

# PHOTONICS spectra

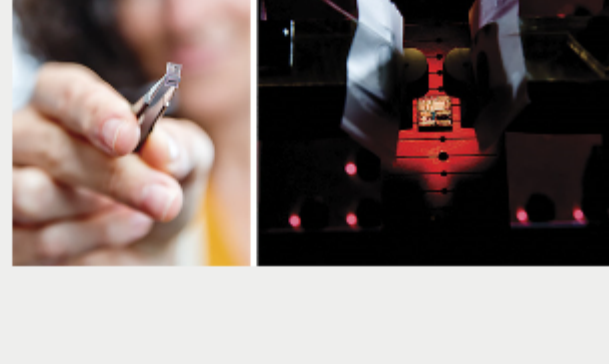


Monthly newsletter from the editors of Photonics Spectra, with features, popular topics, new products, and what's coming in the next issue. Manage your Photonics Media membership at [Photonics.com/subscribe](http://Photonics.com/subscribe).

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High Performance OEM Microscope Components

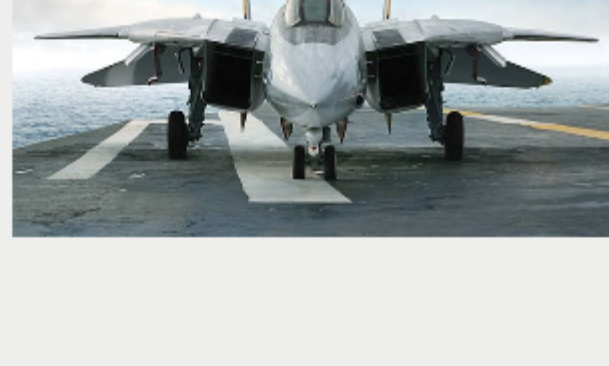
**Protecting Photonic Quantum States Using Topology**  
The use of topology to protect quantum information is well known to the condensed-matter community and, indeed, topological quantum computing is a burgeoning field of research. It is one of the competing avenues to demonstrate that quantum computers can complete certain problems that classical computers cannot. In photonics, however, we are only beginning to glimpse the potential of topologically protected photonic quantum states.



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**Robust Optical Materials for Aerospace and Laser Applications**

While single-crystal materials and ceramics are not as widely used for optical applications as glass, there are niche applications, such as aerospace, submarine optronic, and high-energy laser windows, for which these materials are favored. The choices for these applications often come down to three materials: sapphire, spinel, and aluminum oxynitride (ALON). Sapphire is a single-crystal material, while spinel and ALON are ceramic materials, and each has evolved markedly over the past several years in terms of producibility, affordability, and suitability.



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**Wearable Sensors Challenge Traditional Medical Technology**

From Apple to Fitbit to Garmin to Google, in the U.S. alone, dozens of companies are producing wearable sensors that record our movements as well as basic health information. Many of these devices rely on optical telemetry to read information about the body and transmit it to a smartphone via Bluetooth or Wi-Fi. While the growth of the smartphone market may be leveling off — in part because users are keeping their devices longer — the wrist and body are still prime, underexplored territory.



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## Featured Products



**Teledyne e2v Launches Emerald 67M CMOS Image Sensor**

**Teledyne e2v (UK) Ltd.**  
Teledyne e2v, announces its Emerald 67 megapixel, the newest member of its Emerald CMOS image sensor family. The new sensor features a high resolution with the smallest global shutter pixel (2.5µm) on the market, enabling more objects to be captured in a single high resolution shot, ideal for high end automated optical inspection, microscopy and surveillance.

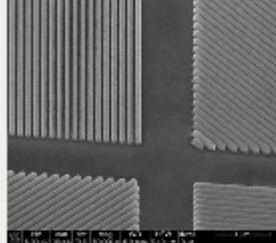
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**NEW Laser Window ACR-2100**

**Kentek Corporation**  
What are the key features of your product/service? Finally, 2100 nm protection in a large 24 x 36-inch polymer window. Why is it news worthy or innovative? Historically when users needed a laser protective window beyond 1400 nm and below 2700 nm they would be limited to mineral glass which is commonly sold in 6-inch square sheets, limiting the users view.

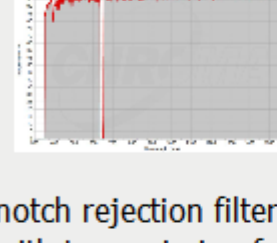
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**Nanolprint Lithography (NIL) Foundry**

**Moxtek Inc.**  
Moxtek offers state-of-the-art NIL volume manufacturing on 8-inch glass and silicon wafers. Based on data from 10,000 processed wafers, we have shown stamp life well in to the 500 to 750 print ranges with some lifetime test up to 1300 prints, and minimally maintained critical dimension (CD) of 30 nm.

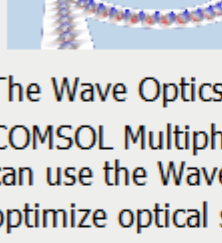
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**Highest Performing Notch Filter**

**Chroma Technology Corp.**  
Chroma Technology introduces the TopNotch™ line of narrow band, notch rejection filters. Offering best-in-class performance with transmission from 350-1600 nm and rejection FWHM of 3% of center wavelength. With a blocking range of at least 6 nm >OD6...

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**Wave Optics Module**

**COMSOL Inc.**  
The Wave Optics Module is an add-on product to the COMSOL Multiphysics® simulation software platform. You can use the Wave Optics Module to efficiently model and optimize optical systems and photonic devices.

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**Defense & Aerospace**

**Photonics Media**  
Drawing mainly from the pages of Photonics Spectra and focusing on the last decade or so of developments, Defense & Aerospace offers an overview of these industries as only Photonics Media can present it — from laser paint removal and laser bonding in aerospace, to breakthroughs in quantum sensing.

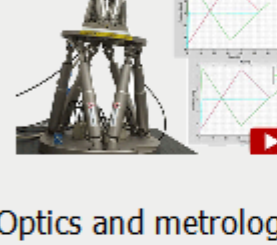
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**OEM Microscope Components**

**Nikon Instruments Inc.**  
Nikon provides a large range of microscopy components to satisfy diverse optical requirements. These components can be incorporated into imaging systems to fulfill unique experimental requirements. Nikon is staffed with a dedicated team to service large volume and OEM requests.

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**Gyroscopic Stabilization of a Platform**

**PI (Physik Instrumente) LP, Motion Control, Air Bearings, Piezo Mechanics**

Optics and metrology applications can require a stable work surface in an unstable environment. Using gyroscopic feedback, it's possible to compensate for multi-degree-of-freedom disturbances with a parallel-kinematic hexapod approach.

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**FSM - Fast Steering Mirror**  
Tip/Tilt Platform, Ready for mounting 1" mirrors

**PI** **SPECS**

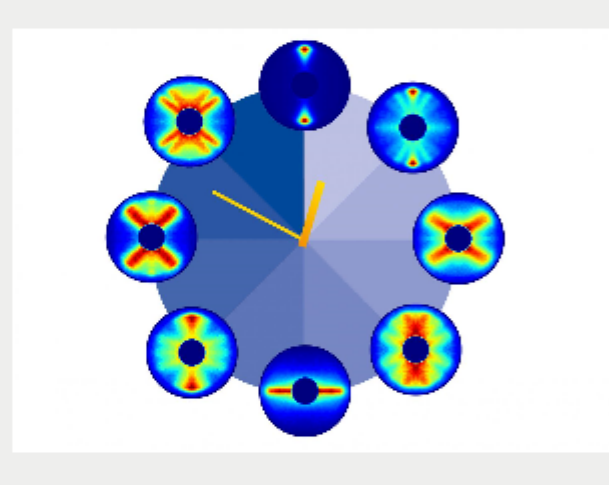
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## In Case You Missed It

**Scientists Image the Ultrafast Motion of a Rotating Molecule**

Scientists at the Center for Free-Electron Laser Science (CFEL) and the Max Born Institute (MBI) have used precisely tuned pulses of laser light to film the ultrafast rotation of a molecule. The resulting "molecular movie" tracks one and one-half revolutions of carbonyl sulfide (OCS), a rod-shaped molecule consisting of one oxygen, one carbon, and one sulfur atom. The revolutions take place within 125 trillionths of a second, at a high temporal and spatial resolution.



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**Light Controls the Electrical Properties in Quantum Materials**

A new study from the University of Pennsylvania reports that Weyl semimetals, a class of quantum materials, have bulk quantum states whose electrical properties can be controlled using light. This work could contribute to a way to engineer and control quantum properties by changing light beam patterns, in addition to giving researchers a means to better observe quantum phenomena.

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**Airborne Lidar Provides More Complete Picture of Atmospheric Gases**

Researchers from Deutsches Zentrum für Luft- und Raumfahrt eV (DLR), Germany's national center for aerospace, energy, and transportation research, have developed a laser-based system for airborne measurement of atmospheric gases. The distribution of these gases in the troposphere, the lowest layer of Earth's atmosphere and where weather takes place, plays a central role in Earth's climate.

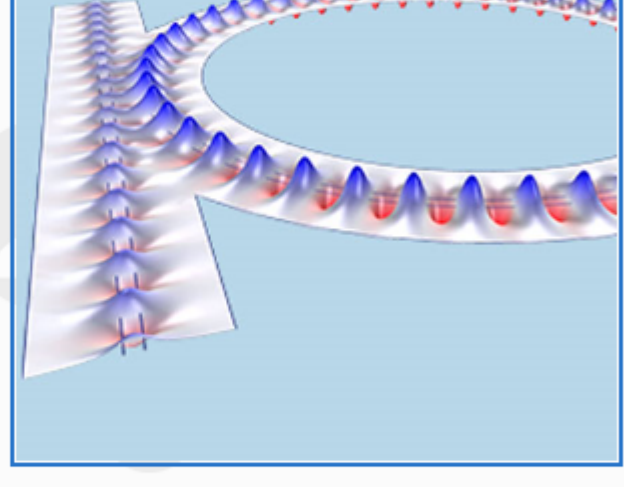
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## Webinars

**Waveguide Simulation with the Beam Envelope Method**

Tue, Sep 17, 2019 2:00 PM - 3:00 PM EDT  
This webinar, presented by COMSOL, will demonstrate that the Wave Optics, Beam Envelopes interface enables the analysis of long optics without having many mesh elements or any theoretical approximation, and you will learn how to set up a model. The speaker will also present advanced examples using the Wave Optics, Beam Envelopes interface.

[Register Now](#)

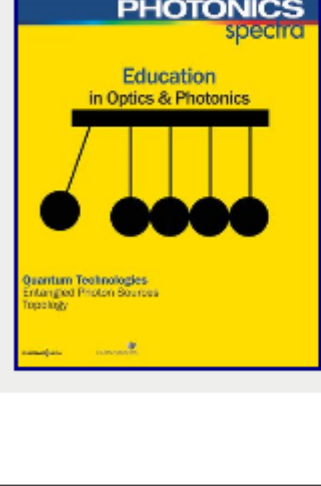


## Coming in September...

**Features**  
Ball Lenses, Aspheres for Nuclear Research, Image Sensors

**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 Susan Petrie, Senior Editor, at [Susan.Petrie@Photonics.com](mailto:Susan.Petrie@Photonics.com), or use our online submission form [www.photonics.com/submitfeature.aspx](http://www.photonics.com/submitfeature.aspx).

## About Photonics Spectra



Since 1967, *Photonics Spectra* magazine has defined the science and industry of photonics, providing both technical and practical information for every aspect of the global industry and promoting an international dialogue among the engineers, scientists and end users who develop, commercialize and buy photonics products.

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