

# IMAGING

## Tech Pulse



### January 2016

Imaging Tech Pulse is a special edition newsletter from Photonics Media and Toshiba Imaging Systems covering key developments in imaging technology.

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## X-Ray Camera Solutions



### As Photonics Advances, Safety and Security Progress

On the camera front, resolutions are moving to the multi-megapixel, high-definition range. Having many such cameras churning out mountains of largely routine video could overburden network, storage and analysis systems.



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### Toshiba Imaging Systems

#### Toshiba Imaging's New UltraHD 4K - World's Smallest 3-Chip Video Camera

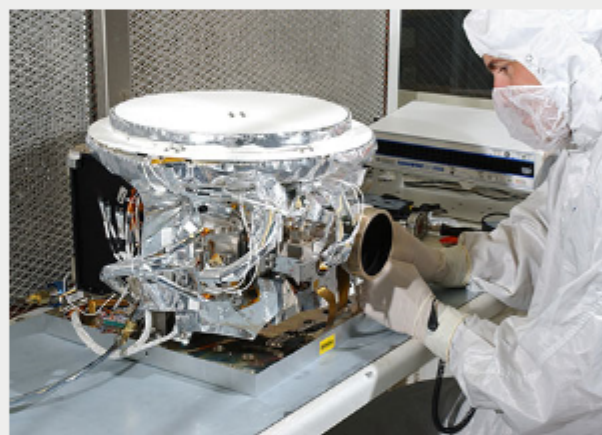
Toshiba Imaging Systems Division, announces the IK-4K, UltraHD 4K, the world's smallest 3-chip video camera with an unprecedented 8-megapixel, 3840 x 2160 pixel output.



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### Understanding Our Universe: The Future of Photonics Is Written in the Stars

Two cameras on board NASA's New Horizons mission are helping scientists explore Pluto. One camera features seven charge-coupled devices and an infrared array detector, all of which provide color and black-and-white maps of the planet's surface. The other is an ultraviolet imaging spectrometer designed to image ultraviolet emissions and provide spectral images in the extreme- and far-ultraviolet passbands.

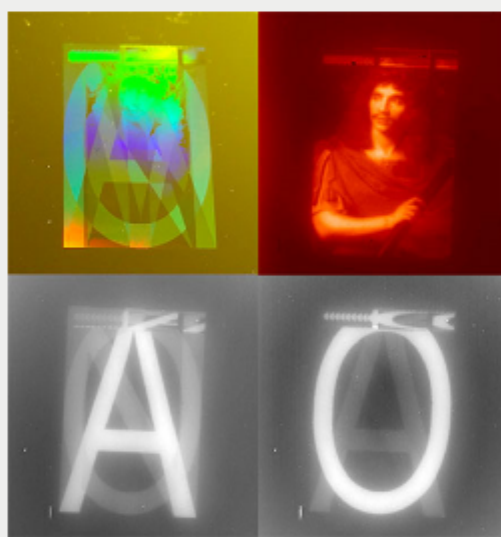


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### Metasurface Encodes IR Images

Irregular metasurfaces can be made to encode multiple images at IR frequencies in much the same way as the pixels in a television screen can form a visible-light image. This was demonstrated with an array of subwavelength metal-insulator-metal (MIM) resonators that revealed different letters and even a famous painting when heated and imaged at different wavelengths and polarizations.



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### Application Note: NIR Spectroscopy Aids Diagnosis of Neonatal Brain Injury

A near-infrared (NIR) spectroscopy system has been used to measure cerebral changes and oxygen utilization in vivo, offering a noninvasive diagnostic technique for neonatal brain injury. The system simultaneously measured cerebral changes in tissue oxygenation and hemodynamics by estimating the changes in hemoglobin concentration.



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### Worm Brain Imaging Illustrates Neurons' Role in Movement

A fluorescence microscopy technique has yielded 3D footage of brain activity in unrestrained worms, offering insight into how populations of neurons generate animal behavior. The setup included a suite of three cameras to monitor neuronal fluorescence, as well as the worm's position and orientation.

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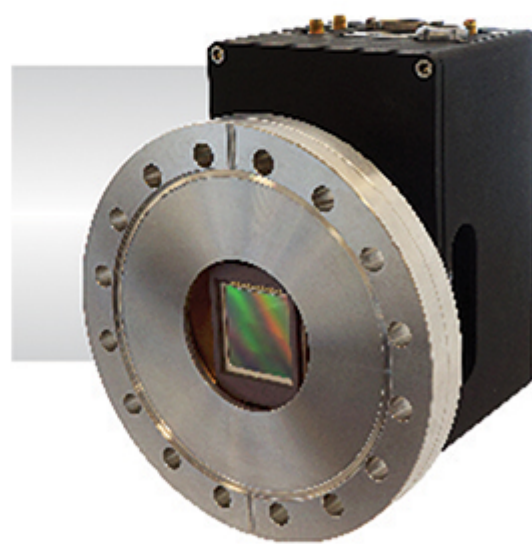


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## Eagle XO X-Ray

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