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Highlights from the August 2013 issue of Photonics Spectra

...and Everything in Its Place

Advances in lighting, resolution, color processing, and hardware and software are fine-tuning machine vision tasks. In an automated manufacturing environment, things must be placed accurately and very quickly: Industrial sorters frequently must decide in milliseconds where a blueberry should go. Glass in a recycling plant and packages being shipped have similar speed and accuracy requirements. Getting those decisions right demands vision technology that is fast and of high enough resolution; sometimes color is needed, too. Also, the camera-computer interface must be beefy enough to handle what can be a mountain of data.

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Faster Mold Coating Tests Make Glass Processing More Efficient

Optical components that fulfill complex functions by using complex-shaped surfaces - for example, free-form surfaces for laser beam shaping optics - are a target of current developments in optics design and production. Such high-precision glass lenses can be manufactured economically only by replicative techniques. The process of precision glass molding is the gold standard for the fabrication of these high-quality lenses.

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Transparent Ceramics Find Wide Use in Optics

Polycrystalline ceramics with the cubic spinel structure enable multiple defense applications, including night-vision goggles and IR optics for military systems such as domes, lenses, reconnaissance and sensor windows - they also have applications in nonmilitary arenas such as semiconductor processing, oil and gas drilling, medical optics and lasers.

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Hybrid Fabrication Makes Better Plasmonic Nanostructures for SERS

Monolithic hierarchical plasmonic nanostructures improve results from surface-enhanced Raman spectroscopy. Plasmonic nanostructures of gold and silver have emerged as attractive nanomaterials because of their small size, corrosion resistance, biocompatibility and ability to bind to a wide range of thiolated molecular and biomolecular species through the metal-S bond. These nanostructures absorb and resonantly scatter visible and near-IR light upon excitation of the localized surface plasmon resonance, which can be tuned over a wide spectral range by changing intrinsic parameters such as material composition or particle size and shape.

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Liaising for Light

As a young girl in the Netherlands, Huisman had a curiosity about the world around her that led her to study physics. That same curiosity now drives the 18-year-old's interest in photonics, and she's putting it to good use in her new appointment as Young Ambassador for Photonics Education. Huisman, now in her third year of undergraduate studies at the University of Bonn in Germany, was officially given the role this spring by European Commissioner Neelie Kroes at the annual meeting of Photonics21, the European technology platform for photonics.

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Products from this Issue

Scan Heads

SCANLAB AG

Scanlab AG has enhanced its line of galvanometer scan heads with the III series, offering improved electronics and providing reference-setting accuracy and speed for systems with analog detectors.

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Universal Measurement Spectrophotometer (UMS)

Agilent Technologies, Inc.

Agilent introduces a revolution in solid sample measurement - the Cary 7000 Universal Measurement Spectrophotometer (UMS).

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Single-Frequency Lasers

Coherent Inc.

The Mephisto family of single-frequency lasers from Coherent Inc. features linewidths of ~1 kHz over 100 ms, suitable for atom trapping and cooling, optical heterodyning, and injection locking and seeding.

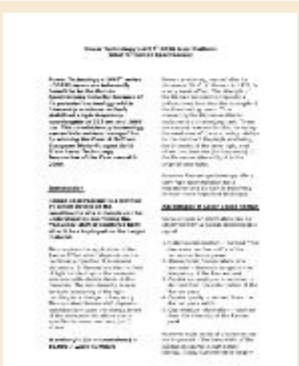
More info >>

UV Laser Micromachining

IPG Photonics Corporation

The IX-255 UV laser micromachining system from IPG Photonics Corp. is a configurable multifunctional system with a beam energy density up to 25 J/cm2 for applications such as drilling and cutting ceramics, patterning of microfluidic devices and machining of low-taper-angle holes in polymers.

More info >>



Power Technology's iMAT® DPSS Laser Platform Ideal for Raman Spectroscopy

Power Technology, Inc.

Power Technology's iMAT® series of DPSS lasers are inherently beneficial to the Raman Spectroscopy industry because of its patented technology which inherently produces actively stabilized single frequency wavelengths at 532 nm and 1064 nm. This revolutionary technology earned international recognition by winning the Frost & Sullivan European Diode-Pumped Solid State Laser Technology Innovation of the Year award in 2009.

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