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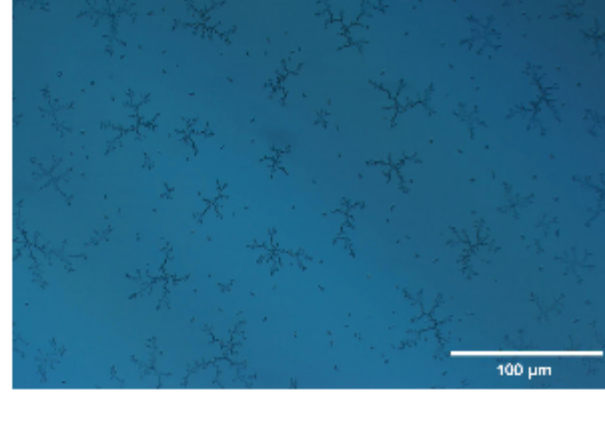
Monthly newsletter from the editors of Photonics Spectra, with features, popular topics, new products, and what's coming in the next issue. Manage your Photonics Media membership at [Photonics.com/subscribe](https://www.Photonics.com/subscribe).

AEROTECH Optimizing Ultrafast Laser Micromachining. Precisely.

How to Preserve Your Laser Optics Against UV Degradation

Ultraviolet laser optics tend to have limited lifetimes, due primarily to two processes: laser-induced contamination (LIC) and UV fatigue. LIC is caused by the deposition of unwanted material on the surface of the optic, whereas UV fatigue results from the breakdown of the optic due to cumulative exposure to UV light. Both degrade the performance of optics over time until the effects become intolerable.

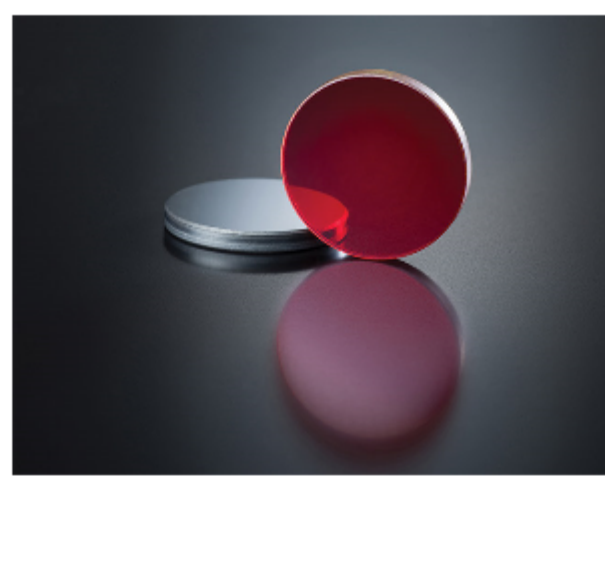
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Chalcogenide Glass Sharpens the Outlook for Infrared Imaging

Chalcogenide glasses — more commonly known as chalcogenides — have been around for some time and offer several benefits over other IR optical materials. They are comparatively lightweight, offer excellent thermal properties, and can be precisely engineered for easy integration with other IR materials. But they have traditionally posed problems for small manufacturers who sought to document consistent production processes for these glasses. In the last ten years, this situation has drastically changed as larger companies have entered the IR glass market and geopolitical circumstances have affected the germanium supply. Today, it's possible to obtain solid production data, such as refractive index and transmission at specific wavelength ranges. The availability of this data demonstrates the maturity of these glasses and shows that they can be produced with consistent properties, with little to no germanium, for years to come.

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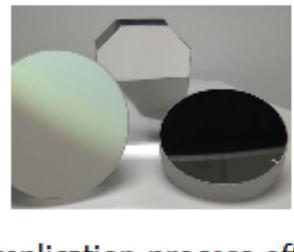
Manufacturing Methods Make Freeform Optics More Accessible

From applications in ophthalmology, endoscopy, and microscopy — to use in head-up displays, lidar systems, unmanned aerial vehicles, and satellites — freeform optics are enhancing the performance of existing imaging systems and are key enablers in a host of lightweight, high-performance applications. Freeform optical surfaces can be defined as surfaces with no axis of rotational invariance within or beyond the optical part. This type of surface contains three or more independent axes, and results in asymmetrical features. In simple terms, freeform optics are not limited to spheres, rotationally symmetric aspheres, and off-axis conics.

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.: Featured Products & Services



[Aspheric Imaging Mirrors](#)

Spectrum Scientific Inc. (SSI)
Spectrum Scientific's optical replication process offers high specification aspheric mirrors at a lower cost than traditional volume manufacturing as well as allowing the incorporation of mounting or alignment features onto the mirror itself, improving stability and reducing assembly and alignment costs. It also allows different material choices and optical surface designs including OAPs and freeform mirrors.

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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 maintain 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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[High-Dynamic Laser Scan Heads](#)

Aerotech Inc.
The Aerotech AGV-XPO two-axis laser scan head minimizes the tradeoff

between speed and precision in laser processing. Its low-inertia, high-efficiency motors enable rapid acceleration profiles, while ultra-high resolution position feedback enables near-zero tracking error even at long working distances.

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[Wafer-Level Optics](#)

Himax IGI Precision Ltd.
Wafer-level optics solutions from origination and nano-imprinting to assembly. Using advanced lithography and

other manufacturing processes, a wide variety of micro/nano structures are created according to customers' desires in applications including refractive/diffractive optics, imaging optics, freeform optics, and many more.

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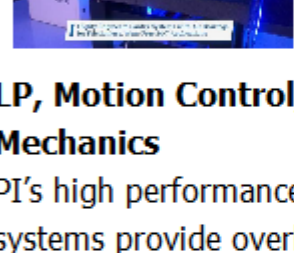
[LIGHT: Introduction to Optics and Photonics, Second Edition](#)

Photonics Media
Offering a comprehensive treatment of the subject as well as key applications, and employing minimal math,

LIGHT: Introduction to Optics and Photonics was written with readers in mind.

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[Gantries For Laser Processing](#)

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

PI's high performance XYZ gantry positioning systems provide overhead motion for industrial automation applications in assembly, pick-&-place, laser processing, alignment, inspection, and 3D printing. The gantries are manufactured in the USA by PI's air bearing and precision motion division.

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International Congress on Applications of Lasers and Electro-Optics
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PI
50 YEARS

Increase Speed and Precision in Photonics Alignment [White Paper](#)

.: In Case You Missed It

Spin-Optics Laser Enables Electron and Photon Spins for Optoelectronics

Researchers at the Technion Israel Institute of Technology developed an atomic-scale, spin-optical laser. To do so, they incorporated a WS₂ monolayer into a heterostructure microcavity that supported high-Q photonic spin-valley resonances. The spin-valley modes were generated from a photonic, Rashba-type spin splitting of a bound state in the continuum. The Rashba monolayer laser has intrinsic spin polarizations, high spatial and temporal coherence, and symmetry-enabled, robust features to enable valley coherence in the WS₂ monolayer upon arbitrary pump polarizations at room temperature. It does not require magnetic fields or cryogenic temperatures.

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Implementation Agreement Builds on OIF's Debut Co-Packaging Standard

The Optical Internetworking Forum has unveiled the External Laser Small Form-Factor Pluggable Implementation Agreement (IA). The IA introduces a multisourced future-proof front panel pluggable external laser source form factor, which represents the first available to industry. The IA includes definitions for the placement of laser sources at the front panel — the coolest section of a co-packaged optical system — enhancing system reliability and allowing for efficient “hot-swap” field replacement when necessary. The front panel pluggable form factor introduced by the IA is tailored for other multiple laser external laser source applications in addition to co-packaged optical systems.

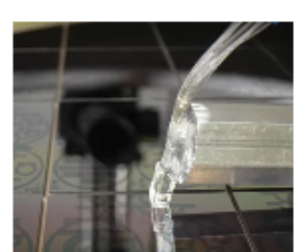
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GaN-Based LEDs Achieve High-Frequency Visible Light Communications

As the large-scale, commercial use of 5G networks has grown, so has the need for broader bandwidth to accommodate high-speed communications. To meet the resource needs of the post-5G and 6G eras, researchers at Fudan University are exploring visible light communication (VLC) to achieve data rates at the terabit-per-second level. The researchers use multicolor LED arrays with wavelength division multiplexing technology. They enhance the efficiency of the long-wavelength GaN-based LED units, especially in the green and yellow wavelengths, by using a V-pit structure. According to the Fudan team, the GaN-based LED array system for VLC demonstrates significantly improved data rates compared with earlier research.

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.: Upcoming Webinars



Precision Automation Principles for the Optimal Testing and Packaging of PIC Devices

Thu, Sep 21, 2023 1:00 PM - 2:00 PM EDT

Thru, Sep 21, 2023 1:00 PM - 2:00 PM EDT
Precision-scale testing of photonic devices continues to be a challenge due to the multi-degree-of-freedom, high-precision, optical alignments required for wafer- and die-level testing. Wide variances in chip designs and coupling features complicate test procedures, making it difficult to identify a system capable of producing repeatable measurements across various topologies. Brett Heintz of Aerotech Inc. provides a guide for selecting precision motion equipment to minimize the impact of positioning errors on optical alignment test results. Presented by Aerotech.

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Infrared Optics Summit

Wed, Sep 20, 2023 10:00A EDT

Photonics Media invites you to join us virtually on September 20 to unlock the world of infrared optics and explore the unnoticed focal planes improving the imaging, remote sensing, and communications industries. Brought to you by the editors of *Photonics Spectra* magazine, the Infrared Optics Summit features five presentations curated to help capture, manipulate, and detect infrared radiation. Join Photonics Media Corporation, SCHOTT North America, Materion Balzers Optics, Edmund Optics, and MKS Ophir for a day dedicated to better understanding the emerging applications of IR Optics.

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Features

AI for Optics Production, Water Monitoring, On-Chip Supercontinuum Lasers, and Space Optics

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*



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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