


This Week in PHOTONICS





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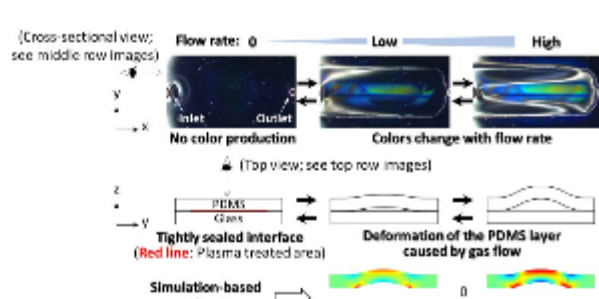
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Device Uses Structural Color to Image-Characterize Ambient Gases

Researchers from the National Institute for Materials Science (Japan), Harvard University, and the University of Connecticut jointly designed and fabricated a device for imaging a gas injected into it, in multiple colors and in accordance with its gaseous properties, enabling chromatic discrimination of different gases. The device converts the pressure generated by an injected gas into structural color, thereby "imaging" it.

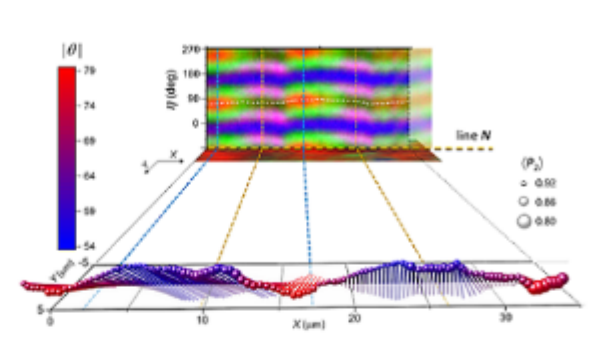
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Modified Raman Microscopy Method Delivers Polymer Chain Measurements

Researchers at NIST have developed a way to measure the 3D orientation of molecules within a material made of polymers. The measurement technique — based on broadband coherent anti-Stokes Raman scattering (BCARS) microscopy — will enable scientists to identify molecular orientation patterns that produce the mechanical, optical, and electrical properties that they seek for optimized materials to be used in medical devices and other items.

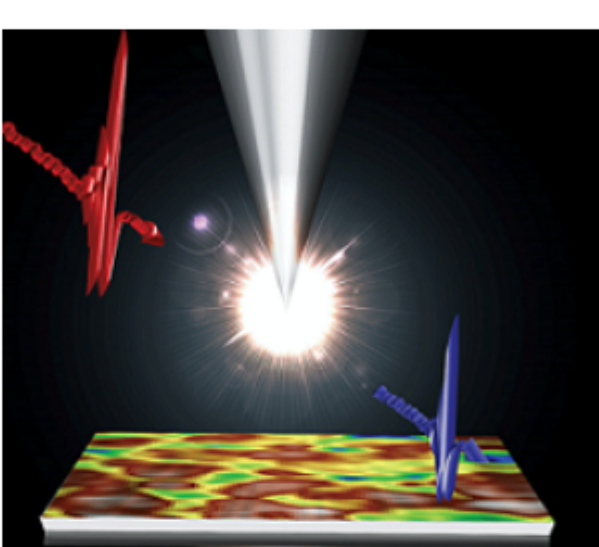
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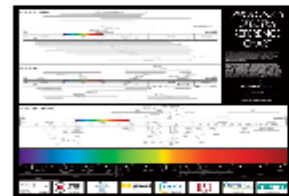
Terahertz Microscopy Imaging Reveals How to Boost Perovskite Performance

To better evaluate perovskite solar cell material(s), scientists at Ames National Laboratory developed a microscope that simultaneously images at the THz frequency, and at nanometer spatial scales. Through THz nanoimaging, the scientists uncovered unexpected information about methylammonium lead iodide perovskite that could improve the material's solar cell performance. This material is of interest as a potential replacement for silicon in solar cells.

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Photonic Spectra Reference Chart

Photonic Media

This full-color, 30 × 20.5-inch poster of the photonics spectrum displays the major commercial laser lines, detectors and optical materials in the ultraviolet to the far-infrared and beyond. The chart was updated in 2021 to reflect the changing technologies in the photonics industry. The convenient format makes it easy to quickly find the information you need.

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Ultrafast Fiber Lasers with <50 fs

HUBNER Photonics GmbH HÜBNER Photonics' VALO

Aalto femtosecond fiber lasers have pulse durations of <50 fs and peak powers of >2 MW from compact and stable turn-key systems. The lasers have very attractive features for applications in bioimaging, spectroscopy and micro-machining.

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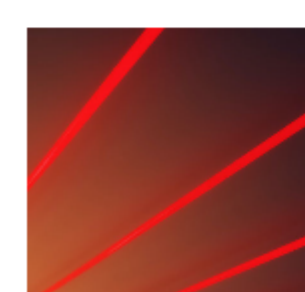
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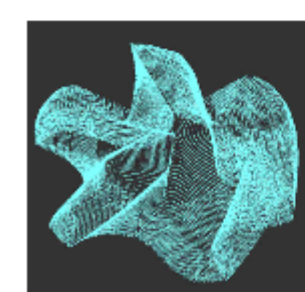


Key Considerations for Part and Sample Holding in Interferometric Characterization

Wed, Jan 18, 2023 1:00 PM - 2:00 PM EST

Interferometry is a powerful tool when used to characterize optical surface form errors, as well as accumulated errors, when measuring transmitted wavefronts. Opticians and engineers have many methods available to facilitate such measurements but can often overlook the effects caused by part holding or fixturing. Frank DeWitt of XONOX Technology Inc. discusses what should be considered when approaching part holding and fixturing for interferometric measurements, the features that are critical to the item being measured, and the required outputs of the measurement.

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3D Optical Metrology: Capabilities for a New Era

Thu, Jan 19, 2023 1:00 PM - 2:00 PM EST

Kevin Harding of Optical Metrology Solutions provides an overview of the many 3D optical metrology tools available today. He discusses applications from general manufacturing of durable parts to precision component measurement. He shares examples, typical performance specifications, and the limitations of the many tools on the market today. Harding then considers each technology for both the type of application it is best suited to address, as well as its speed and resolution. Finally, he shows where each technology fits within the bigger picture of practical applications.

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