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Advancements in Diffraction Grating Aim to Change the Rules

Because they separate light into its spectral components, diffraction gratings lie at the heart of modern spectrometers, hyperspectral imagers, optical coherence tomography systems, and similar instruments. In the future, gratings may improve automotive lidar, a market that could reach tens of millions of units annually. Gratings have also played a role in reducing the footprint of spectrometers in the last few years, vastly expanding their market by enabling more compact and mobile devices.

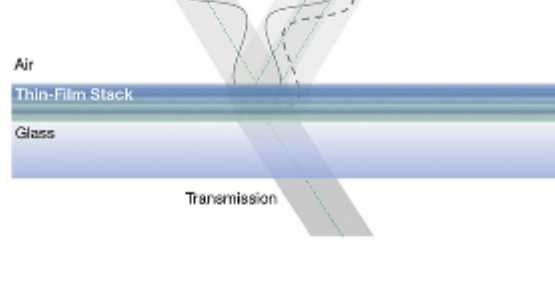
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Sputter-Coated Optics Improve Machine Vision and Remote Sensing

For biomedical instrumentation applications such as fluorescence microscopy and Raman spectroscopy, sputter-coated thin-film interference filters deliver exemplary performance. These filters also enhance imaging system performance for applications such as remote sensing and industrial automation. Filters for wavelengths from the ultraviolet to the shortwave infrared boost contrast, enabling an imaging system to acquire more information faster and at lower overall system cost.

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Large Aspheres Manage High-Power Laser Energy

Laser system output power is constantly increasing. The maximum attainable peak power of laser pulses has increased by a factor of about 1000 every 10 years. Developments in optical coating, cleaning, and polishing technology enable optical manufacturers to fabricate components that can be used with high-power lasers, but high-power laser applications stretch — and often exceed — the limits of coating technologies.

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.: Featured Products & Services



[Precision Night Vision Lenses](#)

Hyperion Optics USA

Hyperion offers night-vision objectives, collimators, and eyepieces with strong adaptability, compatible with most night-vision devices on the market. Our capabilities span from R&D prototyping to large-scale production.

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[Diffraction Gratings for Telecommunication](#)

CASTECH INC.

CASTECH's high DE reflection grating is ideal for WSS and other applications in the optical communication industry. The high-precision design of the grating provides outstanding diffraction efficiency and perfect uniformity.

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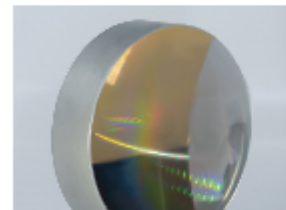
[Umicore Infrared Optics](#)

Umicore Electro-Optic Materials

Umicore is expert in the design and manufacturing of longwave infrared thermal imaging optics. We offer IR materials, coatings (including iDLC™ hard coating on chalcogenide lenses), lenses, wafer-level optics (Tessella™), and assemblies for thermal imaging and sensing applications using germanium and GASIR® infrared glass.

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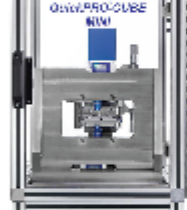
[Flat Field Concave Gratings](#)

Spectrum Scientific Inc. (SSI)

Spectrum Scientific manufactures aberration-corrected blazed holographic gratings designed to minimize astigmatism and coma, making them ideal for use with CCD or array detectors in high throughput, high-performance spectrometers for applications including fluorescence and absorption.

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[QuickPRO™-CUBE-MINI](#)

Opto-Alignment Technology Inc.

Newly enhanced QuickPRO-CUBE-MINI features rapid, dual-sided QA/PC of molded, aspherical, and free-form optics. Takt time of 1 to 2 minutes for both surfaces. Wide range of fixtures and inserts are available to accommodate single-element samples as well as micro-lens arrays.

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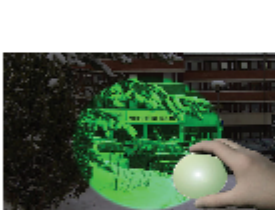
[Variable Beam Laser System](#)

Focuslight Technologies Inc.

Flux H Series, a variable beam laser system for pan-semiconductor manufacturing processes, generates a 4-kW power output laser with length and width continuously adjustable in sections within the range of 2 to 200 mm, as the uniformity maintains > 95%.

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[IR Filters for Thermal Imaging](#)

Spectrogon US Inc.

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 uncooled microbolometers. Our filters and windows range in dimension from Ø6.0 to Ø200.0 mm with dicing capabilities down to as small as 1.0 × 1.0 mm.

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[Affordable IR Cameras](#)

Optris GmbH

IR cameras in short- and longwave detector options, richly featured software freely downloadable without annual subscription fees, optics for microscopic or wide FOV applications, fast temperature measurements and easy process integration, ideal for many industrial and R&D applications.

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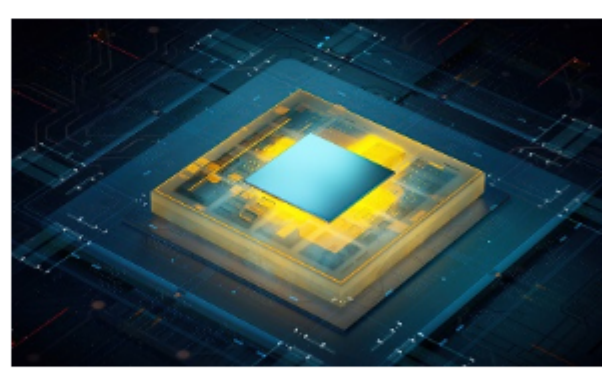
12-16 March 2023
Long Beach, California, USA

.: In Case You Missed It

DARPA Funds Development of Low-Noise Photonic Oscillators

The Defense Advanced Research Projects Agency awarded BAE Systems a \$17.5 million contract for the Generating RF with Photonic Oscillators for Low Noise program. The technology developed through the program could enable an unprecedented combination of low noise, compact size, and frequency agility for next-generation airborne sensing and communications capabilities.

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Self-Emergent Microcombs Flip Switch for Precision Timekeeping

Researchers from the universities of Strathclyde, Loughborough, and Sussex have demonstrated how optical clocks can be reliably switched on and made to keep running. The collaborators' work resolves what had emerged as a persistent problem in the development of ultraprecise optical clocks and, specifically, the microcombs on which they rely to move from an "off" state to an "on" state.

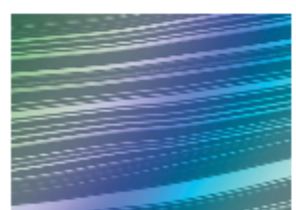
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Miniaturized Tweezer Traps Single Atoms for Quantum Exploration

Scientists at the National Institute of Standards and Technology (NIST) and JILA, formerly the Joint Institute for Laboratory Astrophysics, developed a miniaturized optical tweezer that captured single atoms. The challenging task of single-atom captures has implications in quantum technologies, for which single atoms can provide a platform.

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.: Upcoming Webinars



SPEX: Combining Spectroscopy and Polarimetry for Remote Sensing

Wed, Sep 28, 2022 10:00 AM - 11:00 AM EDT

Spectropolarimetry is a powerful technique for remote sensing of the environment. Combining spectroscopy and polarimetry makes it possible to probe particle shape and size distributions that traditional spectroscopy cannot. However, measuring all these dimensions at once is challenging. SPEX solves this problem by encoding polarization into the spectrum through spectral modulation, meaning the instrument measures spectral radiance and polarization at once. This enables snapshot hyperspectral measurements with high precision and accuracy. Olivier Burggraaff discusses the physics and instrumentation behind the SPEX technique and existing instruments, as well as their current and future scientific applications.

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Features

Additive Manufacturing, Optical Frequency Combs, UV 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.

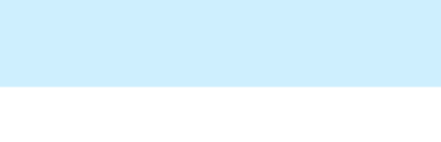
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