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FRAUNHOFER INSTITUTE FOR INTEGRATED SYSTEMS AND DEVICE TECHNOLOGY IISB

Dr. LiTHO

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General Description

Dr.LiTHO is a comprehensive simulation environment for photolithography developed at Fraunhofer IISB. Its main focus is on development and research applications.

Features

- Rigorous electromagnetic field solver. Computation of mask diffraction spectra.
- Fast imaging simulator including polarization effects, Zernike and Jones pupils and illumination settings.
- Models and algorithms for the simulation of EUV masks including mask defects.
- Photoresist processing module including diffusion and chemical reaction kinetics upon PEB and development.
- Process evaluation tools for aerial image and photoresist profile analysis.
- Optimization toolbox for OPC and SMO including global and multi-objective optimizers.
- Interfaces for the modeling of other exposure techniques such as contact and proximity printing and interference lithography.

Advantages

Dr.LiTHO covers a wide range of photolithographic techniques and can be used to speed up process development and analysis.

- Prediction of the performance of photolithography systems for specific tasks.
- Early identification of critical structures and process parameters.
- Optimization of mask layouts and illumination settings.

Benefits

- Less test exposures and faster process development.
- Full access to the (simulated) light distribution, therefore independent analysis of optical and photoresist performance.
- Increased understanding of processes by controlled variation of process parameters.

Usability

Dr.LiTHO is available under Windows and several Linux distributions. The scripting language *Python* is used as a frontend language.
Dr.LiTHO comes with a collection of tutorial scripts and a large scripting library for various applications.
Dr.LiTHO includes graphical user interfaces for data visualization and for the installation and update of its modules.

Lithography Simulation

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