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OPTICS Tech Pulse

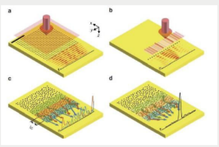
PHOTONICS MEDIA

April 2017

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

Optoelectronic Device Speeds Parallel Processing

To increase the speed of data transfer when many microprocessors are used in parallel, a novel device has been developed that uses surface plasmons to mediate optoelectronic imaging. The on-chip plasmonic switching device consists of a 2D disordered array of nanoholes on a thin metal film that can provide multiple-input and multiple-output channels for transferring information from a photonic to an electronic platform.



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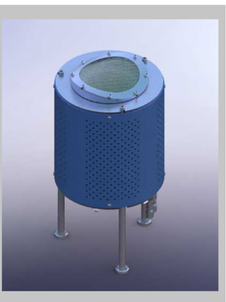
PROMOTED CONTENT

The Benefits of Ion Assisted Deposition

With self-neutralizing Ion Assisted Deposition from Denton Vacuum, you'll produce denser films with less scatter than with evaporative deposition only, but without the cost and low throughput of Ion Beam Deposition. Ion Assisted Deposition provides high-quality, defect-free, low-stress, environmentally-stable (shift-free) films required by the most demanding optical applications.



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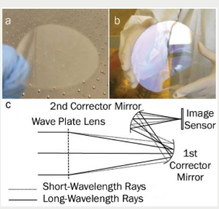
New 4G Optics Technology Extends Limits to the Extremes

Advances in liquid crystal and liquid crystal polymer materials have made it possible to modulate the orientation of the anisotropy axis at high spatial frequencies, ushering in the next generation of optics for space communications and intraocular lenses.



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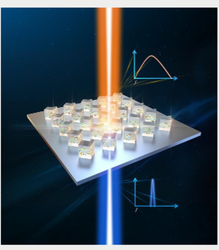
Optical Metamaterials Use III-V Semiconductors as Building Blocks

Materials that are more efficient than metals and that feature wider bandgap measures than silicon are being developed for possible use in optical metamaterial applications. All-dielectric materials using III-V semiconductors could be used to develop metamaterials that are efficient, resistant to energy loss and able to operate in the IR range.



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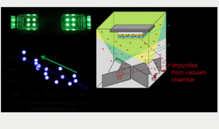
Vacuum Impurities Could Impact OLED Lifetime

While issues affecting the efficiency of OLEDs are well understood, the reasons why some OLEDs degrade and lose brightness over time have not been as easy to identify. Devices fabricated with seemingly the same procedures and conditions but by different research groups often degrade at vastly different rates, even when the initial performances are the same. One possible explanation for discrepancies in OLED lifetimes could be miniscule impurities present in the vacuum chamber during fabrication.



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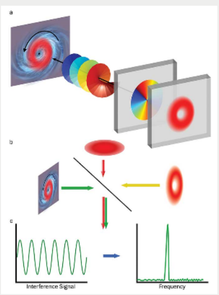
Optical Metrology Techniques Harness Structured Light Beams

As a result of technological advances in recent years, researchers have at their disposal devices capable of tailoring — with almost unlimited freedom — the shape of beams of light. Computer-controlled spatial light modulators (SLMs) and digital micromirror devices (DMDs) are some of the most popular devices with such capabilities. They are invaluable tools in the generation of optical beams with a transverse varying phase structure, otherwise known as structured, sculpted or engineered fields.



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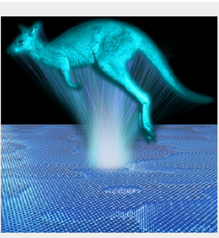
Infrared Hologram Device Achieves New Optical Properties

Physicists have invented a tiny device that creates the highest quality holographic images ever achieved, opening the door to imaging technologies often seen in science fiction movies. The device consists of millions of tiny silicon pillars, each up to 500× thinner than a human hair, and projects complex holographic images in infrared.



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