Wednesday, May 03, 2017

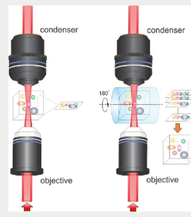
SPECTROSCOPY Tech Pulse

May 2017

Spectroscopy Tech Pulse is a special edition newsletter from Photonics Media covering key developments in spectroscopy technology.

Volumetric Imaging Technique Could Eliminate Needles for Blood Tests

Researchers from Purdue University have developed a chemical imaging system that uses a femtosecond laser to penetrate deep into tissue that could eliminate conventional blood tests for analyses such as drug testing and early detection of diseases. The laser system has two 100-fs pulses — one at 1040 nm with the other tunable from 680 to 1300 nm — giving the user the ability to tune the laser to excite different vibrational transitions of the specimen.



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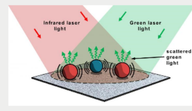
Spectroscopy Technique Could Detect Chemicals in Minuscule Amounts

A microscope that can chemically identify µm-sized particles could one day be used in airports and other high-security venues to rapidly screen people for microscopic amounts of potentially dangerous materials. The technique, which was developed by researchers at the Massachusetts Institute of Technology's Lincoln Laboratory, uses photothermal modulation of Mie scattering (PMMS) to enable concurrent spatial and spectral discrimination of individual µm-sized particles, and uses an imaging configuration to detect multiple species of particles.



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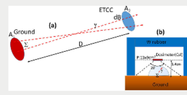
Imaging Gamma Rays to Help Decontaminate Fukushima

A novel camera for visualizing radioactive hot spots is being used to develop radioactivity maps for use in the decontamination of the site of the 2011 nuclear accident in Fukushima. The Electron Tracking Compton Camera (ETCC) can perform simultaneous measurement of brightness and spectrum of MeV gamma rays.



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Lost in Translation

Finding scientific ways to measure whether a target audience understands the message conveyed has baffled many a researcher as they look for methods to improve the exchange of information when the "message" isn't getting across. Biomedical engineers at Drexel University and psychologists at Princeton University think they have a solution in the form of a wearable brain imaging device that displays brain activity between people verbally interacting. The portable functional near-infrared spectroscopy (fNIRS) system uses light to measure brain activity.

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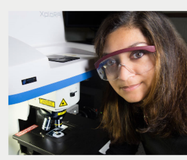
Quantum Dot Spectrometer in Development for Use in Space

A prototype of an imaging spectrometer based on quantum-dot technology could miniaturize and potentially revolutionize space-based spectrometers, particularly those used on uninhabited aerial vehicles and small satellites.The emerging technology could give scientists a more flexible, cost-effective approach for developing spectrometers.



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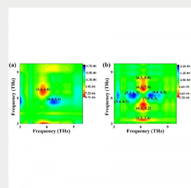
Terahertz Analysis Helps Target Measures for Controlling Pollution

A combination of terahertz (THz) absorption and 2D correlation spectroscopy (2DCOS) has been used to identify the concentration and pollution sources of PM2.5 (particulate matter less than 2.5 µ in diameter) in the Beijing-Tianjing-Hebei region of China. The THz-2DCOS analysis revealed that samples with high PM2.5 were related to higher THz absorption at selected frequencies. This information was used to determine appropriate emergency measures needed to relieve haze pollution.



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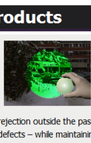
Products



Low-Cosmetic Defect IR Filters for Thermal Imaging

Spectrogon US

Spectrogon manufactures infrared filters and windows with high transmission, high rejection outside the passband, and introducing low cosmetic defects – while maintaining excellent coating uniformity --- for thermal imaging 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 dicing capabilities down to as small as 1.0 x1.0 mm.

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671 Series Laser Wavelength Meter

Bristol Instruments Inc.

The 671 Series High-Accuracy Laser Wavelength Meter from Bristol Instruments is the best way to measure the absolute wavelength of CW lasers that operate from the visible to the mid-IR. This information is critical for applications such as high-resolution laser spectroscopy, photochemistry, cooling/trapping, and optical sensing.

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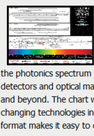

Photonics Spectrum Reference Chart

Photonics Media

This full-color, 30 × 20.5-inch poster of the photonics spectrum displays the major commercial laser lines, detectors and optical materials in the ultraviolet to the far-infrared and beyond. The chart was updated in 2015 to reflect the changing technologies in the photonics industry. The convenient format makes it easy to quickly find the information you need.

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Bruker Solution for Silicon Quality Control

Bruker Optics Inc.

The new Bruker SiBrickScan (SBS) is the first commercially available FTIR at-line instrument allowing for the quantification of interstitial Oxygen in complete Silicon bricks and ingots. Since Silicon is by far the most important semiconductor material in electronics and photovoltaics, Bruker is proud to introduce the SBS system.

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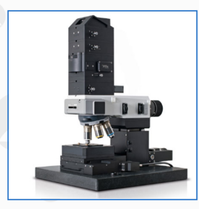
Webinars

Perspectives in 3D Confocal Raman Imaging

Tue, May 30, 2017 11:00 AM - 12:00 PM EDT

This webinar, presented by WITec, will show the workflow and power of confocal Raman imaging for analyzing the chemical composition, crystallinity, stress, optoelectronic and structural properties of materials and organisms. It will introduce you to state-of-the-art developments in confocal Raman imaging, including user-friendly automated features and the ability to extract information from the data set more easily, leading to improved analysis. The presentation will cover recording surface topography of rough and uneven surfaces using WITec's TrueSurface technology. A live data evaluation of measured data sets will demonstrate the power of confocal Raman imaging today. Presenter Thomas Dieing, Ph.D., is director of applications and support at WITec GmbH in Ulm, Germany.



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