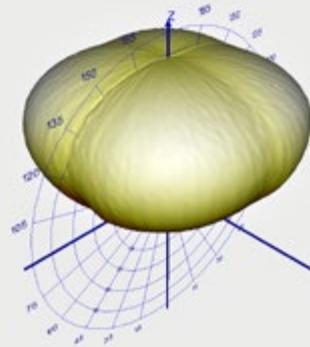
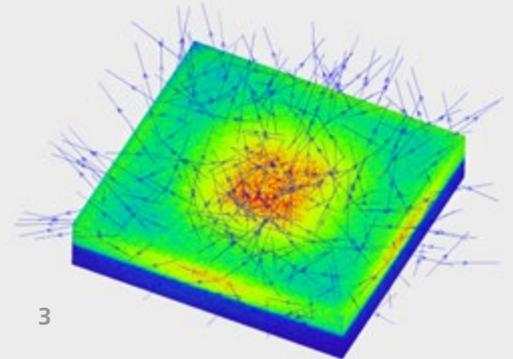


1



2



3

- 1 *Goniometer measurement station.*
- 2 *3D distribution of luminous intensity.*
- 3 *Rayset of a measured light source in an optical simulation.*

## CHARACTERIZATION OF LIGHT SOURCES

During the development of optical systems, it is necessary to characterize single components as well as complete systems. Corresponding measurement techniques are necessary, which provide an interface to the optical design software. The following measurement methods are available.

### Measurements

- Measurement of lamps and luminaires according to DIN 5032
- Angular and spectral distribution of the emission from 300 to 1000 nm
- Generation of raysets for optical simulations
- Burn-in measurements of the lamp
- Measurement of LEDs according to CIE 127
- Spatially resolved luminance and color measurements
- Data export to ZEMAX, FRED and ASAP

### Interface optical design – experimental verification

- Realization of basic experiments for newly developed optical components and systems
- Comparison of experimental results with optical simulation

### Analysis of scatter and stray light

- Analysis of scatter and stray light in optical systems (with FRED and ZEMAX) in connection with light scatter measurements
- Simulation of scatter behavior

### Fraunhofer Institute for Applied Optics and Precision Engineering IOF

Albert-Einstein-Straße 7  
07745 Jena, Germany

#### Director

Prof. Dr. Andreas Tünnermann

#### Contact

Uwe Lippmann  
Phone +49 3641 807-249  
uwe.lippmann@iof.fraunhofer.de

[www.iof.fraunhofer.com](http://www.iof.fraunhofer.com)