

# NANYTE BEAM

## DESKTOP MASKLESS LITHOGRAPHY

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 complements 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 allows multiple exposures to be stitched. The Beam Engine is capable of producing features smaller than (CD) 0.8  $\mu\text{m}$  across a 5" wafer.



### Compact.

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

### Powerful.

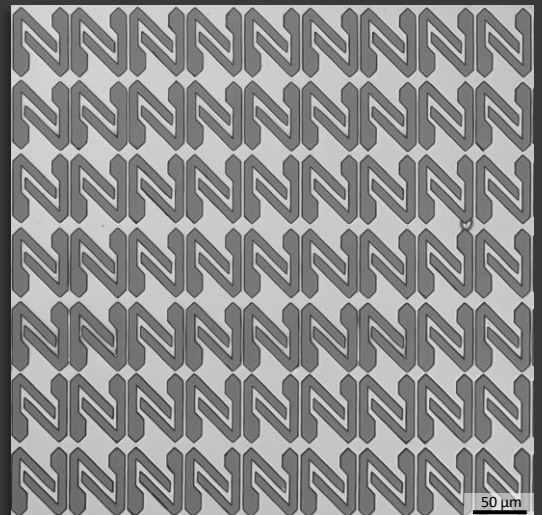
Sub-micron resolution while exposes a writefield in less than two seconds.

### Ultrafast autofocus.

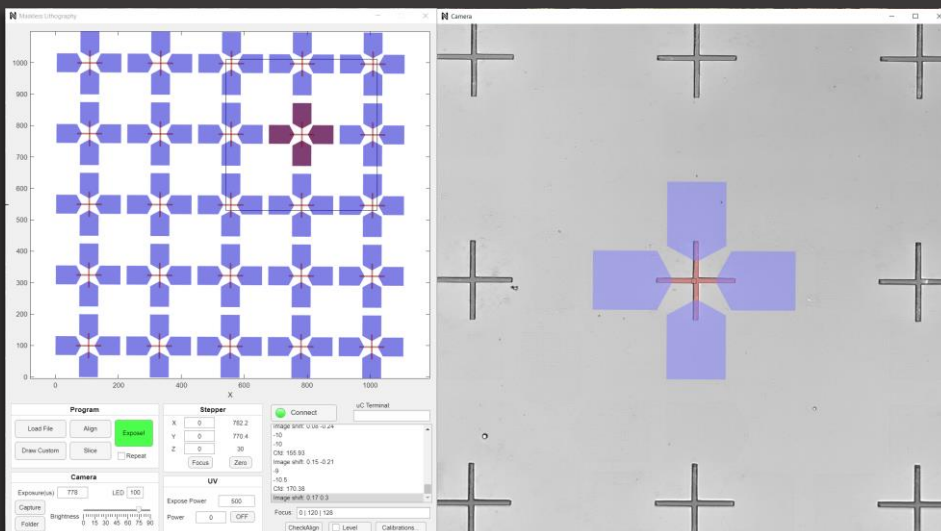
Piezo actuators reach focus in less than a second when combined with our closed-looped focus optics.

### No-fuss multilayer.

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

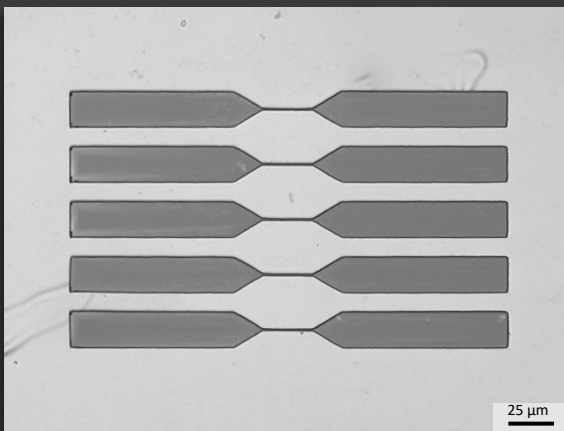


Array of resist micropatterns on silicon substrate. Each cell is  $50 \times 63 \mu\text{m}$ , with  $3 \mu\text{m}$  spacing between adjacent patterns. Resist used: AZ5214E



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 minimap 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

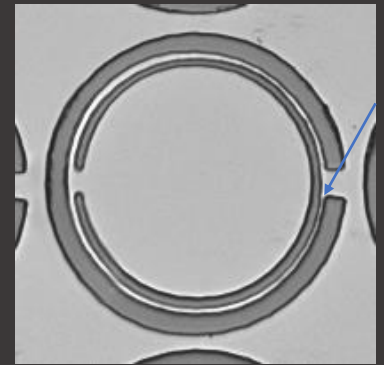


## PATTERNING

Minimum Linewidth		2 μm guaranteed 0.8 μm achievable
Minimum Pitch		1.6 μm achievable
Exposure Time		< 2 s for 1 writefield
Maximum writefield		400 μm × 400 μm
Laser Wavelength		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



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

## 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