

# BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

PHOTONICS MEDIA [photonics.com](http://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](http://Photonics.com/subscribe).

## ct-dSPIM

Dual Selective Plane Illumination Microscopy for Cleared Tissue



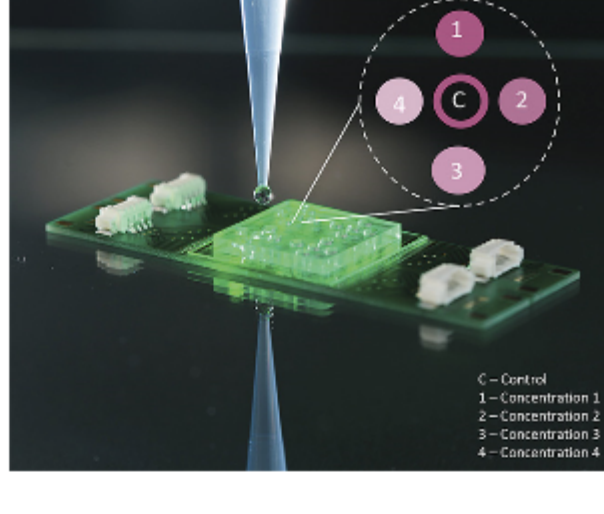
Visit us at **NEUROSCIENCE 2022** • Nov 12-16, San Francisco Booth #1812

Allows for dual views of large samples such as cleared tissue



### Raman Spectroscopic Method Diagnoses Infection at the Point of Care

Millions of people worldwide die from infectious diseases each year, and the spread of these diseases poses a real threat to the survival of public health systems. How quickly health care institutions can be overburdened when an infection rapidly spreads was once again made clear during the current pandemic triggered by the SARS-CoV-2 virus. In addition, the sharp increase in the number of multidrug-resistant pathogens often makes it difficult to effectively treat patients with pharmaceuticals. Noninvasive optical technologies such as Raman spectroscopy could hold the key to quick diagnoses and tailored patient treatment, helping to stop the spread of contagious diseases.



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### Expanding the Range: Wearables Enable the Next Level of Mobile Health Data Monitoring

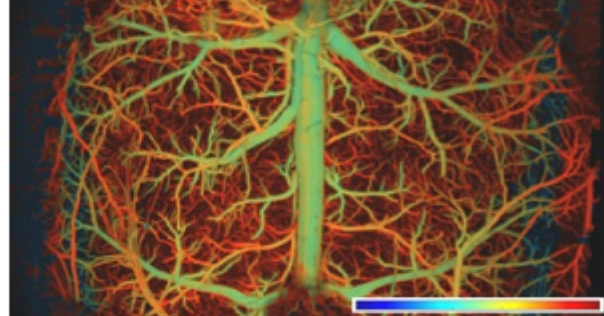
The next generation of wearable devices will no longer be created only for the fitness-conscious to monitor their daily steps or heart rate on a smartwatch. Increasingly sophisticated photonic components such as LED arrays and specialized lasers, as well as a gamut of sensors and detectors contained within mobile equipment attached to the body, will be able to monitor spectral data within both the visible and infrared ranges.



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### Photoacoustic System Enables Real-Time Neurovascular Imaging

A photoacoustic imaging tool accommodates the need for speed and comprehensive detail in neurovascular imaging. The imaging modality enables an approach to visualize whole-brain hemodynamics and oxygenation in real time. It also tracks fast pathophysiological activities at the micro-vessel level. The approach breaks speed and resolution barriers in brain imaging technologies, and could lead to insights into stroke, dementia, and acute brain injury.



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## :: Featured Products & Services



### Keylight™ OEM Microscopy Light Source

**Phoseon Technology Inc.**  
KeyLight™ illumination sources for fluorescence microscopy are the perfect solution to integrate into your equipment. Phoseon's proprietary LED solutions offer intense, broad-spectrum wavelengths for various colors from UV through visible into the infrared.

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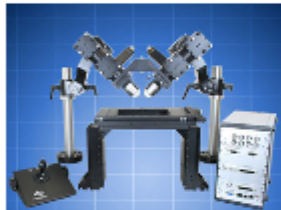
### Lambda 721 - Optical Beam Combining System

**Sutter Instrument Company**

The Lambda 721 was designed to keep the size of the beam combiner small and the optical path short and efficient. Thin-film bandpass filters, such as Semrock's STR, reflect greater than 90% of out-of-band light.

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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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### ZIVA Light Engine: Bright, Stable, Fiber Lasers

**Lumencor Inc.**

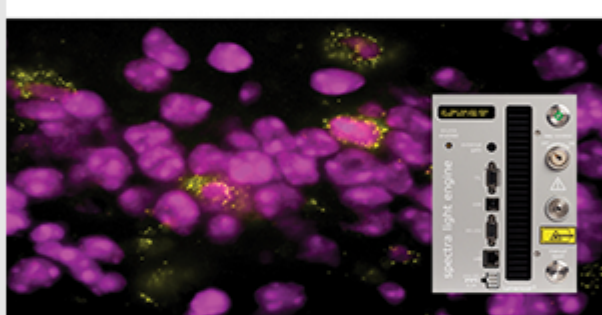
Lumencor's ZIVA Light Engine delivers bright, stable, robust illumination with seven lasers and high-end electronics. Narrow bore fibers (≤200 μm diameter) generate ultra-high radiance from a compact, pre-aligned, bench top device. Super resolution microscopy techniques are well supported.

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### Lumencor SPECTRA Light Engine

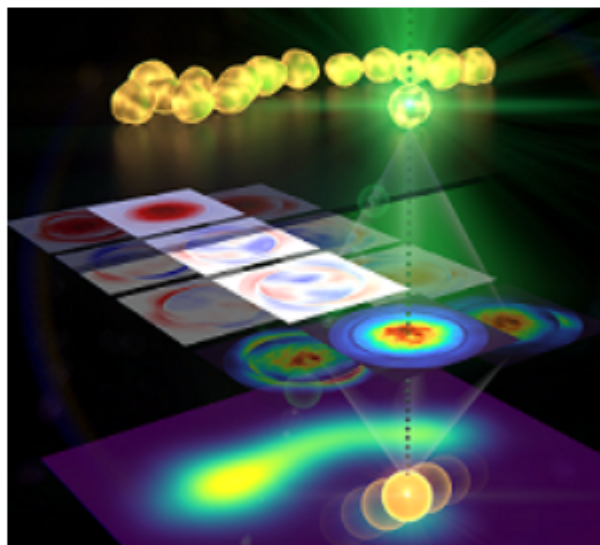
Bright, Multi-Color, Solid-State Illumination



## :: In Case You Missed It

### Noninvasive Imaging Method Measures Below the Diffraction Limit

A label-free microscopy technique developed by researchers at the University of Graz enables noninvasive, sub-diffraction-limit imaging of nanostructures. The all-linear, optical far-field measurement and imaging technique measures the position and size of nanoparticles with nanometer precision, even when the particles are adjacent.



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### Safe, Ingestible Fluorescent Silk Tags Authenticate Medications

To help block the flow of counterfeit medications, researchers at Purdue University and the National Institute of Agricultural Sciences in South Korea developed edible fluorescent tags that can be coded and added to pills or liquid medicine. Each tag is made from photoluminescent natural biopolymers and contains an imperceptible matrix code of the diffraction about the pharmaceutical. The code can be read with a smartphone app.

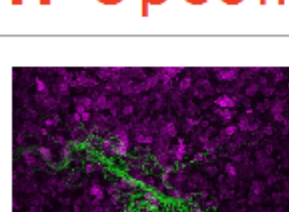
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### Microfluidics Device 3D-Printing Innovates Biomedical Fabrication

Researchers at the University of Southern California developed a printing technique that could provide the precision required to successfully 3D-print microfluidic channels on chips at a scale not previously seen. The technique is called in situ transfer vat photopolymerization.

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## :: Upcoming Webinars



### Sub-Cellular Biology at Tissue Scales with Cleared Tissue Axially Scanned Light-Sheet Microscopy

Wed, Aug 17, 2022 1:00 PM - 2:00 PM EDT

Large-scale interdisciplinary efforts have worked to comprehensively catalog cellular architectures in health and disease. Kevin Dean Ph.D. shares on the scalable imaging platform, Cleared-Tissue Axially Swept Light-Sheet Microscopy (CT-ASLM), that helps further this research. The CT-ASLM leverages high-speed, aberration-free, remote focusing to achieve an isotropic resolution of approximately 300 nm-scale subcellular imaging with an unparalleled optical sectioning capacity and large field of view. The platform provides global tissue architectures as well as quantitative detailed morphological and biochemical intelligents of the individual cells that compose tissues in health and in disease. Sponsored by Power Biotechnology, Intelligent Imaging Innovations Inc., and Applied Scientific Instrumentation, Inc.

[Register Now](#)

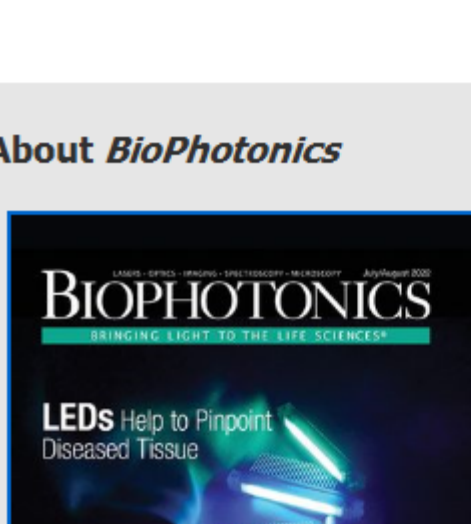
## :: Next Issue:

### Features

Multiphoton Microscopy, Laser Scanning & Diagnostics, Optogenetics, and OCT System Design.

**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](mailto:Doug.Farmer@Photonics.com), or use our online submission form [www.photonics.com/submitfeature.aspx](http://www.photonics.com/submitfeature.aspx).

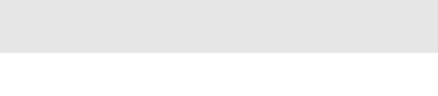
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