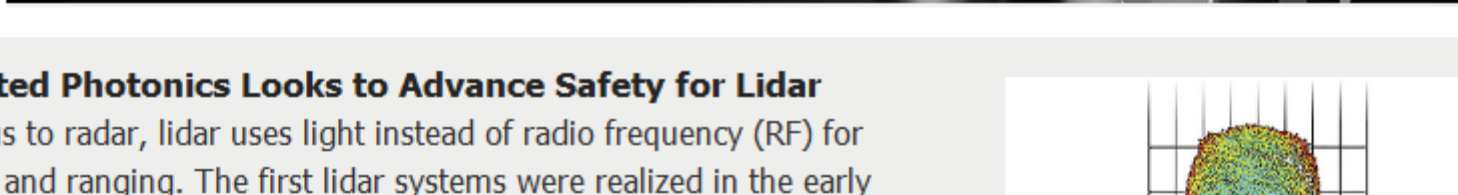


# PHOTONICS spectra



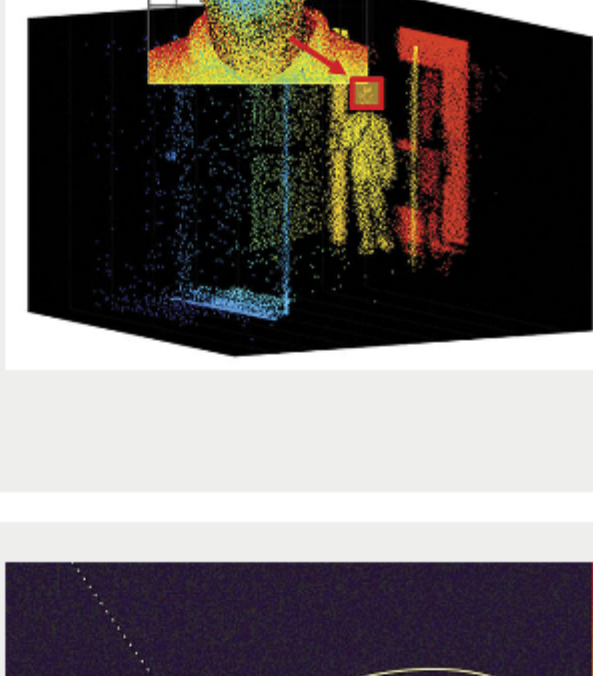
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## Integrated Photonics Looks to Advance Safety for Lidar

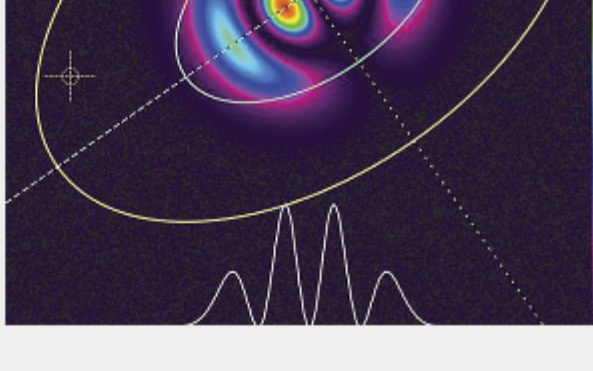
Analogous to radar, lidar uses light instead of radio frequency (RF) for detection and ranging. The first lidar systems were realized in the early 1960s, shortly after the emergence of lasers, and could send out a focused light beam and calculate distance by measuring the roundtrip time of the light signal. Since then, lidar has emerged in applications ranging from ground surveying to self-guided autonomous systems.



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## Measuring Up with High-Power Fiber Lasers

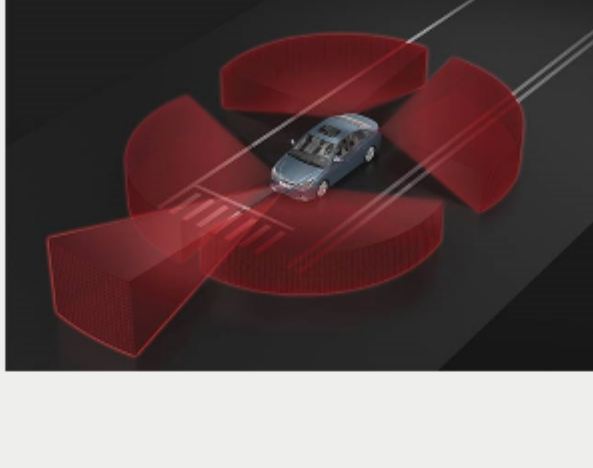
Fiber lasers are used in ever-increasing numbers across a range of applications. In the 2- to 20-kW-power output range, laser applications are growing in materials processing and in finesse applications such as 3D micromilling, microcutting, blind-hole machining, and additive manufacturing. According to Hexa Research, "High-power cutting and welding is a leading application in the [fiber laser] market. This could be attributed to increasing use of the product in tube cutting, flat sheet cutting, 3D cutting, car body scanner welding, power train welding, and tube welding.



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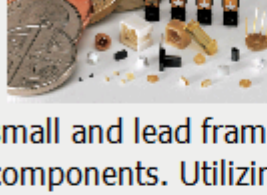
## An Avalanche of APD Innovations

When autonomous vehicles hit the streets, they navigate with the help of avalanche photodiodes, or APDs. These semiconductor photodetectors capture returning laser pulses as part of lidar systems, and this APD-derived data determines the distance to other vehicles, to objects, and to people — information critical for safe driving. Lidar is a fast-growing APD application, and, according to Anand Pandey, applications engineering leader at Excelitas Technologies Corp. of Waltham, Mass., cost considerations and the performance demands of lidar will lead to changes in avalanche photodiodes. "We see the trend moving from single-element APDs to arrays," he said.



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## Featured Products



### Micro Injection Molding

#### Accumold

Accumold® is a high-tech manufacturer of precision micro, small and lead frame injection molded plastic components. Utilizing processes developed from Accumold's Micro-Mold® technology, the company designs, builds and produces unique molds and parts efficiently for markets that include Micro Electronics, Medical, Micro Optics, Automotive, and Military Applications.

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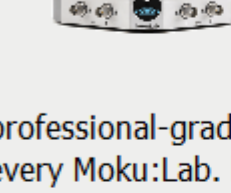


### PEPS Series Optical Power Sensors

#### Newport Corporation

The PEPS sensors measure laser beam positioning as well as power and single pulse energy, suitable for either continuous wave or short pulse laser beams. These general purpose detectors measure laser beam position to 0.1 mm accuracy. When connected to our advanced 1919-R power meter or PMManage™ program, beam tracking is also possible.

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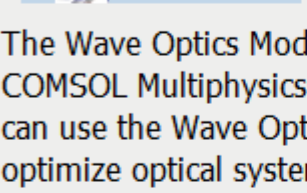


### Moku:Lab

#### Liquid Instruments

Transform the way you do test and measurement with a suite of twelve professional-grade instruments that come included with every Moku:Lab. lock-in amplifier, spectrum analyzer, laser lock box, data logger, phasemeter, frequency response analyzer, AWG, and five others. Besides providing ultra-high frequency measurements,...

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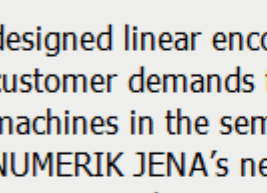


### Wave Optics Module

#### COMSOL Inc.

The Wave Optics Module is an add-on product to the COMSOL Multiphysics® simulation software platform. You can use the Wave Optics Module to efficiently model and optimize optical systems and photonic devices. Typically, simulating geometrically large wave optics problems is both time consuming and computationally demanding.

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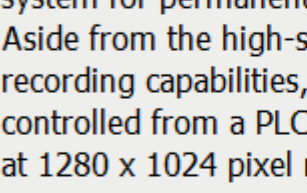


### The New Low Cost LIKgo Linear Encoder

#### Heidenhain Corporation

NUMERIK JENA is proud to introduce the LIKgo, a newly designed linear encoder especially developed to fit customer demands for use in production and inspection machines in the semiconductor industry. LIKgo is NUMERIK JENA's next generation of incremental exposed linear encoder. It is very compact and extremely easy to install...

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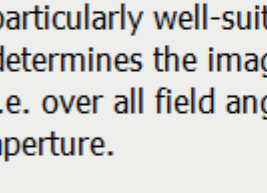


### Inline High-Speed Recording System

#### AOS Technologies AG

Its compact footprint makes the Streamer the perfect system for permanent installation on a production line. Aside from the high-speed recording feature and long-time recording capabilities, the built-in IOs allow it also to be controlled from a PLC. The built-in camera offers 200 fps at 1280 x 1024 pixel resolution and...

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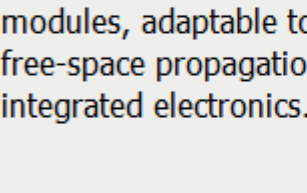


### Off-axis Wavefront Measurement

#### TRIOPTICS GmbH

To ensure the implementation of the complex optical designs, a qualified measuring technology must be used. Wavefront measurement is particularly well-suited for this purpose, since it determines the image quality on a spatially-resolved basis, i.e. over all field angles, and across the entire sample aperture.

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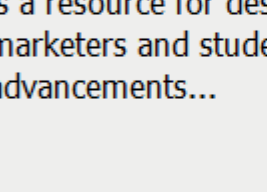


### FISBA READYBeam™

#### FISBA AG

Over the last year, FISBA has further developed the well-known FISBA RGBeam™ laser modules. Until now, FISBA offered the high-precision, miniaturized multiple-wavelength laser modules, adaptable to the customer's requirements with free-space propagation or fiber-coupling, as a unit, without integrated electronics.

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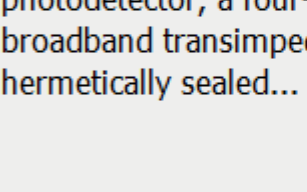


### Machine Vision

#### Photonics Media

Machine Vision is a new book for anyone designing or selecting machine vision systems, and implementing or considering the use of machine vision for a specific application. This engaging overview is a resource for designers, engineers, researchers, marketers and students looking for a broad survey of advancements...

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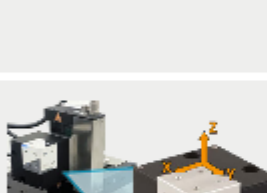


### Ultra-fast Detecting Module with Integrated Cooler Controller

#### VIGO System SA

An AIP ENTOR detection module combines ease of operation, high detectivity, and small dimensions of the device with a gigahertz pass band. Thanks to the use of advanced integration techniques, a HgCdTe photodetector, a four-stage Peltier cooler, and a broadband transimpedance amplifier were packaged into a hermetically sealed...

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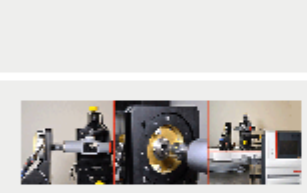


### OEM Microscope Components

#### Nikon Instruments Inc.

Nikon provides a large range of microscopy components to satisfy diverse optical requirements. These components can be incorporated into imaging systems to fulfill unique experimental requirements. Nikon is staffed with a dedicated team to service large volume and OEM requests.

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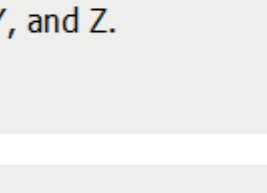


### Lince 11M Sensor for High-Speed Applications

#### Teledyne e2v (UK) Ltd.

Teledyne e2v announces the expansion of its Lince family of image sensors with a new 11Megapixel detector. Lince11M is a new CMOS image sensor designed for applications that require 4K resolution at very high shutter speed. This standard sensor uniquely combines 4K resolution at 710 fps in APS-C format.

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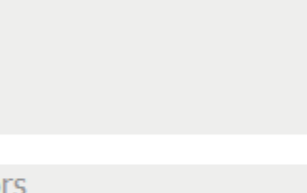


### Compact XYZ Piezo Nanopositioning Stage

#### PI (Physik Instrumente) LP, Motion Control, Air Bearings,

PI Piezo Mechanics Equipped with capacitive feedback capable of detecting motion with sub-nanometer resolution, the parallel-kinematics design of the P-616 reduces the moved mass (inertia) for improved dynamics (step & settle) and scanning speed, and provides 100 microns of travel in X, Y, and Z.

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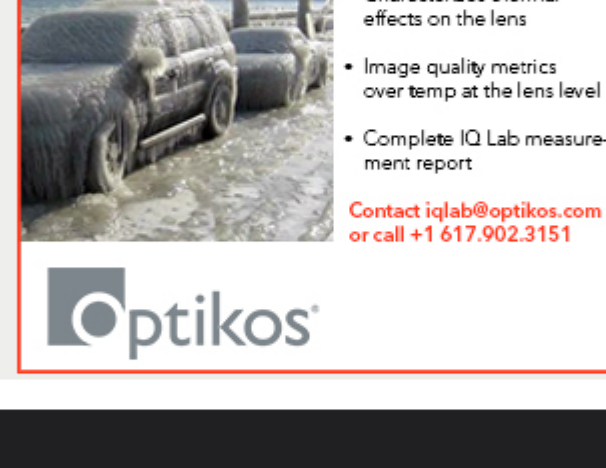
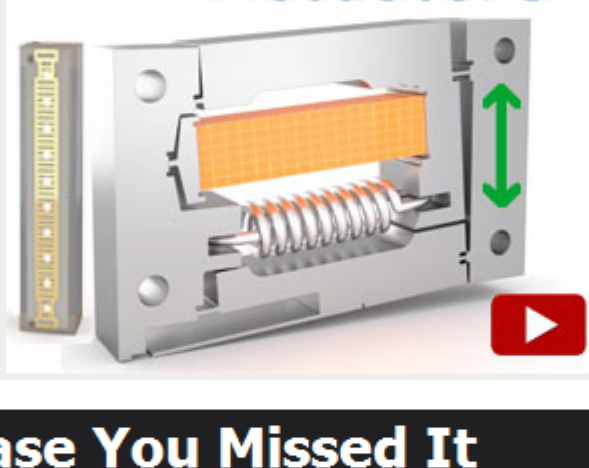


### IQ Lab™ Temperature Testing for Automotive Lenses

Optikos Corporation Optikos IQ Lab™ Services offers lens testing over extended temperature ranges IQ Lab temperature testing services are especially valuable for automotive lens manufacturers and integrators, whose applications have stringent performance and athermalization requirements to meet safety standards for camera image quality.

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## In Case You Missed It

### Quantum Teleportation-Based State Transfer of Photon Polarization in Diamond

Researchers from the Yokohama National University have demonstrated reliable quantum state transfer of photon polarization into a carbon nuclear spin coupled to a nitrogen-vacancy (NV) center in diamond. The transfer of quantum information into an otherwise inaccessible space — in this case, carbon atoms in diamond — could be applied to the transfer of sensitive information into a quantum memory without revealing or damaging the stored quantum information.



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### Researchers Synthesize Quasi-2D Gold Film

Researchers from the Moscow Institute of Physics and Technology (MIPT) Center for Photonics and 2D Materials have synthesized a quasi-2D gold film, showing how materials not usually classified as two-dimensional can form atomically thin layers. The researchers said 2D metals bring them closer to a new class of optical metamaterials whose potential to control light could lead to unexpected technologies.

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### Superresolution Microscopy Platform Offers Immersive Views of Data

A team from Carnegie Mellon University and Benaroya Research Institute at Virginia Mason is working to combine two techniques, expansion microscopy and virtual reality, to create a method, via a platform called ExMicroVR, that will allow researchers to "step inside" biological data. By combining these techniques, the researchers will have the opportunity to enlarge, explore, and analyze cell structures beyond the limits of traditional microscopy.

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## Webinars

### Keys to Success with Vision-Guided Robotics

Tue, Jul 16, 2019 1:00 PM - 2:00 PM EDT

Industry leader David Dechow will present practical methods to successfully integrate modern vision-guided robotic (VGR) applications into machine vision systems. He will discuss some cutting-edge VGR applications, the challenges they present, and the potential advantages they offer. He will provide examples of the products that are being used successfully in VGR, including robots, cameras, and software and will conclude with a discussion of machine vision technologies that could be key to expanding the future use of VGR. This webinar is sponsored by Photonics; Teledyne DALSA; and Integro Technologies Corp.



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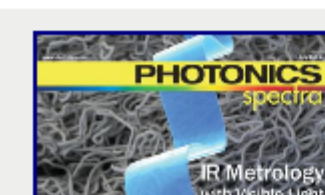
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### Features

Semiconductor Lasers, Ultrafast Optics, Silicon Integrated Nanophotonics

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