

# Masters and Stamps for Nanoimprint Lithography

AMO offers masters fabricated using various micro- and nanolithography techniques in combination with anisotropic etching.

## 1. Large Area Periodic Nanostructures

Using our IL technology allows producing large, spatial coherent and periodic gratings with constant pitch. Pattern transfer and further processing can be carried out according to customer requirements to achieve high aspect ratio gratings with vertical side-walls.

Pattern type	1 D, rectangular, hexagonal
Substrate material	Silicon or fused silica
Substrate thickness	typical 500 $\mu\text{m}$ to 650 $\mu\text{m}$
Substrate size	6" and below, 8" in some configurations
Grating pitch	180 nm to 2500 nm
Etch depth	up to 2500 nm
Line width	40 nm to 1500 nm
Active grating area	up to 90% of the substrate size

### Process Control:

All grating dimensions are specified and controlled during and after processing. Line width maps, LER characterisation and defect inspection are available on request.

Some specifications are matter of negotiation. For further details please contact us.

## 2. Arbitrary high resolution Nanostructures

Using our EBL technology we can realize arbitrary nanoscale patterns. Our Gaussian beam system provides ultrahigh-resolution down to a few ten nanometers. The definition of large active areas is limited by writing time that is pattern dependent. Pattern transfer into silicon or other material is possible. A quote can easily be provided and is usually based on an electronic design, preferable in GDS format.

Pattern type	arbitrary
Substrate material	Silicon or fused silica
Substrate thickness	typical 500 $\mu\text{m}$ to 650 $\mu\text{m}$
Substrate size	2, 4, 6 and 8 inch
Smallest feature size	50 nm (or even lower on request)
Etch depth	up to 1000 nm, pattern dependent
Active patterned area	limited by writing time, e.g. a few $\text{mm}^2$ for ultradense patterns



■ Contact: Dipl.-Ing. Herbert Kleinjans ■ [services@amo.de](mailto:services@amo.de)



**AMO GmbH**

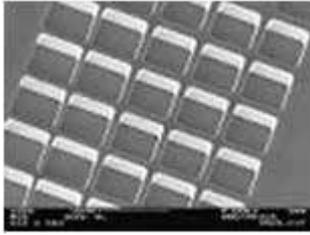
Otto-Blumenthal-Straße 25 ■ D-52074 Aachen ■ Germany

Phone +49 241 88 67-125 ■ Fax +49 241 88 67-560

[services@amo.de](mailto:services@amo.de) ■ [www.amo.de](http://www.amo.de)

### 3. Arbitrary Microstructures

Masters can easily be produced using photolithography. Here micrometer features can be defined and etched up to 10 µm into the substrate. This technique requires a photomask that can either be designed by customer's needs. We have several photomasks on stock that might fit your demands.



#### ■ Mask Aligner

Pattern type	arbitrary
Substrate material	Silicon or fused silica
Substrate thickness	typical 500 µm to 650 µm
Substrate size	up to 8 inch and any size within
Smallest feature size	2 µm
Etch depth	up to 10 µm
Active patterned area	full substrate

#### ■ i-line Stepper

Pattern type	Arbitrary field size up to 20x20 mm <sup>2</sup>
Substrate material	Silicon or fused silica
Substrate thickness	typical 500 µm to 650 µm
Substrate size	6 inch only
Smallest feature size	0,5 µm
Etch depth	up to 5 µm
Active patterned area	full substrate

### 4. Advanced Masters using mixed Technology

Combination of the above mentioned technologies for the fabrication of complex masters available on request.

- Mix-Match between i-line and EBL lithography
- Multi-level-masters, for 3D applications

■ Contact: Dipl.-Ing. Herbert Kleinjans ■ [services@amo.de](mailto:services@amo.de)



**AMO GmbH**

Otto-Blumenthal-Straße 25 ■ D-52074 Aachen ■ Germany

Phone +49 241 88 67-125 ■ Fax +49 241 88 67-560

[services@amo.de](mailto:services@amo.de) ■ [www.amo.de](http://www.amo.de)