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Breakthrough eXcelon CCD Technology Now Enhances Sensitivity for Low-Light, NIR Imaging and Spectroscopy

Trenton, NJ — Princeton Instruments is pleased to introduce eXcelon deep-depletion CCDs and cameras for low-light, near-infrared (NIR) imaging and spectroscopy. New eXcelon deep-depletion technology provides significant improvements over standard deep-depletion technology, including reduced etaloning and higher quantum efficiency (QE) across a broader wavelength range (200 to 1100 nm). The new CCDs, with 1340 x 100, 1340 x 400, 1024 x 1024, and 1340 x 1300 resolutions, are available in Princeton Instruments PIXIS and Spec-10 deep-cooled, low-noise camera platforms. As well as being ideal for broad UV-NIR detection, new eXcelon deep-depletion technology is also especially well suited to low-light, NIR imaging and spectroscopy applications, including NIR Raman spectroscopy, solar wafer/cell inspection, NIR luminescence, and astronomy.

New eXcelon back-illuminated, deep-depletion CCDs provide excellent photon-detection capabilities across a wider spectrum, from 200 to 1100 nm, and are particularly beneficial for applications requiring enhanced sensitivity in the blue and NIR regions. In addition to delivering peak QE of greater than 95% and as much as a 45% increase over a broader UV-NIR wavelength range, eXcelon deep-depletion sensors offer a further reduction in etaloning.

“Since the joint launch of the first eXcelon sensors by Princeton Instruments, e2v technologies [UK], and Photometrics at Photonics West in January 2010, eXcelon-enabled cameras have received tremendous response from the market, thanks primarily to their ability to overcome the long-standing issue of etaloning [unwanted fringes in the NIR] while boosting sensitivity over a wider wavelength band,” explains Ravi Guntupalli, Product Manager at Princeton Instruments. “New eXcelon deep-depletion technology is yet another leap forward, offering unprecedented performance for low-light, NIR imaging and spectroscopy applications. Simply put, these are the best scientific NIR, low-light CCD cameras available, bar none.”

The addition of eXcelon deep-depletion technology extends the benefits of eXcelon-enabled cameras to an even wider variety of applications in both the life sciences and physical sciences. Examples include astronomy, Raman spectroscopy, live-cell imaging, confocal imaging, total internal reflection fluorescence (TIRF), Förster resonance energy transfer (FRET), Bose-Einstein condensate (BEC) imaging, solar cell inspection, and super-resolution techniques such as STORM and PALM. The following table provides a summary of various eXcelon sensors and cameras:

eXcelon Sensor Technology	Princeton Instruments Camera Models	Salient Features	Applications
Back-Illuminated, eXcelon CCD (B_eXcelon CCD)	PIXIS, Spec-10	Optimum VIS-NIR sensitivity, lowest dark current	Astronomy, fluorescence imaging/spectroscopy
Back-Illuminated, eXcelon EMCCD (B_eXcelon EMCCD)	ProEM	High frame rates, single-photon sensitivity, lower etaloning, enhanced QE in NIR and blue, low dark current	Single-molecule fluorescence, Bose-Einstein condensate (BEC) imaging, time-resolved imaging / spectroscopy, plasma diagnostics, super-resolution microscopy (STORM and PALM), confocal microscopy
Back-Illuminated, Deep-Depletion, eXcelon CCD (BR_eXcelon CCD)	PIXIS, Spec-10	Best NIR (>750 nm) sensitivity, lowest etaloning, broad wavelength coverage (UV-NIR)	BEC imaging, Raman spectroscopy, astronomy, NIR luminescence, solar cell inspection

For more information, please visit www.princetoninstruments.com, www.eXcelonCCD.com, or www.eXcelonEMCCD.com.

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NOTES FOR EDITORS:

About Princeton Instruments

Princeton Instruments designs and manufactures high-performance CCD, ICCD, and EMCCD cameras; spectrographs; and optics-based solutions for the scientific research, industrial imaging, and OEM communities. We take pride in partnering with our customers to solve their most challenging problems in unique, innovative ways. Princeton Instruments is a registered ISO 9001: 2008 company. For more information on Princeton Instruments products, please visit www.princetoninstruments.com.

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