

# This Week In PHOTONICS

PHOTONICS MEDIA



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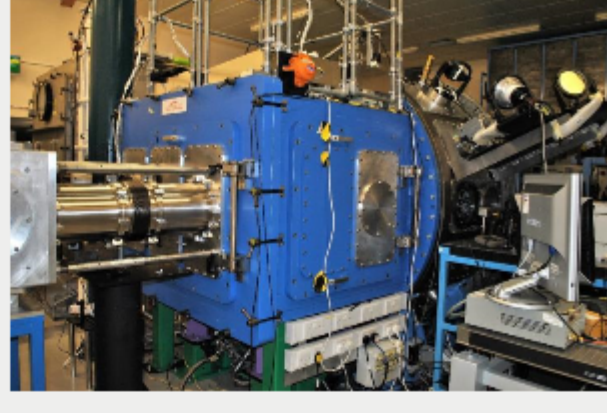


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## Top Stories

### Raman Amplification in Plasma Leads to Ultra-High-Gain Amplifier

Using a plasma medium, scientists have amplified short laser pulses of picjoule-level (pJ-level) energy up to 100 millijoules (mJ), a gain of more than eight orders of magnitude over existing capabilities. A large Raman backscattered energy of up to 170 mJ was measured for a monochromatic 70 joule (J) pump pulse incident at an angle of 175 degrees. Injected pJ seed pulses were observed to grow at a rate corresponding to a gain coefficient of 180 cm<sup>-1</sup>.



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### SERS-Based Sensor Detects Toxins at Ultralow Concentrations

A chemical sensor equipped with organic chemical compounds could provide selective, reproducible detection of minuscule amounts of heavy metal ions quickly. The sensor is based on a plasmon-polariton surface-enhanced Raman spectroscopy (SERS) platform.



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### Image Colorization System Uses AI to Direct Its Choices

A data-driven image colorization technique uses AI and deep learning to colorize images in real-time, providing even novices with the ability to quickly colorize gray scale images with satisfactory results. The system is guided by a Convolutional Neural Network (CNN), which propagates user edits by fusing low-level cues with high-level semantic information learned from large-scale data.



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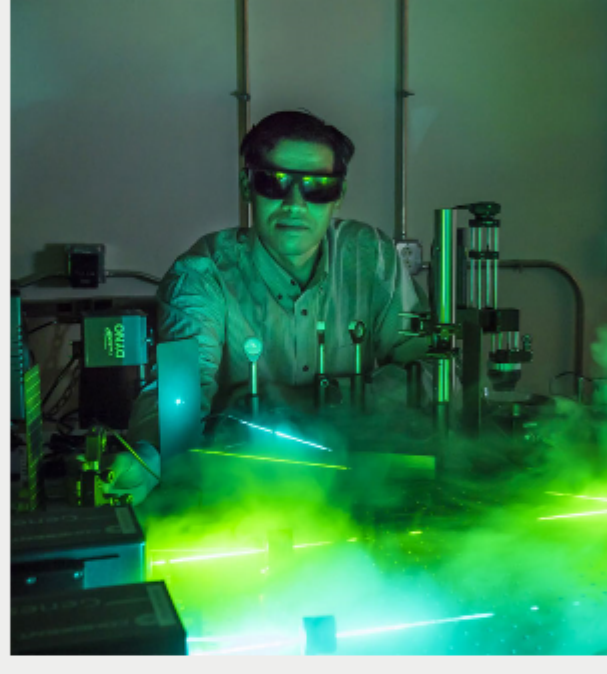


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### Photon Upconversion Technique Utilizes Plasmonics, Quantum Wells

A method to efficiently upconvert light combines plasmonic metals and semiconducting quantum wells to create a plasmon-powered device to boost wavelength frequency. The novel photon upconversion technique is mediated by hot carriers in plasmonic nanostructures.

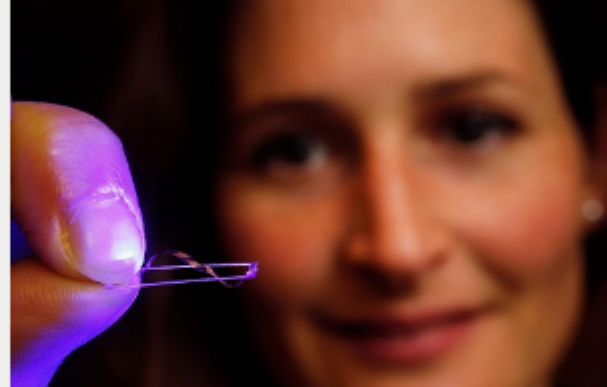


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### New Polymer Material Goes for a Walk When Illuminated

A new polymer material has been developed that can undulate and propel itself forward when exposed to light. Scientists at Eindhoven University of Technology and Kent State University clamped a strip of the polymer material in a rectangular frame and illuminated it with one fixed light source; then they sat back and watched as it "walked" on its own.



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## More Headlines

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## Featured Products



### Laser Control for Spectroscopy

#### Wavelength Electronics Inc.

Wavelength Electronics offers several high performance solutions for complete control of a laser diode or QCL based spectrometer. This includes low-noise laser current operation, and millikelvin stability temperature control. Choose the QCL Series with the PTC-CH for low noise, ultra-narrow linewidth and stable center wavelength.

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### sCMOS Newcomer pco.panda: Compact Design, Extended Performance

#### PCO-TECH Inc.

Experiencing loss of image quality due to small form factor? Not with pco.panda!

Despite ultra-compact measurements of roughly 65 x 65 x 65 mm with only 450 g weight, the new 16-bit sCMOS camera "pco.panda" provides high quantum efficiency up to 80 % and more than 40 fps at a full resolution of 2048 x 2048 pixels.

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## Industry Events

### SPIE Optics + Photonics 2017

August 6-10, 2017 - San Diego Convention Center - San Diego United States  
Photonics Media Booth: 739

SPIE Optics + Photonics 2017 is the premier event for the optics and photonics community, showcasing the latest research in optical engineering and applications, nanotechnology, sustainable energy, organic photonics, and astronomical instrumentation. Four conferences in one event - Nanoscience + Engineering, Organic Photonics + Electronics, Optical Engineering + Applications, and Optics + Photonics for Sustainable Energy. Join your peers at the largest multidisciplinary optical sciences meeting in North America.

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