

AT A GLANCE

Diffraction image of a
7x7- beam splitter DOE
illuminated with white light

Features

- Generation of a predefined intensity distribution
- Planar and compact components
- High optical quality
- High optical performance
- Low cost elements by replication

Applications

- Laser Material Processing
- Sensor Technology
- Metrology
- Biotechnology
- Imaging
- Medicine

Technical background

Optical components with feature sizes down to the micro- and nano-metre range are key components for systems and devices where small dimensions, compactness and light weight are demanded.

Diffraction optical elements (DOEs) - in general a complex pattern of micro- and nano-scale structures - can modulate and transform light in a predetermined way. They can be designed to handle a number of simultaneous tasks. With computer generated DOEs a laser beam can be shaped into any intensity pattern, such as dot arrays, lines, circles, arrows, or any other arbitrary pattern designed to the customer's requirements.

Manufacturing Technologies

- Photolithography
- Direct Electronbeam-Writing [EPBG 5000+; resol.25 nm]
- Reactive Ion Etching

Services

- DOE-Design and Simulation
- Fabrication of Customized DOEs
- Consulting and Engineering assistance
- Prototypes, One-Off-Items
- Low Volume production
- Master DOEs for replication

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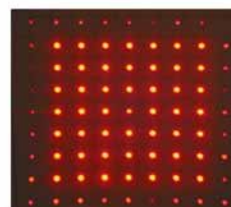
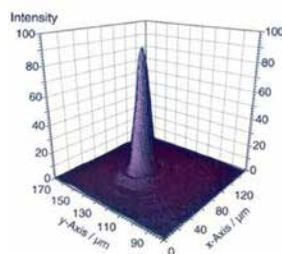
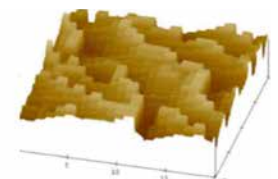
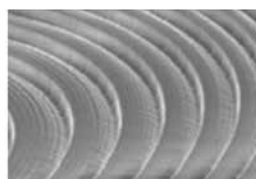
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Specifications

Materials / Master	Fused silica, quartz glass, Silicon,
Materials / Replica	PMMA, PC, PET,Ormocere™
Substrate/ wafer size	Standard 1" up to 5" (Circular or square)
Pixel-size / Resolution	200 nm / 25 nm
Aspect ratio	AR ≤ 1:8
Phase profile	Binary, multi-level, quasi-continuous
Wavelength	DUV, UV, VIS, IR

Portfolio of Diffractive Optical Elements

- **Fresnel Zone Lenses**
on- and off-axis, aspherical & spherical, cylindrical, FZL-arrays
- **Gratings**
binary, multi-level, high frequency, zero order gratings
- **Computer generated holograms**
beam splitter, beam former, diffuser, pattern generators



Fresnel-Zone Lens

Beam Splitter

Pattern Generator