Thursday, June 16, 2022

This Week in PHOTONICS

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.: Top Stories

Ring Resonator Pushes Photonic Sensing to Quantum Limit

A team led by researchers at the University of Bristol developed a method for operating mass manufacturable photonic sensors at the quantum limit. The work paves the way for practical applications, including the monitoring of greenhouse gas emissions and cancer detection.

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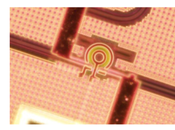

Crystal Diamond Mirrors Stand Up to Continuous-Wave Laser Powers

Researchers at Harvard's John A. Paulson School of Engineering and Applied Sciences (SEAS) built highly reflective mirrors that direct the beams from high-powered continuous-wave (CW) lasers without incurring damage. The mirrors are made from single-crystal diamond.

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Yao Fan Awarded 2022 Teddi C. Laurin Scholarship

Yao Fan, a doctoral student at Nanjing University of Science and Technology (NJUST), was awarded the 2022 Teddi C. Laurin Scholarship for her contributions to the field of optics and photonics. Fan's research interests include quantitative phase imaging, computational microscopic imaging, and the development of novel microscope instruments.

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771 Laser Spectrum Analyzer

Bristol Instruments Inc.

The model 771 operates as both a high-resolution spectrum analyzer and a high-accuracy wavelength meter. With spectral resolution up to 2 GHz and wavelength accuracy as high as ±0.0001 nm, this system provides the most detailed information about the spectral properties of lasers operating from 375 nm to 12 µm.

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CO_2 Laser Glass-Processing

NYFORS Teknologi AB

CO_2 laser glass-processing is designed to produce high-power and sensitive photonic components and complex structures. It guarantees contamination-free processing for fiber linear, 2D and gapless array splicing, ball lensing, end-capping, and many other challenging processes.

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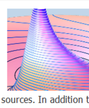

Thermal Modeling of Lasers in Manufacturing Processes

Wed, Jun 22, 2022 2:00 PM - 3:00 PM EDT

Walter Frei shares an overview of laser thermal modeling and presents a demonstration of the software in action. Laser modeling in manufacturing processes commonly views the laser as a spatially or volumetrically distributed heat source that moves and reorients over time. The COMSOL Multiphysics® software provides a computational modeling platform that can easily model such heat sources. In addition to the modeling of heating profiles over time, this software is able to model phase change, ablation, and irreversible transformations. The applications of these different modeling techniques include precision fabrication processes, medical treatments, and additive manufacturing. Presented by COMSOL, Inc.

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Wavelength-Selective Optical Filters: Providing More Signal and Less Background to PCR Instruments

Thu, Jul 7, 2022 1:00 PM - 2:00 PM EDT

Engineers creating polymerase chain reaction (PCR) instrumentation face unique challenges in both qualitative detection of nucleic acid sequences, using end-point analysis and quantitative detection of nucleic acid sequences, using real-time analysis. Quantitative PCR (qPCR) instruments that operate in real time require a favorable signal-to-noise ratio, combined with high sensitivity. Jason Palidwar of Iridian Spectral Technologies shares the role photonics and optical filters play in qPCR instruments along with the challenges presented by their specification, design, and manufacture.

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