

# This Week in PHOTONICS

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PHOTONICS spectra CONFERENCE

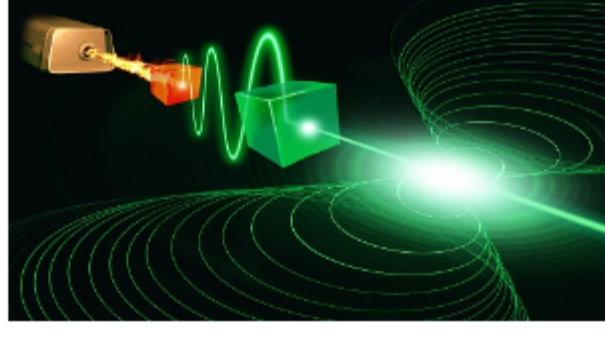
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## :: Top Stories

### Quantum Theorists Rise Beyond Decades-Old Laser Limitation

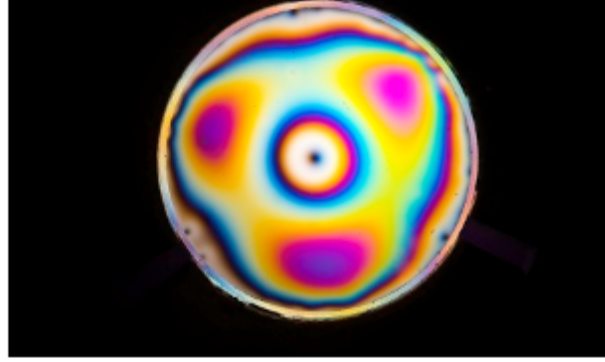
Quantum theorists from Griffith University and Macquarie University, both in Australia, used quantum mechanics to overturn an assertion about laser coherence that has been the common belief for 60 years. The research showed that it is possible to build a quantum-limited laser using superconducting technology, which is currently used in quantum computing.



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### CHIDO Offers Insight into Cells, Molecules

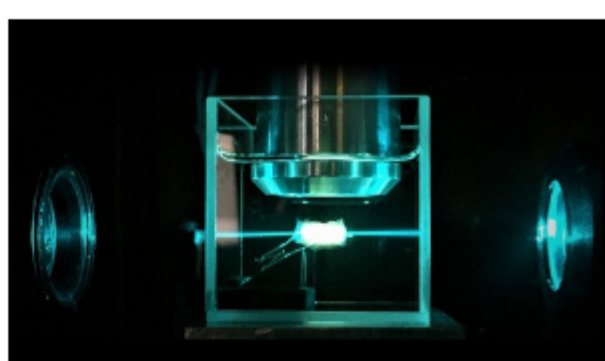
Researchers at the University of Rochester and the Fresnel Institute in France developed a method for visualizing molecules' position and orientation in 3D, as well as their oscillations. The technique could allow for greater insights into the biological processes involved when a cell and the proteins that regulate its functions react to a COVID-19 virus.



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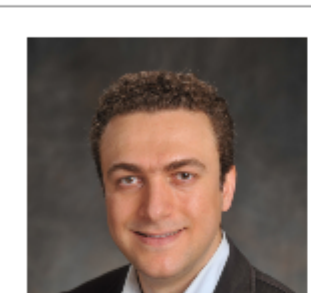
### Light-Sheet Microscopy Method Improves Cancer Diagnostics

A microscopy technique developed by researchers at TU Wien (Austria) in collaboration with TU Munich could lead to more reliable cancer diagnostics. The technique allows a tumor to be analyzed after surgery in 3D without cutting the tumor into sections.



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## :: Photonics Spectra Conference



**Biophotonics Innovation at the Fore of the Biomedical Imaging Track**  
**KEYNOTE: Toward Intelligent Microscopes: Deep Learning's Potential for Biomedical Applications**  
**Presented by: Aydogan Ozcan, UCLA**

Associate Director of the California NanoSystems Institute and elected Fellow of the National Academy of Inventors (NAI) Aydogan Ozcan (pictured) keynotes the Biomedical Imaging Track of the inaugural Photonics Spectra Conference. Ozcan will host a presentation on recent work and advances on the use of deep neural networks in computational microscopy and sensing systems, as well as their biomedical applications.

Conference attendees will be able to access sessions covering emerging techniques such as optical coherence tomography (with sessions by Duke University's Adam Wax and Laura Selmic of The Ohio State University), illumination, and photoacoustic imaging (with a session by Manojit Pramanik of Nanyang Tech University), and AR microscopy (with sessions by Gabe Siegel and Dan Regelman from Augmentiqs). Juergen Popp, editor-in-chief of the Journal of Biophotonics, will report on innovative technological concepts that are moving optical approaches closer to clinical use. PhotoniCare, Dover Motion, Physik Instrumente, and Olympus are among the industry leaders hosting sessions in the track.

For more information and to register, [www.photonics.com/pscinfo](http://www.photonics.com/pscinfo).

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## :: Featured Products



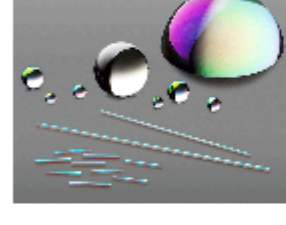
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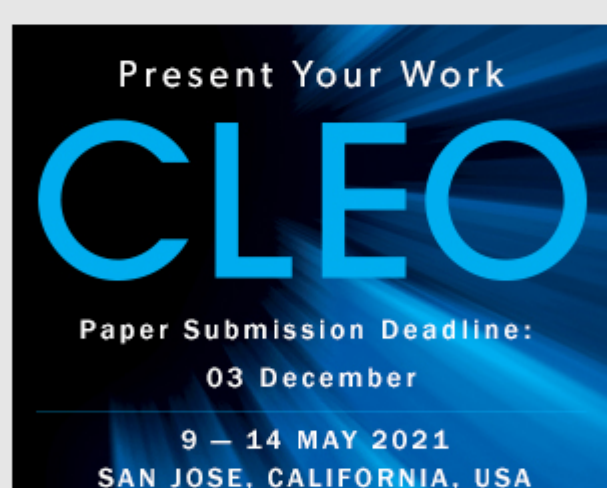
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## :: Upcoming Webinars

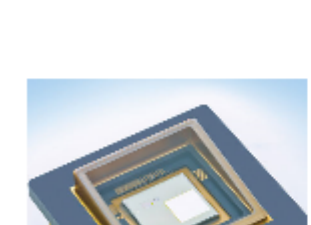


**Multiphoton Autofluorescence Imaging of T-Cell Function**

Tue, Nov 10, 2020 1:00 PM - 2:00 PM EST

In this webinar Melissa Skala, Ph.D., of the Morgridge Institute for Research and the University of Wisconsin-Madison will demonstrate how autofluorescence imaging of NAD(P)H and FAD, co-enzymes of metabolism, is a powerful method for label-free, non-destructive monitoring of T cell metabolism within single cells. This method could inform new immunotherapy approaches for cancer, enable non-destructive assessment of T cell manufacturing, and monitor in vivo T cell behavior in mouse models of cancer. Sponsored by Omega Optical LLC.

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**Optical and Electrical Microsystems for Advanced Biomedical Imaging and Diagnosis**

Thu, Nov 12, 2020 10:00 AM - 11:00 AM EST

Medical diagnosis heavily depends on innovative methods for biomedical imaging. New system concepts that combine miniaturized optical MEMS components, like scanning mirrors and spatial light modulators, with new methods for realization of passive micro-optics allow for a variety of different new biomedical products. This webinar with Michael Scholles, Ph.D., Head of the Fraunhofer Project Hub MEOS will describe the technical realization of those systems in more detail, as well as their biomedical applications. Sponsored by Meadowlark Optics Inc.

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## :: All Things Photonics

In this week's episode, Andreas Tuennermann, head of the Fraunhofer Institute for Applied Optics and Precision Engineering, discusses his work with fiber lasers, quantum applications, and manufacturing in a global pandemic. Alejandro Manjavacas, from the Theoretical Photonics Group at the University of New Mexico, stops by with insights into two distinctly different projects: one with the Metropolitan Museum of Art and one with Los Alamos National Laboratory.

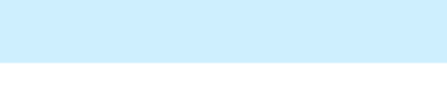


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