Lithography System for Industrial Manufacturing of Photonic Patterns

Field-test and proven tool for photonics fabrication

PhableX™

- Photolithography system for high volume printing of periodic patterns
- Non-contact: protects masks and substrates from damage and contamination
- Cassette-to-cassette automatic wafer processing
- Highly uniform and reproducible printing
- 1D and 2D periodic pattern printing
- Suitable for non-flat substrates
- Suitable for thin glass substrates
- High Resolution: <65nm half pitch
- Practically unlimited depth-of-focus
- Light source: UV and DUV Lasers
- Automatic overlay alignment capability
- Application support: Photoresists, Masks
- Low maintenance and production costs

Applications

XR (AR/VR/MR)
Near-Eye Waveguides
Head-up Displays (HUD)

BIO / MEDICAL
Bio Molecular Sensors
X-Ray Imaging

OPTOELECTRONICS
DFB/DBR Lasers
VCSEL Polarizer Gratings
PCSEL Photonic Crystals
Nanowire Devices
PSS

COLOR/VISUAL EFFECT
Structural Colors
Security Applications

OPTICAL COMPONENTS
Telecom Gratings
Anti-Reflective Surfaces
DOE
Laser Diffraction Gratings
Spectrometer Gratings
Wire Grid (Polarizer)
WSS
Sports optics – Reticles

Eulitha

LITHOGRAPHY FOR PHOTONICS

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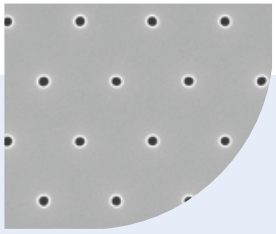
PhableX

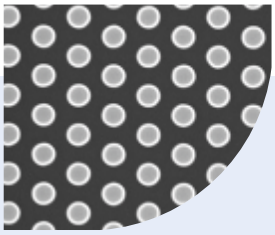
The PhableX tool provides unprecedented ability to print high resolution periodic structures in a low-cost photolithography system. It is similar to a conventional mask-aligner where a photoresist coated wafer is put in proximity to a mask and exposed by a beam of UV light, but thanks to the breakthrough PHABLE exposure technology of Eulitha the resolution is no longer limited by undesired diffraction effects.

Structures such as sub-micron period linear gratings and 2D patterns such as hexagonal and square lattices are printed with high uniformity and fidelity.

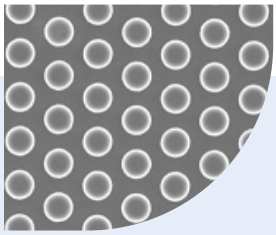
PATTERN EXAMPLES



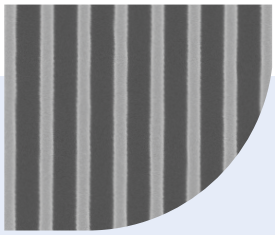
Hexagonal lattice
100nm holes, 600nm period



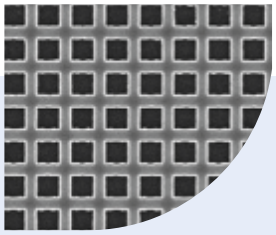
Hexagonal lattice
300nm pillars, 600nm period



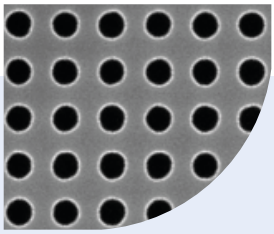
Hexagonal lattice
1,5µm pillars, 3,0µm period



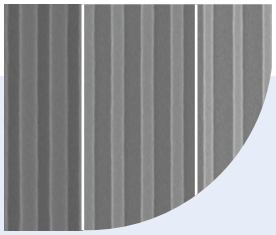
Linear grating
50nm lines, 140nm period



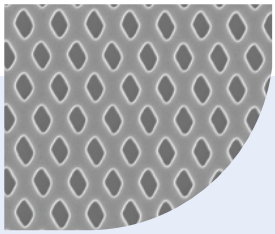
Square holes
500nm holes, 1000nm period



Square lattice
200nm holes, 400nm period



Variable fill-factor
300nm period



Rhombic lattice
200nm holes, 400nm period

SPECIFICATIONS	UV	DUV
Resolution (linear grating)	<125nm	<65nm half-pitch
Wafer size	100mm, 150mm, 200mm, larger size on request	
Mask format	5", 6"	
Illumination uniformity	<3%	
Resist thickness	>1µm	>0.1µm
Operation	Manual load – automatic exposure	
Overlay alignment	<1µm frontside, <5µm backside	
Duty cycle control	Variable duty cycle (optional)	
Beam size	105mm, 155mm, 205mm	