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OPTICS Tech Pulse

PHOTONICS MEDIA

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Optics Tech Pulse is a special edition newsletter from Photonics Media and Bristol Instruments covering key developments in optics technology.

Consumer Electronics Inspection Put to the Test

Every year, smartphones, TVs, tablets, and computers get more capable in terms of screen resolution and processing power. Better consumer electronics and more demand have led to volume increases. This deluge pressures manufacturers to increase throughput, so they must reduce how long it takes on average to make one unit, an interval known as takt time, by improving how fast they can inspect.

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Bristol Instruments Inc.

PROMOTED CONTENT

Optical Thickness Gauges

Bristol Instruments offers a family of thickness gauge products that employ proven optical technology to provide the most precise and reliable non-contact thickness measurement available. What's more, this level of performance is achieved with an unprecedented level of versatility and convenience. These systems are ideal to measure the thickness of optical components and lens assemblies, contact and intraocular lenses, OLED, AMOLED, and LCD displays, and medical tubing.

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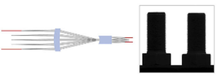
Advancements in Telecentric Technology



The discipline of machine vision encompasses imaging technologies and methods to perform automatic inspection and analysis in various applications, such as verification, measurement, and process control. Driven by trends in Industry 4.0, machine vision has grown steadily over the past few years and now covers a wide range of applications in the most disparate sectors: from automotive to pharma, from food and beverage to electronics.

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Hyperspectral and Multispectral Imaging

Hyperspectral and multispectral imaging are increasingly beneficial for a range of applications as diverse as agriculture, health care, and remote sensing. Both technologies present advantages over standard machine vision imaging, which uses light only from the visible spectrum. However, with the benefits of HSI and MSI comes increased complexity of the imaging systems in terms of lighting, filtering, and optical designs.

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The Microscope Enters the Digital Age

Since its early development, the microscope has undergone little change in optical design, while the optical resolution theoretical limit was already achieved many decades ago. But change is happening, as augmented reality (AR) is being incorporated into the way microscopes are used in the laboratory setting.

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Metasurface-Based Contact Lenses Could Correct Red-Green Color Blindness

A custom contact lens could offer a convenient way to help people who experience color blindness. Researchers at Tel Aviv University embedded large-scale, plasmonic metasurfaces into off-the-shelf contact lenses and studied the ability of the contacts to serve as visual aids for color vision deficiency. Based on simulations, the researchers observed that their metasurface-based contact lens could restore lost color contrast and improve color perception up to a factor of 10.

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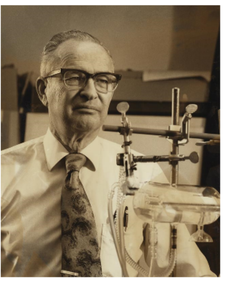
The New Technologies Shaping Near-Infrared Spectroscopy



Near-infrared spectroscopy is the branch of vibrational spectroscopy related to the molecular absorption of light between ~750 to 2500 nm, which has a variety of industrial and medical applications. This region of the electromagnetic spectrum is unique because the photon energies in this range are generally too large to correspond to the fundamental vibrational frequencies of a molecule, but too small to result in electronic absorption.

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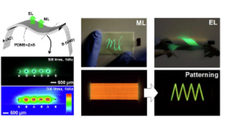
In-Plane Electroluminescent Technology Could Improve LEDs for Displays and Wearables



Luminescence technology that uses an in-plane electric field generated in parallel to the light-emitting layer of an LED could help improve the efficiency of light-emitting elements used in billboards and banners. According to the research team, the LEDs produced this way emit light in a more flexible, stable way than conventional LEDs.

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