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Biophotonic Technologies Enter Varied Markets

A new report details opportunities for photonics in the life sciences and medicine. Biophotonic technologies have received more and more attention in recent years, highly touted as more-effective, cost-saving methods with applications ranging from medicine to life sciences research and beyond. In the wake of the bubble bursts in the telecom and solar industries, cautious CEOs might wonder whether the hype surrounding biophotonics is leading up to the same thing - bubble and burst - and, if not, what the opportunities might be for components manufacturers in this booming market. EPIC (European Photonics Industry Consortium) recently released a report outlining opportunities in the biophotonics value chain.

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PRISM AWARDS WINNER

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Verisante Technology - 2013 Prism Award Winner

Traditional skin cancer diagnosis involves a visual exam followed by an invasive, expensive and time-consuming biopsy. But Aura allows Raman-based disease detection to move to the doctor's office for the first time. Aura's underlying technology also has shown great promise in the early detection of other cancers, including that of the lung, cervix and colon. Company: Verisante Technology (British Columbia, Canada) Product: Aura Website: www.verisante.com

Hyperspectral Imaging Could Help Fight Chronic Wounds

The technique could advance diagnosis and management of this growing public health issue. Chronic wounds might not seem a major public health concern - they don't often make the evening news - but the burden of treating them is significant and growing rapidly. Often masked as a comorbid condition, chronic wounds affect a surprising number of people: 6.5 million patients in the US alone. And because of the aging population and the increase in the incidence of diabetes and obesity - both of which are associated with such wounds - the prevalence and the cost are on the rise.

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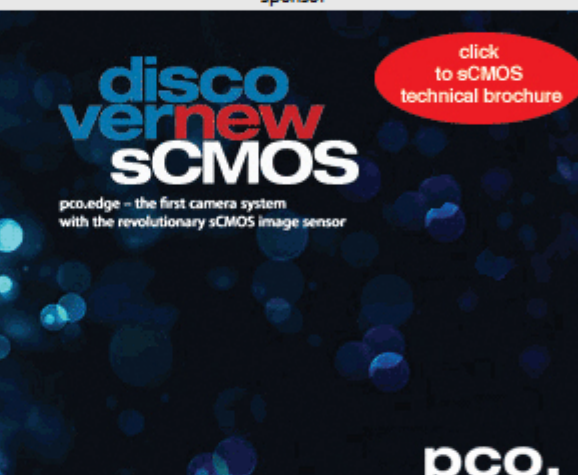
Light Controls Cell Behavior

Light-sensitive proteins in cells can be coaxed to move toward a beam of light, a first step toward manipulating cells to control insulin secretion or heart rate using light, a new study out of Washington University School of Medicine has found. The researchers used genetic engineering techniques to introduce a light-sensing protein called an opsin - proteins made in the eye of humans and other animals, which translate light signals into vision - into immune cells. The proteins enabled the investigators to induce cell movement by shining a laser in the direction in which they wanted a cell to travel.

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In this edition of the industry's premier weekly newscast: an IR camera proves valuable for detecting whales in the wild, mechanical pressure is converted to light signals, and we meet the first winner of The Optical Society's Enabled by Optics contest. Hosted by Photonics Media's Laura Marshall and Melinda Rose.

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Brain's Circuits Shown With New CLARITY

Traditionally, imaging organs such as the brain has involved a slicing or sectioning method, which destroys long-distance neural connections. Now the brain's circuits can be seen with CLARITY (Clear Lipid-exchanged Acrylamide-hybridized Rigid Imaging/Immunostaining/In situ hybridization-compatible Tissue-hydrogel). The technique yields a 3-D transparent brain, with all of its important structures - neurons, axons, dendrites, synapses, proteins, nucleic acids, etc. - intact and in place.

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Neighboring Cells Detect Ovarian Cancer Early

Ovarian cancer - the fifth leading cause of death in women in the US - often goes undetected until it has spread elsewhere. But a new minimally invasive method that investigates cells taken from the neighboring cervix or uterus could provide early detection. The technique uses partial wave spectroscopic microscopy to examine the architecture of cells at the nanoscale, detecting minute changes that are the earliest known signs of carcinogenesis. These changes can be seen in cells far from the tumor site - in a biological phenomenon known as the "field effect" - or even before a tumor forms.

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