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SPECTROSCOPY NEWSLETTER

The latest news, features, and product developments in spectroscopy technology – brought to you by Photonics Media. Manage your Photonics Media membership at Photonics.com/subscribe.

Quantum Processor Improves Spectroscopy Measurements

University of Warsaw researchers are applying the first quantum processor built in Poland to spectroscopy. A team at the university has demonstrated how quantum information processing can efficiently provide information on matter hidden in light, in work that stems from a collaboration in which physicists designed and built the first quantum memory in Poland.

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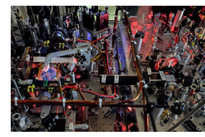

SERS-Based Nanosensor Detects Pesticides on Fruit

Researchers at the Karolinska Institutet in Sweden have developed a nanosensor based on surface-enhanced Raman spectroscopy, or scattering (SERS). The proof-of-concept method uses flame-sprayed silver nanoparticles to increase the signal of chemicals.

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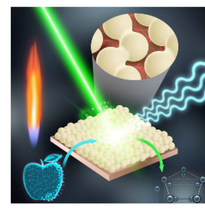

Spectroscopy Method Measures Both Terahertz, Raman Fingerprint Regions

A Raman spectroscopy technique, called dual-detection impulsive vibrational spectroscopy (DIVS) by its developers at the University of Tokyo, allows two types of vibrational signals to be measured concurrently. DIVS enables broadband detection over the low-frequency, or terahertz, region and over the fingerprint region of the Raman spectrum at an ultrafast, real-time spectral rate of 24,000 spectra per second.

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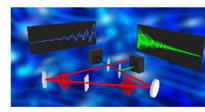

.: Featured Products & Services

IR Filters for Thermal Imaging and Gas Detection

Spectrogon US

Spectrogon manufactures infrared filters and windows with high transmission, high rejection outside the passband, while maintaining excellent coating uniformity — for thermal imaging and gas detection applications such as cryogenically cooled IR detectors and for uncooled microbolometers. Our filters and windows range in dimension from Ø6.0 to Ø200.0 mm with state-of-art dicing capabilities. Custom designs are always welcome.

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Miniature Spectroscopy Redefined

Avantes BV

Spectroscopy redefined, that is what we consider our CompactLine spectrometers to be. High resolution and speed, ensuring unsurpassed inter-instrument reproducibility. In applications where size matters, the AvaSpec CompactLine offers spectrometers with one of the smallest form factors on the market today. Because of the small size, our compact spectrometers are perfectly suited for integration into OEM systems and handheld devices.

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Reusable Sensor Deploys Nanopatch Antenna for Diagnosis

A tiny, reusable sensing chip developed by University of Buffalo researchers could lead to new point-of-care medical tests. The sensor uses surface-enhanced infrared absorption (SEIRA) spectroscopy, with technology that is based on nanostructures that are nearly as small as the biological and chemical molecules they aim to detect.

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Hyperspectral Method Adds Speed, Accuracy to Wafer Inspection

A high-throughput metrology technique for semiconductor manufacturing, developed by Samsung Electronics, combines spectroscopy and imaging to measure in-cell uniformity (ICU) and in-wafer uniformity (IWU) of semiconductor devices used in high-volume manufacturing. The line-scan hyperspectral imaging (LHSI) approach measures semiconductor structures with speed, high spatial resolution, and high spectral resolution.

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CMOS-Compatible Photodetector Spurs Possibilities in the Extended SWIR

High-bandwidth germanium-tin (GeSn) photodetectors, developed by a team at Polytechnique Montréal to support CMOS-compatible technologies in the extended shortwave infrared (e-SWIR) wavelength, could open the way for applications in ultrafast spectroscopy, next-generation optical communications, artificial intelligence, and other emerging areas.

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Spectroscopy Deems Biexciton Binding Energy Usable in Electronics

Researchers at Swinburne University of Technology used an advanced spectroscopy technique to quantify the energy required to bind two excitons into a biexciton state. The team directly measured the biexciton binding energy in tungsten disulfide a 2D material that belongs to the transition metal dichalcogenide (TMDC) family of semiconductors. The findings could be used to develop applications based on the flow of biexcitons in TMDCs.

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.: Upcoming Webinars

Wavelength-Selective Optical Filters: Providing More Signal and Less Background to PCR Instruments

Thu, Jul 7, 2022 1:00 PM - 2:00 PM EDT

Engineers creating polymerase chain reaction (PCR) instrumentation face unique challenges in both qualitative detection of nucleic acid sequences, using end-point analysis and quantitative detection of nucleic acid sequences, using real-time analysis. Quantitative PCR (qPCR) instruments that operate in real time require a favorable signal-to-noise ratio, combined with high sensitivity. Jason Palidwar of Iridian Spectral Technologies shares the role photonics and optical filters play in qPCR instruments along with the challenges presented by their specification, design, and manufacture.

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