

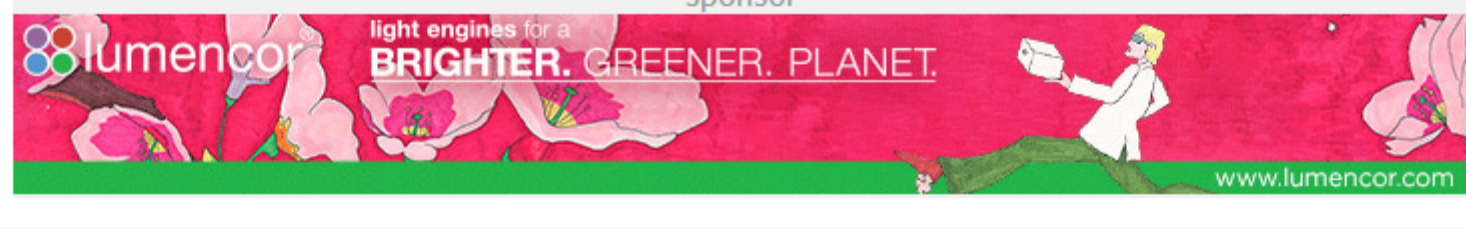
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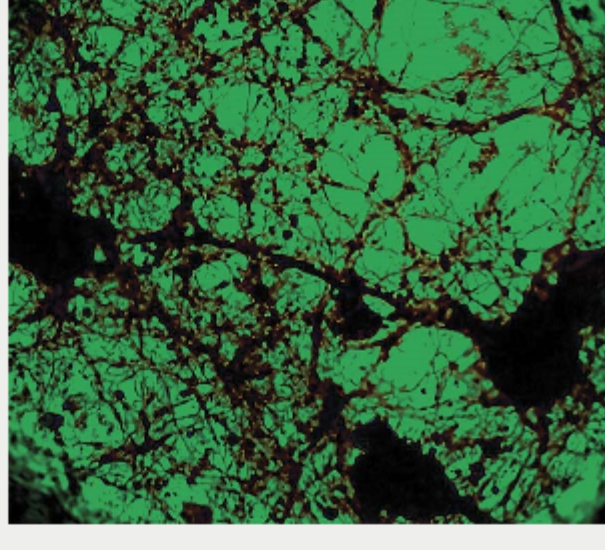


Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at Photonics.com/subscribe.



Coherent Diffraction Imaging Expands Researcher Tool Set

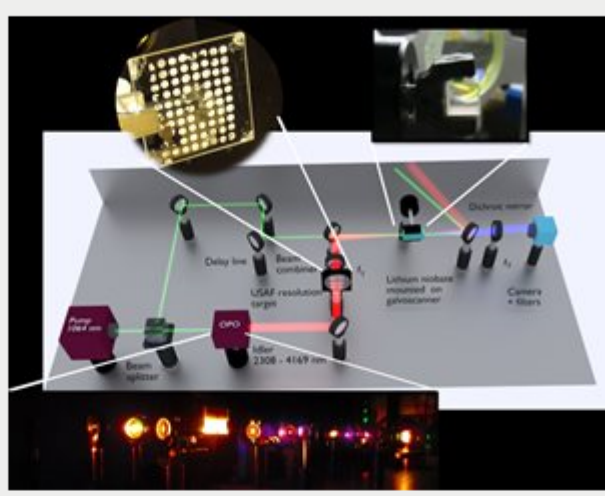
Both optical and x-ray microscopy are well-established tools, but nanoscale imaging with light in the intermediate range — specifically the extreme UV ($\lambda \sim 8$ to 80 nm) — has been neglected. This has been primarily because of a gap in available tools and techniques, so thus far the potential for progress has been relatively untapped. However, recent advancements in suitable lab-scale light sources, as well as in computational imaging approaches, such as lensless coherent diffraction imaging (CDI), now make it possible to measure structures and features at <15-nm resolution and with unique contrast sensitivity. These new sources and approaches also enable spectral and temporally resolved diffraction measurements that can elucidate even the fastest dynamics in materials.



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MIR Upconversion Imaging Could Speed Medical Diagnostics

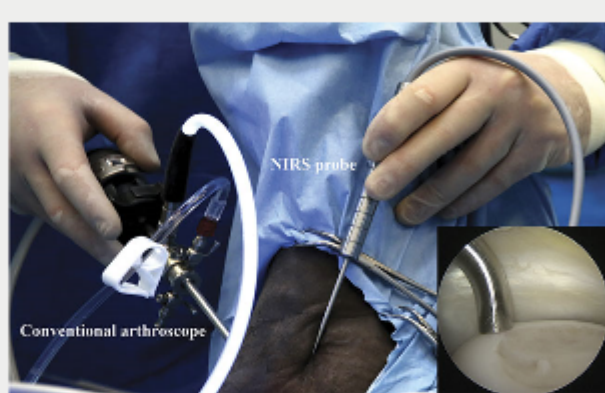
Researchers from multiple institutions collaborated to develop a way to translate information from the mid-infrared (MIR) region, where chemical signatures are most distinct, to the near-infrared (NIR), where existing camera technology is most sensitive. Their new, wide field-of-view system can capture MIR spectral images of fast events or dynamic processes that take place in a matter of milliseconds. The technology could be used to investigate the chemical signatures of cancer and other diseases in ways that would increase accuracy and speed diagnoses.



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NIRS Surpasses Conventional Diagnostics for Orthopedics

As the aging population continues to grow, the number of people suffering from musculoskeletal diseases, such as osteoarthritis (OA), is expected to drastically increase. The symptoms of OA are diverse and include pain, soreness, and stiffness of affected joints. These symptoms, however, may only begin to manifest in the later stages of the disease, at which point the most common treatment involves partial or total joint replacement.



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Featured Products



Multi-Immersion Objectives

Applied Scientific Instrumentation Inc.

ASI and Special Optics developed two objective lenses for light sheet imaging. Because of their unique curved first surface, both objectives work with all media regardless of refractive index — air, water, glycerol, oil, and cleared tissue media all work equally well.

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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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- Applications: Fluorescence microscopy among others, OEM customization upon request

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In Case You Missed It

Nanostructured Glass Is Based on Butterfly Wing

Glass for displays, tablets, laptops, smartphones, and solar cells needs to allow light to pass through, but could benefit from a surface that repels water, oil, and other liquids. Researchers from the University of Pittsburgh (Pitt) created a new type of glass that is clear across a range of wavelengths and angles as well as superomniphobic and antifogging. The design for the glass was inspired by the wings of the glasswing butterfly (Greta oto). Machine learning techniques were used to help streamline the development process.



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Optochemogenetics Tested for Neuronal Repair after Stroke

Researchers at Emory University School of Medicine have developed optochemogenetics, a combinatorial approach based on optogenetics and chemogenetics, to enable the selective, noninvasive stimulation of brain cells using light.

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Washable Electronic Textiles Can Activate LEDs and Detect Electrocardiogram Signals

A transistor fiber for use in wearable electronics has been developed by researchers at the Korea Institute of Science and Technology (KIST). The transistor, which has the characteristics of a textile, can be inserted into clothing and retain an adequate level of functionality even after multiple washings.

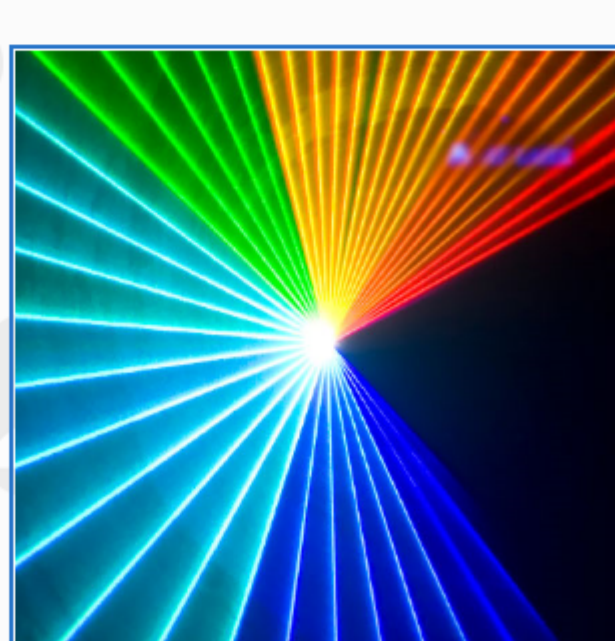
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Webinars

High-Power Diode Laser Solutions for Manufacturing and Scientific Applications

Wed, Oct 9, 2019 1:00 PM - 2:00 PM EDT

Diode lasers support a diverse field of applications, where the optimum diode laser solution can be quite specific for each application. In this webinar you will learn about several key applications and how high-power diode laser solutions are optimized for each application. Also, you will learn how innovations ranging from corrosion-resistant cooling schemes to novel beam-shaping optics enable diode laser manufacturers to continue to improve solutions that service these applications. Examples will be taken from a range of industries, including medical devices. This webinar is sponsored by RPMC Lasers Inc. and TOPTICA Photonics.

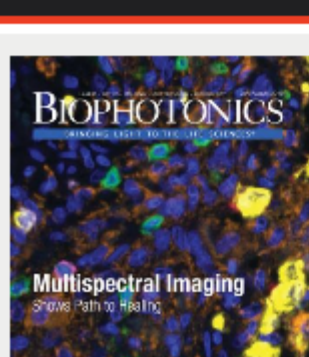


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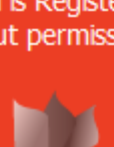
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