Wednesday, March 25, 2020

BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

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PHOTONICS MEDIA

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.

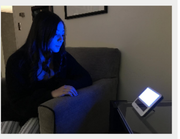
Opsins Travel to the Brain's Hidden Places

The brain is one of the most complex systems in the known universe, a living computer that controls not only basic functions of the body but ponders and directs responses to what's going on in its surroundings. But when it comes to understanding how the brain works — and, in some cases, how to heal what is ailing it — practitioners of optogenetics know that the answer can lie in natural optical phenomena that have existed since before modern life even began.

Read Article

Blue Light Can Improve Sleep, Help Brain Recover from Injury

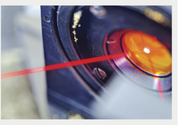
According to a University of Arizona study, exposure to blue light in the morning could re-entrain the circadian rhythm and improve sleep problems, leading to faster recovery from brain injury. Research has shown that the brain repairs itself during sleep. The team sought to determine whether improved sleep could lead to a faster recovery from mild traumatic brain injury.



Read Article

A Laser Points Toward Disease Diagnosis

According to the latest reports from the United Nations Department of Economic and Social Affairs and the World Health Organization, life expectancy has more than doubled in the last two centuries, from less than 30 years to over 70, thanks to both life-saving scientific innovations and health improvements. But the rise in life expectancy increases issues of morbidity, primarily driven by the high prevalence of chronic diseases, such as cardiovascular disease, cancer, diabetes, and arthritis. This has serious consequences for nations' health and health care systems.



Read Article

Featured Products

Ultra Precise Piezo-Z Focus Stage

Applied Scientific Instrumentation Inc.

The PZ-2000FT XYZ stage has been specifically designed to provide a high resolution, and highly repeatable, means of controlling the X, Y, and Z position of the microscope stage. The XY axes derive their precise control through the use of closed-loop DC servomotors employing high-resolution rotary encoders for positioning feedback.

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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. Generating ~1000 mW/color at the distal end of a 1.5 mm fiber, its seven intense, pre-aligned, independently operable lasers...

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TracePro

Lambda Research Corp.

Award-winning illumination design, analysis, and optimization software TracePro streamlines your prototype-to-manufacturing process for luminaire design, LED integration, light pipe design, optimization, biomedical optics, and stray light analysis.

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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

Smartphone-Based System Tests for Infectious Diseases, Sends Results to Doctor

Engineers at the University of Cincinnati (UC) have created a tiny portable lab that plugs into a smartphone. The lab, which is about the size of a credit card, can diagnose infectious diseases such as coronavirus, malaria, HIV, or Lyme. It can also track hormones related to anxiety or depression. The patient puts a single-use plastic lab chip into his or her mouth and the saliva on the chip is tested. The device automatically transmits test results to a doctor's office through a custom app developed at UC.

Read Article

High-Speed Microscopy Tracks Millisecond Voltage Changes in Neurons of Awake Mice

University of California, Berkeley, researchers have built a microscope that can image the brain of an alert mouse 1000 times a second and record the passage of millisecond electrical pulses through neurons. The new imaging technique combines two-photon fluorescence microscopy and all-optical laser scanning in a microscope that can image a 2D slice through the neocortex of the mouse brain up to 3000 times per second. According to the researchers, that's fast enough to trace electrical signals flowing through brain circuits.

Read Article

Imaging Agent Illuminates Cancer and Surrounding 'Hijacked' Cells

Scientists at Washington University School of Medicine have developed an imaging agent that can identify multiple types of tumors as well as the surrounding normal cells that the cancer uses as a shield against attempts to destroy it.

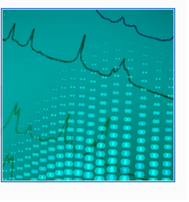
Read Article

Webinars

Raman Spectroscopy: Theory, Practice, and Applications

Wed, May 6, 2020 1:00 PM - 2:00 PM EDT

This webinar, presented by Hamamatsu Corp., will review the basic theory behind normal, resonant, and surface-enhanced Raman scattering. It will discuss the hardware required in a working Raman spectrometer; describe data analysis and presentation; and give examples of common applications. In addition, it will examine some of the market challenges and solutions. You will learn about the basic setup of a Raman spectrometer, performance trade-offs associated with hardware limitations, and the factors that influence the choice of the illumination laser.



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Features

Diffuse Optical Spectroscopy, NIR Imaging, Selective Plane Illumination 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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