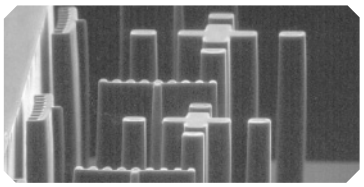
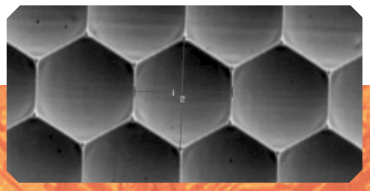
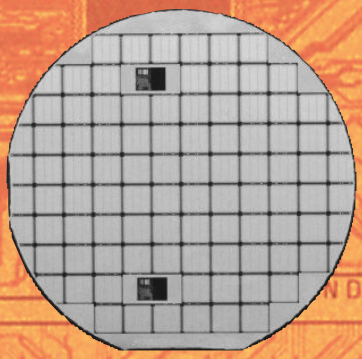
DWL 4000

The Advanced Laser Pattern Generator for High Resolution Photomasks



maskless lithography





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DWL 4000

The DWL 4000 line of laser lithography systems is an ideal solution to cost effective, high resolution, mask and wafer patterning up to 400 mm x 400 mm. The DWL 4000 systems are utilized in a variety of applications that require complex micro-structures, such as: MEMS, SAW Devices, ASICS, MCMs, Integrated Optics and Displays.

The DWL 4000 line consists of two models, the DWL 4000DD, and the higher throughput DWL 4000FBM. These systems can be outfitted with customized laser sources, making it possible to expose nearly any photoresist.

Advanced technologies have been applied in the new systems to improve performance and capability. A newly incorporated air bearing stage dramatically minimizes mechanical resonances. Mura Correction is achieved through advanced software and hardware modifications. A higher resolution address grid has been implemented to improve edge roughness and structure uniformity. Exposure speed has been dramatically improved through a recently developed Fast Beam Module (FBM) technology. The FBM technology consists of advanced electronic, optical and software upgrades.

Besides 2D patterns used in common applications requiring binary exposure, the new DWL 4000 systems can also create complex 3D structures, such as micro-optics, using a cutting edge Gray Scale exposure technology.

The DWL 4000 systems' optional Automatic Write Mode Exchanger allows for easy optimization of resolution and throughput for each application.

In addition to the industry based applications, DWL 4000 systems are also utilized in some of the most prestigious research institutions worldwide.

Key features and options

- Substrates up to 400 x 400 mm^2
- Structures down to 0.6 µm
- Address grid down to 10 nm
- Multiple write modes
- Automatic write mode exchanger
- Advanced 3D exposure mode
- Metrology and alignment system
- Climate chamber
- Customer specific laser source
- Online data transfer
- Automatic loading system
- Multiple data input formats (DXF, CIF, GDSII, Gerber, STL)
- Stage map correction

Heidelberg Instruments Systems are used to fabricate micron-scale devices and structures. These structures are integrated into applications as diverse as micro fluidic channels used in biological and chemical micro sensors to micro-optic arrays used in novel optics applications. The versatility and functionality of Heidelberg Instruments systems allow for almost any micron-scale application to be realized, and has made Heidelberg Instruments a presence in the worldwide industry and research communities.

Specifications

Write Mode	I	II	III	IV	V
Address Grid [nm]	10	20	25	50	100
Minimum Structure Size [µm]	0.6	0.7	0.8	1.6	3.2
Write Speed DWL 4000DD [mm^2/minute]	26	101	155	560	1120
Write Speed DWL 4000FBM [mm^2/minute]	90	320	480	1480	----
Edge Roughness [3σ, nm]	60	80	100	120	180
CD Uniformity [3σ, nm]	80	100	120	150	260

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