



# Large Area Nanogratings

1D, rectangular and hexagonal



## Description

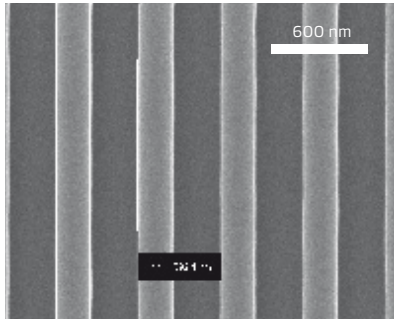
AMO offers gratings fabricated by inhouse interference lithography (IL). The IL technology allows producing large, coherent and periodic gratings with nearly constant pitch. Pattern transfer and further processing can be carried out according to customer requirements. Substrates up to 6 inch and any rectangular within.

## Applications

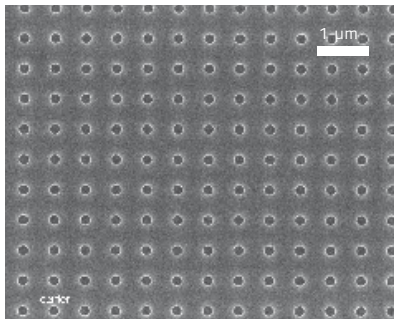
- ▶ Master for Imprint Templates
- ▶ Microoptics
- ▶ NanoBio Technology
- ▶ Sensor technology

## Process Control

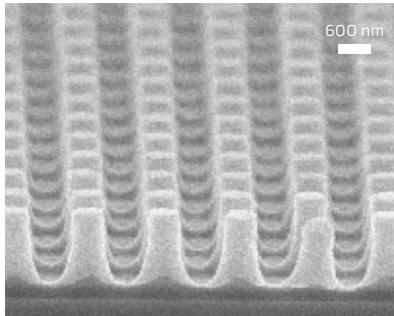
All grating dimensions are specified and controlled during and after processing. Line width maps, LER characterisation and defect inspection are available on request.



Linear Grating



Holes Pattern



Pillars Pattern

## Specification

<b>Substrate material</b>	Silicon or fused silica
<b>Substrate thickness</b>	typical 500 µm to 650 µm
<b>Substrate size</b>	up to 6 inch and any rectangular within
<b>Grating pitch</b>	300 nm to 2.500 nm
<b>Etch depth</b>	90 nm to 2.500 nm
<b>Line width</b>	40 nm to 2.500 nm
<b>Acting grating area</b>	up to 400 mm in diameter

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

### Contact

Dipl.-Ing.  
Michael Möller  
moeller@amo.de

### AMO GmbH

Gesellschaft  
für Angewandte  
Mikro- und Opto-  
elektronik mbH  
Otto-Blumenthal-  
Straße 25  
52074 Aachen  
Germany

### Phone

+49 241 88 67-125  
www.amo.de



# Masters and Stamps for Nanoimprint Lithography

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

## Large Area Periodic Nanostructures

Our interference-lithography (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 sidewalls.

<b>Pattern type</b>	1D, rectangular, hexagonal
<b>Substrate material</b>	Silicon or fused silica
<b>Substrate thickness</b>	typical 500 µm to 650 µm
<b>Substrate size</b>	2, 4, 6 and 8 inch
<b>Grating pitch</b>	180 nm to 2500 nm
<b>Etch depth</b>	up to 2500 nm
<b>Line width</b>	40 nm to 1500 nm
<b>Active grating</b>	area up to 90% of the substrate size

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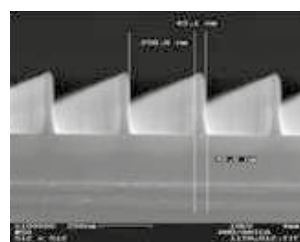
## Process Control

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

## High resolution nanostructures

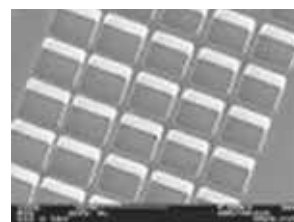
Using our e-beam lithography (EBL), we can realize arbitrary nanoscale patterns. Our system provides resolution down to a few ten nanometers. The definition of large active-areas is limited by the writing time, which is pattern dependent. Pattern transfer into silicon or other material is possible. Quotes can be provided ased on an electronic design, preferable in GDS format.

<b>Pattern type</b>	arbitrary
<b>Substrate material</b>	Silicon or fused silica
<b>Substrate thickness</b>	typical 500 µm to 650 µm
<b>Substrate size</b>	2, 4, 6 and 8 inch
<b>Smallest feature size</b>	50 nm (or even lower on request)
<b>Etch depth</b>	up to 1000 nm, pattern dependent
<b>Active patterned area</b>	limited by writing time, e.g. a few mm <sup>2</sup> for ultradense patterns



## 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 be designed to satisfy the customer's needs or chosen among our masks on stock.



## Mask Aligner

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

## i-line Stepper

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

## Advanced masters using mixed technology

E-beam and photolithography can be combined on request to realize particularly complex masters.

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

**Contact**  
Dipl.-Ing.  
Herbert Kleinjans  
services@amo.de

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Gesellschaft  
für Angewandte  
Mikro- und Opto-  
elektronik mbH  
Otto-Blumenthal-  
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