

LASERS



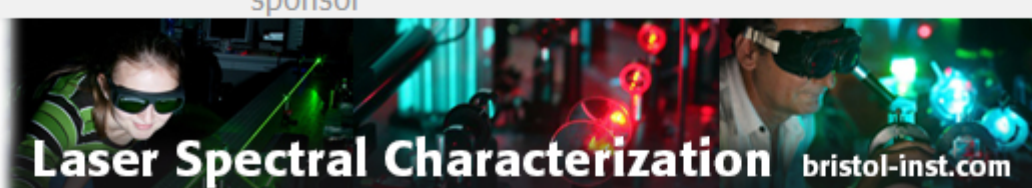
Tech Pulse



September 2017

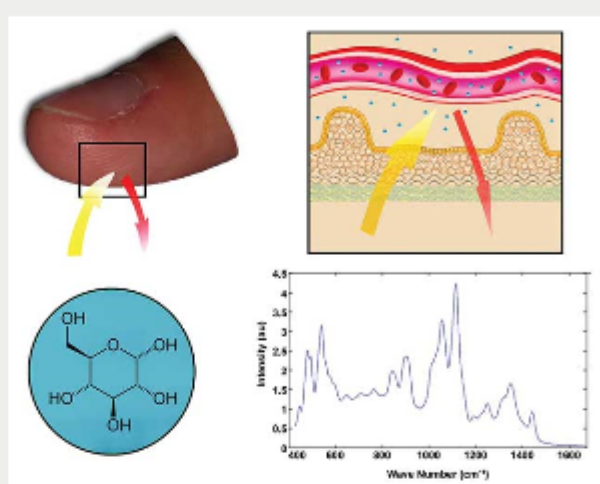
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Spectroscopy and the Holy Grail

Researchers have long pursued a noninvasive way to measure blood glucose. Spectroscopy checks off all the right boxes for the technology behind a noninvasive monitor. Spectroscopic probes are pain-free and typically do not harm the body. The technology is reliable. And it can lend itself to the kind of miniaturization required for a wearable. But the prize remains elusive. To get a clearer picture of the reasons why this is so — and why spectroscopy particularly holds so much promise — we reached out to three experts in field.



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PROMOTED CONTENT **Bristol Instruments Inc. 871 Laser Wavelength Meter**

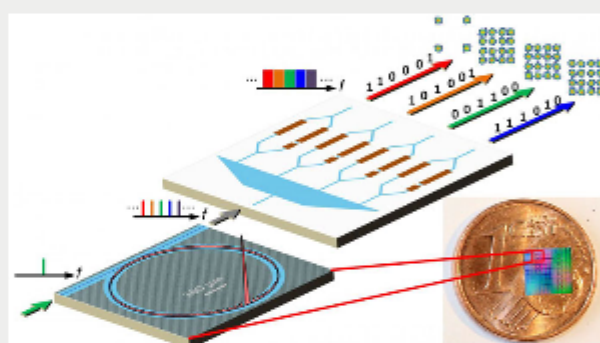
Bristol Instruments' 871 Laser Wavelength Meter measures laser wavelength at a sustained rate of 1 kHz, the fastest available. The resulting time resolution of 1 ms provides the most detailed analysis of tunable lasers. The system is automatically calibrated with a built-in wavelength standard to ensure accurate performance is maintained over time. This provides the reliable accuracy needed for the most meaningful experimental results.



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Optical Approach Delivers Fast, Scalable Data Transmission

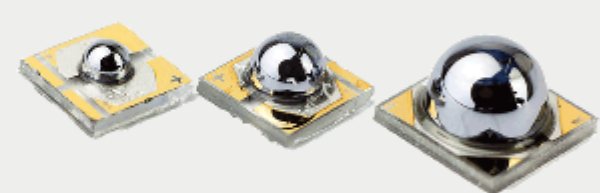
Microresonator soliton frequency combs have been shown to considerably increase the performance of wavelength division multiplexing (WDM) techniques in optical communications. The technology could be used to develop efficient, highly scalable communication systems.



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Fast and Sensitive Mid-IR Detectors for Gas Sensing

Demands from industrial, petrochemical and new medical diagnostic applications are very wide-ranging — from air quality, emission monitoring and leak detectors, to breath analyzers and explosive material sensors. For many years, mid-IR components were considered expensive, immature and unreliable for wide application in this range. Swift growth of the mid-IR market is changing that.



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Spectroscopy for the Masses

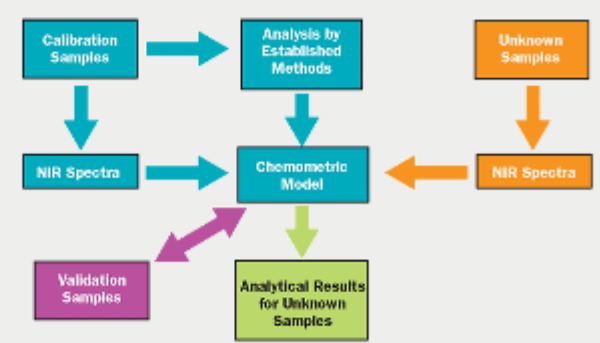
The availability of low-cost, compact spectrometers and sensors has driven developers to find numerous new usage models that may completely change our personal connection to fitness, health care and our homes. Advanced optical technology, along with creative programming, are birthing a whole new cadre of next-generation consumer devices that could create a billion dollar market by 2021.



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Portable Spectroscopy and the Fight Against Food Fraud

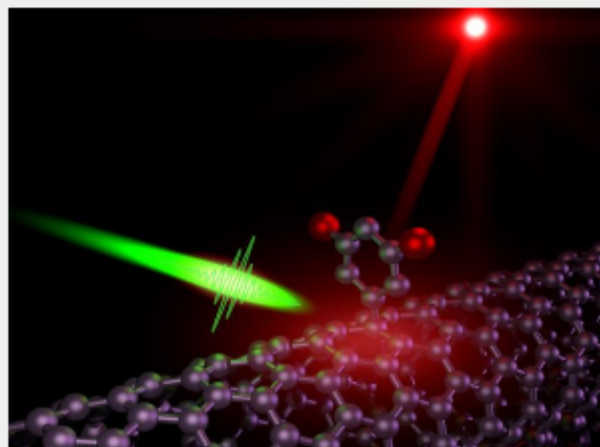
Food fraud and adulteration is a serious and increasing problem with significant health and economic impacts. Although robust and sophisticated laboratory methods have been developed to detect fraud, the question of how that experience can be deployed in the field remains. Ideally, handheld instruments operated by nonscientists would be used at a port, in a food distribution center or on a supermarket loading dock.



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Tunable Single-Photon Emitter Could Empower Quantum Info Processing

Carbon nanotube quantum light emitters have been produced that are capable of single-photon emission at room temperature and at telecommunications wavelengths. These emitters could be used for optically based quantum information processing and information security as well as for sensing, metrology and imaging.



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