Wednesday, July 14, 2021

# PHOTONICS spectra

PHOTONICS MEDIA photonics.com

Monthly newsletter from the editors of Photonics Spectra, with features, popular topics, new products, and what's coming in the next issue. Manage your Photonics Media membership at Photonics.com/subscribe.



**UV-VIS Spectroscopy Extends from the Lab to Outer Space**

Although many scientists and engineers have preferred other spectroscopic methods as light source and detector technologies have advanced, the use of UV-VIS spectroscopy has not dwindled. In fact, growth in the pharmaceutical, food, and environmental services sectors has spurred projections of a 5.1% compound annual growth rate in UV-VIS spectroscopy between 2020 and 2028, and an expected global market value approaching $1.5 billion by the end of the same period.

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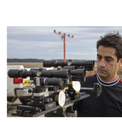
**Why SWIR Imaging? Insights on Its Practical Implementations**

Originally developed for applications in defense, infrared scanning technology targeting the shortwave infrared (SWIR) band has become more widely adopted in many other applications over the last decade. From predicting water stress or detecting disease in crops to inspecting produce headed to market, commercial SWIR imaging technology is starting to yield real benefits in the agriculture industry, including increased crop production, lower-cost produce, and reduced food waste.



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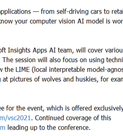
**Photonics Scores a Touchdown for Space Exploration**

As the Apollo 11 astronauts were initiating the first human-crewed landing on the moon, Neil Armstrong looked out of the module's small window and, rather than observing a relatively flat landing zone on the lunar surface, he saw a boulder field. So he took control of the spacecraft and piloted it to a safe site, which became known as Tranquility Base.



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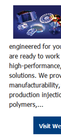
## .: *Vision Spectra* Conference



**Presentation: Is It a Wolf or a Husky? Can You Trust Your AI Vision Model?**
**Presented by: Ted Way, Microsoft**

Artificial intelligence is ubiquitous in computer vision applications — from self-driving cars to retail, healthcare, manufacturing, and beyond. How do you know your computer vision AI model is working as advertised?

In his presentation, Ted Way, Ph.D., a program manager lead for the Microsoft Insights Apps AI team, will cover various ways that AI models can be fooled, such as by adding stickers to a stop sign. The session will also focus on using techniques to probe how a vision AI model makes a decision. Finally, Way will show how the LIME (local interpretable model-agnostic explanations) technique explains what an AI model is doing when it's looking at pictures of wolves and huskies, for example.

The inaugural *Vision Spectra* Conference runs July 20 - 22. Registration is free for the event, which is offered exclusively online. For more information and registration, please visit www.photonics.com/vsc2021. Continued coverage of this inaugural event will also be available on vision-spectra.com and Photonics.com leading up to the conference.

Register Now

## .: Featured Products

**SmartStage™ XY**
**Dover Motion**
With a SmartStage™ XY positioner, the high-performance controller and all hardware to position the stage are built-in. By embedding what used to be multiple cables and external electronics, the control is seamless, and performance-optimized for low noise.

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**C-RED 2 SWIR Extended Range**
**First Light Imaging SAS**
C-RED 2 Extended Range is an extended SWIR camera (1300 – 2200 nm) based on a 640 x 512 pixels ER-InGaAs detector, offering extremely-high frame rates and high sensitivity, and opening new perspectives in SWIR imaging.

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**Precision Polymer Optics**
**GS Plastic Optics**
Injection molded optics, engineered for your success. Our in-house experts are ready to work with your technical team creating high-performance, molded, optical element solutions. We provide expertise on design for manufacturability, single-point diamond turning, production injection molding, thin-film coating on polymers,...

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**Laser-based Specimen Preparation**
**3D-Micromac AG**
microPREP™ PRO is a laser-based sample preparation system, that provides smart processes for a range of specimen preparation applications. With its ultrashort pulsed laser source, it complements existing approaches to sample preparation like FIB, SEM/TEM, x-CT, and microscopic analysis of any kind.

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**Automated Glass Components Processing**
**NYFORS' Teknologi AB**
The NYFORS SMARTSPLICER is a CO2 laser glass-processing system designed for the production of high-power and sensitive photonic components. It offers contamination free end-capping, splicing, tapering, bundling, and many other glass-shaping processes.

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**Multi-Line Technology at Its Best**
**Teledyne DALSA, Machine Vision OEM Components**
Designed with performance in mind, the Linea™ Lite family offers innovative mono and color performance with resolutions from 2k to 4K, and line rates up to 50 kHz.

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**Vibration Isolation Workstation**
**Kinetic Systems Inc.**
Designed to isolate sensitive instruments and experiments up to 1300 lbs., the 9100 can be customized by adding a variety of work surfaces and accessories. Providing both vertical and horizontal isolation and supported by a VibraDamped steel frame with an Active-Air suspension, the isolated tabletop will maintain a preset...

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**Adjustable Pulse Generator**
**Highland Technology Inc.**
The J270 is a tiny high-voltage pulse generator, with user-settable delay and pulse width in the nanosecond range. It makes clean, fast pulses from 0.8 to 20 V, with typical 1 ns rise and fall. An optional 44-V version is available. It is an ideal cable, SiC FET, PIN diode, or laser driver.

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**SWIR Image Sensor Testing**
**Gamma Scientific**
The RS-7 SWIR Tunable Light Source creates nearly any SWIR spectrum (855 – 1700 nm) with highly uniform illumination over a wide FOV. The system enables stable, tunable, and accurate illumination of camera and image sensors, medical/life sciences, facial recognition, vision research and color science.

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**Micro-Precision 3D Printers**
**Boston Micro Fabrication - BMF**
A 2021 Prism Awards winner, the microArch S240 is a micro-precision 3D printer capable of achieving resolution of 2 µm – 50 µm and tolerance of +/- 5 µm – 25 µm, thus providing mold-free, ultra-high-resolution fast prototyping and end part capability.

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## .: In Case You Missed It

**STED Microscopy Calibration Uses Adaptive Optics to Improve Brain Imaging Capabilities**

Researchers from the University of Bordeaux have found a way to calibrate stimulated emission depletion (STED) microscopy for improved brain imaging. The method increases the depth at which STED microscopy can image and be applied to other tissues.



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**Molecular Coating Outperforms Traditional Material to Improve Solar Cell Performance**

Experiments showed that a coating just one molecule thick can significantly enhance the performance of an organic photovoltaic cell. In performance, the coating outperformed PEDOT:PSS, which is the leading material used for the same task. In addition to improving the performance of OPVs, the single-molecule coating developed by scientists at King Abdullah University of Science and Technology could be used to improve other devices that rely on organic molecules, such as LEDs and photodetectors.

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**Light-Based Method Creates 2D Polymer, Expedites Quest for New 2D Materials**

A method that uses light to manufacture 2D polymers that have the thickness of a single molecule could create a path for the development of ultrathin, functional 2D materials with highly defined and regular crystalline structures.

Read Article

## .: Upcoming Webinars

**AuSn Thin-Film Technology and AuSn Pre-deposited Substrates for Optoelectronics**
Wed, Aug 25, 2021 10:00 AM - 11:00 AM EDT
AuSn thin film is a critical technology to enable an optoelectronic device to ensure durability, anti-oxidation ability and reliability compared with Indium, SnPb, SnBi, and others. In this webinar, Allen Liu of Focuslight Technologies Inc. explains the design, key processes, and application data of high-power laser diode devices. Presented by FocusLight Technologies Inc.

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## .: Next Issue:

**Features**
Augmented and Virtual Reality, Micro-Optics Manufacturing, Tunable Laser Spectroscopy, and more.

**Photonics Media** is currently seeking technical feature articles on a variety of topics for publication in our magazine *Photonics Spectra*. Please submit an informal 100-word abstract to Daniel McCarthy, Senior Editor, at Daniel.McCarthy@Photonics.com, or use our online submission form www.photonics.com/submitfeature.aspx.

## About *Photonics Spectra*




Since 1967, *Photonics Spectra* magazine has defined the science and industry of photonics, providing both technical and practical information for every aspect of the global industry and promoting an international dialogue among the engineers, scientists and end users who develop, commercialize and buy photonics products.

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