have elevated this component. What was once a basic illuminator has become a highly controllable system with the potential to advance fluorescence microscopy.

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The Pandemic Is Driving Innovative Microfluidic Disease Detection

As medicine and the monitoring of health have advanced into the modern era, researchers and clinicians have sought to capture an ever-increasing number of the biomarkers that are carried in biofluids, especially in biofluids such as blood and saliva that are present in living beings. Microfluidic systems establish a sterile environment in which to collect this information. Optofluidic components — including light sources, such as lasers and LEDs, detectors, lenses, and switches — have enabled these systems to reveal biomarkers that are essential to plotting a course for effective medical treatment, a capability that has become more important in a time rife with transmissible disease.

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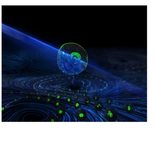
Flow Cytometry Technique Enables High-Speed Cell Sorting



A study led by global medical technology company BD, in collaboration with the European Molecular Biology Laboratory, has demonstrated an innovation in flow cytometry that adds fluorescence imaging and image-based fluorescence to sort individual cells at exceptionally high speed based on the visual details of each cell, as opposed to on the type or quantity of biomarkers that are present.

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.: Featured Products

CELESTA Light Engine: Bright, Stable, Turnkey Lasers

Lumencor Inc.

Lumencor's CELESTA Light Engine is a multiline, solid-state laser illuminator, designed to support numerous demanding fluorescence microscopy applications. CELESTA delivers superior brightness and stability. Customization is available, please inquire.

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CRISP Autofocus System

Applied Scientific Instrumentation Inc.

The Continuous Reflection Interface Sampling and Positioning system (CRISP) is designed to maintain focus over time. It eliminates focus drift in high-power microscopy applications by sensing minute changes between the objective lens and the sample's cover slip.

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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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Need Something a Bit Different?

CoolLED Ltd.

Give your imaging instrument the edge with the latest LED illumination technology. The CoolLED Amora Series combines the proven performance of an established product range with unparalleled customization opportunities.

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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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Optical Biomedical Imaging

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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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.: In Case You Missed It

Laser Ophthalmoscopic Method Enables In Vivo Imaging of the Eye

An instrument called the two-photon excited fluorescence scanning laser ophthalmoscope has made it possible to view, in real time, the biochemical processes that occur in the retina. Researchers have traditionally been unable to view these processes.

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Optogenetics Tool Brings Dynamics of Cellular and Tissue Mechanics to Light

A research team at the National Institute for Basic Biology developed an optogenetic tool that can reduce cellular contractile force to better understand how contractile forces generated by cells — those that affect an array of biological processes, including cell motility, cytokinesis, and tissue morphogenesis — influence cell dynamics. The tool, called OptoMYPT, uses blue light to induce relaxation of actomyosin contractility at the subcellular level; It inactivates nonmuscle myosin II, an actin-binding protein that generates cellular contractility in coordination with actin filaments.

Read Article

Alfano-Led Team Introduces Alternative Route to Odd Higher Harmonic Generation

Researchers in the group of Robert Alfano at the Institute of Ultrafast Spectroscopy and Lasers at the City College of New York, with collaborators from the University of California, San Diego, have introduced an approach to explain higher harmonic generation. The method is an alternative to the electronic cloud distortion model proposed in 1970.

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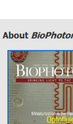
.: Upcoming Webinars



Adaptive Optics: From Design to Application

Wed, Mar 30, 2022 10:00 AM - 11:00 AM EDT

Adaptive optics (AO) is a technology originally used for removing the blurring effect of atmospheric turbulence on images in ground-based telescopes. Since then, it has been become invaluable in other fields, such as vision science and microscopy. For example, by correcting for blur due to the optics of the eye, AO has revolutionized ophthalmology by allowing diseases to be detected and monitored at the single-cell level, thus providing earlier diagnoses. Karen Hampson, Ph.D., of Oxford University overviews AO technology and its application considerations for astronomy, vision science, and microscopy.

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