Latest RSoft Product Updates Include Powerful New Design Features for Photonic Integrated Circuits and Silicon Photonics

Release 2018.03 of the Synopsys RSoft Product Portfolio Now Available

MOUNTAIN VIEW, Calif., March 12, 2018 /PRNewswire/ -- Synopsys, Inc. (Nasdaq: SNPS) today announced the release of version 2018.03 of the Synopsys RSoft™ product portfolio, the newest version of the company's industry-leading family of software tools for photonic component and optical communication system design. RSoft 2018.03 expands the products' support for the design of photonic integrated circuits (PICs) used in applications ranging from data communications to sensors and biomedical devices, as well as silicon photonic components used in high-performance telecommunication systems, including waveguides, grating fiber couplers, and silicon lasers.

"Rapid growth in data usage worldwide drives the need for photonic integrated circuits and silicon photonics in data centers, fiber networks and wireless networks," said George Bayz, vice president of Synopsys' Optical Solutions Group. "With our recent acquisition of the PhoeniX Software technology, combined with ongoing enhancements to the RSoft products, we're enabling engineers to design photonic components and systems that will help manage increased data traffic, higher signal quality requirements and more efficient power consumption."

RSoft Photonic Component Design Suite

New features include:

- **Enhancements to the S-Matrix/PDK Generation Utility,** which automates the interface between RSoft component tools, the RSoft OptSim™ Circuit tool, and mask layout tools. The utility creates the S-Matrix of a photonic component using the RSoft FullWAVE™, BeamPROP™, and ModePROP™ tools and exports it to OptSim Circuit to verify its performance in a PIC system. The final design can then be easily exported to mask layout tools to create an optical process design kit (PDK), augment an existing PDK, or generate IP. The interface allows designers to efficiently create PICs from basic building elements and accurately test PIC performance prior to fabrication. Version 2018.03 adds:
  - Support for parameterization of S-matrices, allowing multiple variants of a component to be studied within a circuit in OptSim Circuit or foundry-independent layout in Synopsys PhoeniX OptoDesigner tools.
  - Automatic icons and improved port placement for custom PDK models.
- **Expanded support for all silicon photonics applications**, including:
  - Improved modeling of incomplete ionization and free-carrier-dependent index/absorption of silicon in LaserMOD.
  - Incorporating doping in the silicon material model in the FullWAVE, BeamPROP, ModePROP, and FemSIM™ passive tools.
  - Direct calculation of carrier-dependent index from carrier densities in the Synopsys Sentaurus™ TCAD product interface for consistent material modeling in all contexts.
- **New 3D wide-angle Beam Propagation Method (BPM) algorithms**, further extending BeamPROP's capabilities to simulate structures in silicon or other high-index contrast materials.
- **Improvements to FullWAVE modeling of dispersive materials**, including automatic optimized fitting of materials and a 30% speed improvement in the finite-difference time-domain (FDTD) algorithm.

RSoft Photonic System Design Suite

New features include:

- **In the OptSim Circuit tool, support for parametric custom PDK components** created with the S-Matrix/PDK Generation Utility. The enhancement supports multiple PDK variants through parameterization of S-matrices for PIC simulation and generation of netlists. Custom PDK components can be used as multi-stage PIC elements or as hierarchical circuit schematics, providing engineers with significant design flexibility and rapid prototyping capabilities.
- **Support for hierarchical components in the interface between OptSim Circuit and PhoeniX OptoDesigner tools** Scalability is the key to supporting increasing component count and PIC design complexity. Hierarchical topologies enable design re-use and support parametric scans over subsections of the design.
- **Support for the American Institute for Manufacturing Integrated Photonics (AIM Photonics) PDK version 2.0b**. The PDK helps reduce PIC design costs and brings designers a step closer to fabrication through SUNY Polytechnic Institute silicon photonics processes.
- **In OptSim, support for m-QAM and arbitrary constellation in the DSP Library for MATLAB** to assist coherent system designers in developing custom digital signal processing algorithms for long-haul and metro data center interconnects.
- **In OptSim, OptSim Circuit, and ModeSYS™ advanced tools, NxM Electrical S-matrix block supporting the**

Touchstone file format to model passive, linear electrical networks.

Visit Synopsys at OFC 2018 at Booths 1822 and 3735

With the RSoft and PhoeniX OptoDesigner tools, Synopsys is the leading provider of photonics design automation solutions, offering photonic-aware physical layout capabilities enabled by support for foundry-specific PDKs. At the Optical Networking and Communication Conference (OFC) in San Diego, Calif. March 13-15, Synopsys will demonstrate the latest innovations in the RSoft and PhoeniX OptoDesigner product families at booths 1822 and 3735.

About Synopsys RSoft Products

Synopsys RSoft products are leading solutions in photonic design software and serve several industries including optical communication, optoelectronics and semiconductor manufacturing. RSoft products provide a full range of design, optimization and planning tools for optical communications, as well as solutions for optoelectronics components and subsystems. Learn more at https://www.synopsys.com/optical-solutions/rsoft.html.

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 15th 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 http://www.synopsys.com.

Editorial Contact:
Janet Berkman
Synopsys, Inc.
650-584-5707
jberkman@synopsys.com

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