Synopsys Announces Release 2013.12 of the RSoft Product Family

Latest Release Enhances Design of Photonic Components and Optical Networks

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Highlights:

- Enhanced modeling of optical surface scattering for subwavelength optical components
- Faster photonic device simulations
- Expanded Multi-Physics utility for analysis of physical effects on photonic devices
- Flexible modeling and simulation of Reconfigurable Optical Add Drop (ROADM) networks
- Compliance with latest Optical Transport Network (OTN) standards

Synopsys, Inc. (Nasdaq: SNPS), a global leader providing software, IP and services used to accelerate innovation in chips and electronic systems, today announced the availability of version 2013.12 of the Synopsys RSoft™ products, its industry-leading family of software tools for photonic and optical network design. This latest release delivers new modeling and analysis features as well as simulation speed improvements in the RSoft Photonic Component Design Suite. In addition, the release delivers enhancements in the RSoft MetroWAND™ network design tool to streamline network modeling, design and service planning.

Enhanced Modeling of Optical Surface Scattering
Two products in the Photonic Component Design Suite, the DiffractMOD™ and FullWAVE™ simulation tools, can now generate a Bidirectional Scattering Distribution Function (BSDF) file that contains scattering information for periodic optical structures, such as subwavelength diffractive surface gratings. The BSDF can be applied to a finite optical beam that covers more than one period to determine reflection and transmission characteristics of a structure. This provides a flexible, highly accurate method for modeling an optical surface's scattering properties, and helps optical designers achieve stringent size, weight and cost targets more easily.

The RSoft BSDF files can be imported into Synopsys' LightTools® illumination design software to facilitate the design of lighting systems with small-feature, diffractive optical structures such as nano-structured LEDs. The BSDF data can also be used in Synopsys' CODE V® optical design software, in its Beam Synthesis Propagation tool. This enables efficient analysis of micro-optical components used in applications that incorporate both illumination and imaging elements, like digital projector systems.

"The BSDF enhancements in the RSoft Photonic Component Design Suite provide a powerful new way for designers to model nanotechnology applications," said George Bayz, vice president and general manager of the Optical Solutions Group at Synopsys. "The RSoft BSDF's compatibility with LightTools and CODE V extends the modeling capabilities to a wide range of illumination and imaging applications."

Simulation Speed and Performance Enhancements
The RSoft BeamPROP™ tool has enhanced multi-threading capabilities that dramatically improve simulation speed and new Perfectly Matched Layer (PML) boundary conditions that provide improved performance for complex radiation patterns. FullWAVE has optimized continuous wave (CW) dispersive simulations for improved simulation speed, as well as a new dispersion fitting utility to create dispersive material models to use in simulations for multi-wavelength systems.

Expanded Multi-Physics Utility
The RSoft Multi-Physics Utility accounts for the effects of electrodes, heaters, stress and carriers on the refractive index profile during photonic device simulation. The Carrier Effects feature in this utility has been expanded to include:

- The ability to use complex index perturbations
- Generation of the photonic device's frequency response
- The ability to import custom, user-defined doping profiles
- Many new analysis outputs, including carrier density, current vs. voltage (I-V), resistance vs. voltage (R-V), and capacitance vs. voltage (C-V) plots

ROADM Network Design
MetroWAND 2013.12 delivers a new design engine option that allows flexible modeling and simulation of ROADM networks. Key capabilities include:

- Design and optimization of capacity allocation, end-to-end fiber layer performance validation and automatic selection and

placement of ROADM network elements from the equipment library of choice
- End-to-end grooming of traffic demands into wavelengths
- Automatic setting of optical attenuators to equalize power of all optical channels
- Placement of optimal dispersion compensation modules in ROADM nodes
- Addition of Wavelength Selective Switch (WSS) models to the equipment library
- Ability to display the internal architecture of a ROADM node
- Support for automatic- or manual-selection nodes to build ROADM modules

Compliance with Optical Transport Network Standards
MetroWAND has new features to support the latest ITU-T OTN design standards, including:

- Rate Definition Model to support ITU-T G.709 Optical Transport Units (OTU) and Optical Data Units (ODU)
- Flexibility to add custom client signals and mappings
- Vendor equipment library samples to support OTN signal rates

"MetroWAND provides us with a user friendly, highly accurate tool for designing optical networks that meet our performance metrics for non-linearity, polarization mode dispersion (PMD) and all other parameters of Dense Wave Division Multiplexing (DWDM) components," said R. Parameshwar, senior project manager of R&D at United Telecoms Limited (UTL). "For example, it has various routing algorithms like shortest path, minimum hop and minimum cost to determine various routing arrangements, customizable equipment library to suit UTL DWDM equipment, and it performs optical link engineering analysis by placing dispersion compensation modules and setting optical attenuators for power equalization."

Availability & Resources
Synopsys' RSoft products version 2013.12 are available now. Customers with a current maintenance agreement can download this version from the Synopsys website using their SolvNet® account.

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. For more information, visit https://optics.synopsys.com/rsoft/.

About Synopsys
Synopsys, Inc. (Nasdaq:SNPS) accelerates innovation in the global electronics market. As a leader in electronic design automation (EDA) and semiconductor IP, Synopsys delivers software, IP and services to help engineers address their design, verification, system and manufacturing challenges. Since 1986, engineers around the world have been using Synopsys technology to design and create billions of chips and systems. Learn more at www.synopsys.com.

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