

# lmaging **Tech Pulse**



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#### Microscopy Light Sources Illuminate Research Biology

Research biology is changing, moving toward more complex experiments that combine imaging and traditional fluorescence with photostimulation and electrophysiology. As these new directions evolve, they require light sources that adapt on the fly, rapidly providing multiple wavelengths in a format that is programmable and tunable.

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#### Photomultiplier Detects Ocean Color at Night

Just how blue the ocean is can be a clue to the health of its inhabitants, and now scientists have a way to gauge that color even under dark of night.

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### PentaVac™ Vacuum Technology

CCD imaging sensors are used extensively in high-end imaging applications, enabling acquisition of quantitative images with both high resolution and sensitivity. Some photon-starved applications require even these highly sensitive devices to be used with both long exposure times and high amounts of binning in order to obtain a detectable signal. To do this the CCD must be deep cooled to reduce the noise component associated with dark signal. Read Raptor's white paper on cooling CCDs.

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## Noninvasive Imaging Method Promising for Skin Assessment

A laser-speckle imaging technique using low-power red lasers can assess skin aging better than traditional imaging methods, a team at De Montfort University has discovered. As a possible alternative to high-cost confocal microscopy, it could lead to better understanding of skin growth, damage and diseases, and could also lead to better and more personalized skin treatment.

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#### Nanoinjection Makes Photon Detection More Efficient

Northwestern University researchers have come up with a new approach that operates photon number resolving imaging systems at short-wave IR (SWIR) wavelengths. This could benefit applications such as scalable quantum computing, noninvasive diffused optical imaging and optical coherence tomography (OCT).

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#### One Photon Per Pixel Produces 3-D Lidar Image

A new lidarlike system, developed at MIT's Research Laboratory of Electronics (RLE), requires 100 times less light to infer depth, meaning it could result in substantial savings in energy and time, both of which are at a premium in autonomous vehicles trying to avoid collisions.

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