

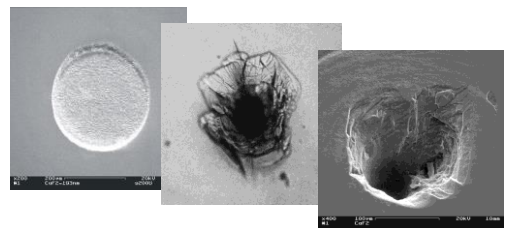
# Optics Characterization (EUV - NIR)

Laser-  
Laboratorium  
Göttingen e.V.

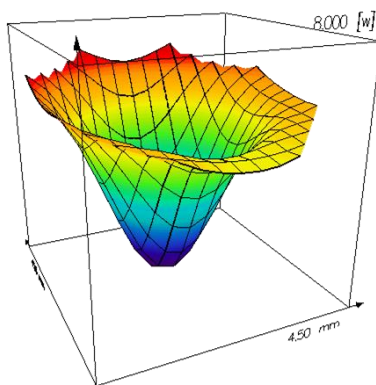
## Characterization methods

At Laser-Laboratorium Göttingen, the performance of optical components for high power lasers and EUV-sources is comprehensively characterized using testing procedures in accordance with ISO standards:

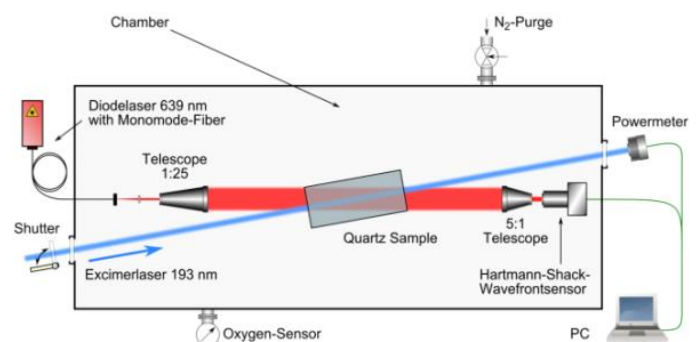
- ▶ Absorbance (ISO 11551)
- ▶ Laser-induced damage threshold (ISO 11254)
- ▶ Wavefront distortion (lens heating, compaction)
- ▶ Transmittance / Reflectance
- ▶ Scattering (ISO 13696)
- ▶ Degradation (color centers) for up to 1 billion laser pulses
- ▶ Fluorescence / Luminescence



▲ Micrographs of laser-induced damage sites of various laser-optical materials



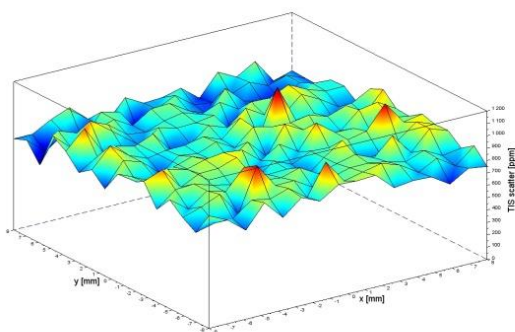
▲ Absorbance: Thermal lens in fused silica @193nm



▲ Photothermal setup for absorbance tests

## Available radiation sources

- ▶ High power excimer lasers  
351nm, 308nm, 248nm, 193nm, 157nm
- ▶ Solid-state lasers  
1064nm, 532nm, 355nm, 266nm  
(ns and ps pulse widths)  
1070nm fiber laser (500W cw)  
tunable OPO: 680 – 980 nm + IR-Idler
- ▶ Laser-induced EUV / XUV source  
13nm, 2 - 4nm



▲ Two-dimensional scatter map @248nm