Thursday, July 24, 2025

PHOTONICS spectra

Weekly News

New Tunable Semiconductor Laser, Handheld Device to Detect and Treat Oral Cancer

Q.Ant raises more than $72 million to advance the commercialization of its photonic processors for AI and high-performance computing. TAU Systems and Thales announce a new collaboration in laser-driven particle acceleration. A research team in California has successfully integrated indium arsenide, quantum dot lasers, monolithically on silicon photonics chiplets. A research team from Harvard and Vienna University of Technology develops a tunable semiconductor laser. A new method of dark state control could expand quantum dot use in quantum applications. And a compact device could detect oral cancer and treat it through photodynamic therapy. Sponsored by Thorlabs.

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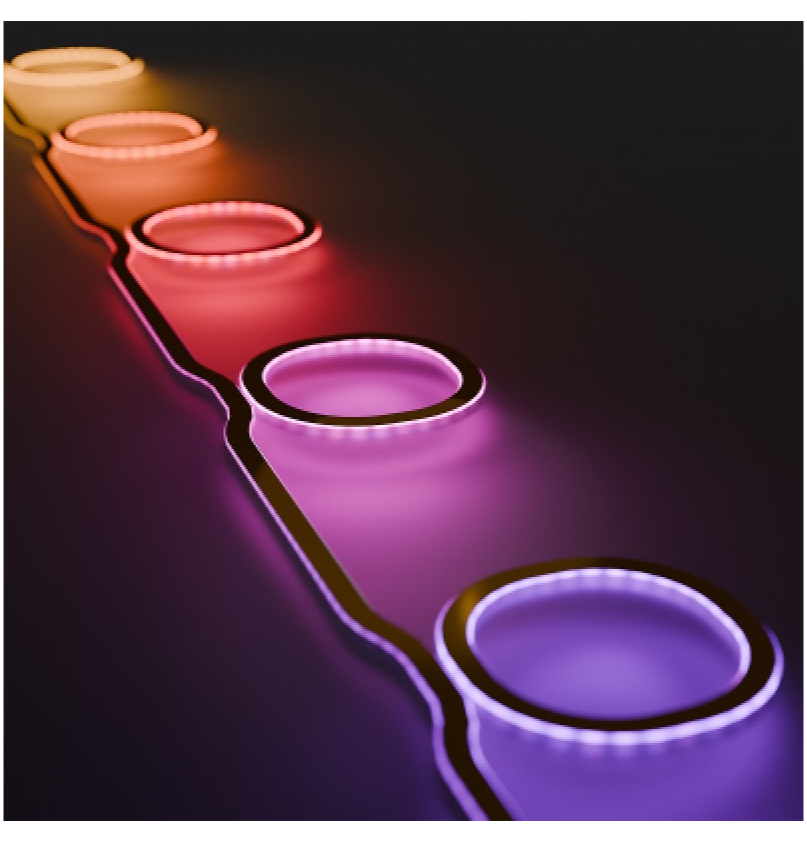
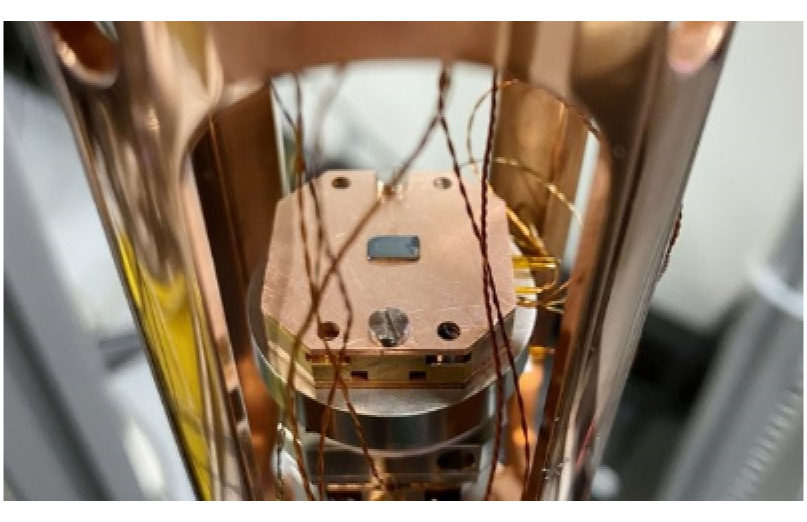
Q.ANT Secures $72M as Company Moves to Commercialize Photonic Computing Tech

Q.ANT, a developer of photonic processing technologies, has raised €62 million in a series A financing round. The funds will serve to accelerate the commercialization of its energy-efficient photonic processors for artificial intelligence and high-performance computing (HPC). The round was co-led by Cherry Ventures, UVC Partners, and imec.xpand, with participation from L-Bank, Verve Ventures, EXF Alpha of Venionaire Capital, LEA Partners, Onsight Ventures, and TRUMPF. Read Article



Luminary Research Collaborators Advance Tunable Semiconductor Laser Design

Researchers in the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) and Vienna University of Technology (TU Wien) have developed a tunable semiconductor laser that combines the best attributes of today's most advanced laser products, demonstrating smooth, reliable, wide-range wavelength tuning in a simple, chip-sized design. Tunable lasers are integral to applications including high-speed telecommunications, medical diagnostics, and safety inspections of gas pipelines. Yet laser technology faces many trade-offs – for example, lasers that emit across a wide range of wavelengths sacrifice the accuracy of each wavelength. Read Article



Dark State Control Could Expand Quantum Dot Use in Quantum Applications

One way to extend the functionality of quantum dots as a platform for quantum applications is through control of the dark exciton states in quantum dots. The photon generation from quantum dots relies on the recombination of bright excitons. However, quantum dots also host excitons of parallelly-oriented spins, called dark excitons. While the bright excitons in quantum dots emit light, the dark excitons are optically inactive. Due to the suppression of emission, the dark exciton states exhibit a substantially reduced decay rate. As a result, the lifetimes of these excitons can be orders of magnitude longer than their optically bright counterparts. This attribute makes dark exciton states beneficial for storing and controlling quantum information over time.

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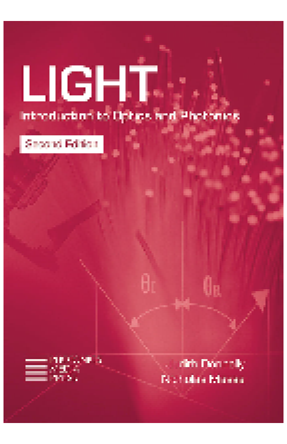

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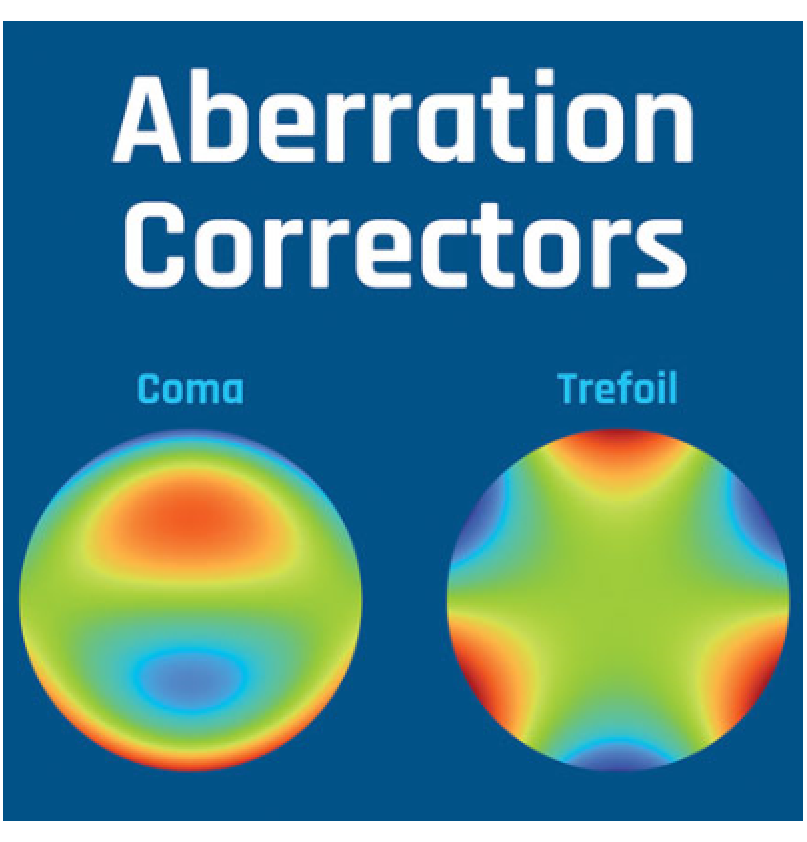

Practical Aberration Correction Using Freeform Optics — Pushing the Boundaries of Laser System Performance

Non-chromatic aberrations in laser systems can be compensated, in a cost beneficial way, using a single custom manufactured freeform optical element. Any combination of pointing, defocus, spherical, astigmatic, coma, and other higher order aberrations, can be compensated. Making this freeform in fused silica with a precision direct write laser machining process enables an inline manufacturing solution that pushes the boundary of optical performance in applications ranging from laser inertial fusion to fluorescence microscopy. Presented by PowerPhotonic.

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All Things Photonics

Spectroscopy in the MIR — With Søren Friis

Søren Friis, head of sales and business development at NLIR, breaks down the technique of MIR spectroscopy, overviewing technology, applications, and instrumentation. As a key addition to the end user's toolkit for industrial tasks that strain many familiar methods, MIR spectroscopy may be best explained by its applications. But, Friis explains, innovative system architectures and rising trends also help tell the story.

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