

Oddělení diodově čerpaných laserů a realizační tým projektu HiLASE

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From deep UV to soft x-rays: Overview of research at short wavelengths in the Laser Lab. Göttingen

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The Optics/Short Wavelengths department of Laser-Laboratorium Göttingen is concerned with the characterization of laser sources as well as high quality optics for beam steering and shaping. Main focus is put on the deep UV wavelengths relevant for semiconductor microlithography. Various measuring devices for assessment of the efficiency and stability of heavily loaded optical components are operated. This allows, among others, at-wavelength determination of laser-induced damage thresholds, thermal lensing, as well as monitoring of absorption and degradation behavior.

Furthermore, compact laboratory-scale EUV / XUV sources based on laser-produced plasmas are being developed, accomplishing metrological applications and material interaction studies with soft x-rays (reflectometry, microscopy, NEXAFS spectroscopy for chemical analysis). Stability and damage threshold tests of EUV optics and sensors at 13.5 nm are performed by focusing the radiation with the help of an EUV Schwarzschild objective.

In addition, the propagation characteristics of laser radiation is precisely analyzed with the help of specially designed Hartmann-Shack wavefront sensors. Such sensors have also been developed for the EUV and soft x-ray range, especially for beam characterization and optics alignment in free-electron laser beam lines.

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