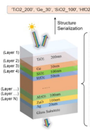
Thursday, July 25, 2024

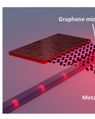
PHOTONICS spectra

Weekly News



OptoGPT to Enhance Optical Component Design

An algorithm developed at the University of Michigan is expected to enhance the design process for optical components including solar cells, smart windows, telescopes, and others. OptoGPT harnesses the transformer neural networks powering large language models to work backward from desired optical properties to the material structure that can provide them. Read Article



Graphene Activates IR Emission Source for Integrated Photonic Gas Sensor

Using graphene as the emission source, researchers at AMO GmbH worked with other European universities to develop a MIR emitter for integrated photonic gas sensors. The researchers integrated the graphene-based emitter with photonic waveguides that couple directly into silicon waveguides operating in the region relevant for gas sensing. The integration of these components at the wafer level could reduce the size and cost, improve the mechanical stability, and potentially enhance the performance of environmental sensors. Read Article

Quandela, Welinq Partner on Quantum Interconnects for Photonic Computing

Quantum computing company Quandela has partnered with quantum networking company Welinq to develop custom quantum interconnects. The collaborators aim to establish clusters of interconnected and error-protected photonic quantum computers by combining Welinq's full-stack quantum interconnects technology with Quandela's photonic quantum computing processors. Read Article

Featured Products & Services

Stabilizing the Line of Sight

Photonics Media

In Stabilizing the Line of Sight, authors Peter J. and Rhonda L. Kennedy provide a methodology and an example for executing a successful end-to-end line-of-sight (LOS) design. Comprehensive in scope, this book will give readers a better understanding of the relationships between the various engineering disciplines that are required for successful LOS control.

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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. NYFORS also manufactures automated high-precision solutions for fiber preparation, such as stripping, cleaving, recoating, and end-face inspection. NYFORS offers custom workcell automation solutions.

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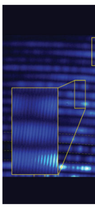
Affordable Light-Sheet Microscope Could Spur Biomedical Exploration

Infleqtion Installs Quantum Computer in U.K.

Latest Webinars



Measuring Starlight with an Ultrafast Laser: Astrocomb Development for the Extremely Large Telescope

Tue, Aug 6, 2024 10:00 AM - 11:00 AM EDT

In this webinar, Yuk Shan Cheng of Heriot-Watt University explores the important role of the Extremely Large Telescope's (ELT) ANDES spectrograph and its need for a high-precision frequency calibrator in order to pursue exciting ventures. She focuses on the development of astrocombs, which are laser frequency comb systems that can provide thousands of stable, atomically referenceable, and evenly spaced calibration lines. Despite their demonstrated success in labs and various telescopes worldwide, integrating astrocombs into modern telescope facilities presents challenges, including aligning their mode spacings with the spectrograph's resolving power and achieving broad spectral coverage, particularly in the UV-blue/green wave band. This presentation covers the approaches to these challenges, recent implementation at the Southern African Large Telescope, and advancements in astrocomb technology at Heriot-Watt University, including the development of the first continuous UV-blue/green astrocomb.

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Industry Innovations in Fiber-Based Frequency Combs: Ultrabroadband Comb with Sub-3-kHz Free-Running Linewidths

Tue, Aug 27, 2024 1:00 PM - 2:00 PM EDT

Femtosecond frequency combs represent unparalleled measurement tools with diverse applications in spectroscopy, metrology, and quantum physics. This talk delves into the critical aspect of maximizing the passive stability of these instruments to unlock their full potential in fundamental science and high-tech industries. By studying systematically, the noise properties of fiber-based frequency combs across varying intracavity dispersion, pump power, and repetition rate parameters, researchers have notably identified distinct minima where the free-running linewidth of the carrier-envelope offset (CEO) frequency fCEO drops below 1 kHz. A comprehensive analysis of individual comb lines across a broad spectral range unveils the specific contributions to phase noise and their interplay. Leveraging these insights, this presentation showcases the development of frequency combs with sharp teeth at designated positions throughout the spectrum from fCEO to 300 THz. These compact systems offer ultrabroadband stability, presenting a new standard for front-end measurement such as integrated quantum clocks experiments based on Strontium atoms. Sponsored by Toptica Photonics.

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