



IRIS Switzerland Adopts Silvaco TCAD Software for the Development of Photodiodes for Autonomous Driving Applications

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SANTA CLARA, Calif., Nov. 24, 2020 – [Silvaco Inc.](#), a leading supplier of EDA software and design IP, today announced that [IRIS Switzerland](#) has adopted Silvaco TCAD simulation software to prove the fabrication feasibility of a short-wave infrared single photon avalanche diode (SPAD) targeted for use in autonomous driving applications.

IRIS Switzerland develops and builds mid- and long-range short-wave infrared (SWIR) detectors and flash LiDARs that are primarily used in autonomous driving applications. Silvaco TCAD simulation software was chosen to accelerate the development of SPAD products with a systematic view of all device parameters to be analyzed. The simulations of the SPAD enabled the optimization of the device structure to deliver the best photodiode performance.

The SPAD structure makes use of two different semiconductor materials to absorb light and generate an electrical avalanche to amplify the signal. In the device, germanium-tin alloy is the absorption material and silicon is the multiplier material. TCAD simulations were performed with different doping and thicknesses of layers to extract an optimized electric field profile. The simulations gave valuable insights on thermoelectric cooling requirements early in the SPAD development to achieve an optimized Peltier cooling system in the first fabricated photodiode.

“IRIS Switzerland is a start-up company developing safe and reliable detectors for autonomous driving which can sense and avoid obstacles, even in adverse climate or low-light conditions,” said Claude Meylan, IRIS Switzerland chairman and CEO. “To develop our breakthrough technology requires a comprehensive understanding and analysis of the semiconductor material physics and properties. Silvaco TCAD software has enabled us to choose the right design parameters, allowing us early success in developing our new short-wave infrared detection and ranging systems.”

“TCAD simulation is the key to early success in the design and development of new semiconductor devices,” said Eric Guichard, vice president and general manager of Silvaco’s TCAD Division. “The success of IRIS Switzerland demonstrates the benefits of using Silvaco’s comprehensive TCAD solutions for creating new breakthrough designs.”

About Silvaco, Inc

Silvaco is a leading EDA tools and semiconductor IP provider used for process and device development for advanced semiconductors, power IC, display, memory, and SoC design. For over 35 years, Silvaco has enabled its customers to develop next generation semiconductor products in the shortest time with reduced cost. The company is headquartered in Santa Clara, California and has a global presence with offices located in North America, Europe, Japan, China, Taiwan, Korea, and Singapore.

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