

# This Week In PHOTONICS

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**A better excimer laser. The IPEX-700.**

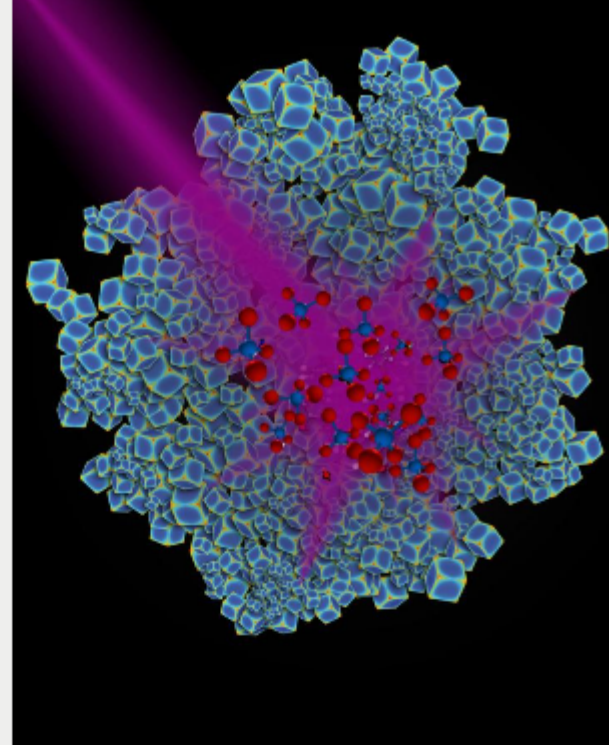
[www.lightmachinery.com](http://www.lightmachinery.com)



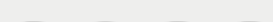
## Top Stories

### Light-Driven Nanoparticles Convert Carbon Dioxide to Fuel

Rhodium nanoparticles have demonstrated the ability to capture the energy in UV light and use it to selectively catalyze the conversion of carbon dioxide (CO<sub>2</sub>) to methane. Such light-driven catalysis could be used to help reduce the level of CO<sub>2</sub> in the atmosphere and for industrial applications.

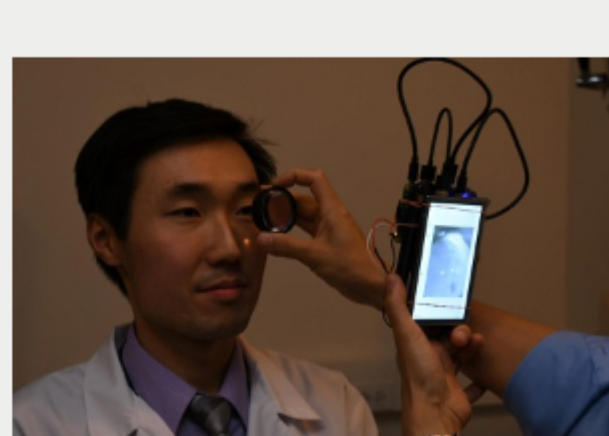


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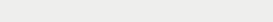


### Retina Camera, No Dilating Required

A portable inexpensive camera that can photograph the retina could replace the need for pupil-dilating eye drops. Researchers at the University of Illinois at the Chicago College of Medicine and Massachusetts Eye and Ear/Harvard Medical School have created a prototype camera that is small enough to carry in a pocket; it can take pictures of the back of a patient's eye that can then be shared with other doctors or attached to a medical record.

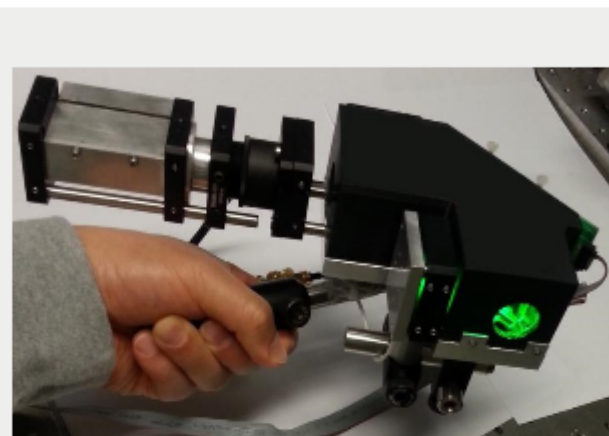


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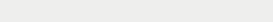


### Quantum Key System Uses Unbreakable Light-Based Encryption to Secure Data

A device that can send unbreakable secret keys from a handheld device to a terminal could keep users' personal financial information more secure and safer in the event of a cyber-attack. Researchers from Oxford University are using ultrafast LEDs and moveable mirrors to send a secret key from a device at a rate of more than 30 kilobytes per second over a distance of 0.5 meters.



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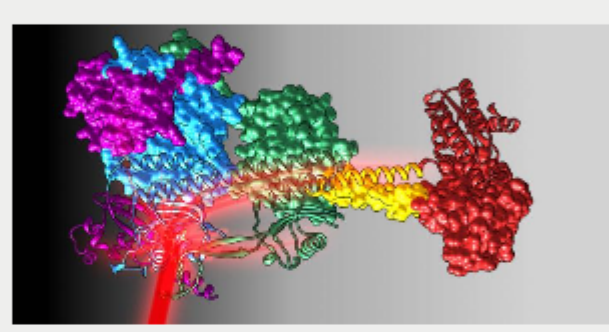


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### Path Opens for Red-Light-Regulated Optogenetic Tools

The observation of sensor-effector coupling in the full-length structure of a protein responsive to red light could aid in the development of red-light-regulated optogenetic tools for targeted cell stimulation. Light-regulated enzymes have potential for optogenetic applications. However, current knowledge of the molecular mechanisms underlying the modularity of sensor-effector couples has inhibited the design of efficient, novel sensor-effector combinations.

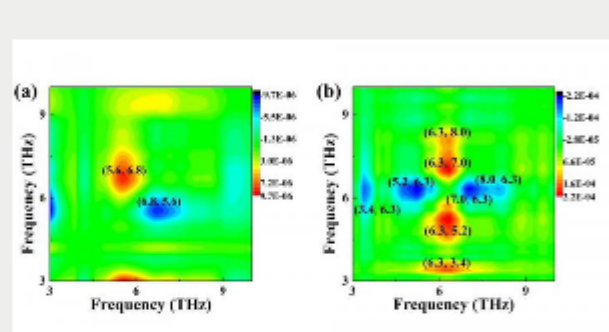


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### Terahertz Analysis Helps Target Measures for Controlling Pollution

A combination of terahertz (THz) absorption and 2D correlation spectroscopy (2DCOS) has been used to identify the concentration and pollution sources of PM<sub>2.5</sub> (particulate matter less than 2.5 μm in diameter) in the Beijing-Tianjing-Hebei region of China. The THz-2DCOS analysis revealed that samples with high PM<sub>2.5</sub> were related to higher THz absorption at selected frequencies. This information was used to determine appropriate emergency measures needed to relieve haze pollution.



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## More Headlines

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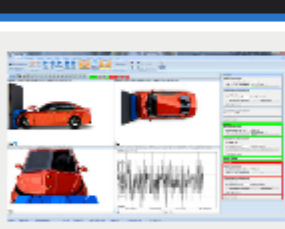
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## Featured Products



### StreamPix 7 - Multiple Camera DVR Software

NorPix Inc.

StreamPix 7 supports a wide selection of GigE Vision, 10 GigE, USB3, CoaXpress and Camera Link cameras. StreamPix can capture from multiple synchronized cameras simultaneously along with computer time stamp, GPS coordinates, and IrigB or GPS timing.

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### Multi-Line Color CMOS TDI Cameras

Teledyne DALSA, Machine Vision OEM Components

Piranha XL cameras feature multi-line color CMOS TDI (Time Delay and Integration) technology, and deliver unprecedented speed and responsivity with low noise in a compact design. The new 8k and 16k models deliver high sensitivity for color imaging using 4 rows per RGB channel for 12 rows in total.

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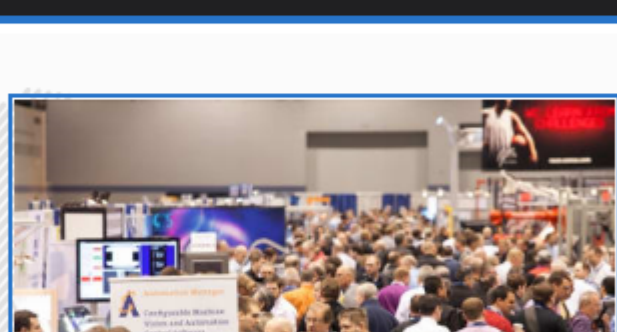
## Industry Events

### AUTOMATE 2017

April 3-6, 2017 - McCormick Place North - Chicago United States

AUTOMATE is North America's largest showcase devoted to automation industry trends, leading-edge technology and business innovation. Last held in 2015, the biennial event features over 300 exhibitors who comprise many of the industry's leading manufacturers and system integrators of robotics, machine vision, metrology, software, safety, motion and motors. Over 20,000 attendees are expected from all 50 states and more than 70 countries, including corporate decision-makers as well as press and analysts. The conference and exhibition will enable participants to explore the future of automation, which is dynamically changing due to mobile and collaborative robots, cloud computing, smart manufacturing, Industrial Internet of Things (IIoT) and other innovations.

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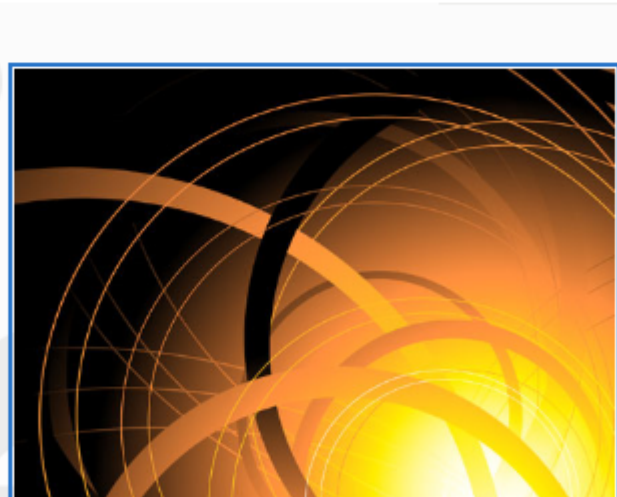
## Webinars

### Table-Top Fabrication of Plasmonics-Based Ultrathin Optical Components

Thu, Apr 6, 2017 1:00 PM - 2:00 PM EDT

Professor Toussaint will begin with an overview of his group's work with plasmonic nanoantennas and then describe how these structures can be harnessed to develop a simplified, table-top approach to producing flat, ultrathin optics using laser-assisted etching. Kimani C. Toussaint, Jr., Ph.D., is an associate professor in the Department of Mechanical Science and Engineering, and an affiliate faculty in the Departments of Electrical and Computer Engineering and Bioengineering, as well as the Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana-Champaign (UIUC). Toussaint also directs the laboratory for Photonics Research of Bio/nano Environments (PROBE Lab) at UIUC, an interdisciplinary research group that focuses on quantitative nonlinear plasmonic nanostructures for light-driven investigation of the optical properties of plasmonic nanostructures for light-driven control of matter.

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### Technology Business Champions' Guide to Successful Commercialization

Thu, Apr 13, 2017 1:00 PM - 2:30 PM EDT

This webinar, presented by David Krohn, Managing Partner of Light Wave Venture LLC, is for scientists, engineers and others seeking potential opportunities for marketing and selling a new technology, whether it is a product, a service or a groundbreaking idea. You will learn how to focus R&D with an eye toward commercialization; how to source funding and much more. The instructor has over 50 years of experience in the photonics industry. A trained scientist turned businessman, Krohn has assisted more than 127 companies and organizations, working with key management on product development, commercialization, funding and acquisitions. Please note: there is a registration fee for this webinar.

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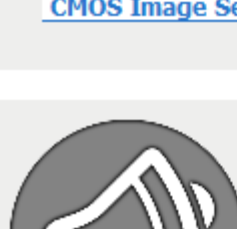
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