

# IMAGING

## Tech Pulse




PHOTONICS MEDIA

### December 2019

Imaging Tech Pulse is a special edition newsletter from Photonics Media and PCO-TECH Inc. covering key developments in imaging technology. Manage your Photonics Media membership at [Photonics.com/subscribe](https://www.photonics.com/subscribe).

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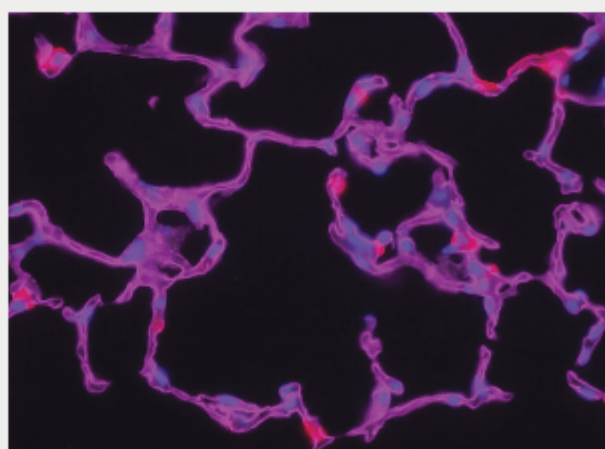


global shutter  
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pco.  
edge 26

pco.

### Deconvolution Helps Break Down Imaging Barriers

Deconvolution is a computationally intensive image processing technique used to improve the contrast and sharpness of images captured with a light microscope. Researchers can use this method to improve clarity — without additional optical hardware — and to obtain access to structures previously hidden above and below the focal plane.



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### PROMOTED CONTENT PCO-TECH Inc.

#### pco.flim: Frequency Domain FLIM Camera

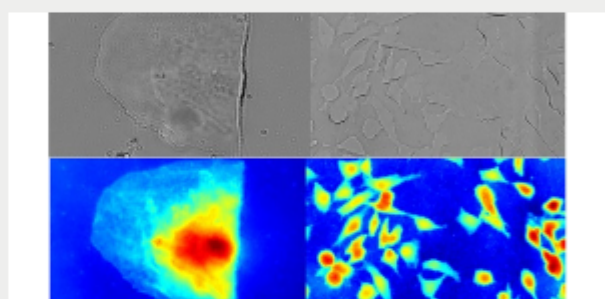
The pco.flim is the first Frequency Domain FLIM camera using a two tap CMOS sensor. Synchronized modulation of the light detection of the pixels and the fluorescence excitation light enables the analysis of luminescence decay times in the range of 100 ps – 100 μs. With its 1008 x 1008 pixels resolution the pco.flim reads out 45 double frames/s at a max. It covers a modulation frequency range of 5 kHz – 40 MHz. Using C-mount as standard the system is easy to connect to any microscope or lens. Further, with the USB 3.0 interface it is easy to connect the camera to all kinds of computers.



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### Microscopy Innovation Allows for Simultaneous Quantitative and Bright-Field Imaging

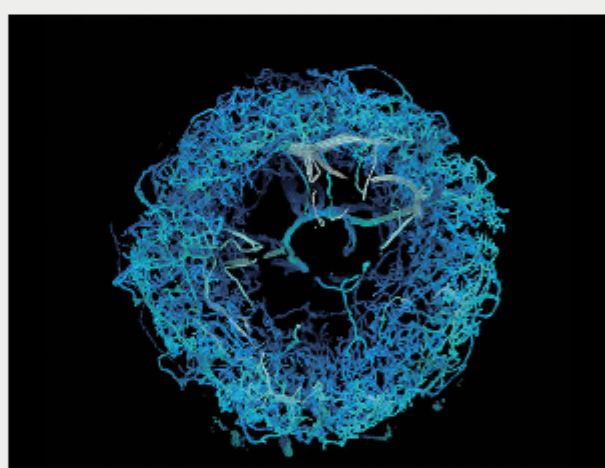
Researchers from King Abdullah University of Science and Technology have designed a microscope lens that is able to take both quantitative phase images and bright-field images in a single measurement. The researchers developed a microscope lens that incorporates a wavefront sensor, a custom-designed optical sensor able to encode the wavefront, or phase, information into intensity images.



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### Better Biomedicine via 3D Imaging

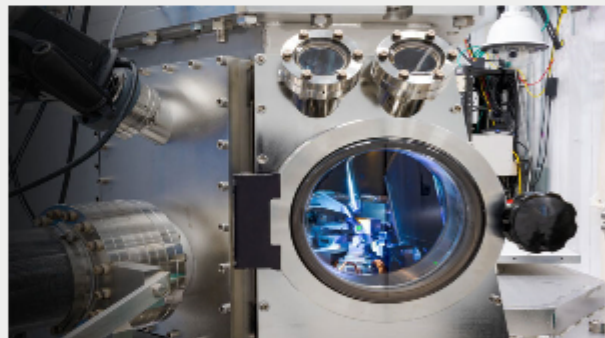
Advancements in biomedical 3D imaging promise to improve research findings and clinical outcomes, thereby producing widespread benefits. In research, a combination of techniques will enable high-speed visual 3D imaging effectively below the diffraction limit, allowing scientists to better track what goes on in the brain or to examine other tissues and organs.



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### Scientists Develop Photocatalyst That Can Turn CO2 to Fuel

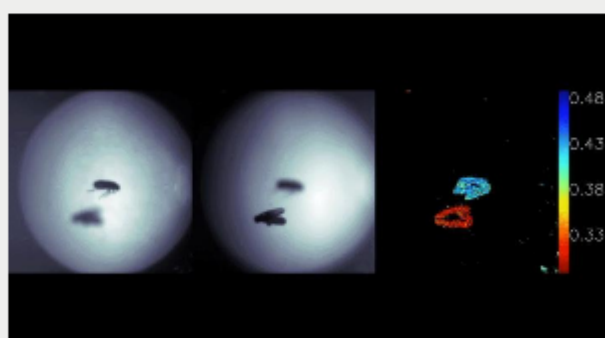
In a recent study from the U.S. Department of Energy's Argonne National Laboratory, scientists used a photocatalyst largely made of copper to transform carbon dioxide to methanol. The researchers used a photocatalyst made of cuprous oxide, a semiconductor that when exposed to light can produce electrons that can react with, or reduce, many compounds.



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### Bioinspired Sensor Uses Metalenses for Depth from Defocus

Researchers at the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) have developed a compact sensor that can measure depth in a single shot. The SEAS researchers combined multifunctional metalenses, nanophotonic components, and efficient computations to create a sensor that can efficiently measure depth from image defocus.



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## Webinars

### Frequency-Domain Fluorescence Lifetime Imaging: System Improvements and Applications

This webinar-on-demand, presented by PCO, discusses improvements in the use and applicability of the FD-FLIM pco.flim camera. New results including investigation of microplastics on lab filters, pH measurements, oxygen measurements in a marine environment, assistance for neurosurgery, and rapid FD-FLIM measurements are shown to demonstrate the flexibility of the pco.flim camera system.



[Watch Webinar](#)

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