

# BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

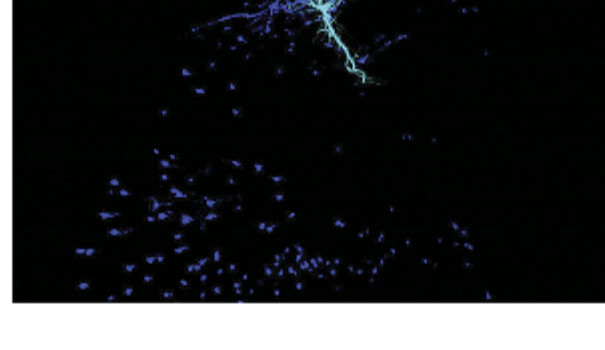
www.BioPhotonics.com

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](https://www.photonics.com/subscribe).



## Acousto-Optic Components Overcome Limitations in Confocal Microscopy

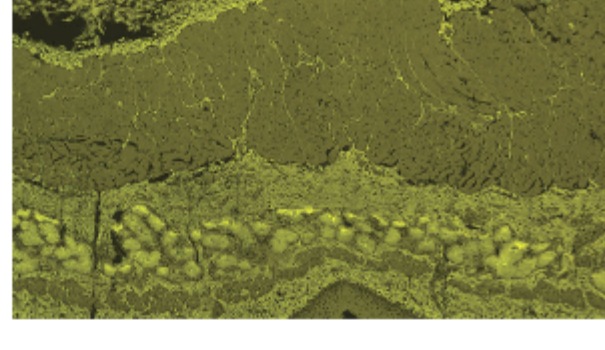
Confocal and multiphoton microscopy are commonly used to provide 3D-resolved images of in vitro or in vivo tissue samples without physical sectioning. But there are also inherent trade-offs in the use of these techniques when it comes to imaging depth, resolution, and speed. Recent developments in the use of acousto-optic and other photonic components integrated into a microscope are beginning to address these limitations in capability, opening up new opportunities in life science research.



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## Top Hat Illumination Provides Even Light Distribution Across Samples

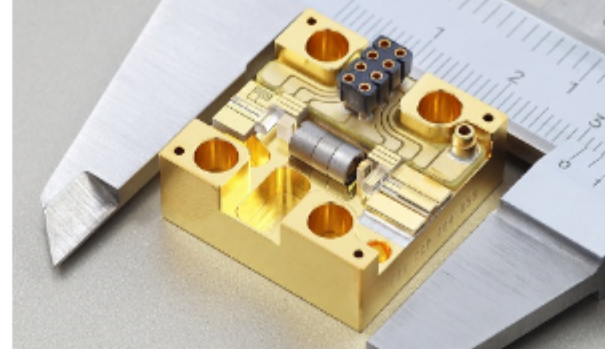
Two common illumination techniques used in microscopy are known as critical illumination and Köhler illumination, and each has advantages and disadvantages. Other lighting techniques are also available for a variety of biophotonics applications. A new lighting method that uses lenses with LEDs to produce flat, top hat illumination has emerged, yielding even distribution of illumination across any plane of interest. This approach greatly benefits life scientists who examine dynamic and intricate samples.



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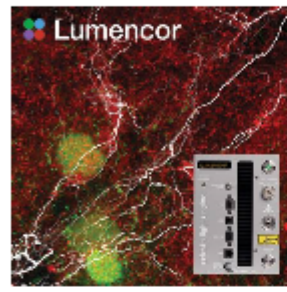
## Pump Laser Modules Show Promise for Ophthalmologic Treatments

Researchers at the Berlin-based Ferdinand-Braun-Institut (FBH) developed a pump laser module for ophthalmologic treatments. The module offers a cost-effective pump source for laser systems that are used to treat retinal detachments. The miniaturized module can be flexibly adjusted to provide the optimal wavelength for its intended application. The semiconductor-based, miniaturized laser module could provide a reliable, efficient way to provide laser surgery that is targeted to the condition being treated and could reduce the costs of ophthalmologic laser surgery.



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## Featured Products & Services

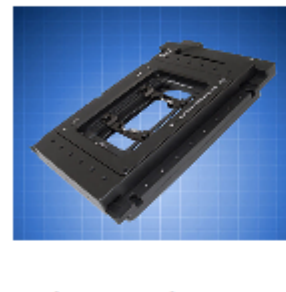


### CELESTA Light Engine

**Lumencor Inc.**  
CELESTA Light Engine houses seven lasers in a turnkey illuminator for fluorescence confocal spinning disk microscopy and spatially resolved transcriptomics. 1000 mW/color from the end of an optical fiber is powerful, intense, quiet, reproducible and consistent. High-end imaging and OEM instrumentation are well supported. Ask about customization.

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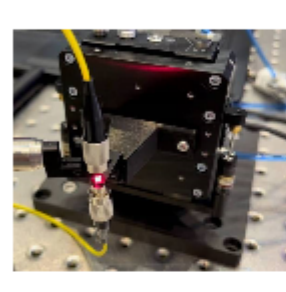


### TracePro 2023 Released!

**Lambda Research Corporation**  
TracePro 2023 by Lambda Research Corporation is a comprehensive software with new features for illumination and optical design, including CAD and lens design importers. TracePro offers tools for designing medical devices, automotive lighting, illumination, display backlights, and more.

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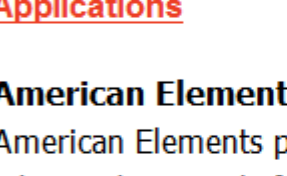


### Fast XYZ Photonics Aligner

**PI (Physik Instrumente) LP, Motion Control, Air Bearings, Piezo Mechanics**  
This A-142-based XYZ photonics aligner can reduce alignment times by up to 99%. Its high-performance motion controller comes with embedded advanced alignment algorithms. Featuring zero-wear air bearings and direct drive motors, the system is well suited for 24/7 operation.

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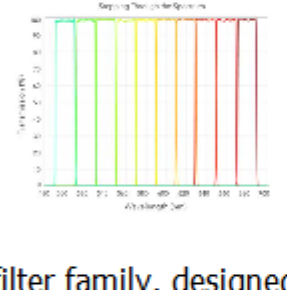


### KeyLight™ by Phoseon Technology

**Phoseon Technology Inc.**  
KeyLight™ is a compact light source that supports 3-7 channel fluorescence microscopy systems. It brilliantly illuminates your results by delivering intense, broad-spectrum UV and visible wavelengths for a wide variety of colors between 340 nm and 760 nm.

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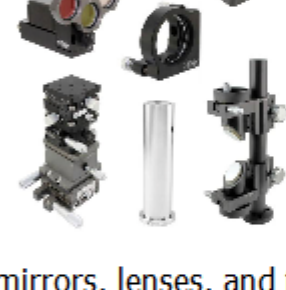
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filter family, designed specifically for flow cytometry, provides a value approach to optical performance for your application. We understand each flow cytometry instrument is different, partner with us on custom optical filters to meet your specific application needs.

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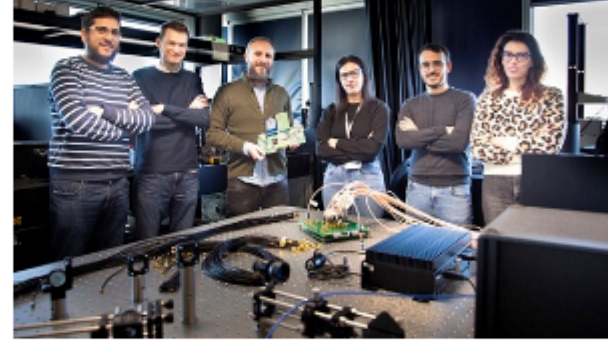
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## In Case You Missed It

### Time-Tagging Captures Cellular Activity with Single-Photon Microscopy

BrightEyes-TTM, an open-source time-tagging module (TTM) developed at the Italian Institute of Technology (IIT), enables scientists to observe the dynamic processes of molecules inside living cells over time, at a thousandth of a millisecond scale. BrightEyes-TTM can be used to study the variations that occur at the cellular level when a healthy cell becomes diseased.



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### Isorg Collaborates with Precise Biometrics on Turnkey Fingerprint Sensor

Isorg, a developer of organic photodetectors (OPD) and large-area image sensors, has collaborated with Precise Biometrics, a provider of fingerprint verification software, on a new fingerprint-on-display solution for the mobile phone industry.

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### STOC Tomography Advances Ophthalmological Imaging

Spatio-Temporal Optical Coherence Tomography (STOC-T), an ophthalmological imaging technique originally invented to capture optoretinograms, has been enhanced by its developers at the International Centre for Translational Eye Research (ICTER) to enable views of the retina and choroid at different depths.

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## Upcoming Webinars

**Technical Advancements in Line-Field Confocal Optical Coherence Tomography for Improving the Management of Skin Cancer**  
Tue, Feb 28, 2023 10:00 AM - 11:00 AM EST

Line-field confocal optical coherence tomography (LC-OCT) is an imaging technique based on a combination of reflectance confocal microscopy and time-domain OCT. It can generate cellular-resolution vertical images, horizontal cross-sectional images, and three-dimensional (3D) images, yielding the possibility for optical biopsies of skin tissue in vivo and in real time. Jonas Ogien, Ph.D., of DAMAE Medical introduces the basic principles of LC-OCT and shares an overview of new technical advancements based on the technique.

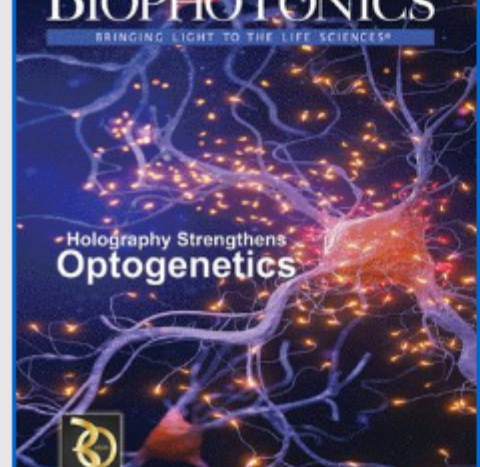
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**Features**  
Photoacoustic Microscopy, Raman Spectroscopy, Dynamic Light Scattering & Alzheimer's, Aptamer Molecular Photonic Beacons

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