SYNOPSYS®

About Synopsys Optical Solutions
Design Better Optical Systems, Faster

Synopsys' Optical Solutions Group is a leading developer of optical design and analysis tools that model all aspects of light propagation, enabling users to produce accurate virtual prototypes leading to manufacturable optical systems.

Our innovative software packages include CODE V® imaging design software, LightTools® illumination design software, and the LucidShape® products for automotive lighting. We are integrated with RSoft™ Photonic Device Tools for streamlined, multi-domain co-simulations of nano-textured optical structures and diffraction analysis. We offer precision light scattering measurements and equipment for high-accuracy optical product simulations and visualizations.
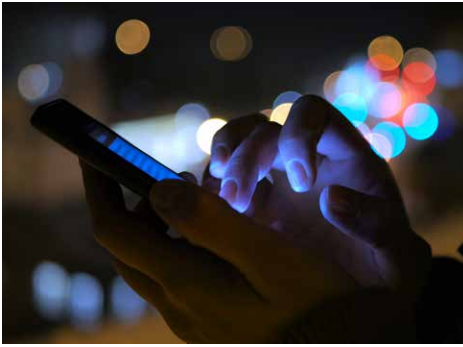
Our History

- In October 2010, Synopsys acquired Optical Research Associates (ORA®), representing Synopsys' initial move into the optics industry and aligning with the company's strategy to expand its total addressable market into areas that are naturally adjacent to traditional EDA. With the CODE V and LightTools software products, Synopsys continued ORA's long history as an innovator in the development of optical design and analysis software. The Engineering Services group of consultants is the largest independent supplier of optical systems design.

- In May 2012, Synopsys acquired RSoft Design Group. With the RSoft products, Synopsys augmented the CODE V and LightTools product lines to provide a full spectrum of photonic and optical design solutions.

- In February 2014, Synopsys acquired Brandenburg GmbH, maker of the LucidShape line of CAD software for the design and simulation of automotive and general lighting. The LucidShape products further strengthened Synopsys' existing lighting design and simulation portfolio by offering a more complete set of optical tools for automotive lighting customers.

- In February 2018, Synopsys acquired PhoeniX B.V., a global supplier of photonic integrated chip (PIC) design solutions. With the PhoeniX OptoDesigner tools, Synopsys became the leading provider of PIC design automation solutions. Synopsys is accelerating the adoption of photonic and PIC technologies with a comprehensive Photonic Solutions portfolio.

- In November 2020, Synopsys acquired Light Tec, a global provider of optical scattering measurements and measurement equipment. The combination of Synopsys' optical design software tools with Light Tec's solutions expanded customer access to precision light scattering data for materials and media used in optical systems.

Products and Services

CODE V Optical Design Software

CODE V is used for the optimization, analysis, and tolerancing of image-forming optical systems and free-space photonic devices. CODE V combines superior engineering capabilities with the control and access of an intuitive user interface. Its many unique capabilities include the most powerful local and global optimization for optics, MTF-based tolerancing, environmental analysis, partial coherence analysis, gradient index and DOE/HOE support, polarization ray tracing, and lens cost appraisal. And it's easy to share CODE V's optimization and analytic capabilities with other scientific and engineering applications through its COM interface, enabling a seamless, end-to-end design solution. As the industry-standard design and analysis software for optical engineers worldwide, CODE V is unmatched in function, quality, accuracy, ease of use, and technical support.
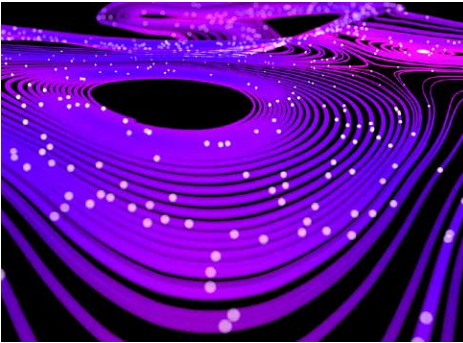
LightTools Illumination Design Software

LightTools is a complete optical design and analysis software product featuring virtual prototyping, simulation, optimization, and photorealistic renderings of precision illumination applications. Its robust 3D modeling technology delivers the inherent accuracy required to simulate ray paths of light as they travel through and within optical elements and mechanical structures. The fully integrated system optimization tool improves the performance of virtually any type of illumination system, dramatically reducing the time required to finalize a design. From LCD displays to vehicle lighting to projector systems, LightTools supports all aspects of illumination design projects.

LucidShape Automotive Lighting Design Software

The LucidShape product family provides a complete set of design and analysis tools for automotive lighting. With dedicated algorithms optimized for automotive applications, LucidShape facilitates the design of automotive forward, rear and signal lighting and reflectors. In addition, the LucidDrive tool provides night driving simulations that generate nearly photorealistic lighting scenes in real time, which allows designers to quickly and accurately evaluate beam patterns of vehicle headlamps prior to expensive fabrication and testing.

RSoft Photonic Device Tools

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

- Synopsys CODE V and LightTools products for rigorous modeling of nano-textured optical structures and diffraction analysis
- Synopsys Sentaurus™ TCAD products for simulations of complex optoelectronic devices

Optical Engineering Services

Our Optical Engineering Services team provides imaginative, cost-effective consulting design services across the entire spectrum of optics. We have successfully completed over 5,500 projects for government, commercial, and consumer products, including breakthrough designs for compact disk player optics, holographic heads-up displays, and precision illumination systems. We partner with manufacturers to deliver total design-to-build optical solutions.

Optical Measurement Equipment and Services

Our light scattering measurement equipment and services allow Synopsys to continuously augment our optical software materials and media libraries for faster, physics-based system modeling. Customers are able to save time and decrease product development costs by having instant access to these libraries, rather than characterizing materials or media manually, or paying for a third-party service to perform measurements. Additionally, customers have the option to purchase solutions from Synopsys to measure their own optical samples, or to request Synopsys' services for custom measurements.

Upgrade to Synopsys Optical Solutions

Visit https://www.synopsys.com/optical-solutions.html to learn more about our optical design software tools, services, and equipment. Or contact us at optics@synopsys.com so we can help you with demos, trial licenses, and product pricing.

SYNOPSYS®
Silicon to Software™