Wednesday, May 12, 2021

PHOTONICS spectra®

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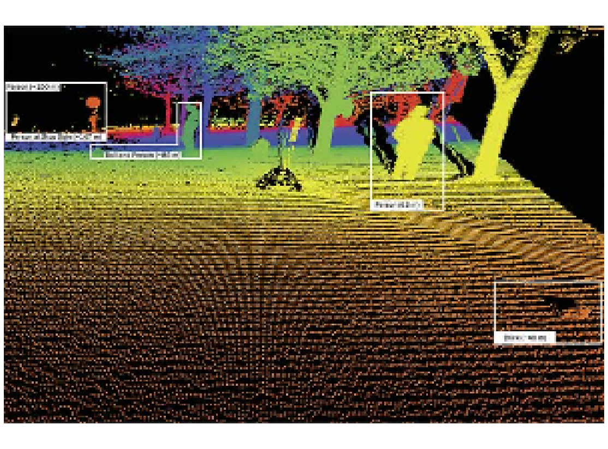
Monthly newsletter from the editors of Photonics Spectra, with features, popular topics, new products, and what's coming in the next issue. Manage your Photonics Media membership at Photonics.com/subscribe.

How Far Down the Road Is the Autonomous Vehicle?

Designers have learned how difficult it is to resolve those last couple of percentage points before any design meets the target specifications for a project. Autonomous vehicle (AV) technology is truly in the "last mile" of development, but like for many design projects, that mile can take the majority of the development time. In the case of autonomous vehicles, the last mile involves the challenges of capturing sufficient quality data, enabling the AV system to make good decisions, and resolving the corner cases — the problems or situations that occur outside of normal operating parameters.



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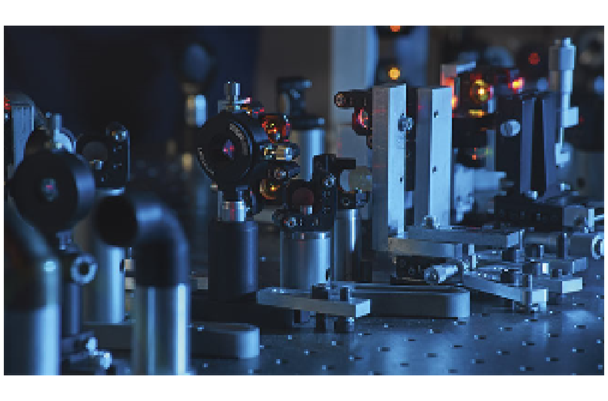
Ultrafast Lasers Are Quickly Catching Up with Industry Demand

With pulse lengths down to the picosecond realm and beyond, ultrashort-pulse lasers — often called ultrafast lasers — have been deployed as scientific research tools for decades. The fields of femtochemistry, spectroscopy, and multiphoton imaging, in particular, have benefited from the technology, which has since enabled new investigations in neuroscience and quantum mechanics. Now, however, ultrafast lasers are starting to expand beyond their traditional research niche.



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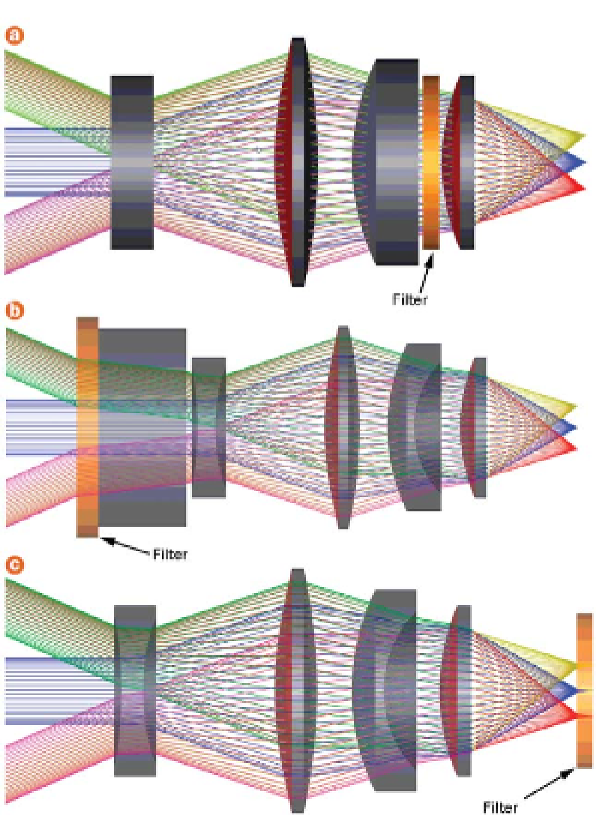
Managing Temperature-Based Performance Drift for Coatings

What happens when optical coatings get very cold? There should be little difference in a thin film's optical performance at room temperature test conditions versus its use conditions. But this is not always the case. Performance varies at different temperatures, and systems engineers, program managers, and other stakeholders must account for when and where these coating performance differences occur to realize ideal instrument performance.



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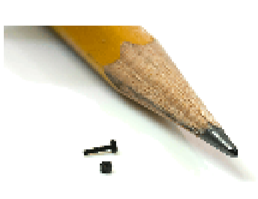

Micro-Precision 3D Printers

Boston Micro Fabrication - BMF

A 2021 Prism Awards winner, the microArch S240 is a micro-precision 3D printer capable of achieving resolution of 2 μm~50 μm and tolerance of +/- 5 μm~25 μm, thus providing mold-free, ultra-high-resolution fast prototyping and end part capability. The microArch S240 is the perfect choice for industrial...

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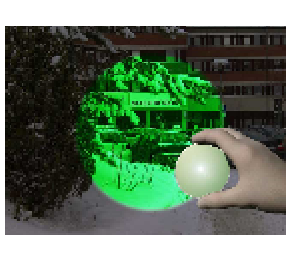

IR Filters for Thermal Imaging and Gas Detection

Spectrogon US

Spectrogon manufactures infrared filters and windows with high transmission, high rejection outside the passband, while maintaining excellent coating uniformity — for thermal imaging and gas detection applications such as cryogenically cooled IR detectors and for uncooled microbolometers.

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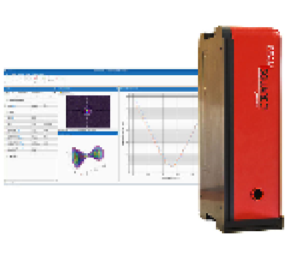

M2 for Long Focal Length Lenses

Ophir, Photonics

The BeamSquared® beam profiler is a compact, fully automated tool for measuring the propagation characteristics of CW and pulsed laser systems from UV to XNIR wavelengths. Its longer optical train and patented Ultracal™ calibration make BeamSquared the most accurate product on the market and it is ISO 11146...

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Automated Glass Components Processing

NYFORS Teknologi AB

The NYFORS SMARTSPLICER is a CO_2 laser glass-processing system designed for the production of high-power and sensitive photonic components. It offers contamination free end-capping, splicing, tapering, bundling, and many other glass-shaping processes. NYFORS provides automated high-precision solutions...

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RGA150 Motorized Rotation Stage

MKS/Newport

The RGA150 low-profile and large aperture rotary stage addresses the need for quick angle adjustments of wafers and vacuum chucks. Although specifically tailored to semiconductor applications, the RGA150 can also be utilized in other industrial applications, such as through hole imaging/inspection or laser processing,...

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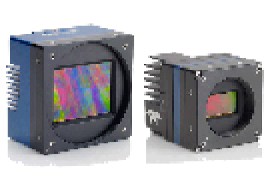

True High Performance

Teledyne DALSA, Machine Vision OEM Components

When you need true high performance imaging, turn to the Falcon4-CLHS. Using Teledyne Imaging's advanced CMOS architectures, the Falcon4-CLHS offers unique, unprecedented capabilities for large area, high resolution, high speed imaging. Models include 11.2M at 609 fps and 86M at 16 fps, both with a Camera Link HS...

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NRO DII R&D Funding

National Reconnaissance Office

The National Reconnaissance Office Director's Innovation Initiative (DII) Program funds cutting-edge scientific research in a high-risk, high-payoff environment to discover innovative concepts and creative ideas that transform overhead intelligence capabilities and systems for future national security intelligence...

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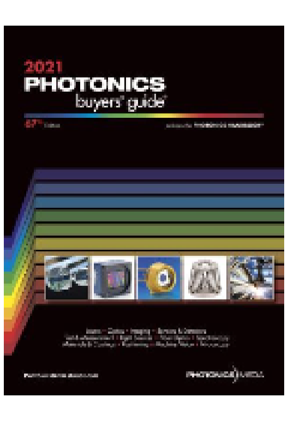

The 2021 Photonics Buyers' Guide

Photonics Media

If you buy products and services related to lasers, optics, imaging, sensors, detectors, test and measurement, light sources, fiber optics, spectroscopy, materials and coatings -- you need the Photonics Buyers' Guide. Our editors verify all 4000+ company listings annually, making it the most trusted, accurate and...

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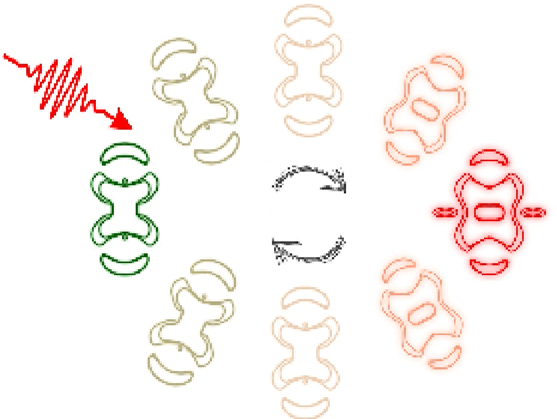
.: In Case You Missed It

Laser Pulses Trigger Ultrafast Material Property Shift

Researchers from the Fritz Haber Institute of the Max Planck Society and the Max Planck Institute for the Structure and Dynamics of Matter demonstrated the ability to use light to achieve a novel type of ultrafast switch. The efforts stem from the collaborators' pursuit of ever-increasing speed in electronics and computing technologies. Transistors that turn electrical currents on and off quickly are pillars of those technologies.



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Organic Electrochromic Material Changes Colors Rapidly, Reversibly

Ludwig-Maximilians-Universität researchers developed an electrochromic thin-film material that, by changing colors rapidly, is poised to feature in the design of smart windows, solar energy production/acquisition, and automotive applications. The material, which relies on electricity to change colors, is part of a generation of highly ordered lattice structures, known as covalent organic frameworks. These are made up of synthetically conceived organic building blocks that, under the right conditions, form crystalline and nanoporous networks.

Read Article

Synapse-Like Phototransistor Enables Persistent, Low-Energy Optical Switching

Researchers at the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) created a phototransistor that allows long-lived persistent photoconductivity (PPC), which is a form of optical memory. The new structure is a heterojunction between perovskite semiconductors and carbon nanotubes. The device could enable optical switching with low energy consumption for potential use in sensors and artificial neural networks and in applications such as self-driving vehicles.

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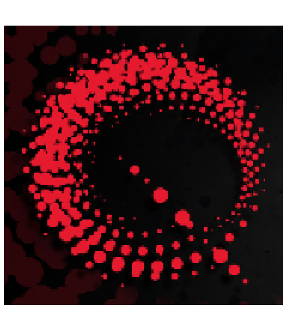
.: Upcoming Webinars

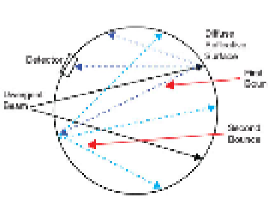


Quantitative CMOS Imaging – qCMOS: The Dawn of a New Era

Wed, May 19, 2021 11:00 AM - 12:00 PM EDT

Imaging in general and semiconductor imaging in particular has penetrated every aspect of our lives, especially in the sciences. It has empowered many experiments from relying on subjective recording into objectively documentable, repeatable and quantifiable methods. This webinar with Peter Seitz, Ph.D., will provide an overview of semiconductor image sensors and introduce photon-resolving quantitative imaging, or qCMOS. Presented by Hamamatsu Corporation.

Register Now



Measuring the Power and Beam Profile of Divergent Laser Sources

Thu, May 20, 2021 1:00 PM - 2:00 PM EDT

Lasers with large beam divergence are used in a number of applications, such as remote sensing, optical communications, and materials processing. In this webinar, Derrick Peterman, Ph.D., will discuss methods for reliably characterizing the beam power and profile of divergent sources, so that users will be able to better understand how their lasers are performing in critical applications. Presented by Ophir, an MKS Instruments company.

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Freeform Optics for Imaging: Design Methods

Wed, May 26, 2021 1:00 PM - 2:00 PM EDT

The rise of freeform optics in imaging applications has led to optical systems with increased etendue, more compact volumes, and superior performance. In this presentation, Jannick Rolland, Ph.D., and Aaron Bauer, Ph.D., of the University of Rochester's Institute of Optics will provide an overview of the methods in which systems utilizing freeform optics have been designed and the steps taken to bridge freeform design to manufacture. Examples of freeform systems from space applications to an application in the movie industry will be discussed.

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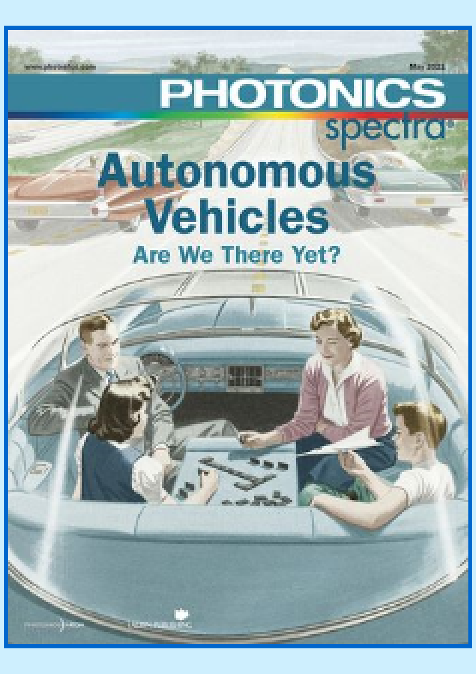
.: Next Issue:

Features

Cameras for Low-Light Imaging, Beam Profiling, Hyperspectral Imaging, and more.

Photonics Media is currently seeking technical feature articles on a variety of topics for publication in our magazine *Photonics Spectra.* Please submit an informal 100-word abstract to Daniel McCarthy, Senior Editor, at Daniel.McCarthy@Photonics.com, or use our online submission form www.photonics.com/submitfeature.aspx.

About *Photonics Spectra*



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