

1 *Laser illuminated
Fresnel lenses fabricated
via nanoimprint*

PHOTONIC DEVICES

Customized services and solutions

Our objectives

- Preparation and characterization of your photonic device
- Being your R&D partner for your sensing or diagnostic applications

Providing photonic devices for biomedical usage

- Non-invasive sensing of temperature, humidity or detection of specific substances
- Fabrication of large-area periodical photonic structures or complex photonic layouts
- Functionalizing surfaces for enhanced sensitivity or selectivity
- Tailor-fit layout and device fabrication

What can we do for you?

- Provide you with custom-specific samples and front-end sensing devices
- We can cover the whole process chain from in-depth simulation and design to small series fabrication of your photonic element or sensor system

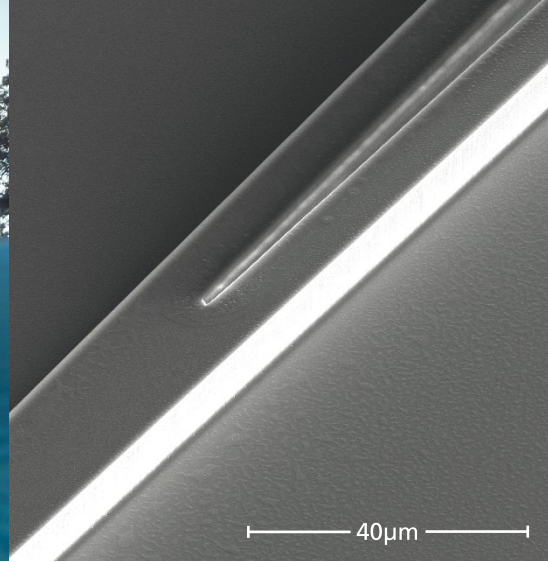
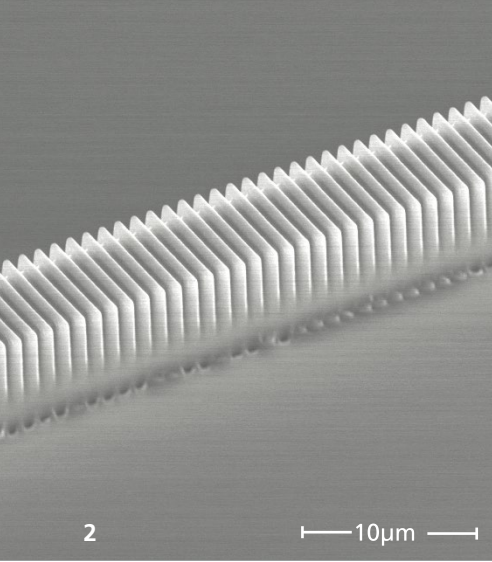
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Fraunhofer IISB offers R&D services for photonic structures from prototype design to device fabrication and characterization.

Variety of photonic structures and devices

Plasmonics and photonics

- Micro / nano structures for e.g., optical filters, enhanced light coupling
- Fresnel lenses and other refractive elements

Planar Bragg grating sensors

- Patterning of planar waveguides, couplers and Bragg gratings
- Substrate materials: quartz, silicon, PMMA, PDMS, hybrid polymers
- Functional cladding via spin coating or deposition from liquid or vapor phase

Lab-on-a-chip applications

- Combination of microfluidic structures and optical sensor devices

Optical simulation

- from a single component to a photonic device

Prototyping and variable layout design using direct laser writing (DLW)

- Hierarchical, non-periodical micro / nanostructures

Characterization

Structural characterization

- SEM and FIB cross sections
- Atomic force microscopy (AFM)

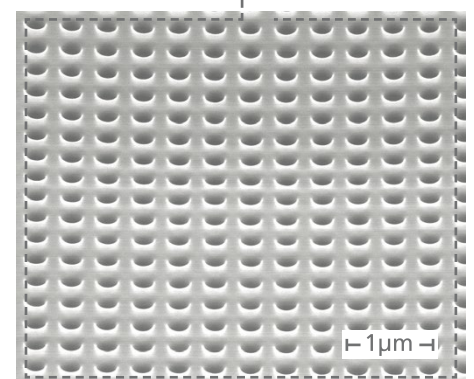
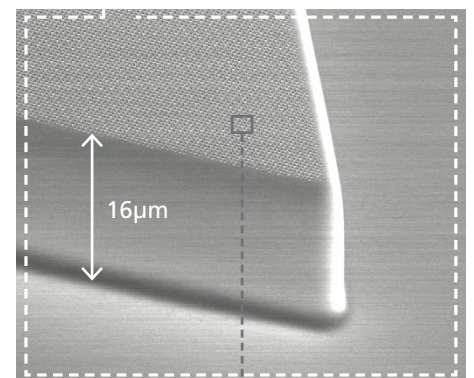
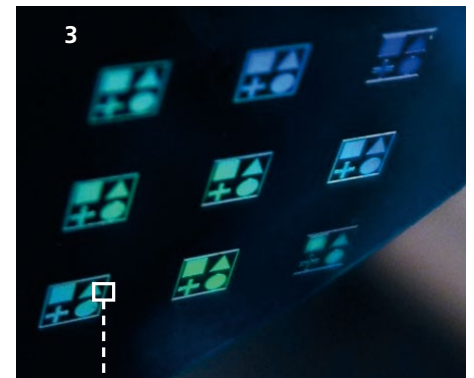
Optical characterization

- UV-VIS spectroscopy
- Reflectometer, refractometer

Sensor characterization

- Attenuation measurement
- Spectral reflection analysis (by external partner)

2 Imprinted surface relief Bragg grating, plasmonic color filter, Y-branch waveguide splitter including surface relief Bragg gratings (from left to right)



3 OrmoComp® mesas with nanostructures cured by direct laser writing