

Origionation by mask-less Laser Lithography

Our unique multiscale mask-less laser lithography enables the low-cost production of novel and complex high-resolution sub-micro and micro-structures:

CONTACT

JOANNEUM RESEARCH
Forschungsgesellschaft mbH

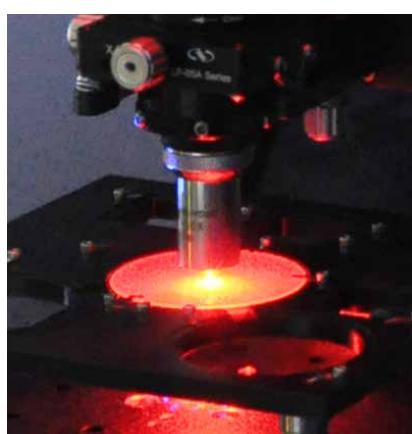
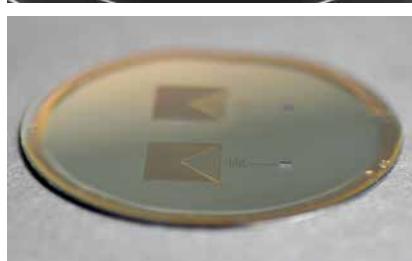
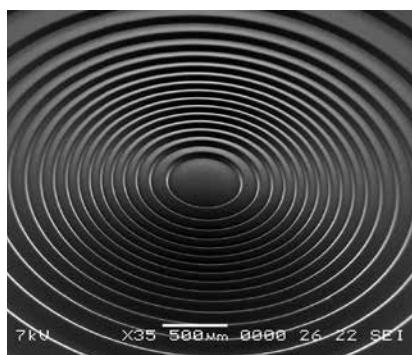
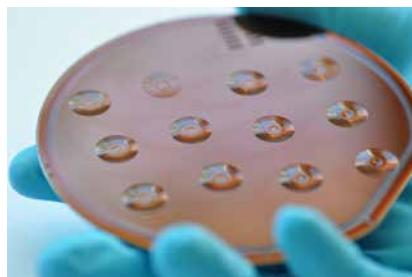
MATERIALS

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MALA
MASKLESS LASER LITHOGRAPHY



- Master fabrication e.g. for UV-nanoimprint lithography, hot-embossing, high precision optical injection moulding, vacuum resin casting
- Rapid prototyping in Micro-Optics, Photonics, Microfluidics, Electronics and others

Several advantages can be realised:

- Reduction of process time
- Digital, non-photomask-based production
- quick and flexible to test and implement design changes
- fabrication of microstructures on flat and curved substrates via 5-axes nano-positioning system

Our technology allows high quality fabrication of sub-micro and micro-structures on large area formats (2", 4", possibly 6" substrate). The structures can have a one-(1D), two-dimensional (2D), or stepless (2.5 D) relief shape.

The minimum structure size achieved in the lateral direction (critical dimension) of our system is in the range of 300 nm. The maximum structure depth for 2.5D microstructures is in the range of 80 µm. An aspect ratio of 4 is possible.

Depending on the complexity of the designed microstructure, the processing time is approx. 1 hour per cm².

Applications can be found in

- Free form micro optics for innovative illumination designs
- Diffractive and refractive micro optical elements
- Bionic surfaces in aviation for reduction of drag to reduce fuel consumption
- Microfluidic Lab-on-Chip systems for molecular diagnostics
- Micro-Electronics