

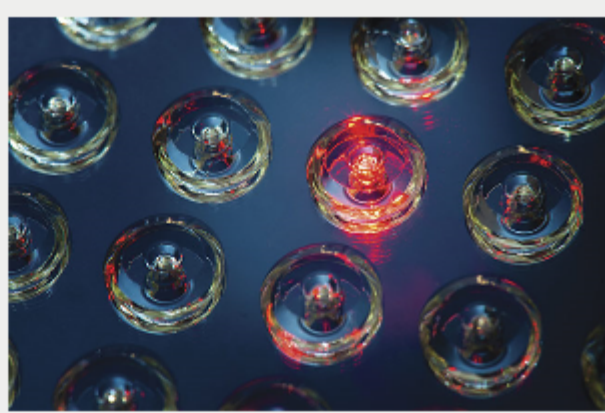
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Wafer-Level Optics Enable Small-Form Photonic Sensors

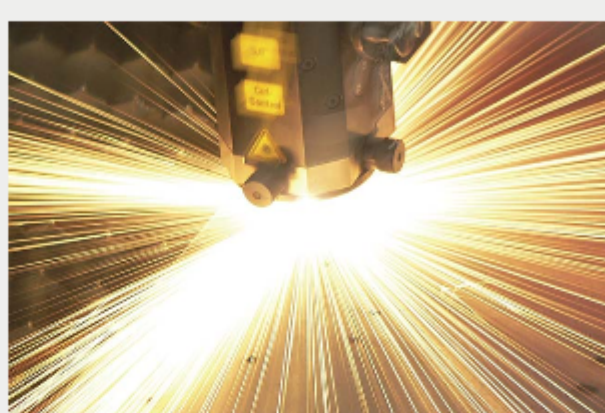
For many years, innovations in sensors for mass markets such as automotive, gaming, and consumer electronics have been driven by the microelectromechanical systems (MEMS) industry. MEMS-based sensors are well known to provide solutions for a multitude of applications that require the smallest form factors or size of components and packaging, while still providing high performance. However, emerging markets for autonomous vehicles, augmented reality, biomedical uses, and security solutions have necessitated a focus on optical sensors and projectors to their product requirements. By measuring intensity, wavelength, or polarization and the respective change of the light, it is possible to identify nearly any physical property of an object or the environment, and it is even possible to gain chemical information.



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Pulsed Lasers Create Optimal Cladding for Tools

Lasers are versatile tools with negligible changeover times in manufacturing processes, but in some areas their uses are still suboptimal, such as in welding. Crack formation and problems with fusion of material can still occur and hinder the quality of construction. The German state of Hesse and Sigma Laser GmbH, in cooperation with professor Klaus Behler's team from Germany's Technical University of Applied Sciences Mittelhessen, researched means to address these issues. They investigated the influence of the temporal modulation of the laser pulses on cracking and geometry of the weld.



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Built-In Neural Hardware Allows Image Recognition in Nanoseconds

Researchers at Vienna University of Technology (TU Wien) have developed an image sensor that can be trained to recognize (in a matter of nanoseconds) certain objects.



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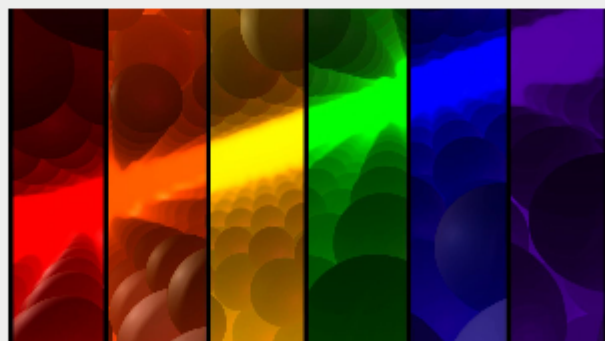
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More News From Europe

2D Material Structures Can Emit Customized Light in Desired Color

Some atomically thin 2D materials can emit customizable light in the color desired when the materials are combined together to create an "artificial semiconductor." The discovery, made by researchers at the University of Geneva (UNIGE) and the University of Manchester, could spur use of 2D materials on an industrial scale.



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ETH Researchers Demonstrate 5-Meter-Long Microwave Quantum Link

In the future, quantum links will connect clusters of quantum computers to form a local network. These links will need to support quantum mechanical superposition states (states that contain the logical values 0 and 1 at the same time). The longest such link to date, based on microwaves, has been built at ETH Zurich, in the laboratory of professor Andreas Wallraff. The microwave quantum link is 5 meters long.

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Printable Photodiodes Could Be Used for Visible Light Communication

A team at Karlsruhe Institute of Technology has demonstrated a multichannel visible light communication system based on an organic photodetector array capable of demultiplexing optical signals without the need for additional optical filters.

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Features

Freeform Optics, Remote Sensing, EPIC Insights, and more.

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