

SENSORS & DETECTORS



Tech Pulse



June 2019

Sensors & Detectors Tech Pulse is a special edition newsletter from Photonics Media and Hamamatsu Corporation covering key developments in sensors and detectors technology. Manage your Photonics Media membership at Photonics.com/subscribe.

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Growing Developments with NIR Spectroscopy

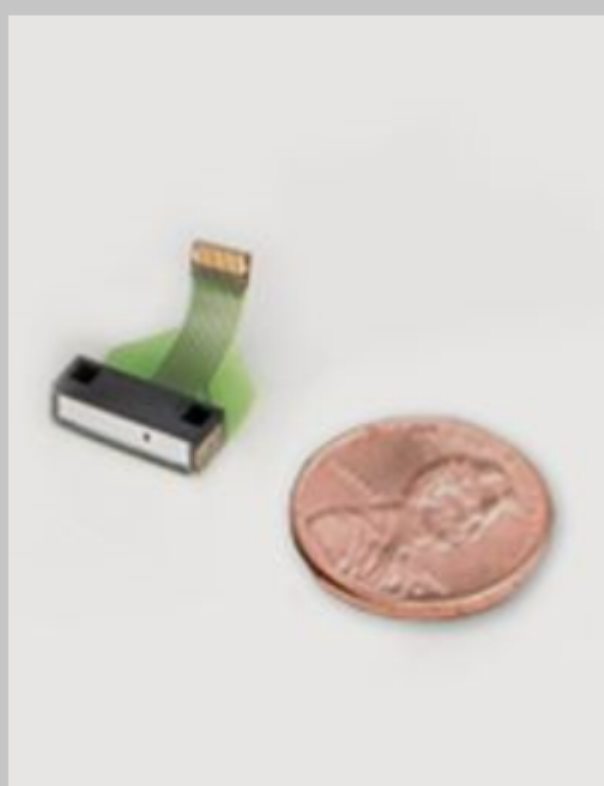
Advancements to NIR LED emitters are helping to grow the product portfolio for mobile spectroscopy and opening new application products for well-being and health monitoring. Consumers will soon be able to use their smartphones to check the freshness of supermarket food, measure the calories in restaurant meals, and verify whether a medication is valid and contains its prescribed contents.



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Hamamatsu Corporation Hamamatsu's SMD Mini-Spectrometer

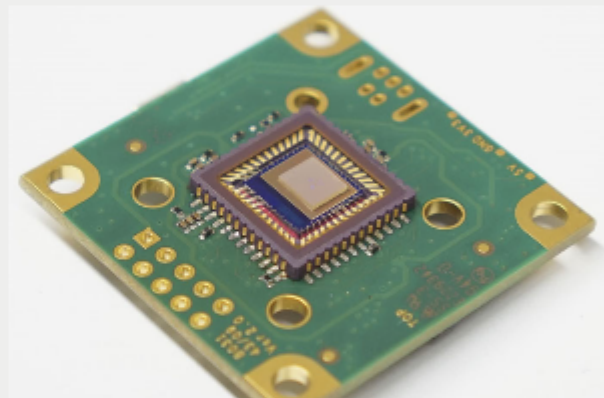
The new SMD mini-spectrometer series from Hamamatsu enables new levels of flexibility for designers with its remarkably compact design. Our latest grating type spectrometer, the SMD series model C14384MA-01 features high sensitivity for near-infrared detection, compressed size, lightweight design, and low cost. The C14384MA-01 is about 1/40th of the cubic size and 1/30th of the weight compared to Hamamatsu's MS series of mini-spectrometers, representing a significantly lower profile that enables its use in many devices.



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Single-Shot Spectrometer Offers Portability, High Resolution

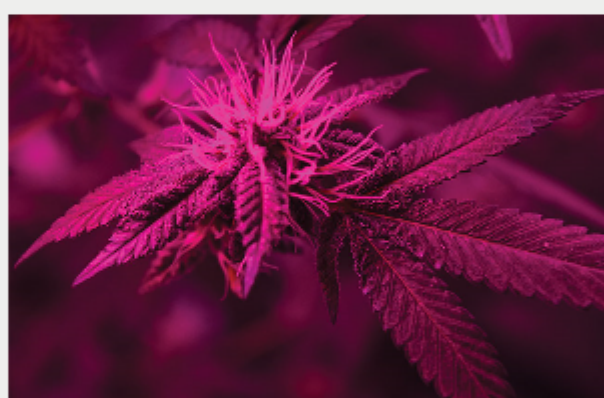
Engineers at the University of Wisconsin-Madison have developed a compact, single-shot, free-space-coupled spectrometer with hyperspectral imaging capabilities that can be integrated with a cellphone. The spectrometer is fabricated on top of and integrated with a CMOS chip.



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Cannabis Industry Boom is a Boon for Spectroscopic Detection

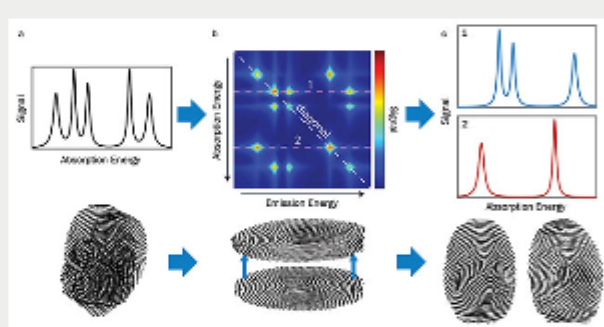
Scientists and researchers — working alongside growers, extractors, producers, dispensaries, and law enforcement — have developed specialized testing labs and portable spectroscopic devices, and have leveraged analytical techniques both to assist manufacturers and to safeguard consumers.



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Single-Beam Multidimensional Coherent Spectroscopy

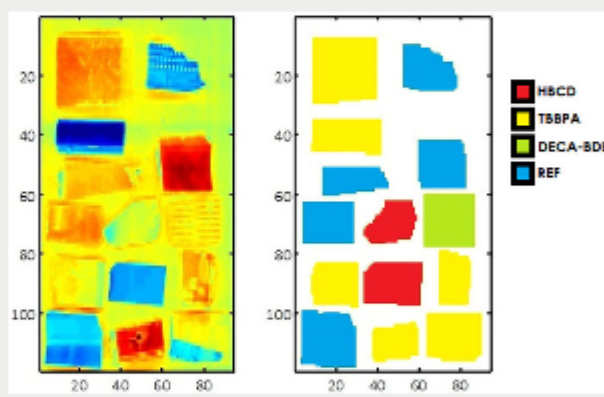
Multidimensional coherent spectroscopy (MDCS) is a set of laser techniques that nondestructively measures how evolving matter absorbs and emits light. The information present in a multidimensional spectrum is both extensive and straightforward to interpret, and MDCS provides valuable information on materials, chemicals, and biological systems.



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Hyperspectral Imaging Could Automate, Improve Plastics Recycling

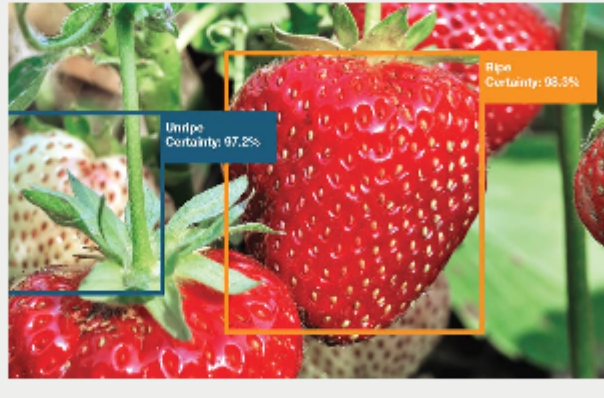
A new method using NIR hyperspectral imaging (HSI) and chemometrics could make it possible to sort between different types of plastic and between different flame retardants added to plastic — a necessity for recycling plastics more economically.



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Innovations in Machine Vision Bolster Food Inspection

Machine vision inspections and their associated quality judgments are now possible because of advanced analytics. Innovations in lighting and sensors have expanded the spectrum that can be imaged, and added depth information. Further improvements promise to make inspections even faster and less costly, yet more powerful.



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Laser-Induced Avalanche Breakdown Detects Radioactive Material Remotely

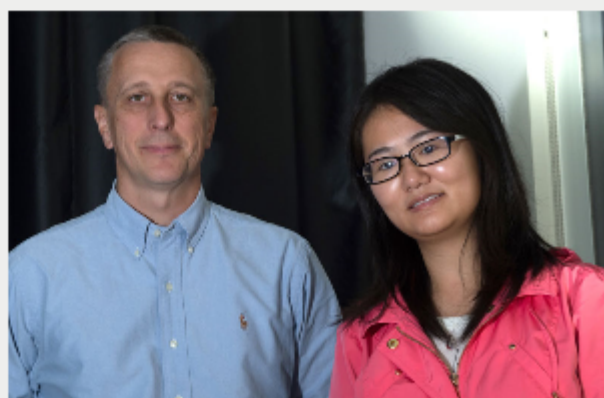
A new method to identify radioactive material employs an IR laser beam to detect shielded material from a distance. The method, developed by physicists at the University of Maryland, improves upon current detection technologies that require close proximity to the radioactive material.



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Image Spectrometer Captures and Calibrates Record Amounts of Data Rapidly

Researchers at Rice University have developed a compact, fiber-based image spectrometer for remote sensing. Called the Tunable Light-Guide Image Processing Snapshot Spectrometer (TuLIPSS), the device combines high spatial resolution with large amounts of spectral information and can deliver data to a detector instantly.



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