

# TEST & MEASUREMENT

## Tech Pulse

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**September 2019**  
Test & Measurement Tech Pulse is a special edition newsletter from Photonics Media and Bristol Instruments covering key developments in test & measurement technology. Manage your Photonics Media membership at [Photonics.com/subscribe](https://www.photonics.com/subscribe).

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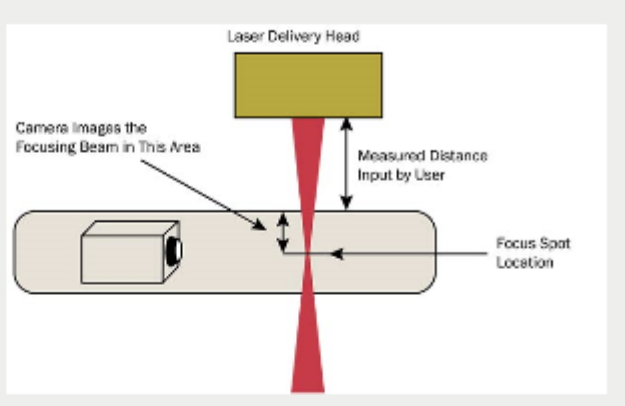


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### Measuring Up with High-Power Fiber Lasers

As power levels increase, fiber lasers have also become increasingly reliable, affordable, and easier to implement, thus they have found their way into more applications. Regardless of the industrial application, each system requires that the working laser beam be consistent and its performance verified.

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**PROMOTED CONTENT**

### Bristol Instruments Inc. High Speed Laser Wavelength Meter

Bristol Instruments' 871 Laser Wavelength Meter measures laser wavelength at a sustained rate of 1 kHz, enabling the wavelength characterization of every single pulse for most lasers. The combination of proven Fizeau etalon technology and automatic calibration with a built-in wavelength standard ensures the uncompromised accuracy needed for the most meaningful experimental results. Operation is available from 375 nm to 2.5  $\mu$ m.

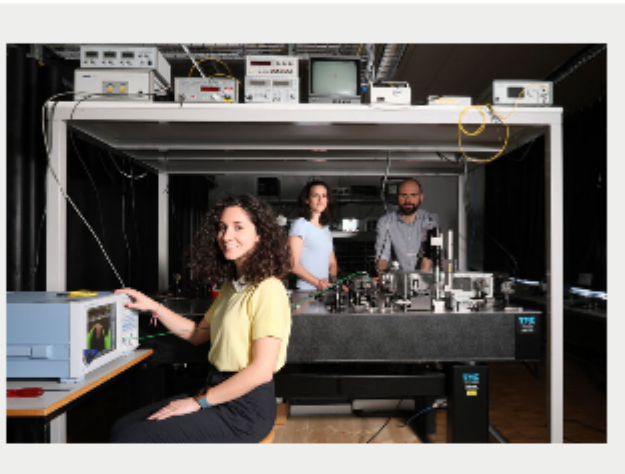
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### Compact Laser Detects Greenhouse Gases Using Mid-IR Source

A system developed at École Polytechnique Fédérale de Lausanne, composed of a standard laser and a photonic chip, uses a mid-infrared light source to detect greenhouse and other gases. The team took a commercially available fiber laser and combined it with a waveguide chip to reliably generate lightwaves in the MIR spectrum.

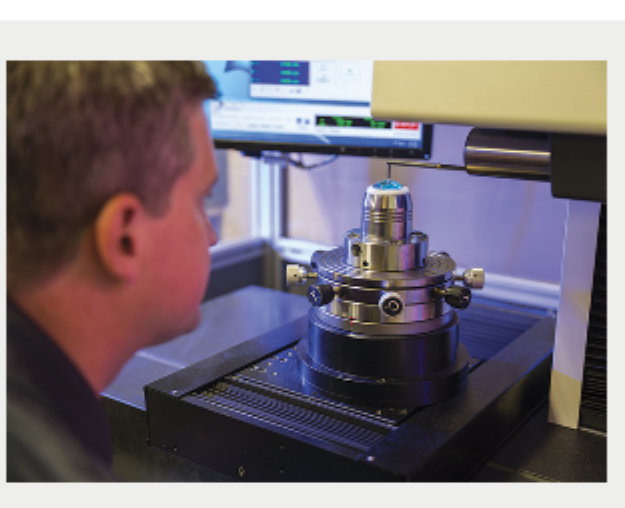
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### Measuring Aspheres: Selecting 2D or 3D Metrology

As aspheres become more prevalent in optical systems and more companies design systems that include them, it is crucial that both designers and manufacturers understand what is needed and what the limitations are in regard to metrology. An understanding of 2D and 3D metrology can help designers and manufacturers make the right choices when characterizing aspherical lenses.

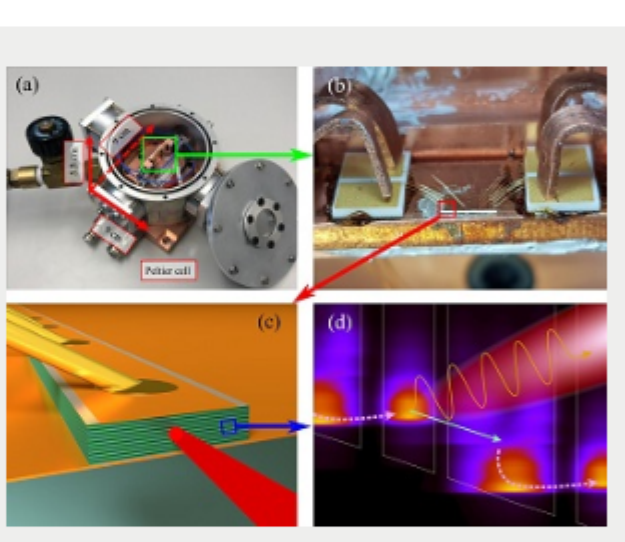
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### Terahertz Technology Is Heating Up

Researchers at ETH Zurich have reported the highest operating temperature of a quantum cascade laser, which eliminates a major barrier in the practical implementation of the technology. The team used a design that has long been known to allow for higher temperatures, but has been relatively difficult to achieve due to the intense level of precision required.

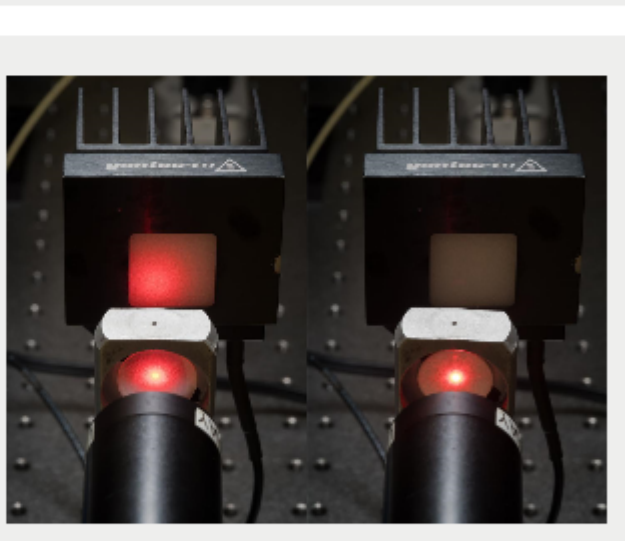
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### Welding with Pulsed Lasers Protects Temperature-Sensitive Materials

A new ceramic welding technology developed by engineers at the University of California, San Diego and the University of California, Riverside uses a series of short, ultrafast laser pulses to melt ceramic materials along the interface between two ceramic parts and fuse them together. Heat builds up only at the interface, so the melting is localized.

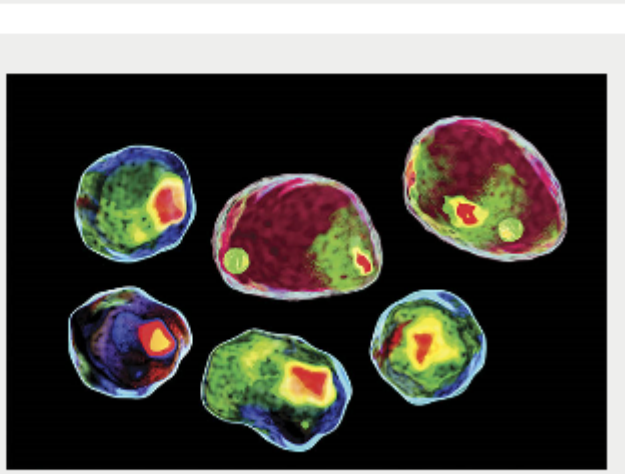
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### Innovations in Flow Cytometry Expand Its Use in Clinical Diagnostics

Lasers and sensors used in flow cytometers are making major strides — becoming smaller, more powerful, and more affordable. These advancements are helping improve clinical diagnostic tools used in detecting cancer cells.

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### Scientists Apply LIF Imaging to Explore Molecular Interactions in Atmosphere

A new technique uses laser sheets and laser-induced fluorescence (LIF) imaging to visualize and study gas-liquid interactions at the molecular level. Developed by researchers at Heriot-Watt University, it could be used to improve predictive atmospheric models used to study the climate.

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