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Top Stories

Smartphones Used for Live Cell Imaging

Laboratories around the world can now make movies of living cells with their smartphones. Researchers from Uppsala University gave their old standard inverted microscopes an upgrade using a few 3D-printed parts, off-the-shelf electronics and a smartphone. The upgraded systems provided excellent culture conditions and gave the researchers high-resolution, less expensive images of living cells.

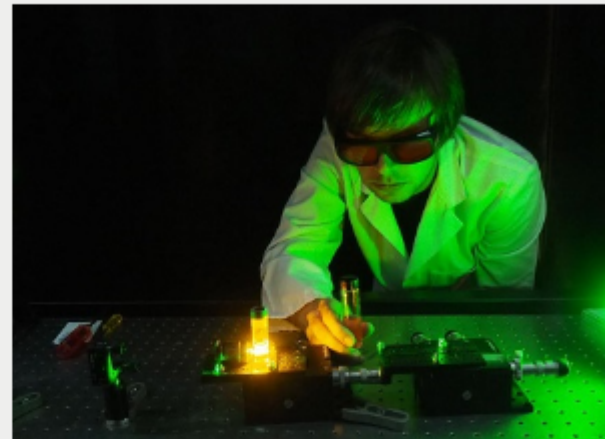


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Optical Fiber Probe Detects Breast Cancer

Using an optical fiber probe, researchers have developed a more precise technique to distinguish breast cancer tissue from normal tissue. This novel device will potentially give surgeons the upper hand when removing breast cancer and prevent follow-up surgeries, which are currently needed for 15 to 20 percent of breast cancer surgery patients where all the cancer is not removed.

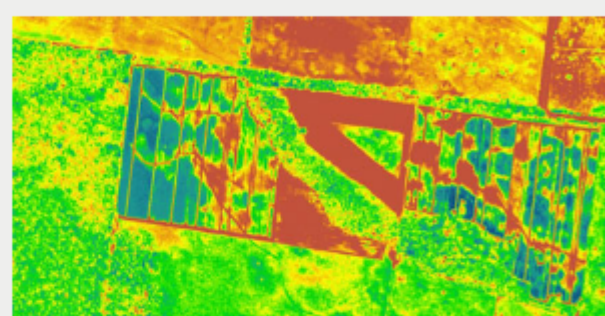


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Hyperspectral Imaging System Could Advance Flight- and Space-Based Remote Sensing

Advances in spectroscopy imaging will be applied to the development of a hyperspectral/ultraspectral imaging system that will be used for remote sensing. The imaging system incorporates a novel camera system that uses a compressive sensing technology. The camera, which has been significantly miniaturized, requires only one-tenth of the data traditionally needed to quickly produce high-resolution images.



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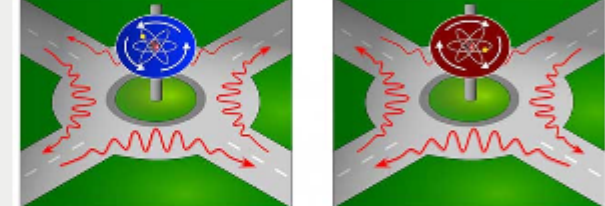
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Optical Circulator Could Be Used to Route Quantum Data in Integrated Optical Circuits

An advance in optical signal processing uses a fiber-integrated quantum optical circulator, operated by a single atom, to control the direction of light. The nonreciprocal behavior of the circulator arises from a chiral interaction between the atom and the transversally confined light. The circulator's nonlinear response at the single-photon level enables photon number-dependent routing. Dubbed a "nano-roundabout," the circulator could be used in integrated optical chips, and would be an advance for nanotechnology where the ability to process light pulses consisting of individual photons could be useful.

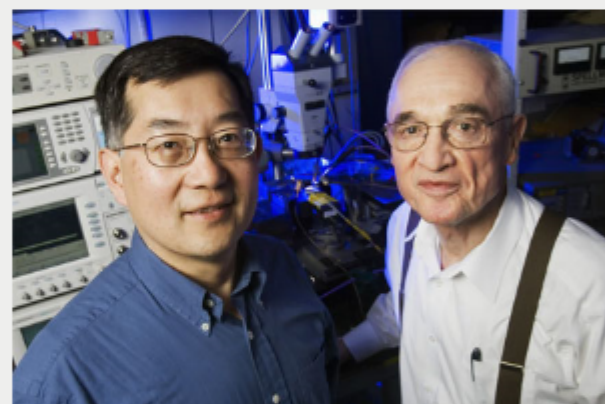


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Tunneling Could Be Key to Modulating Bandwidth of Transistor Laser

Two recent studies could impact the fundamental modulation bandwidth of the transistor laser and increase its capacity for data transfer in optical and 5G wireless communications. Electrical engineers Nick Holonyak, Jr. and Milton Feng at the University of Illinois invented the transistor laser in 2004, based on their discovery that a transistor could be modulated to be a signal and a device that could harness the physics between electrons and light. The engineers are now exploring how optical absorption can be enhanced, using an approach they have called the Feng-Holonyak Intra-Cavity Photon-Assisted Tunneling (FH-ICPAT).



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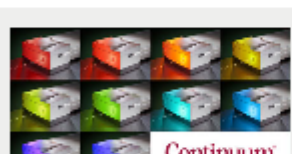
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Advanced Manufacturing Expo & Conference

February 7-9, 2017 - Anaheim Convention Center - Anaheim United States

The Advanced Manufacturing Expo & Conference is the nation's biggest annual destination for specialists and buyers across the advanced design and manufacturing space. With more than 20,000 professionals in attendance, the Expo & Conference will deliver multiple industry-leading shows under one roof: MD&M West, Electronics West, WestPack, Pacific Design & Manufacturing, ATX West and PLASTEC West. The shows will run in parallel, offering multiple crossover opportunities for attendees and exhibitors. You will meet key decision makers from leading advanced manufacturing companies at this year's Expo & Conference, and you will enjoy a range of sessions and activities that will help you make strong connections with others in your industry.

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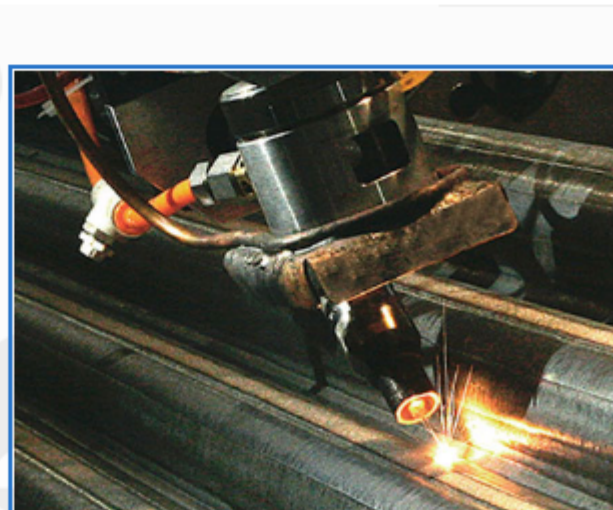
Webinars

LAM Technology, Opportunities and Challenges

Thu, Jan 12, 2017 1:00 PM - 2:00 PM EST

Laser Additive Manufacturing (LAM) is one of the breakthrough technologies facilitating the transition from traditional subtractive machining to 3D printing. This webinar will provide you with a solid foundation in LAM and 3D printing, covering the advantages, possibilities and challenges of these cutting edge technologies. Wayne Penn, applied physics consultant and former president of Alabama Laser Systems, will draw on his considerable experience to provide you with unique insight into LAM and its potential uses in a range of industries, including energy, oil & gas, aerospace as well as emerging applications.

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