

Top: Adjusted grating.

Cover: Sentinel 5 - grating.

Contact

Department
Micro- and Nanostructured Optics

Scientific Group
Center for Advanced Micro- and
Nano-Optics

Dr. Martin Heusinger
Phone +49 3641 947-993
martin.heusinger@iof.fraunhofer.de

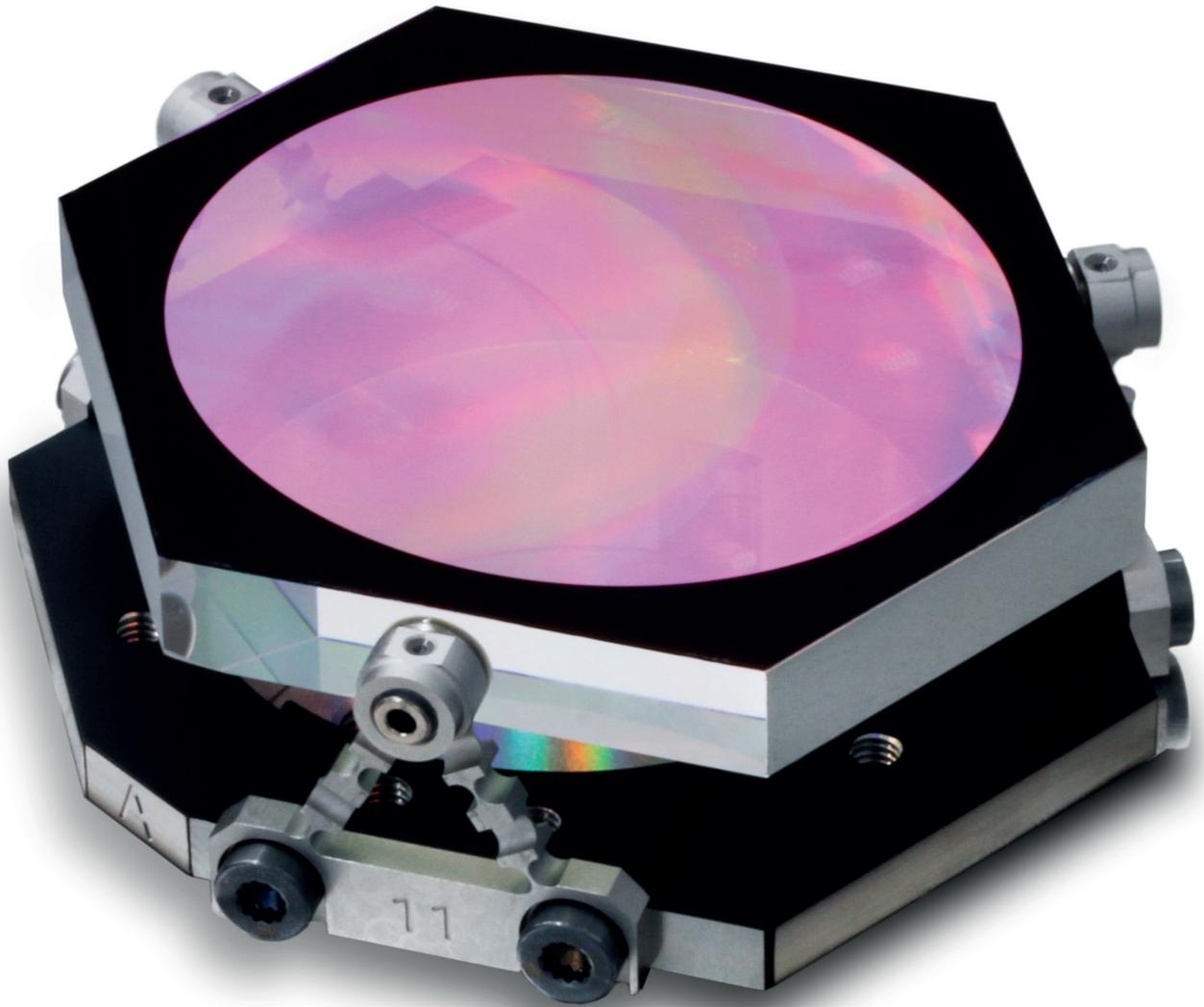
Fraunhofer IOF
Albert-Einstein-Strasse 7
07745 Jena
Germany
www.iof.fraunhofer.de



www.iof.fraunhofer.de
more info



High-performance diffraction gratings
for spectrometer applications



High-performance diffraction gratings for spectrometer applications

Near Infrared Reflection Grating with iso-static mount to the mechanical interface frame.

Features

Customized diffraction gratings are designed, manufactured with lithographic technologies, machined for mechanical interface, assembled and fully characterized with respect to their optical parameters.

Parameters

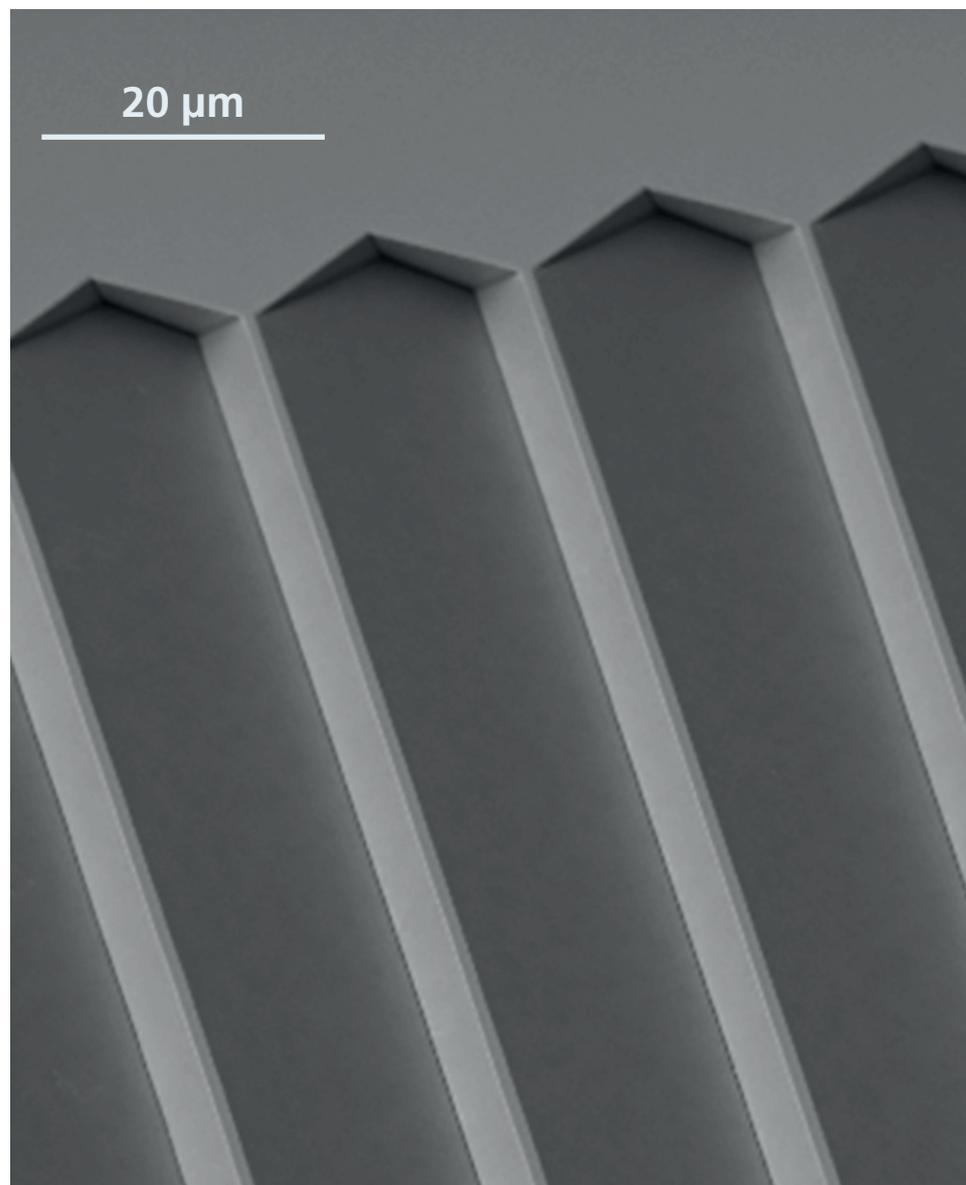
- Reflection (R) or Transmission (T)
- Line density: 10 to 3500 l/mm
 - Polarization: TE, TM or unpolarized down to < 2 %
- Channels: UV, VIS, NIR, SWIR1/2/3
- Bandwidth:
 - Low resolution 200–600 nm
 - High resolution 50–200 nm
- Element size: < 260 x 120 mm² or < 200 x 200 mm² or < 270 mm diameter
- Efficiency depends on grating configuration

Service / technology

- Grating design
- Lithographic wafer-level processing
 - Electron beam lithography
 - Reactive ion etching and/or wet chemical etching
- Characterization
 - Diffraction efficiency
 - Wave front error
 - Stray light
- Machining of mechanical interface
- Backside anti-reflection coating (T)
- Aperture-stop coating
- Bonding / Assembly

References

- ESA GAIA mission
- Sentinel 4 mission



SEM micrograph of an Echelle grating in silicon with 20 microns period.