

This Week in PHOTONICS

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High-Speed Infrared Imaging for lithium-ion battery Research



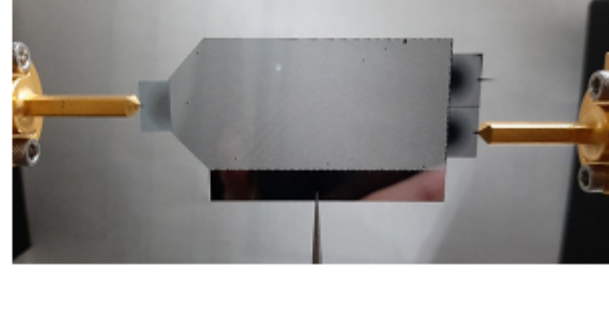
Free Webinar
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Photonic Crystals Imitate Gravitational Effects on Light

Researchers from Tohoku University, in collaboration with other institutions including Osaka University, set out to determine whether lattice distortion in photonic crystals could produce the effects of pseudogravity in the terahertz range.

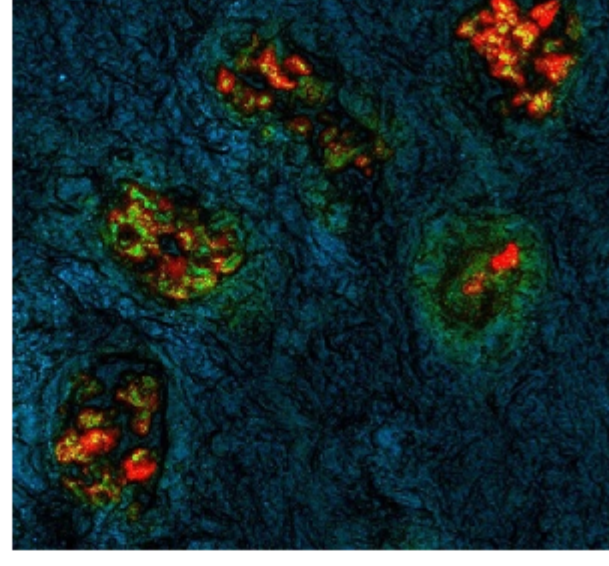
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Fluorescence Lifetime Imaging Could Improve Cancer Surgery Outcomes

Extreme precision is required to surgically remove a cancerous tumor without damaging the surrounding healthy tissue. Yet surgeons often must rely on their eyes and hands to determine where to cut. Fluorescence lifetime (FLT) imaging, developed at Mass General Brigham by researchers who collaborated with several other institutions to evaluate the technique, could improve the precision of cancer surgeries.

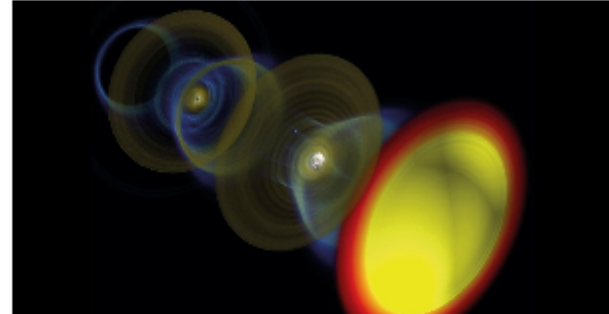
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Quasiparticle Light Source Could Rival Super-Brightness of FELs

An international team of scientists is rethinking the principles of radiation physics, with the goal of creating super-bright light sources that are compact and relatively convenient to use. Coherent light sources such as free-electron lasers (FELs) provide super-bright beams for studying biological, chemical, and physical phenomena. Although these super-bright sources can enhance the imaging for many applications from drug development to chip-making, their massive size and scarcity make them impractical for most laboratories, hospitals, and businesses.

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Upcoming Webinars

Advancing Quantum and Nano-Photonics with Machine Learning

Wed, Nov 1, 2023 1:00 PM - 2:00 PM EDT

The discovery of unconventional optical designs via machine learning promises to advance on-chip circuitry, imaging, sensing, energy, and quantum information technology. In this talk, Alexandra Boltasheva of Purdue University discusses photonic design approaches and emerging material platforms for showcasing machine learning-assisted topology optimization for optical metasurface designs with applications in thermophotovoltaics, reflective optics, quantum photonic circuitry, and lightsail technology. She demonstrates the effectiveness of autoencoders for compressing the vast design space of metasurfaces into a smaller search space.

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Lock-in Amplifier or Boxcar Averter? Choosing the Right Measurement Tool for Periodic Signals

Thu, Nov 2, 2023 11:00 AM - 12:00 PM EDT

When it comes to analyzing periodic signals, selecting the appropriate measurement tool is crucial for achieving accurate and meaningful results. Gustavo Ciardi, Ph.D., an application scientist for optics and photonics at Zurich Instruments, delves into the theory behind two powerful techniques, lock-in amplification and boxcar averaging, to help individuals make informed decisions in their measurement endeavors.

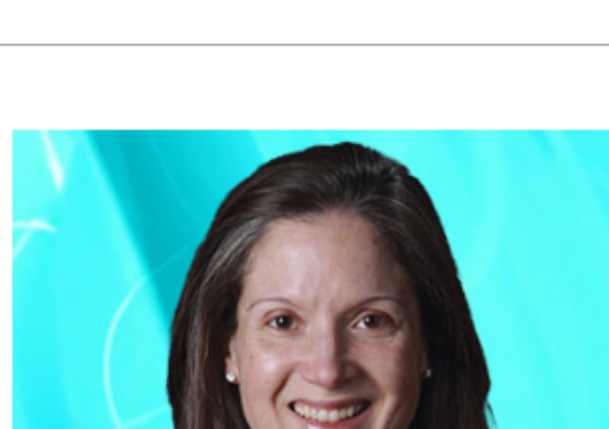
Additionally, he shares how to gain a deeper understanding of the techniques' strengths, weaknesses, and the scientific contexts in which they excel. He aims to empower attendees with the knowledge needed to maximize signal-to-noise ratio, ensuring the highest precision in measurements. Presented by Zurich Instruments.

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All Things Photonics

Photonic technologies like lab-on-a-chip are taking out a lot of the head-scratching and tedium that goes along with traditional diagnostic methods, giving patients and clinicians access to technology that is cheaper, quicker, and often more reliable. Andrea Armani, the Ray Irani Chair in Engineering and Materials Research at the USC Viterbi School of Engineering, is working at the forefront of this exciting technology and others that promise to revolutionize the world of medicine. In this episode, Armani discusses the current landscape of lab-on-a-chip technology, optogenetics, and the current and potential capabilities of both. She also discusses the path to commercialization, and what these advancements in nanomedicine may mean for the future. Sponsored by **Teledyne Judson Technologies**.

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