

Electron-beam lithography and nanoimprint lithography

E-BEAM PATTERN WRITING on semiconductor and optical wafers
(e.g. Si, Ge, GaAs, InP, SiC, quartz)

Substrate size	Ø 50 - 150 mm
Resolution (minimal line width)	≤ 50 nm
Address grid	1 nm
Overlay accuracy	≤ 15 nm
Format of data	GDSII, DXF, CIF

CHROMIUM PHOTOMASKS

Substrate size	4"x4" to 7"x7"
Address grid	1 nm
Positioning accuracy of pattern elements	≤ 15 nm
Overlay accuracy	≤ 5 nm
Format of data	GDSII, DXF, CIF

UV NANOIMPRINT LITHOGRAPHY

Technology: pattern embossing in thin photo-curable polymer layers, top-side, back-side or double- side pattern alignment	
Resolution (minimal element size)	≤ 50 nm
Substrate size	Ø 50 - 100 mm
substrate type: semiconductor, glass and polymer wafers	

THERMAL NANOIMPRINT LITHOGRAPHY

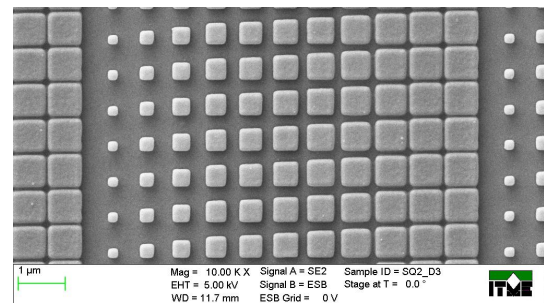
Technology: hot-pressing of 3D structures - in thermo-curable polymer layers, - on thermoplastic wafers	
resolution	≤ 50 nm
Substrate size	Ø 50 - 100 mm

DIFFRACTIVE OPTICAL ELEMENTS

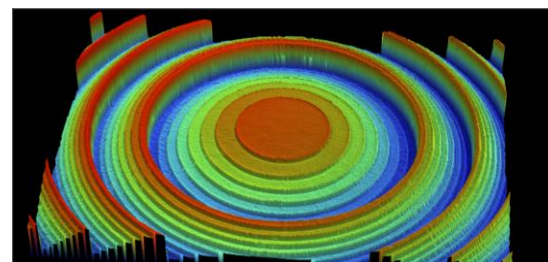
- planar, lightweight and compact structure
- diffraction efficiency of up to 95%
- complex wavefront transformations,
- easy integration into opto-electro-mechanical systems

Types of optical elements:

- diffractive lenses (spherical, elliptical, cylindrical etc.) and their arrays
- semiconductor laser beam shaping systems
- diffraction gratings
- apodised diffractive elements
- phase masks for fiber Bragg gratings
- sub-wavelength diffractive structures



Sub-wavelength diffractive grating (fragment of a single array)



Replica of a 8-level diffractive lens (optical profilometer, step height 147 nm)