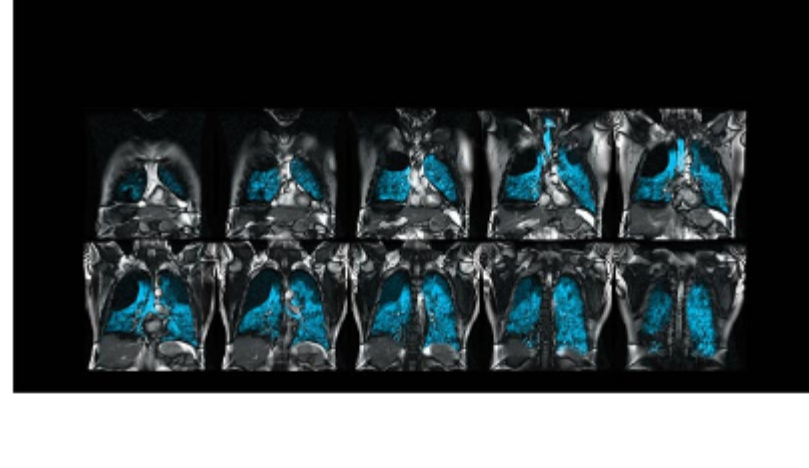




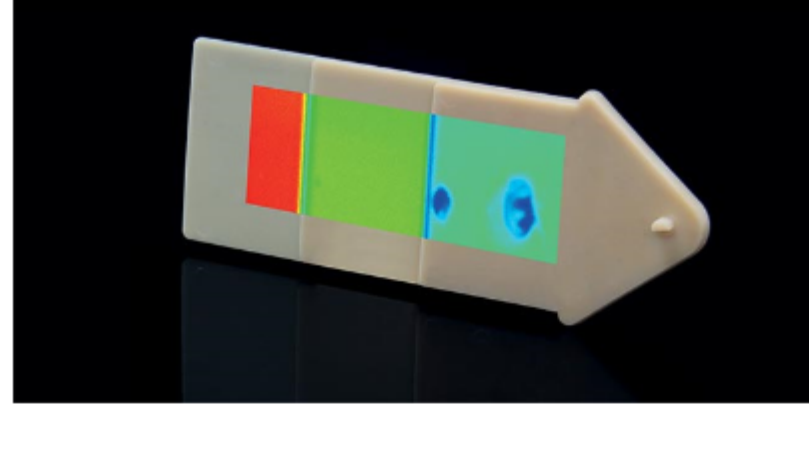
Monthly Newsletter

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



Advancements in High-Power Laser Diodes Fuel Essential Applications

More than 30 years ago, acclaimed physicist Edward Teller said, "No one should use a laser unless it's a diode laser." Although those of us engaged in the manufacture of laser diodes will perhaps be forgiven for our uncritical endorsement of Teller's statement, ample scientific justification supports such a perspective. [Read Article](#)



Optoelectronic Solutions Give Rise to Terahertz Sensing

Terahertz radiation has historically been difficult to generate. The efficiency of electronic devices drops sharply as frequencies increase into the terahertz range. Photonic devices work well at higher frequencies, but they struggle to produce terahertz radiation due to the need for highly precise and stable frequency mixing or efficient nonlinear optical processes. This bottleneck is the origin of the familiar term "terahertz gap." [Read Article](#)



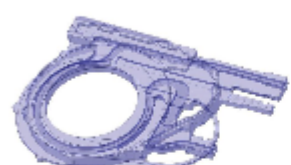
Embedded Vision Systems Usher Deep Learning into the Imaging Domain

Computer-guided machine vision systems are deployed in a wide range of industries, and most of these systems rely on rules-based algorithms that provide concrete guardrails for assessing and classifying parts and products. But these rules can be very hard to comprehensively define for organic products. This makes it challenging to implement machine vision for large-scale farming or produce-processing efforts. [Read Article](#)

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In Case You Missed It

Keller-Led Team Posts an Ultra-Short Pulse Record

Researchers at ETH Zurich have developed a laser that can produce extremely short pulses with peak powers up to 100 MW and 550 W of average power. The researchers, led by Ursula Keller, a professor at the Institute for Quantum Electronics, report that the achievement marks a record — surpassing the previous reported maximum by more than 50%. The demonstrated pulses are the strongest pulses ever created by a laser oscillator. [Read Article](#)

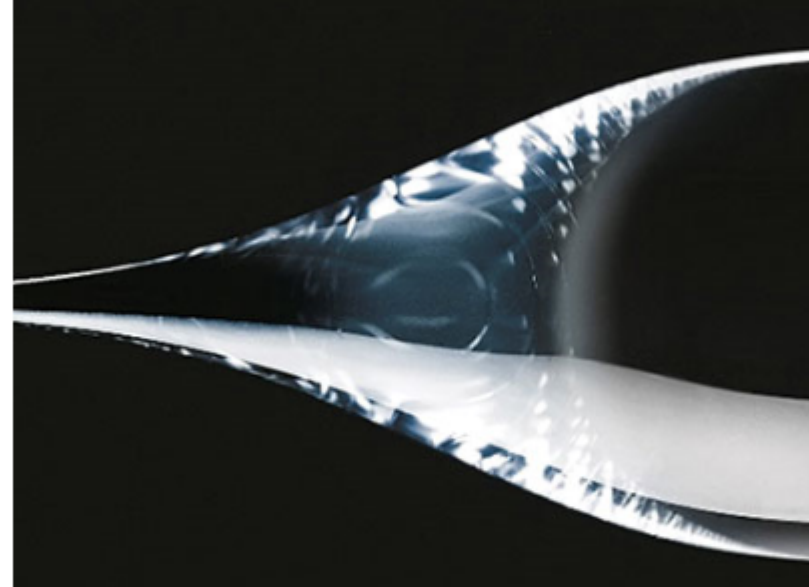
About Lasers and a Dinosaur

Lithuania is a small country, roughly twice the size of the State of Maryland, and with a population of 2.9 million. Its status as a photonics hotbed, especially in ultrashort pulsed laser technology, owes largely to the many reputable brands that headquarter in Vilnius, the nation's capital city. [Read Article](#)

Deep Learning-Based Method Guards Against Chip Tampering

The \$75 billion counterfeit chip market jeopardizes the safety and security of multiple sectors that depend on semiconductor technologies, including aviation, communication, quantum computing, artificial intelligence, and finance. A new counterfeit detection method for semiconductor devices could help global chip makers and users evade the risks introduced by the surge in counterfeit chips coming on the market. [Read Article](#)

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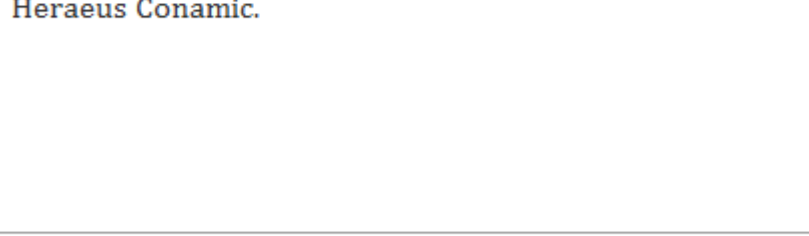


Fused Silica Step Index Fibers: Advanced Preform and Fiber Metrology

Tue, Dec 10, 2024 10:00 AM - 11:00 AM EST

This webinar discusses advanced preform and fiber measurement techniques for specialty fibers, with a particular focus on fibers produced using the POD (plasma outside deposition) process. In this process, fluorine-doped fused silica is applied to the outside of a high-purity core rod made of synthetic quartz glass to produce the refractive index step required for light guiding. Depending on the specific application wavelengths of these specialty fibers, various synthetic fused silica materials are available as core materials, which enable the production of specialty fiber preforms tailored to the application. The session begins with a brief introduction to the manufacturing process and typical applications of specialty fiber preforms and the resulting fibers. Presented by Heraeus Conamic.

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New Semiconductor Technology Center Comes to Albany and a Flurry of Mergers and Acquisitions

NY CREATES' Albany NanoTech Complex will be the site of a new National Semiconductor Technology Center. The University of Tokyo has found a way to make Raman spectroscopy 100 times faster. The Israeli Defense Ministry is investing big in a laser air-defense system. A list of photonics companies are expanding through new acquisitions. And a new robot-assisted laser procedure from the Fraunhofer Institute for Laser Technology (ILT) is helping surgeons with brain surgery. All this on a new *Photonics Spectra* Now. Sponsored by Reynard Corporation and Hamamatsu Corporation.

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Beam Measurement, Gas Sensing, Laser Texturing, and Metallic Coatings

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