

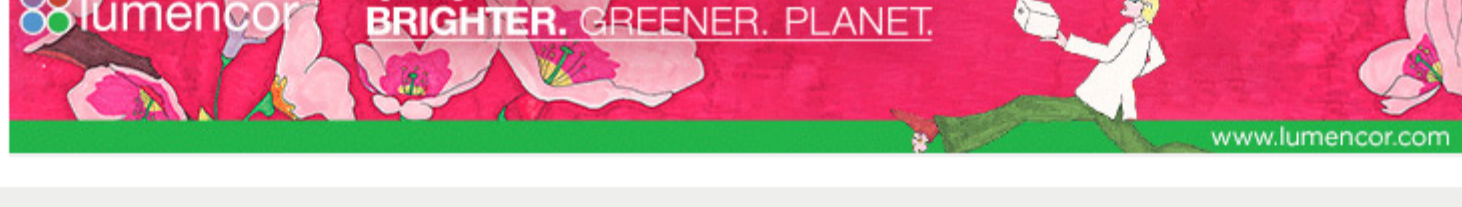
BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

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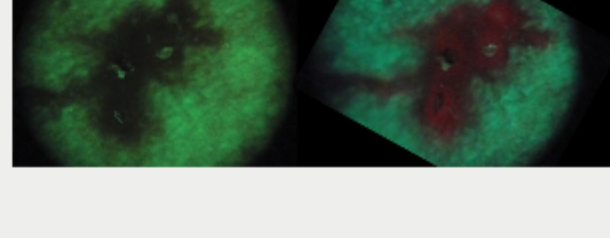


Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at Photonics.com/subscribe.



PDT, Customized Protocols Team Up for Enhanced Clinical Translation

Photodynamic therapy (PDT) is a robust treatment procedure that can be designated to treat some types of cancer, as well as infectious diseases and other tissue disorders. It involves the use of a photosensitizer — a chemical compound that is activated by light — which results in the production of reactive species (mainly singlet oxygen) and further induction of cell death.



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Advancements in Raman Spectroscopy Find Real-World Uses in the Life Sciences

Since its development in the mid-1920s, Raman spectroscopy has been used to study various low-frequency vibrational modes in molecular systems. In contrast to its counterpart — Fourier transform infrared spectroscopy, which probes asymmetric molecular stretches and changes in dipole moment through absorption of radiation — Raman spectroscopy probes symmetrical stretches and changes in polarizability of a molecule via inelastic scattering of radiation.



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Wearable Sensors Challenge Traditional Medical Technology

From Apple to Fitbit to Garmin to Google, in the U.S. alone, dozens of companies are producing wearable sensors that record our movements as well as basic health information. Many of these devices rely on optical telemetry to read information about the body and transmit it to a smartphone via Bluetooth or Wi-Fi. While the growth of the smartphone market may be leveling off — in part because users are keeping their devices longer — the wrist and body are still prime, underexplored territory.



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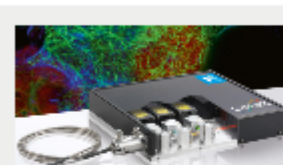
Featured Products



OBIS LX and Fiber Pigtailed Lasers

Coherent Inc.
Ideal for demanding applications ranging from flow cytometry, genomics, semiconductor inspection and particle measuring, the OBIS laser family, renowned for their high reliability and plug-and-play simplicity across the spectrum, now has three new wavelengths to help you obtain better images and data.

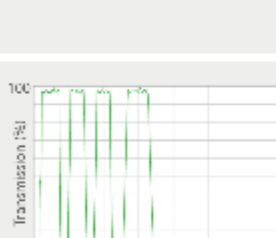
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C-FLEX Laser Combiner

HÜBNER Photonics
The C-Flex laser combiner from HÜBNER Photonics, the youngest division of HÜBNER GmbH & Co. KG, is a compact and flexible laser combiner. The C-FLEX is available with up to 6 wavelengths from a selection of 17 wavelengths.

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1P/2P Super-Res TIRF Dichroic

IDEX Health & Science - Semrock Optical Filters
As multiphoton microscopy has increasingly become the norm within the microscopy community, the need to combine multiphoton and single-photon excitation has risen as a necessity for many emerging protocols. Effortlessly switch between confocal and multiphoton microscopy with Semrock's newest 1P/2P super-resolution /...

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HyperFine Brillouin Spectrometer

LightMachinery Inc.

The great challenge with Brillouin spectroscopy is that the scattered signal from the unshifted wavelength of the laser can overwhelm the small Brillouin shifted return signal. LightMachinery has combined its leading-edge HyperFine spectrometer with a very narrow band tunable filter to suppress the bright unshifted laser frequency.

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Cleared Tissue Objective

Applied Scientific Instrumentation Inc.

The Cleared Tissue Objective is an immersion objective lens specifically designed for light sheet microscopy of cleared tissue samples (ct). The objective can be used with any ASI Light Sheet Microscopy configuration, enabling isotropic resolution without manipulating the sample. The 0.4 N.A. multi-immersion objective is designed for dipping media RI ranging from 1.33 to 1.56, >1 mm field of view,...

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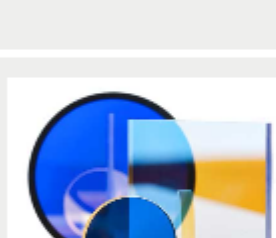


NEW pE-4000 with Enhanced Intensity

CoolLED Ltd.

The CoolLED pE-4000 now benefits from our award winning sustainable Green technology. This provides enhanced intensity where it matters for imaging and dramatically reduces the power consumption. Every pE-4000 boasts 16 selectable LED sources arranged conveniently in 4 channels, using our patented wavelength grouping concept.

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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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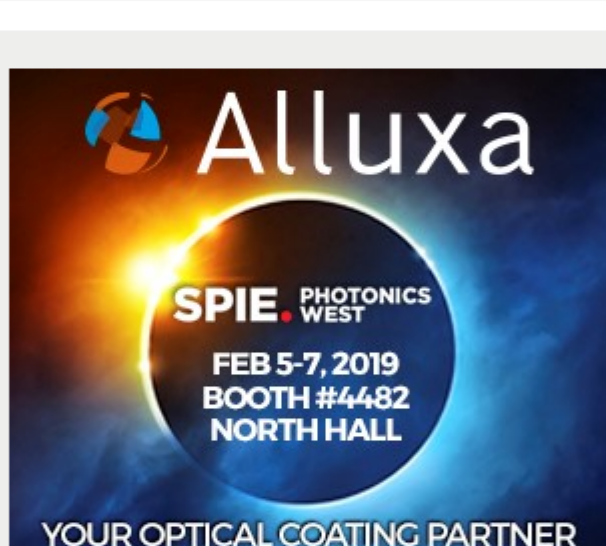
It Just Keeps Getting Better...

Lumencor Inc.

Lumencor's new SOLA SE nIR Light Engine with added Cy7 excitation.

- Breadth: UV + visible + nIR light: 350–760 nm
- Brightness: ~ 4.0 W optical output
- Control: Light on/off and graduated intensities
- Ease: No maintenance, no consumables, mercury-free

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CLEARED TISSUE OBJECTIVE

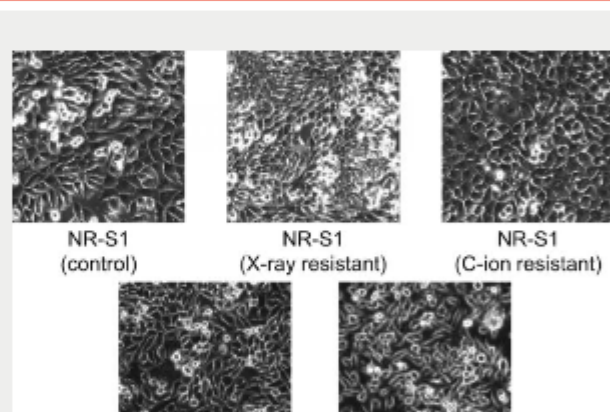
- Immersion objective lens specially designed for light sheet microscopy of cleared tissue sample
- Used with any ASI Light Sheet Microscopy configurations
- Enables isotropic sub-micron resolution without manipulating the sample
- Offers sub-micron resolution in X, Y, and Z when used in multi-view system
- Permits imaging more than 5 mm deep into flat samples, or up to 12 mm into spherical samples
- Nikon style form factor M25 threads, 40 mm OD, 61.6 mm parfocal length, available for use with other systems

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In Case You Missed It

AI-Based System Uses Microscopic Images to Identify Cancer Cell Types

A system based on a convolutional neural network (CNN), developed at Osaka University, has shown that it is able to automatically distinguish between different types of cancer cells.



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Using Light to Stop Itch Could Provide Relief From Skin Diseases

Scientists at the Phototoxic Molecular Biology Laboratory in Rome used light to stop itch in mice. They used NIR light to activate a phototoxic agent that selectively targets itch-sensing cells, which are located in the upper surface of the skin.

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Fraunhofer Institute, OtoNexus to Tackle Middle Ear Infection

The Fraunhofer Institute for Photonic Microsystems and OtoNexus Medical Technologies have partnered to employ microelectromechanical systems (MEMS) for middle ear infections.

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Meet the Editors

Talk directly with our editors about trends in the industry or becoming a contributor.

BiOS	Photonics West
Sun., Feb. 3rd	Wed., Feb. 6th
3:00 p.m.	3:00 p.m.
Booth 8444	Booth 444 & 445

Webinars

Emergence of Freeform Optics in Imaging Systems: A Leap Forward

Wed, Feb 27, 2019 1:00 PM - 2:00 PM EST

This webinar will provide an overview of freeform optics. Following a brief introduction, the presenter will discuss the historical context and applications for freeform optics. She will then present mathematical descriptions and the latest methods of optical design. As time allows, she will discuss some of the primary fabrication techniques and provide a short update on freeform metrology. This webinar is sponsored by Greenlight Optics.

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Coming in February...

Features

Lasers for Revascularization, Multiphoton Imaging, OCT, Spectroscopic Photoacoustics

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