

# PHOTONICS spectra

## WEBINARS

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### **Avalanche Photodiodes – Design and Applications**

**Tuesday, September 29, 2020 1:00 PM - 2:00 PM EDT**

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Presented by



## .: About This Webinar

The high-gain properties in avalanche photodiodes (APDs) make these devices an ideal choice for low-light-level detection in optical communications, spectroscopy, range finding and many other applications for medical, industrial, telecommunications, automotive, defense, and aerospace industries. This webinar examines the unique features of APDs, including the fundamental theoretical aspects of operations, the structure, and related characteristics and functions. Oleks Goushcha, Ph.D., will review the design of APDs based on the incident wavelength, noise, operating voltage, avalanche gain, and speed requirements.

The methods of measurement for various functional parameters, including gain and excess noise factors, will also be discussed. Features of current APD technologies, using a variety of semiconductor materials including Silicon (Si), Indium Gallium Arsenide (InGaAs), Gallium Nitride (GaN), and others, will be examined. In addition, the applications for APDs and relevant structural designs, as well as coupling of APDs with transimpedance amplifiers and thermo-electric coolers, will be covered. The speaker will discuss APD operation in the analog and digital (Geiger) modes, as well as Si photomultipliers, which are arrays of microcell APDs connected in parallel and operating in Geiger mode. This webinar has been specially developed for researchers and engineers working with low optical signal detection, as well as students involved in optics, medical imaging, laser ranging, and other research applications.

Pictured: APDs. Courtesy of OSI Optoelectronics.

#### **Who should attend:**

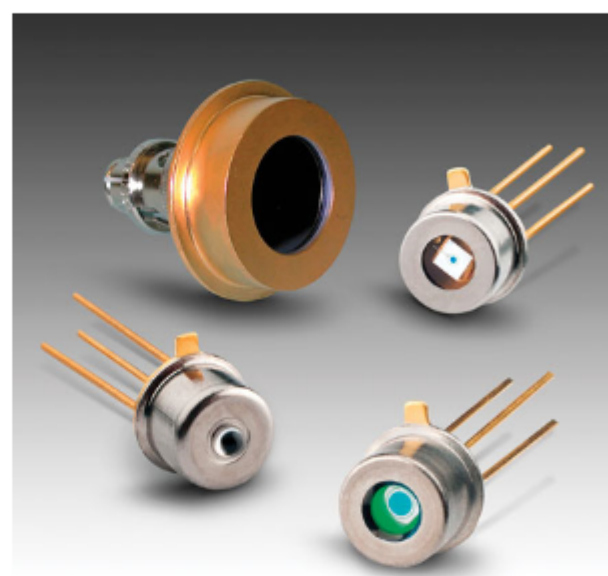
Engineers, researchers, students, and others involved or interested in current technology and trend developments for avalanche photodiodes, in various modes of operation. Anyone working with sensors and detectors, optics, imaging, lasers, and other photonic technologies for research, manufacturing, testing, and educational purposes.

#### **About the presenter:**

Goushcha, a respected, seasoned veteran in optoelectronics and semiconductor technologies, has held key positions as vice president of research and development, chief technology officer, and chief scientist at various U.S. companies before his appointment at OSI Optoelectronics as lead scientist of semiconductor devices. Goushcha has 15 patents in semiconductor devices and optoelectronics. He has authored papers in over 100 peer-reviewed and professional journals, and has presented many technical papers at leading research conferences. Goushcha received his bachelor's and master's degrees in physics and solid-state optics from Taras Shevchenko University in Ukraine, and his Ph.D. in solid-state physics from the Institute of Physics, Ukrainian Academy of Sciences. His academic activity included research work at Max-Planck Institute for Radiochemistry (Germany) and the University of California, Riverside. He was awarded multiple research grants from the Ukrainian Academy of Sciences, the Max-Planck Society, and the Netherlands Ministry of Sciences.

#### **About OSI Optoelectronics:**

OSI Optoelectronics is a leading global provider of innovative photonics, optoelectronics, and advanced electronic systems for preeminent aerospace and defense, medical, and industrial OEMs that require high-reliability, high-performance, market-driven technology solutions.



## .: Mark Your Calendar

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