Maskless Lithography UV Laser Writer

Beam / Beam Lite

2023 V1

For customized projects please Contact us:

info@simtrum.com

Desktop Maskless Lighography – Beam / Beam Lite

Maskless lithography enables nanopatterning at will, without the need for slow and expensive photomasks. This convenience is especially useful for research and rapid prototyping use. The Nanyte Beam compliments the existing benefits by bringing it to the desktop without any compromise in performance.

The Beam Engine focuses a UV laser beam into a diffraction-limited spot and scans the spot to expose any arbitrary pattern on a photoresist. To expose large wafers, precision steppers move the wafer and allow multiple exposures to be stitched. The Beam Engine is capable of producing features smaller than (CD) 0.8 μm across a 5” wafer.

* We have a new option for you – the Beam Lite. At a lower price, you can get the best-fitting product. Contact us for more details.

Compact.

Full-features maskless lithography, smaller than a desktop computer.

Powerful.

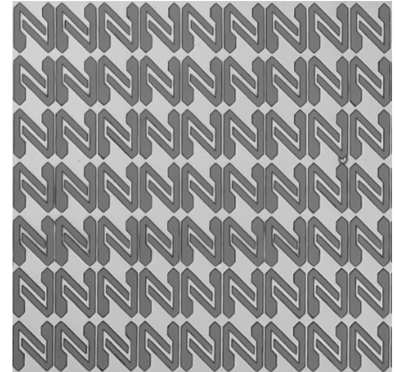
Sub-micron resolution while exposes a write-field in less than two seconds.

Ultrafast autofocus.

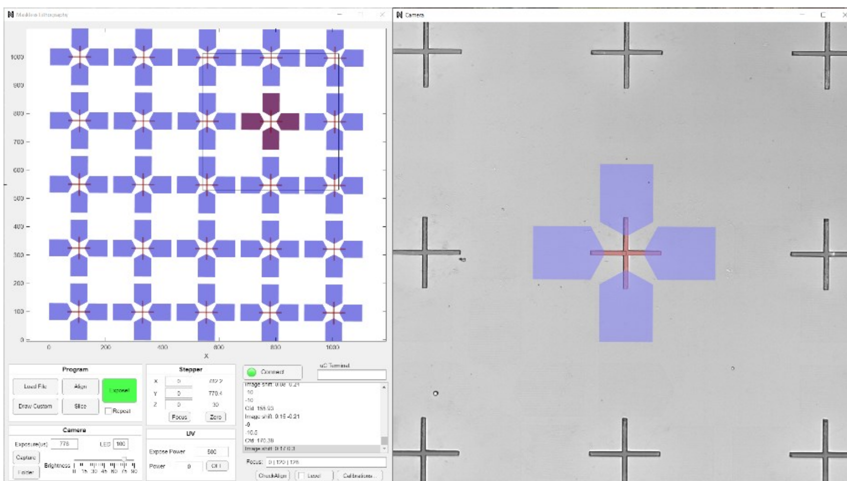
Piezo actuators reach focus in less than a second when combined with our closed-looped focus optics.

No-fuss multilayer.

Semi-automatic alignment allows multilayer alignment to be completed within minutes.

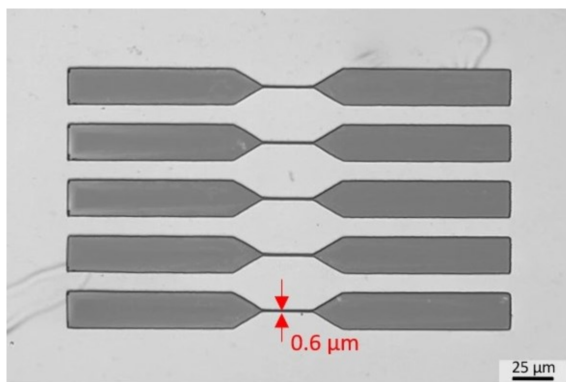


Array of resist micropatterns on silicon substrate. Each cell is 50 × 63 μm, with 3 μm spacing between adjacent patterns. Resist used: AZ5214E

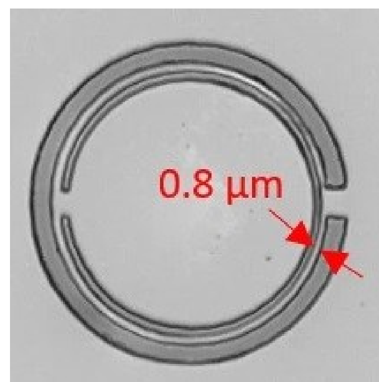


The included software makes quick work of any patterning job; just load, align and expose. Navigation is similar to CNC systems.

During multilayer exposures, the GDS pattern is overlaid for visualization. The control GUI (left window) has a mini map of the loaded GDS that allows navigation to any area on the wafer with 1-click.



0.8 µm tapered middle section with 20 ╳ 90 µm contact pads on the side. Resist used: AZ5214E



Split-ring resonator arrays. The distance on the right is 1.5 µm (arrow), separation distance on the left is 2 µm. The outer ring is 80 µm across.

Parameters		BEAM	BEAM Lite
PATTERNING			
Minimum Linewidth		2 µm guaranteed, 0.8 µm achievable	3 µm guaranteed, 2 µm achievable
Minimum Pitch		1.6 µm achievable	4 µm achievable
Exposure Time		< 2 s for 1 writefield	
Maximum Writefield		400 µm ╳ 400 µm	800 µm ╳ 800 µm
Laser Power		40mW	
Laser Wavelength		405 nm	375/405 nm
Laser Galvo	**Step Size**	8 nm	
	Repeatability	< 100 nm (static)	
	Speed	up to 200 mm/s	
STEPPING			
Motorized Stepper	**Encoder Resolution**	0.1 µm	
	Stage Repeatability (1σ)	Better than 0.3 µm	
	Movement Area	120 mm ╳ 120 mm	
Largest Sample Size		130 mm ╳ 130 mm (> 5”)	
Wafer Alignment		Multilayer processes supported	Single-layer processes supported*
GENERAL			
Accepted File Formats		.bmp, .png, .tiff, .gds, Custom shapes can directly be drawn in software.	
Software	**Patterning**	Nanyte BEAM Xplorer	
	Design	KLayout (most powerful), MS Paint/Powerpoint (rapid prototyping)	
Weight		Lighter than 20 kg	
System Size		330 ╳ 310 ╳ 340 mm	

* For more information about upgrading to Multilayer Processes, please contact us.

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