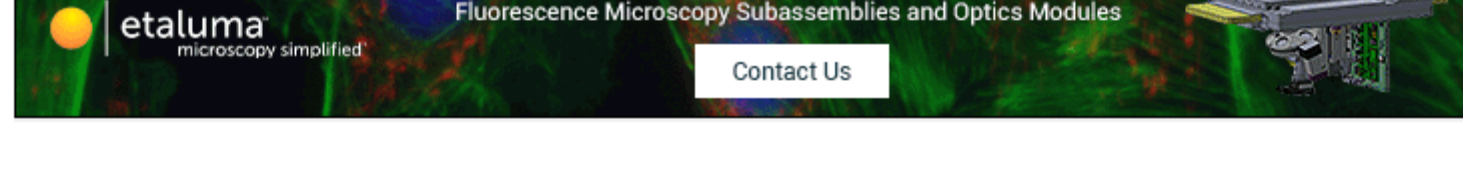


# BIOPHOTONICS

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



**Commercial Ready Imaging with Automation**  
Fluorescence Microscopy Subassemblies and Optics Modules  
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## Optical Fiber Provides Real-Time Diagnostic Guidance

The biomedical community recognized the advantages of optical fibers long ago, accepting them even before their adoption for long-haul telecommunications. Early research on the light-guiding properties of fibers in the late 1920s was aimed at applications in medical imaging. The first clad optical fiber was drawn on December 8, 1956, by Larry Curtis, a graduate student under Basil Hirschowitz at the University of Michigan. The technology was used in a multifiber bundle for a fiber endoscope, which Hirschowitz first tested on himself.

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## Versatility in OCT System Design Opens the Door to New Clinical Applications

Optical coherence tomography (OCT), a noninvasive imaging technology, is a standard diagnostic tool used in the field of ophthalmology. With the advent of new compact form factors for the modality, as well as the assistance of artificial intelligence and other software innovations, OCT could be put to use in other clinical settings, such as optometry and family medicine. These and other specialties are taking notice of OCT's capacity to provide high-resolution cross-sectional images without the adverse effects of radiation or surgical incisions for the examination of tissue. Thanks to reconfigured and miniaturized components, as well as user-friendly interfaces, mobile clinics could reap the benefits of utilizing an accessible, easy-to-use OCT system.

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## The BioPhotonics Conference Places Biomedical Imaging and Medical Laser Innovations at the Fore

Photonics Media's second annual online BioPhotonics Conference, highlighting the latest advancements in optical biomedical and life sciences technology, will run Oct. 25-27. Attendees can expect an expansive lineup of presentations detailing the cutting-edge research and innovative technologies that are leading to improved diagnostics, treatments, and heightened understanding of the biophotonics field.

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## .: Featured Products & Services

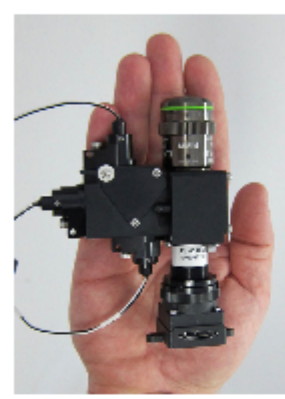


### Alluxa Ultra Series Filters

**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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### Compact Fluorescence Imaging Modules for your Instrumentation Project

**Etaluma Inc.**  
Our powerful commercial-ready fluorescence microscope modules use modern LED excitation, multi-bandpass filters, and CMOS cameras to solve your custom imaging needs. We provide easy integration in the minimum space for analytical and clinical instrumentation development.

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### American Elements Advanced Materials and Chemicals for Optical Applications

#### American Elements

American Elements produces a wide range of advanced materials for optical, laser, electronics, and other applications. Products are engineered to meet rigorous quality standards and produced from ultra-high purity materials including sputtering targets, chemicals, pure metals, and nanomaterials.

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### XYZ Nanopositioners for Microscopy

**Mad City Labs Inc.**  
The Nano-LPS and Nano-LPQ are low profile 3-axis piezo nanopositioning systems with sub-nanometer precision under closed loop control. They use exclusive PicoQ sensors, ensuring high stability and low noise performance, making them ideal for single molecule and super resolution microscopy.

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### SL160 Slide Loader

**Prior Scientific Inc.**  
The SL160 automated microscope slide loader combines reliability and high capacity with easy set up to provide automated slide scanning to a wide variety of existing upright microscopes or with the use of Prior's OpenStand microscope.

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### 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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### Rapid Automated Modular Microscope

**Applied Scientific Instrumentation Inc.**  
Rapid Automated Modular Microscope is a fully functional compact automated imaging platform mounted on the frame with mounting holes and support points. The frame supports the assembly and the stage in a manner that ensures coupling between sample and objective.

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### HYPERION II - FPA/FTIR/IR Laser Imaging Microscope

**Bruker Optics Inc.**  
Bruker's IR microscope HYPERION has always been synonymous with sensitivity and versatility. For more than 20 years, it has pioneered FT-IR imaging and left its mark in countless high-profile publications. With the new HYPERION II Laser Imaging Microscope, we remain true to our reputation as an innovation leader.

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### Product Development through Manufacturing and Assembly

**Optikos Corporation**  
Optikos brings 40 years of engineering expertise to serve the development needs of a diverse portfolio of life science clients — from design through manufacturing and assembly in our extensive clean facilities.

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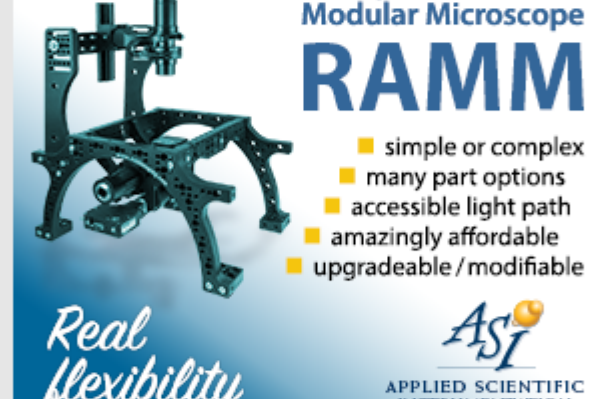
### LIGHT: Introduction to Optics and Photonics, Second Edition

**Photonics Media**  
Offering a comprehensive treatment of the subject as well as key applications, and employing minimal math,

LIGHT: Introduction to Optics and Photonics was written with readers in mind. This textbook is for beginning students of optics and photonics in high school, community college, and university STEM courses as well as for teachers and non-optics industry professionals looking for a basic understanding of the subject.

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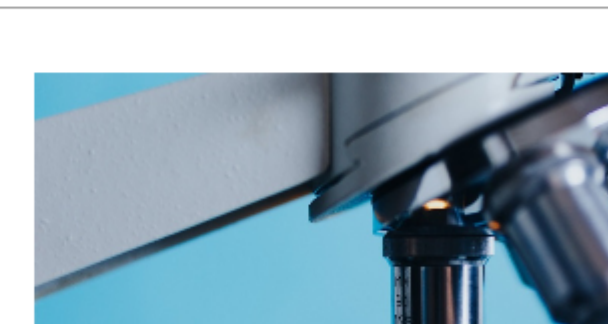


## .: In Case You Missed It

### Sensor-Integrated Flow Cytometry Shows Early Diagnosis Potential

A digital droplet microfluidic flow cytometry technique could enable earlier recognition of tumor development and progress, by aiding in the detection of multiple microRNAs (miRNAs) in single circulating tumor cells (CTCs). Tumor-microRNAs within CTCs are considered biomarkers for tumor growth.

[Read Article](#)



### Nanotechnology, Deep Learning Help Detect Pediatric Tuberculosis

A technique for diagnosing tuberculosis (TB) in children takes advantage of the optical properties of gold nanoparticles to detect the disease. The technique uses an artificial intelligence (AI) algorithm to enhance the sensitivity of the test, as well as low-magnification dark-field microscope (DFM) image analysis.

[Read Article](#)

### Microscopy Technique Enables In Vivo Vascular Imaging at Single-Cell Resolution

A two-photon fluorescence imaging method was able to image the flow of individual blood cells at 1000 2D frames and 1,000,000 line-scans per second in the brains of awake mice. The technique could help scientists better understand how energy is distributed and regulated in both the healthy and diseased brains.

[Read Article](#)

## .: Upcoming Webinars



### Harnessing Photons for Bond-Selective Imaging, Neuromodulation, and the Killing of Superbugs

Tue, Nov 1, 2022 10:00 AM - 11:00 AM EDT

Chemical microscopy utilizing fingerprint vibrational spectroscopic signals opens a new window to visualize the orchestra of chemical and biological structures inside living systems. Dr. Ji-Xin Cheng, professor at Boston University, and his research team have recently started to harness photons to modulate the behavior of cells, including the photoacoustic modulation of neurons at ultrahigh spatial precision and photolysis of intrinsic chromophores to eradicate drug-resistant bacteria.

[Register Now](#)

## .: Coming Next Issue...

### Features

Reflectance Confocal Microscopy, Scientific Cameras, Superresolution Microscopy, Dynamic Light Scattering and Alzheimer's, 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](mailto:Doug.Farmer@Photonics.com), or use our online submission form [www.photonics.com/submitfeature.aspx](https://www.photonics.com/submitfeature.aspx).

### About BioPhotonics



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