Thursday, August 11, 2022

This Week in PHOTONICS

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.: Top Stories

Optical Tweezing Resolves Pivotal Bottleneck in Quantum Computing

A research team in Japan's Institute for Molecular Science (IMS), National Institutes of Natural Sciences (NINS) has executed a two-qubit gate — a fundamental operation for quantum computing — that operates in just 6.5 ns. The team believes that its advancement is poised to support a next wave of success in ultrafast quantum computing.

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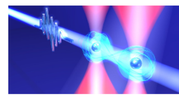

Chip-Based Beam-Steering Lights the Way to Smaller, Cheaper Lidar

Researchers from the Technical University of Denmark have developed a chip-based beam-steering device to reduce the size and cost of high-performance lidar technology. The device could have applications in autonomous diving, free-space optical communications, 3D holography, biomedical sensing, and virtual reality.

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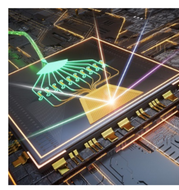

Hybrid Interferometer Broadens Application for Fiber Optic Sensing

Researchers at the University of Alabama in Huntsville invented an ultrahigh-resolution interferometer that is sensitive enough to detect weak acoustic signals that are too faint to be picked up by other sensor types. The team embedded an optical resonator-based interferometer — the Fabry-Perot type — into a double-path interferometer — the Mach-Zehnder type — to create the device, known as the Mach Zehnder-Fabry Pérot (MZ-FP) interferometer.

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.: Upcoming Webinars

Intraoperative OCT in Veterinary Surgery for Cancer

Tue, Aug 16, 2022 1:00 PM - 2:00 PM EDT

Surgery is a common cancer treatment performed in dogs and cats but the process of assessing the tumor takes several days and is only able to evaluate a small portion. Optical coherence tomography (OCT) is a non-invasive optical imaging technique that helps solve issues that accompany this process. OCT enables real-time intraoperative surgical margin assessment, allowing rapid visualization of the tissue microstructure at the surgical margins. To date, Dr. Laura Selmic, and her team have found high sensitivity and specificity for detection of incomplete margins after surgical excision of skin tumors, including STS and mast cell tumors, in dog and feline injection site sarcoma. The results reveal that OCT has potential for showing the demarcation between tumor and other normal tissues including muscle, fat, and skin.

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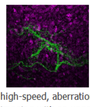

Sub-Cellular Biology at Tissue Scales with Cleared Tissue Axially Swept Light-Sheet Microscopy

Wed, Aug 17, 2022 1:00 PM - 2:00 PM EDT

Large-scale interdisciplinary efforts have worked to comprehensively catalog cellular architectures in health and disease. Kevin Dean Ph.D. shares on the scalable imaging platform, Cleared-Tissue Axially Swept Light-Sheet Microscopy (CT-ASLM), that helps further this research. The CT-ASLM leverages high-speed, aberration-free, remote focusing to achieve an isotropic resolution of approximately 300 nm-scale subcellular imaging with an unparalleled optical sectioning capacity and large field of view. The platform provides global tissue architectures as well as quantitatively detailed morphological and biochemical descriptions of the individual cells that compose tissues in health and in disease. Sponsored by Power Technology, Intelligent Imaging Innovations Inc., and Applied Scientific Instrumentation, Inc.

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