What is OptiCAD®?

OptiCAD® is a flexible, easy to use 100% non-sequential, illumination, optical analysis, and visualization program.

What are OptiCAD®'s Capabilities?

OptiCAD® can perform analysis on arbitrarily placed optical components, with the capability to do unconstrained ray tracing considering **reflection**, **refraction**, **surface and bulk scattering** and **polarization**.

OptiCAD® models many optical components, including lenses, mirrors, light pipes, prisms, imported CAD surfaces and solid objects, faceted surfaces and solid objects, and other components. Light sources may be modeled as points, lines, surfaces, or volumes. Sources maybe diverging converging, or collimated, and multiple sources may be placed at any location. Sources may also be user defined via table or external dlls.

Applications for OptiCAD®

- Parabolic shaped concentrators
- Arbitrarily shaped concentrators
- Light pipes of any shape or complexity
- Automobile instrument and display panel lighting
- Display panel lighting
- Illumination systems, headlights, taillights
- Conventional optics, including lenses and mirrors
- Systems with prisms or beam splitters
- Laptop computer displays
- Slide and television projectors
- Flow cells, and other biomedical instruments
- Uniform illumination reflectors
- Stray light analysis, baffle design, optical scanners
- Flashlamp and diode pumped lasers
- Grazing incidence conics
- X-ray telescopes
- Reflective highway markers
- Solar collectors
- Axiconal optics
- Lenslet arrays
- Fiber optical design and multimode fibers

OptiCAD®'s Features

- 3-D solid models of optical components
- Single integrated version
- Multiple light sources may be place anywhere

- 100% non-sequential ray traces, no ports, no special modes of operation, no limited list of objects, no compromises
- 100% global coordinates
- Both source based and observer based ray tracing
- Polarization ray tracing of coated and uncoated surfaces
- Integrated Bi-directional CAD import/export
- CAD import of both surfaces and solids as NURBS Breps
- CAD export of objects and surfaces has full functionality for later reimport
- OptiCAD now comes with EquationCAD, an equation based CAD surface creator
- Multiple independent ray paths
- Automatic ray branching for non-polarization and polarization ray tracing
- Total internal reflection, Fresnel reflection performed automatically
- Ray tracing using glass catalogs: Schott, Hoya, Ohara, Corning, Infrared, and others
- Thin film coatings
- Energy distribution and radiometer analysis
- Uses radiometric/photometric units
- Surface scattering models: Lambertian, Gaussian, power law, X-Y exponential, ABg, measured BRDF/BTDF data, tabulated data
- Monte Carlo simulation
- Volume absorption & scattering
- REAL TIME 3D OpenGL graphics
- False color intensity mapped polynet radiometer objects
- Significantly faster ray tracing