

TABLE-TOP INSTRUMENT FOR 3D LIGHT SCATTER MEASUREMENTS



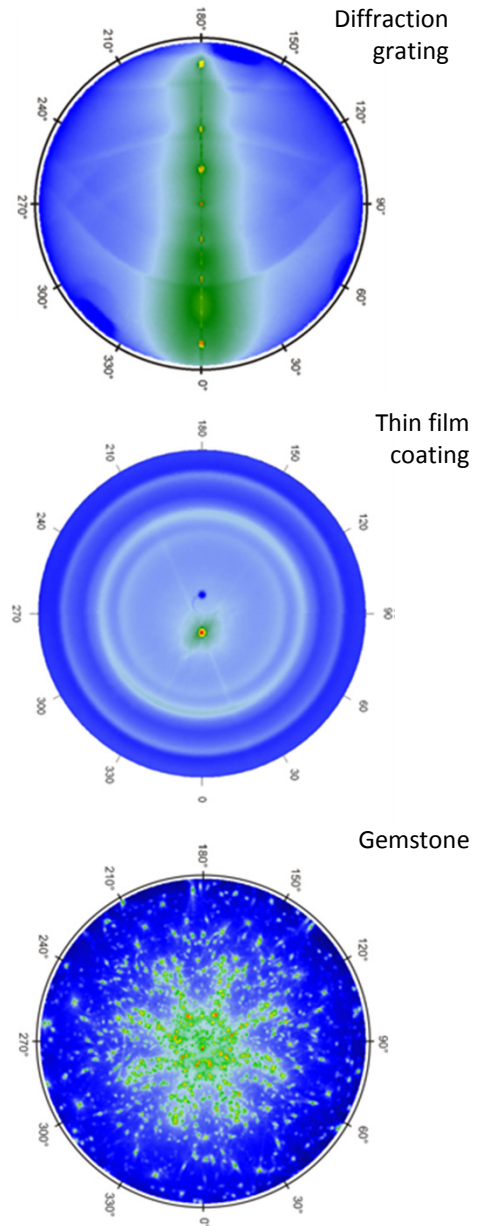
System description

The new Table-Top 3D Scatterometer TTS, developed at the Fraunhofer Institute (IOF) in Jena, Germany, enables laser-based highly sensitive measurements of angle resolved light scattering, reflectance, and transmittance of optical and non-optical surfaces, materials and components within the entire 3D-sphere.

Applications

Characterization of surfaces, coatings, and materials:

- Quality control, appearance
- Optical performance
- Roughness analysis



3D scattering distributions measured at 532 nm

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Specifications

- Measurement of Angle Resolved Light Scattering (BRDF, BTDF), Reflectance, and Transmittance
- Full 3D-spherical measurement capability
- In- and out-of-plane modes
- Flexible variation of incident angle, scattering angle (azimuthal and polar angles), and polarization
- Area raster scans of sample surface
- Housed table top system < 1 m³
- Dynamic range: 13 orders of magnitude
- Instrument signature down to ARS: $3 \times 10^{-08} \text{ sr}^{-1}$
- Roughness equivalent sensitivity: < 0.1 nm
- Wavelength: 532 nm (other wavelengths on demand, e.g. 375 nm, 405 nm, 637 nm)
- User-friendly software for measurement control and data analysis
- Analysis tools: Roughness, PSD, Total / Integrated Scatter (scatter loss)

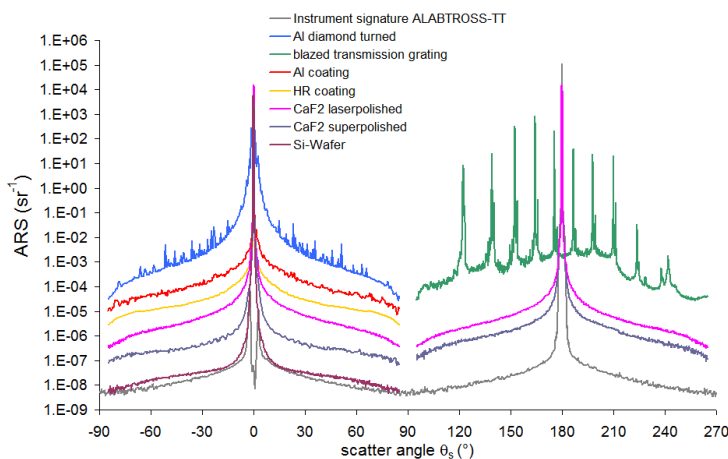


Figure: Examples of in-plane scattering distributions of optical components measured at 532 nm.

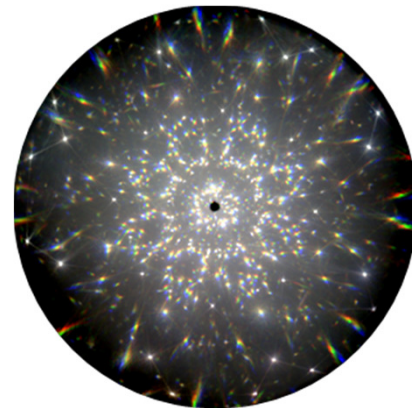


Figure: Superposition of 3D scattering distributions of gemstone at 405 nm, 532 nm, and 640 nm.