Wednesday, July 22, 2020

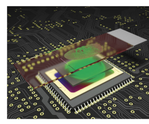
BIOPHOTONICS

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.

Diffuser Modulation Enables Quantitative Lensless Microscopy



Traditional optical microscopes require constant adjustments to bring a sample into focus. To see a small feature with details, researchers must use a high-resolution objective lens with a reduced field of view. The trade-off between resolution and imaging area is a major inconvenience for life scientists and pathologists who rely on microscopy to analyze and diagnose disease, because prepared tissue samples have dimensions in the centimeter range. It turns out, however, that this inherent limitation can be overcome by using lensless equipment. Rather than using lenses to magnify the object image, a thin diffuser can be placed between the specimen and the image sensor in a lensless setting. The diffuser is then randomly scanned to various positions while the sensor acquires the images.

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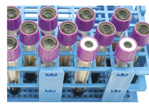
Achieving Improved Signal-to-Noise Ratio in Flow Cytometry



Flow cytometry explores, analyzes, counts, and sorts small particles. With the increasing demands for higher data quality from researchers, clinicians, and manufacturers, component builders for these systems are being driven to increase the signal-to-noise ratio (SNR), rather than just the signal. SNR is a widely applicable engineering term referring to the relative size of the real signal (or signal variations) compared to random errors (noise) in the observed signal.

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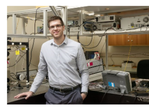
Researchers Define New Law in Laser Physics Via Pulsation



Scientists at the University of Sydney Institute of Photonics and Optical Science have developed a new type of laser that can deliver high amounts of energy in short bursts, with potential applications in eye and heart surgery or the engineering of delicate materials.

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.: Featured Products

CELESTA Light Engine

Lumencor Inc.

Lumencor's CELESTA Light Engine delivers exceptional brightness and speed. This laser-based, solid-state illuminator is designed to support today's most demanding multidimensional fluorescence microscopy applications.

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Ultra Precise Piezo-Z Focus Stage

Applied Scientific Instrumentation Inc.

The stage is capable of XY resolutions down to the 10-20 nm and Z resolutions to the 1nm range. It is able for use with rapid z-sectioning and autofocus systems. It prevents focus drift when used with our CRISP system.

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BOB - Open-design Upright Microscope

SUTTER INSTRUMENT

The BOB is a versatile, open-design microscope mounted on a stable optical rail. The height is easily adjustable, allowing in vivo and in vitro research in one set up. Configure the scope as you like with fluorescence epi-illumination, transmitted light, OCC or DIC condensers, stages, and much more.

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Keylight™ OEM Light Source

Phoseon Technology Inc.

KeyLight™ illumination sources deliver the highest performance imaging with easy integration for OEMs. Ensure reliable and accurate results for labs with our patented LED technology: an affordable, energy-saving, customizable, top-quality, and low maintenance option for every integrator.

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Photonics Spectrum Reference Chart

Photonics Media

This full-color, 30 × 20.5-inch poster of the photonics spectrum displays the major commercial laser lines, detectors and optical materials in the ultraviolet to the far-infrared and beyond. The chart was updated in 2018 to reflect the changing technologies in the photonics industry.

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Engineering Services for Life Sciences

Optikos Corporation

From concept to volume production — you can do it all with Optikos. Decades of service in the optics industry have given us a proven track record of innovative and practical problem solving that serves the development needs of a diverse portfolio of life sciences clients.

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.: In Case You Missed It

Single-Photon Technology Could Allow High-Sensitivity, Low-Power OCT

A detection technology used in quantum optics also could be used to perform OCT with lower light power than previously possible, potentially improving the imaging quality available from OCT.

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UV Light and Riboflavin Reduce SARS-CoV-2 Pathogens in Plasma, Whole Blood

Researchers at Colorado State University (CSU) showed that exposure to riboflavin and ultraviolet light (R + UV) can reduce SARS-CoV-2 infectivity in human plasma and whole-blood products while maintaining blood product quality. The CSU team aimed to determine whether it would be possible to kill the virus in blood products. Although scientists do not yet know if SARS-CoV-2 can be transmitted by blood transfusion, viral RNA has been detected in serum.

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Photosensitizer Design Absorbs Low-Energy Light, Transfers Energy Efficiently

Researchers at Hokkaido University, working with colleagues in Japan to develop a photosensitizer design that could use low-energy light effectively, developed a design that made the rare earth element europium (Eu) shine five times more brightly than any previous design. Their discovery could lead to more efficient photosensitizers with a wide variety of applications.

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.: Upcoming Webinars

An Oblique Plane Light-Sheet Microscope with 200-nm-Scale Resolution

Tue, Aug 4, 2020 1:00 PM - 2:00 PM EDT

In this webinar, UT Southwestern professor Kevin Dean will describe an oblique plane microscope that uses a newly developed glass-tipped objective and an optimized optical train to maximize the speed, field of view, and resolution of the overall imaging system. He will characterize the performance of this microscope, and then demonstrate biological imaging of clathrin-mediated endocytosis, cell migration, natural killer cell induced cytotoxicity, and more. This webinar is sponsored by Applied Scientific Instrumentation; Andor Technology, part of the Oxford Instruments Group; TOPTICA Photonics; and Coherent Inc.

Register Now

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Features

Biothermophotonics, Hand-Held Microscopy, Vibrational Spectroscopy, 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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