

**Crosslight Short Course, August 7-9, 2007  
Rensselaer Polytechnic Institute, Troy, NY ([www.rpi.org](http://www.rpi.org))**

**For Faculty, Students, and Professionals from Industry**

## **Computer Simulation of Optoelectronic Devices using APSYS/LASTIP/PICS3D**

**Instructor: Joachim Piprek, NUSOD Institute**

Advanced software is widely available for optoelectronic devices, however, the inherent complexity of device physics makes it quite difficult to use. This short course gives a hands-on introduction to optoelectronic device simulation. Basic equations and key semiconductor material parameters are explained. Advanced simulation is demonstrated to provide deep insight into micro- and nano-scale physical processes of real-world devices. Strategies for obtaining realistic performance predictions are discussed.

Learning by doing is a main emphasis of this short course. Participants will be able to work hands-on with advanced commercial software on their own laptop PC. APSYS, LASTIP, and PICS3D by Crosslight Software are the most advanced commercial simulation tools in optoelectronics. These software packages self-consistently combine quantum mechanical, electrical, optical, and thermal calculations in two or three dimensions. They cover a large spectrum of devices, including light-emitting diodes, laser diodes, amplifiers, modulators, and photo-detectors. Material parameters for most III-V semiconductor compounds are included and can be easily edited by the user.

**Instructor:** Joachim Piprek is currently president of the NUSOD Institute and he also chairs the annual NUSOD Conference ([www.nusod.org](http://www.nusod.org)). He has published three books on optoelectronic device simulation and has taught graduate courses at universities in Germany, Sweden, and in the United States.

## Tuesday, August 7

- 9:30 AM Welcome by ECSE Department Head Ken Connor
- 9:40 AM Welcome by Fred Schubert
- 9:50 AM Welcome by Joachim Piprek
  
- 10:00 AM Lecture: Introduction to Optoelectronic Device Simulation
  
- 12:00 PM Lunch (free)
  
- 1:00 PM Lecture: Simulation Examples (Laser, LED, Photodetector)

## Wednesday, August 8

- 9:30 AM Hands-on Exercises: Getting started
  
- 12:00 PM Lunch (free)
  
- 1:00 PM Hands-On Exercises: Setting up new projects

## Thursday, August 9

- 9:30 AM Discussion of special topics (as proposed by participants)
  
- 12:00 PM Lunch (free)
  
- 1:00 PM Individual appointments

**Note:** Before course starts, participants are asked to install LASTIP, APSYS, and PICS3D on the laptop PC that they are using for the hands-on exercises. Free training licenses should be obtained directly from Crosslight, see [www.crosslight.com](http://www.crosslight.com) (/ download / free training license). The software can then be downloaded through the internet. A WLAN card is required to have online access to the Crosslight license server during class.

## Registration

### Computer Simulation of Optoelectronic Devices using APSYS/LASTIP/PICS3D

Name: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Email address: \_\_\_\_\_

Telephone: \_\_\_\_\_

#### **Registration fee: \$ 50.00**

Payment of the registration fee must be coordinated with RPI's Gina Moore,  
Email: < gina@ecse.rpi.edu > Telephone: 518-276-8072 Office CII 7119.

#### **Please email filled-in registration materials to:**

Dr. Joachim Piprek: < piprek@nusod.org >  
Gina Moore, Email: < gina@ecse.rpi.edu >