



## 5th Fraunhofer IISB Lithography Simulation Course June 4 and 5, 2009 in Erlangen, Germany

[www.litho-workshop.com](http://www.litho-workshop.com)

### Program

#### **Day 1 (June 4, 2009) Optical Lithography: Introduction to optical projection lithography, resolution enhancements, alternative optical techniques**

11:00 - 11:15 am	Welcome
11:15 am - 1:00 pm	Introduction to lithography simulation
1:00 - 2:00 pm	Lunch
2:00 - 3:30 pm	Optical imaging below the Rayleigh limit - off-axis illumination, phase shift masks, double exposure / patterning
3:30 - 3:45 pm	Coffee break
3:45 - 5:15 pm	Optical imaging below the Rayleigh limit - near field techniques, plasmonic lenses, negative index superlenses, stimulated emission depletion and other techniques

#### **Day 2 (June 5, 2009) Lithography at shorter wavelengths: physical effects and modeling approaches**

<b>9:00 - 10:15 am</b>	EUV-lithography: overview, sources, multilayer coatings, exposure tools, flare, resists, metrology
<b>10:15 - 10:30 am</b>	Coffee break
<b>10:30 am - 12:00</b>	EUV-lithography: masks, mask-induced imaging artefacts, absorber and multilayer defects, process performance analysis
<b>12:00 - 1:00 pm</b>	Lunch
<b>1:00 - 2:30 pm</b>	E-beam lithography: overview, e-beam systems and writing strategies, resolution limits and patterning fidelity issues, resists for e-beam lithography
<b>2:30 - 2:45 pm</b>	Coffee break
<b>2:45 - 4:00 pm</b>	E-beam-lithography: modeling, pattern degrading effects and exposure optimization, future developments and novel concepts, multi-beam techniques
<b>4:00 - 4:30 pm</b>	Final discussion and summary

**Instructors:** Andreas Erdmann, Peter Evanschitzky (Fraunhofer IISB)  
Peter Hudek (FH Vorarlberg / Institute for Lithography Research - Erwin Schrödinger Society)  
Stephan Ratzsch (Friedrich-Schiller-Universität Jena)