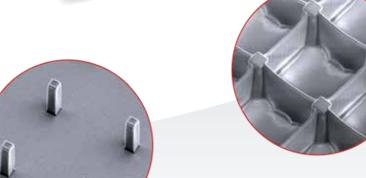
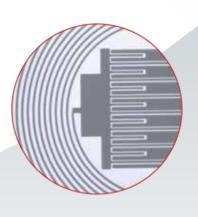


μ**ML**A

The Tabletop Maskless Aligner







www.himt.de

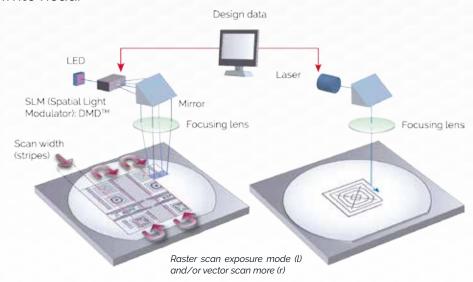


μMLA

THE TABLETOP MASKLESS ALIGNER

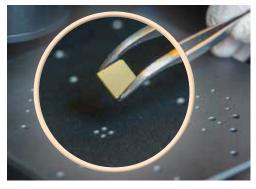
The Maskless Aligner was first introduced in 2015. Since then, the revolutionary, state-of-the-art maskless technology has become firmly established. The μ MLA presents a new generation of tabletop laser lithography tool: Configure the set-up precisely to your needs with raster scan and vector scan mode (or both) and a variable resolution write head.

In many applications, the traditional photomask has become a thing of the past as your design file is exposed directly onto the resist-coated wafer via a 2-dimensional Spatial Light Modulator (SLM). The µMLA is the direct successor of the MLA100 and is the "little brother" of our Advanced Maskless Aligner MLA150, which serves as a trusted. indispensable workhorse in many multi-user facilities, nanofabrication labs, and national institutes.



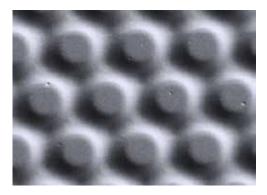
In the development of our brand-new entry-level system μ MLA, we introduced new features such as variable resolution and created a table-top system that is flexible and highly customizable. And of course small sample handling is straightforward. Building on our many years of experience, the μ MLA features all that was best in our previous tabletop systems, while offering more options and higher performance than ever before.

Applications include Research & Developent in areas such as MEMS, micro-fluidics, micro-optics and all other fields where an affordable, compact, and powerful pattern generator for microstructures is required.



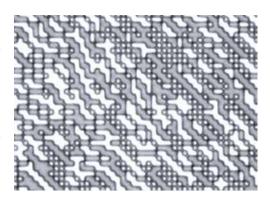
Small sample handling

APPLICATIONS



Micro-Optics: Binary diffractive optical element (DOE). The design is made up of 1 µm² squares. →

← The µMLA offers a standard Grayscale mode, which allows the creation of micro-lenses. Resist: 15 µm thick AZ4562. Pitch 30 µm, radius of curvature 16 µm.



CUSTOMIZE YOUR µMLA

Two Exposure Modes

The µMLA allows you to either choose between Raster Scan Exposure Mode and Vector Mode, or to even run both exposure modes on one and the same system! The Raster Scan Exposure mode is fast and provides excellent image quality and fidelity, while the write time is independent of structure size or pattern density. The Vector Scan Mode can be helpful for exposing designs consisting of curved lines, where smooth contours are required. While Vector Mode creates similar image quality as the Raster Scan exposure mode, it cannot achieve the same write speed, especially for patterns with high fill factor.

A Choice of Wavelengths

In consequence, you can use up to three different wavelengths (LED and/or laser diodes) on one system.

Variable Resolution

Our newly developed variable resolution function allows you to choose up to three different resolutions for a particular write mode. Simply select the resolution of choice in the software menu and optimize the parameters for your application.

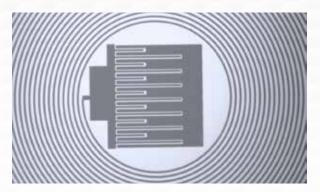
The Surface at One Glance

The optional overview camera provides an easy way to locate alignment marks or other features of interest on your substrate.

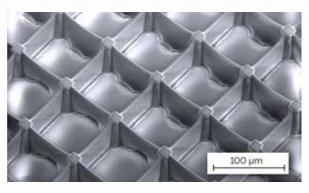
Small Sample Handling

Small sample handling is straightforward with the μ MLA: The optical autofocus option allows accurate exposure right up to the edges of a sample.

APPLICATIONS

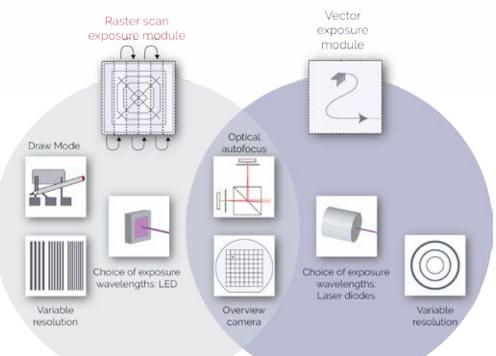


Microfluidics



Cage structures made of circa 50 μm thick SU-8. The structures are used in biological applications to trap and grow cells.

Courtesy of the University of Hamburg



Options offered by the Raster Scan Exposure Mode (gray circle) and by the Vector Exposure Mode (blue circle)

Overlap: Options available for both modes



		Write Mode I	*	Write Mode II*	
Writing performance (both Raster Sca	ın and Vector Exposi	ure Module)			
Minimum structure size [µm]		0,6		1	
Minimum lines and spaces [half pitch, µm]		0,8		1,5	
2nd layer alignment over 5 x 5 mm² [3σ, nm]		500		500	
2nd layer alignment over 50 x 50 mm² [3σ, nm]		1000		1000	
Writing performance with the Raster S	Scan Exposure Modu	ıle			
Line width variation [3σ, nm]		200		300	
Max. write speed [mm²/min]		10		30	
Write speed with optional "Variable Resolution for Raster Scan Exposure Module" (UMVAR) for different minimum structure sizes		10 mm²/mir at 0.6 µm	1	30 mm²/min at 1 μm	
		20 mm²/mir at 1 µm	1	60 mm²/min at 2 μm	
		25 mm²/mir at 2 µm	1	LOO mm²/min at 4 μm	
Writing performance with the Vector E	Exposure Module				
Address grid in vector mode [nm]		20			
Edge roughness [3 σ , nm]		30		50	
Line width variation [3σ, nm]		70		80	
Maximum linear write speed		200 mm/s			
System specifications					
Maximum substrate size	5" × 5"				
Minimum substrate size	5 mm x 5 mm				
Substrate thickness	0.1 to 12 mm				
Maximum write area	100 mm x 100 mm				
	Raster scan exposure module		Vector exposure module		
Light source	LED; 390 nm or 365 nm		Laser; 405 nm and/or 375 nm		
System dimensions (lithography unit)					
μMLA	Width	Depth	Height	Weight	
Main system housing	630 mm (25")	800 mm (31.5")	530 mm (21")	100 kg (220 lbs)	
Optional antivibrational table plus user PC table	1400 mm (55")	700 mm (28")	750 mm (30")	350 kg (770 lbs)	
Installation requirements					
	230 VAC ± 5%, 50/60 Hz, 16A				
Electrical		230 VAC ± 5%, !	00/60 HZ, 16A		

 $[\]ensuremath{^\star}$ Only one write mode can be installed on the system

Please note: Specifications depend on individual process conditions and may vary according to equipment configuration. Write speed depends on exposure area. Design and specifications are subject to change without prior notice.

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