



# SPIE Professional

JULY 2012

## Graphene

in science  
and art

**SPIE annual awards**

**Optics + Photonics preview**

**Spectral imaging in the clinic**

**Eco-metamaterials**

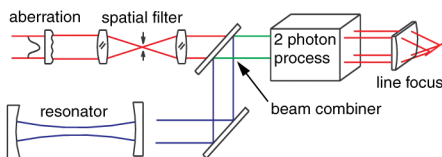


# GLAD

## Laser and Physical Optics Design Software

### Full diffraction analysis

GLAD is the state-of-the-art in laser and physical optics analysis. GLAD can model almost any type of laser or physical optics system with a complete end-to-end 3D diffraction analysis.



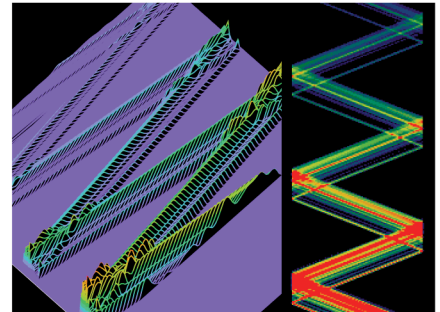
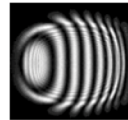
GLAD uses a general description of intensity and phase to perform full diffraction propagation through the most complex systems including detailed treatment of laser gain, nonlinear optics, stable or unstable resonators, diffractive optics, waveguides, fibers and coupling, fiber lasers, photolithography, excimers, optical integrators, etc.

### New, Ver. 5.7, 32 & 64 bit

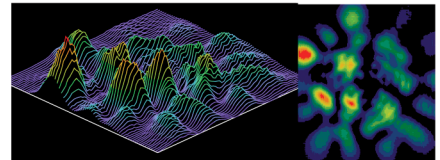
- Ultra short pulse effects with new coherent gain model
- Multi-threading to 16 threads in selective gain and diffraction routines (64 bit version only)
- Full arrays as optimization variables

### Features:

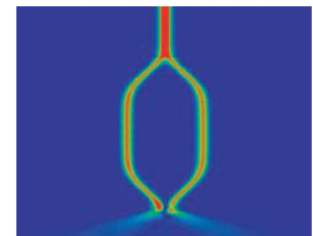
- Complex, multiple laser systems
- Laser gain models
- Q-switch lasers
- Nonlinear optics
- Interferometry
- Diode pumped lasers
- Stable, unstable, ring resonators
- Lens and mirror arrays
- Binary optics and gratings
- 3D waveguides and fibers



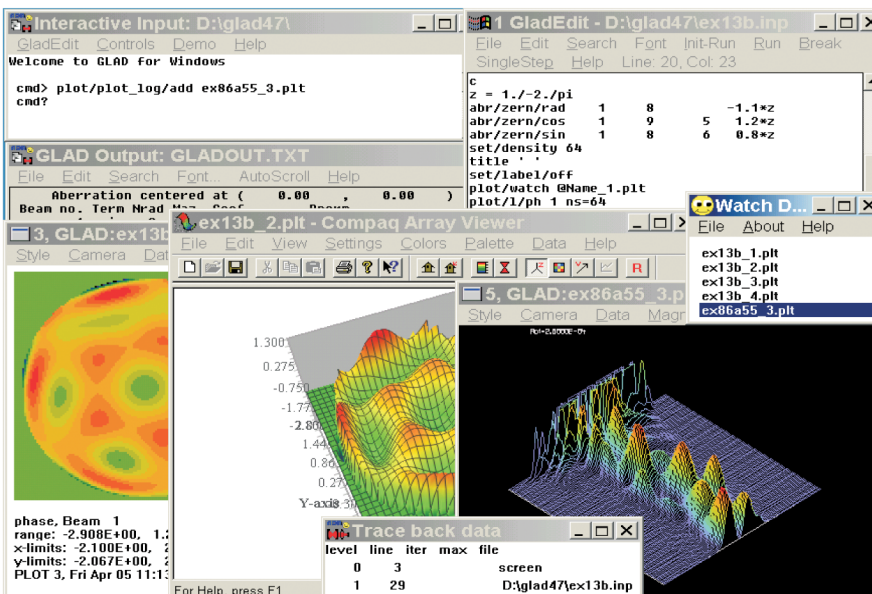
Zigzag resonator in Q-switch laser showing amplification from top to bottom and self-interference at side mirrors.



Transient Q-switch laser mode at 2ns



Photonic switch in the off position



### Technical Support

Excellent technical support, including 中文, for one-year by email and telephone.

### Three-day courses.

June, 13-15, 2012, San Diego

June, 27-29, 2012, Shanghai

**Demo:** Full-function demo. Send complete address and organizational email to [glad@aor.com](mailto:glad@aor.com).

### Applied Optics Research

tel: 1 360 225 9718, fax: 1 360 225 0347  
e-mail: [glad@aor.com](mailto:glad@aor.com), [www.aor.com](http://www.aor.com)

International Distributors: **Leadintex International, Inc.**, Japan  
tel: 81 3 3661 5041, [tsutom@leadin.co.jp](mailto:tsutom@leadin.co.jp)  
**Infotek**, Taiwan, tel: 88 6232332748, [sales@infotek.com.tw](mailto:sales@infotek.com.tw)

# WARNING...

## ASPHERIC CURVES AHEAD



## Make sure you can navigate them—use CODE V

If you're concerned that aspheric surfaces in your lens system will cause manufacturing problems, then you're not using Synopsys' CODE V.



Photo courtesy of QED Technologies.  
Precision asphere under test.

CODE V delivers fast, accurate results for any optical system—from complex aspheres to classic camera lenses. And when you compare us to other optical design software products, you'll find that CODE V is unrivalled in its ability to deliver designs that work right when built. So you can stop worrying about manufacturing issues that lead to higher costs and lost revenue.

To see how CODE V can help you design manufacturable, high-performance optics, visit [www.synopsys.com/CODEV\\_1](http://www.synopsys.com/CODEV_1)

### Key Aspheric Design & Analysis Features

- Automatic determination of best locations for aspheric surfaces in your design
- Fast, powerful tolerancing of aspheric surface errors
- Built-in aspheric constraints to control slope and sag during optimization
- Full support for Qcon and Qbfs surface shapes

OPTICAL  
RESEARCH  
ASSOCIATES



Tel: (626) 795-9101 E-mail: [info@opticalres.com](mailto:info@opticalres.com)  
Web: [www.synopsys.com/CODEV\\_1](http://www.synopsys.com/CODEV_1)

H	Li	Na	K	Rb	Cs	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Be	Mg	Ca	Sr	Ba	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Xe
B	Al	Si	P	S	Cl	Ar	He														

Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

# Now Invent.

strontium doped lanthanum III-IV nitride materials crystal growth cobalt metamaterials  
 metallics tantalum alloys cerium polishing powder thin film bionics  
 dysprosium pellets atomic layer deposition  
 aerospace ultra-light alloys iridium crucibles  
 scandium-aluminum green technology

gallium arsenide carbon nanotubes titanium robotic parts gold nanoparticles  
 spintronics laser crystals rare earth metals fuel cell materials hafnium tubing europium  
 targets silicon carbide germanium windows 99.999% ruthenium spheres erbium doped fiber optics  
 dielectrics platinum ink quantum dots nickel foam ultra high purity metal  
 anti-ballistic ceramics osmium alternative energy ionic



The World's Manufacturer of Engineered & Advanced Materials

photovoltaics

Nd:YAG

catalog: [americanelements.com](http://americanelements.com)

© 2001-2011. American Elements is a U.S. Registered Trademark

