


BioPhotonics

Bringing Light to the Life Sciences


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 BioPhotonics.com/subscribe.

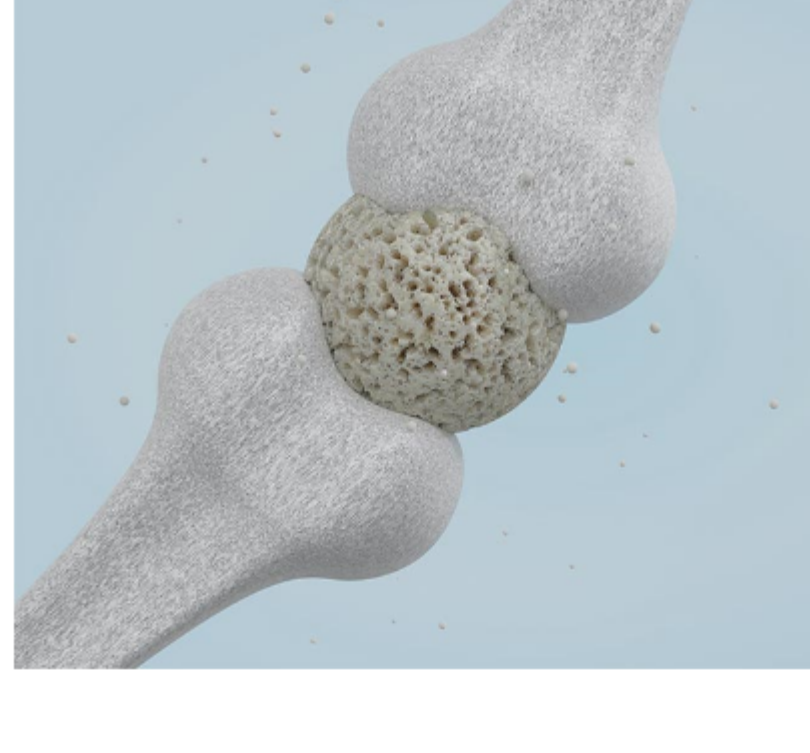


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Melles Griot®
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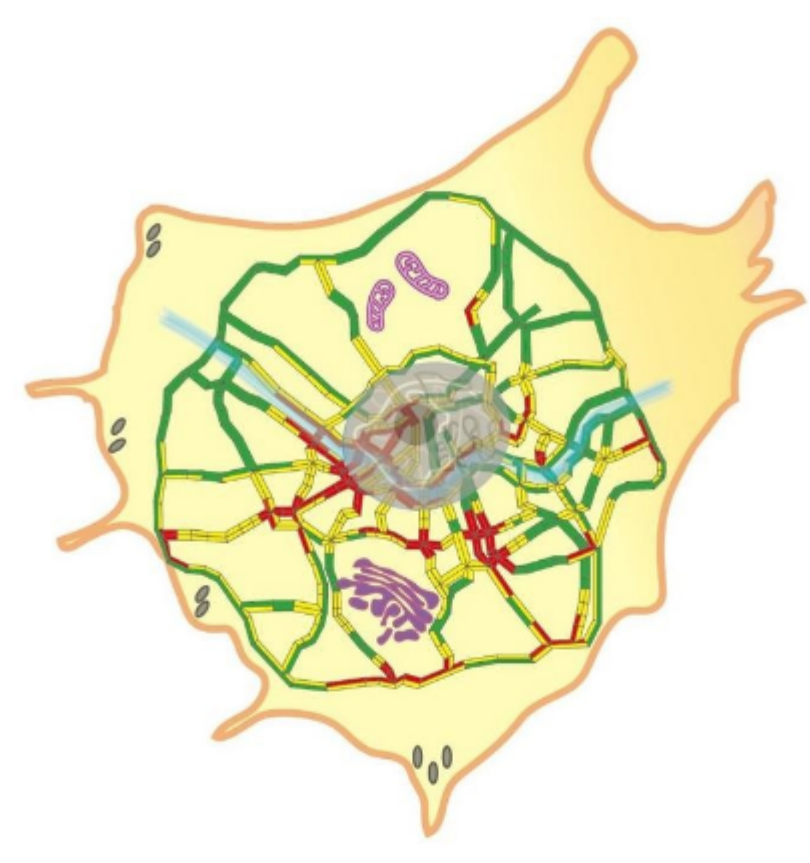
Optical Filters Narrow the Focus of Raman Biomedical Analysis

While Raman spectroscopy has long been useful in pharmaceutical analysis and the identification of hazardous materials, the technology's usefulness in biomedicine has also been expanding due to less bulky, miniaturized instrumentation. Its inherent capability to distinguish molecular composition is being integrated into specialized diagnostics, in applications such as endoscopy, cancer detection, bone density, and additional in vivo and in vitro biomedical systems. [Read Article](#)



Time-Domain Functional NIRS Traces Map of Brain Activity

Functional near-infrared spectroscopy (fNIRS) is a noninvasive optical investigative technique in neurology to map localized brain activity, during which the brain signal is derived from measured changes in the oxidation levels of hemoglobin and the scattering of light from brain tissue. The basic setup of an fNIRS system contains at least one pair of light sources to inject light into the brain and a photodetector to detect the emerging light. The point on the skull where the light is injected is at a distance (ρ) from the point where the emerging light is detected. [Read Article](#)



Label-Free Imaging Shows Dynamics of Intracellular Cargo Transport

Researchers at the Institute for Basic Science Center for Molecular Spectroscopy and Dynamics, in collaboration with Korea University, developed a label-free, cargo-tracing microscopy technique to address the challenges of photobleaching and the visual isolation of cellular features associated with fluorescence microscopy. [Read Article](#)

OPTICA

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Optica Biophotonics Congress: Biomedical Optics

07 - 10 April 2024
Fort Lauderdale, Florida, USA



SINGLE-OBJECTIVE LIGHT SHEET

blazing fast 3D fluorescence imaging with sub-cellular resolution and standard biological sample mounting

Featured Products & Services

[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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[NAN™ Open-Design Microscope](#)

Sutter Instrument Company
The Sutter Instrument NAN™ is a focusing-nosepiece microscope designed for electrophysiology and material science. The microscope frame has been reimaged around Sutter manipulator gantry stands, which allows for many possible configurations to match bespoke application needs. The microscope can be configured with a single filter cube or a complete Olympus epi-illuminator, binocular or trinocular head, various transmitted light LEDs, and with OCC or IR-DIC.

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[Custom Microscopes and Optical Systems](#)

Prior Scientific Inc.
Prior Scientific has developed OpenStand to offer a working platform to build OEM solutions and one-off customizations with excellent value for money and reduced development time. Whether developing new automation techniques and software or developing new imaging methods, you can quickly find that you need a microscope system tailored to your application.

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[NEW Melles Griot® XPLAN™ CCG Lens Series](#)

IDEX Health & Science - Melles Griot, Light Sources
The new Melles Griot XPLAN™ CCG Lens Series from IDEX Health & Science enables the rapid development of breadboard instruments for NGS, Proteomics, and Spatial Biology applications. Access superior-quality optics with off-the-shelf lead time.

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[Introducing ThermoCube II](#)

Solid State Cooling Systems
Solid State Cooling Systems is pleased to introduce the next generation of our legendary ThermoCube thermoelectric recirculating chiller. With no compressor and harmful refrigerants, ThermoCube II offers precise (± 0.05 °C) temperature control, long-life reliability, and a wide variety of configuration options.

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[OEM-Ready Microscope Subsystems](#)

Zaber Technologies Inc.
For OEMs and system integrators, the Nucleus™ Microscopy Platform provides a single platform of interchangeable hardware modules & software tools for prototyping and production. Capture clear, actionable images at the quality and speed your customers demand. For details, visit www.zaber.com/nucleus.

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[Custom Optical Assemblies](#)

Rocky Mountain Instrument Co. (RMI)
Custom optical assemblies for your life science applications including microscopy, spectroscopy, and biotech imaging. Proven technologies in fast prototyping, design consultation, and vertically integrated manufacturing.

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[Multi-Immersion Objectives](#)

Applied Scientific Instrumentation Inc.
ASI and Special Optics have developed two dipping objective lenses designed for light sheet microscopy of cleared tissue samples, including ASI's ct-dSPIM. These objectives work in any refractive index media without a correction collar because of a unique curved first surface.

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More News

[SPIE Names 2024 Prism Award Winners](#)

SPIE, the international society for optics and photonics, recognized the top innovations in new optics and photonics products at the 2024 Prism Awards held at Photonics West on Jan. 31. The gala event marked the Prism Awards' 16th anniversary. [Read Article](#)

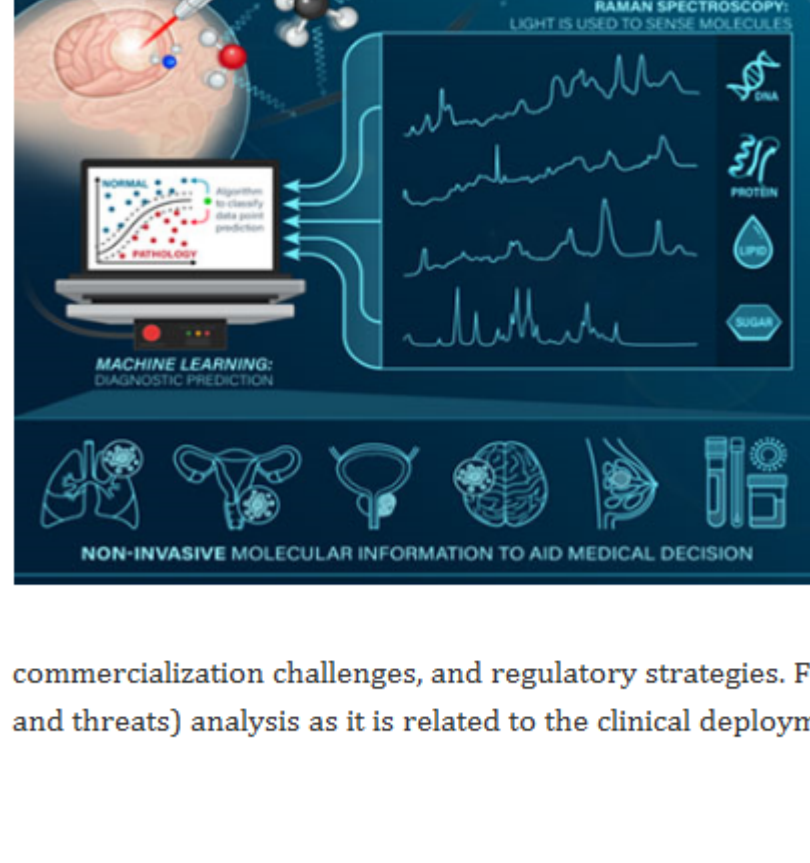
[Optical-Plasmonic SERS Platform Clocks Molecular Systems](#)

An optical plasmonic tweezer-controlled surface-enhanced Raman spectroscopy developed by Hong Kong University of Science and Technology enables efficient, high-throughput, single-molecule characterization in solution. It has the potential to uncover hidden molecular mechanisms that can affect the health of people living with type 2 diabetes. [Read Article](#)

[Retinal OCT and Genetics Identify Links Between Ocular and Systemic Health](#)

A study conducted by Mass Eye and Ear, the Broad Institute at MIT, and Harvard Medical School has demonstrated links between the thinning of different retinal layers and an increased risk of disease. The work used OCT retinal images and genetic data from thousands of UK Biobank participants and could serve to advance the use of OCT to predict ocular disease and inspire further research on disease prediction beyond the eye. [Read Article](#)

Latest Webinars



PLATFORM TECHNOLOGY
MICROSCOPIC INFORMATION
MACROSCOPIC INFORMATION
RAMAN SPECTROSCOPY: LIGHT IS USED TO SENSE MOLECULES
MACHINE LEARNING: ENHANCED PREDICTIONS
NON-INVASIVE MOLECULAR INFORMATION TO AID MEDICAL DECISION

What is the Role of Vibrational Spectroscopy in Surgery and Diagnostics?

Wed, Mar 13, 2024 1:00 PM - 2:00 PM EDT
Vibrational spectroscopy techniques are used for a wide range of materials characterization applications that require detailed molecular fingerprinting and quantification of molecular species based on the detection of specific vibrational bonds. In this talk, Frederic Leblond describes how the integration of technologies that rely on spontaneous Raman spectroscopy signal detection can complement current medical practice for surgical guidance, in situ diagnostics, and disease detection in biofluids. He presents case studies in breast-conserving surgery, neurosurgical oncology, breast-conserving surgery, bronchoscopy, prostate cancer diagnostics, and orthopedic surgery. He also addresses aspects relating to clinical translation, commercialization challenges, and regulatory strategies. Finally, he presents a SWOT (strengths, weaknesses, opportunities, and threats) analysis as it is related to the clinical deployment of vibrational spectroscopy techniques.

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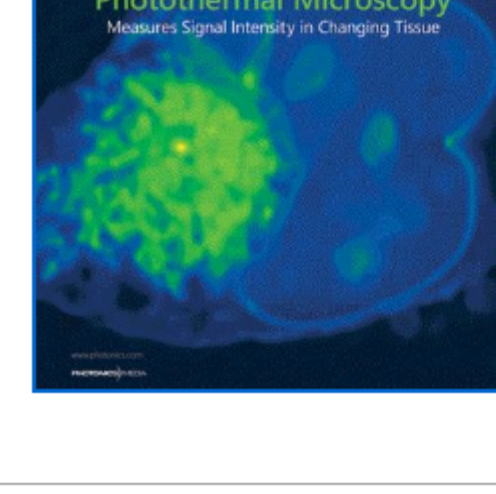
Next Issue

Features

Laser Speckle Imaging, Raman Spectroscopy, Confocal Microscopy, and Fiber-based Endoscopy

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.

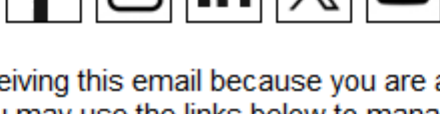
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