

# Photonic Solutions From Synopsys Support Advancements in Nanoscale Optics

Latest Photonic Solutions Portfolio Accelerates Design of AR/VR Systems, Optical Communications, and PICs

MOUNTAIN VIEW, Calif., March 30, 2020 /PRNewswire/ -- **Synopsys, Inc.** (Nasdaq: **SNPS**) today announced the release of version 2020.03 of its comprehensive **Photonic Solutions design portfolio**, which includes the RSoft™ Photonic Device Tools, the Photonic System Tools, and the PIC Design Suite for photonic integrated circuit (PIC) design. Offering the industry's only seamless design flow, the Synopsys Photonic Solutions portfolio enables innovations in consumer and industrial communication, sensing, and imaging applications – from concept to manufacturing.

The latest release of this portfolio features a capability to optimize nanoscale and macroscale illumination optics in an integrated environment to meet the stringent performance, functionality, cost, and size requirements of AR/VR devices. The release also includes new solutions to accelerate the design of PICs and photonic systems for aerospace and defense, 5G, and long-haul data networks.

The RSoft Photonic Device Tools provide the industry's broadest portfolio of simulators and optimizers for passive and active photonic and optoelectronic devices, including lasers and VCSELs – all integrated with Synopsys' optical and semiconductor design tools for complete, multi-domain co-simulations.

In version 2020.03, the RSoft-LightTools® Bidirectional Scattering Distribution Function (BSDF) interface produces interpolated BSDF files that allow designers to optimize nanoscale and macroscale optics directly in LightTools. This capability is especially useful for optimizing performance of AR/VR system components, including freeform optical prism projectors, eye tracking technologies, and optical planar waveguides with diffraction gratings.

"The updated RSoft-LightTools BSDF interface helps AR/VR designers improve display immersion and visual comfort," said Tom Walker, group director of Synopsys' Photonic Solutions. "Gratings and other sub-wavelength structures can now be more easily chirped or apodized to achieve performance targets. In addition, the interface gives designers more flexibility to incorporate nanoscale optics into illumination designs and optimize nanoscale and macroscale elements simultaneously. This is a powerful way to increase design functionality and decrease manufacturing costs. It's an essential combination for cutting-edge illumination devices."

An expanded Custom PDK Utility allows designers to create PDK device models using **co-simulation between the RSoft Photonic Device Tools and Sentaurus TCAD**. The seamless integration of these industry-leading tools for semiconductor process and photonic device simulation produces accurate, complete optoelectronic models for modulators and detectors. An example model now provided with the software demonstrates how the Custom PDK Utility can be used to create ring and linear modulators.

The Photonic System Tools, including OptSim™ and ModeSYS™, simulate the performance of optical communication system links through comprehensive simulation techniques and component models. New features in version 2020.03 include application notes and example models to jumpstart designs for:

- Long-haul data networks
- Aerospace and defense systems
- 5G and free-space optical communication systems

Synopsys is driving the advancement of photonic integrated circuit technologies with its PIC Design Suite, which includes the OptSim Circuit and OptoDesigner™ tools. New features in version 2020.03 include:

- An enhanced bidirectional multiport model in OptSim Circuit for characterizing passive photonic devices in terms of an S-matrix (scattering matrix) to support both non-uniform frequency and wavelength data
- Improved simulation of compact models produced by the Custom PDK Utility. These models now include options for wavelength grouping data for more accurate phase estimation when using a coarse parametric grid
- Application notes and example models to jumpstart PIC designs for data center interconnects and sensors
- The ability to export OptoDesigner files to the DXF file format, allowing PIC designs to be easily transferred to CAD programs such as SOLIDWORKS and AutoCAD

## About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15<sup>th</sup> largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at [www.synopsys.com](http://www.synopsys.com).

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