

## Stray Light Analysis

**S**hedding light on a subject may be wanted by some. But in the optics industry, rays of stray light are a troublesome factor.

Based on a Small Business Innovation Research (SBIR) contract from the Jet Propulsion Laboratory (JPL), TracePro™ is state-of-the-art interactive software created by Lambda Research Corporation of Littleton, Massachusetts to detect stray light in optical systems. An image can be ruined by incidental light in an optical system, like static spoils quality sound. To maintain image excellence from an optical system, stray light must be detected and eliminated.

Founded in 1992, Lambda Research Corporation offers stray light analysis, optical system design and analysis, optical testing, process control software and custom software development.

The company's mission is direct: establish a technology bridge between optical and mechanical engineers. That corporate credo is embraced in TracePro, the first optical analysis software program to have as its core, ACIS®, a solid modeling tool that is an industry standard. The ACIS kernel in TracePro provides a vast array of capabilities to create, manipulate, and visualize designs.

Introduced in 1996, TracePro is a Windows® 95/Windows NT™ application, with roots in the Monte Carlo simulation aspect of ray tracing. This permits the user to compute optical flux as it propagates through a model. Users of the optics software can perform stray light analysis, illumination analysis, and optical systems analysis. The software has an intuitive graphical user interface, familiar Windows pull-down menus, dialog boxes and context-sensitive help.

Lambda Research Corporation president, Edward Freniere, says that TracePro is targeted to optical analysts and mechanical, optical and design engineers across a broad range of industries. "TracePro is the product I have wanted to develop for the past ten years. TracePro is based on the philosophy that there's no reason for an engineer to do the drudgery that a computer can do," Freniere says.

TracePro accounts for absorption, specular reflection and refraction, scattering and aperture diffraction of light. Output from the software consists of spatial irradiance plots and angular radiance plots. Results can also be viewed as contour maps or as ray histories in tabular form.

TracePro is adept at modeling solids such as lenses, baffles, light pipes, integrating spheres, non-imaging

concentrators, and complete illumination systems.

Optical system designs are capable of being visualized from multiple angles and in rendered views. Objects can be moved and rotated, and modified with optical properties assigned to them.

With Lambda Research's product, the process of going from optical system layout to the completed opto-mechanical product is streamlined. Tasks that demanded a good part of an hour can be completed in a few computer mouse clicks, saving company time and money.

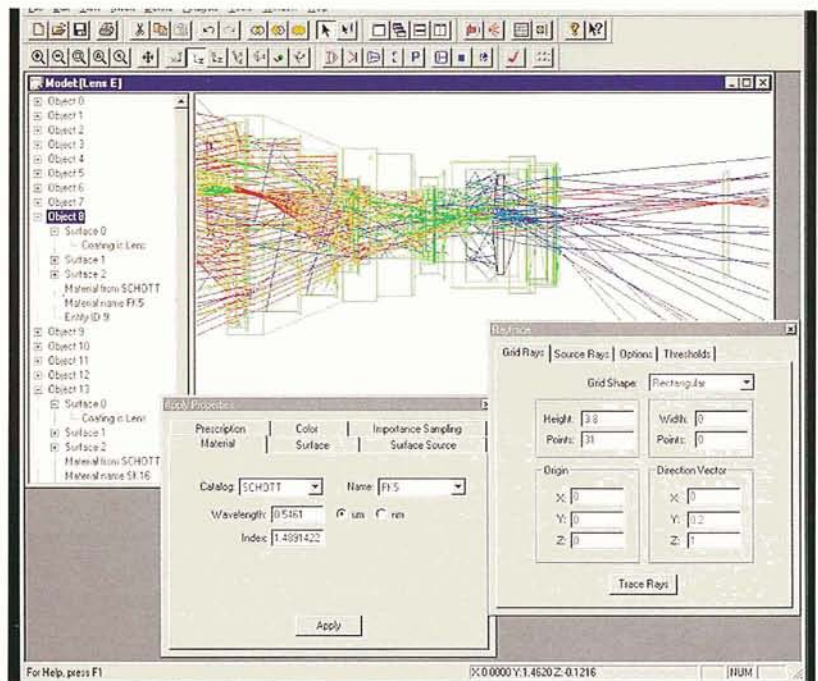
Marketing of TracePro and other optical analysis software from Lambda Research is now underway throughout the United States, Europe, and the Pacific Rim. The firm's customer base includes corporations such as Lockheed Martin, Samsung Electronics and other manufacturing, optical, aerospace, and educational companies worldwide.

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*Lambda Research's TracePro software depicts rays of light moving through an optical system. In this instance, the blue light rays indicate the paths of unwanted stray light that can ruin an image. JPL-funded work helped put a new light on this unique software for a range of commercial applications.*