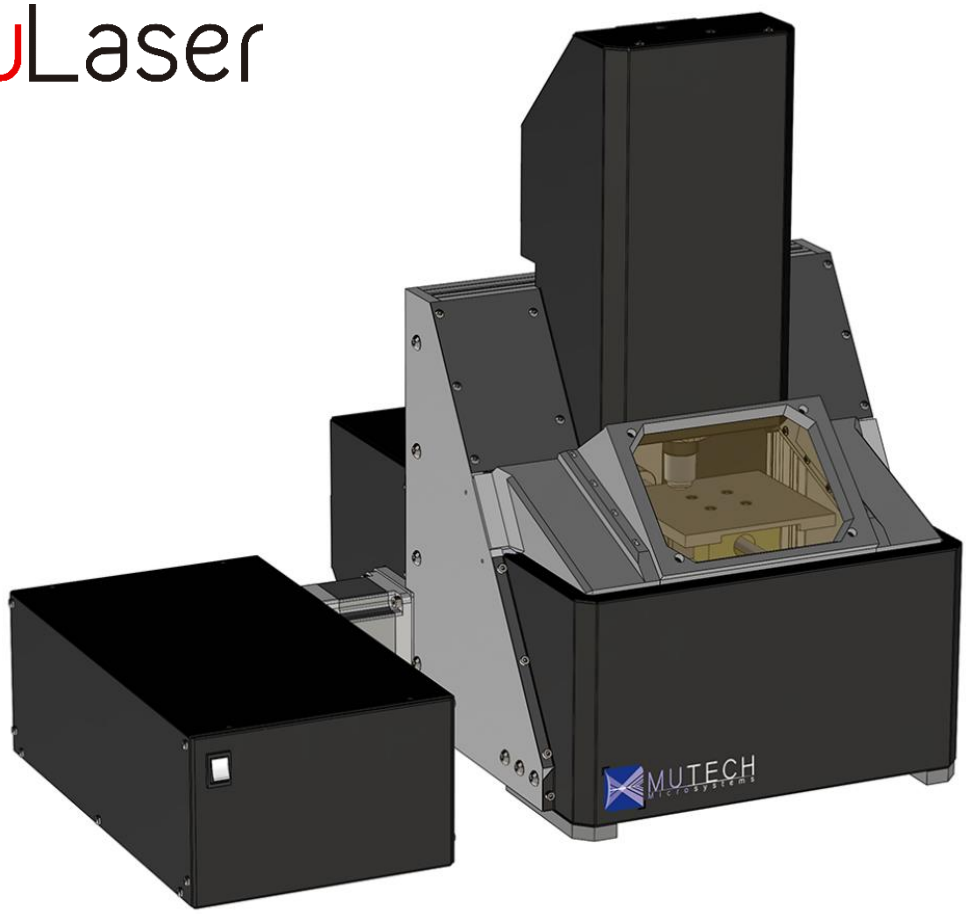
µLaser



Features

- 100x92 mm^2 writing area
- 32000 DPI Resolution
- 3-5µm feature size
- Ultra compact design ideal for fume hood or glove box usage
- Integrated confocal microscope for laser focusing, aligning and inspection
- Laser spot size can be changed using industry standard microscope objectives
- Tilted/warped substrate compensation via 3-point focus or 4-point bilinear measurement
- Multiple designs from different files can be written in one process

Mutech microlaser

Mutech microsystems microlaser is a high value direct laser lithography writer, oriented to universities and research facilities looking to expand their capabilities.

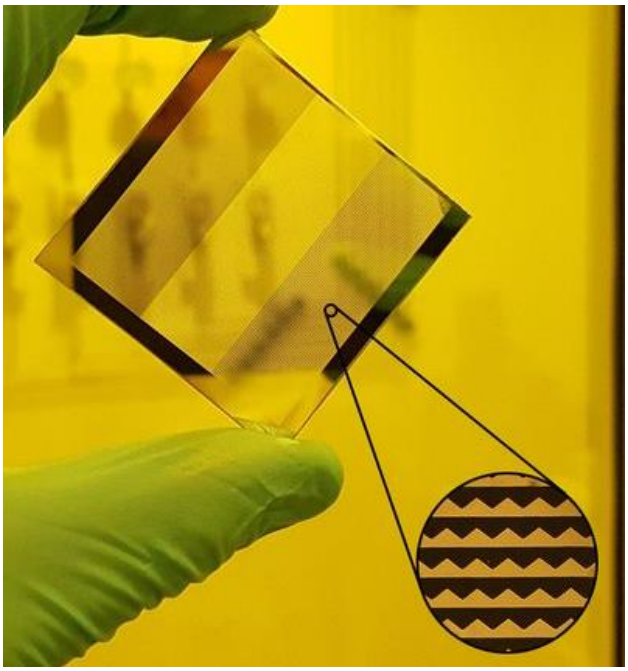
It writes on a photosensitive resist coated surface with a laser at submicron pixel resolution on big areas.

You can write anything from photomasks to research prototypes for basic or applied science

Microlaser comes with a confocal integrated camera and yellow illumitation to focus the laser, align the writing with existing features and to inspect the designs after writing.

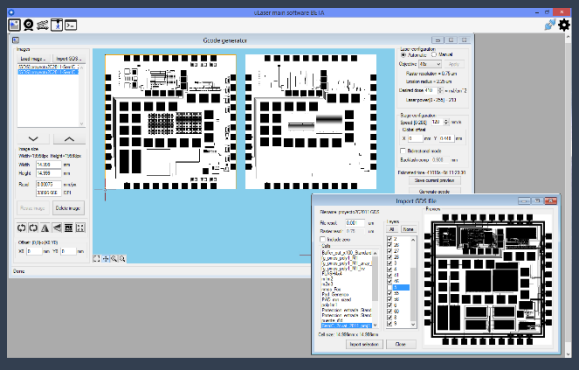
Direct laser lithography

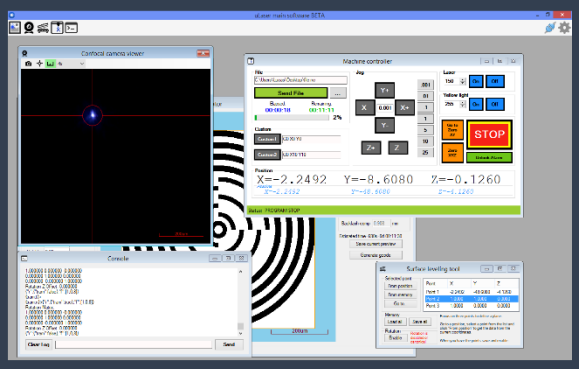
Direct laser lithography greatly reduces costs and execution times in areas such as microfluidics, microelectronics, micromechanics and material science research, by eliminating the dependence of external suppliers for the production of photomasks.



Ultra compact design

microLaser size is only 510x360x455mm and weighs 16kg, making it ideal for use inside of a fume hood or a glove box simplifying installation, reducing requirements and improving the cleanliness of microfabrication processes.





Software

µLaser is delivered with its control software on a PC. It allows you to import the designs to be written from cells of GDSII files or directly from PNG images.

Everything is done from a user friendly graphical interface that allows you preview the design to write before executing it.

Multiple designs can be combined in a single process, in addition to applying transformations such as rotations, reflections, inversions or scale adjustments to each design.

The writings can be aligned with previous designs on the substrate using the confocal camera.

Technical specifications

Mechanics	
Size (WxDxH)	510 x 360 x 455 mm
Weight	16 kg
Power	110v/220v 400w

XY stage	
Typical writing speed	100-120 mm/s
Maximum area	100x92 mm^2
Unidirectional positioning step	X = 0.16 µm, Y = 1.00 µm
Mechanical noise on the X and Y axis	< 1 µm
Multi layer aligning accuracy	5-10 µm (Optional rotary stage for easier aligning)
Realistic minimum feature size: 3-5µm depending on the feature	

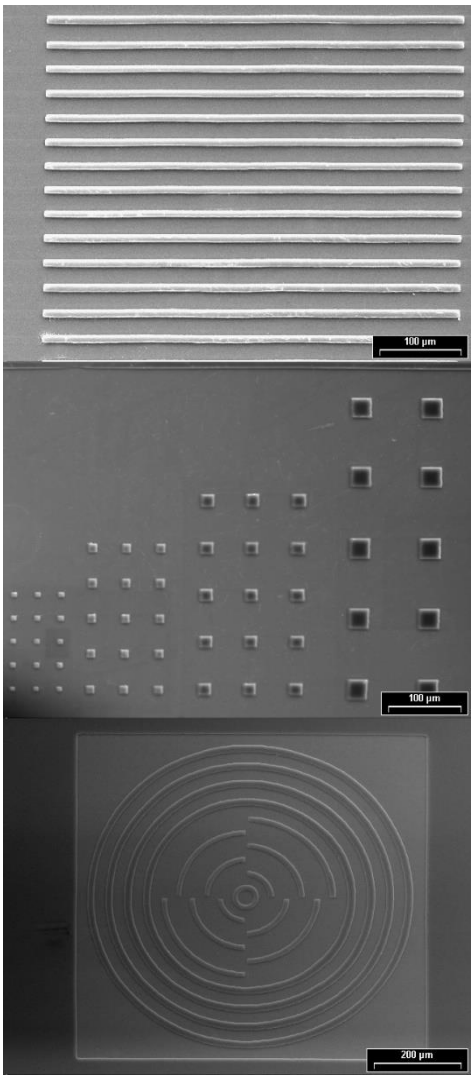
Software	
Supported formats	PNG,GDSII
In-software transformations	Rotation, Reflection, Inversion, Rescaling, Add border
Multiple designs from different files can be written in one process	
Tilted/warped substrate compensation via 3-point linear or 4-point bilinear focus measurement	
Mesh type calibration for full-bed curvature compensation	
Unidirectional or bidirectional writing modes	

Optics	
Laser wavelength	405nm (Optional 375nm)
Confocal microscope for laser focusing, aligning and inspection	
Secondary independent yellow illumination	
Laser spot size can be changed using industry standard microscope objectives	

Included objectives

	Raster step	Speed on big areas (unidirectional)
Fine	0.8 µm	1.7 mm^2/min
Medium-fine	0.96 µm	2.04 mm^2/min
Medium	2 µm	4.25 mm^2/min
Coarse	5 µm	10.6 mm^2/min

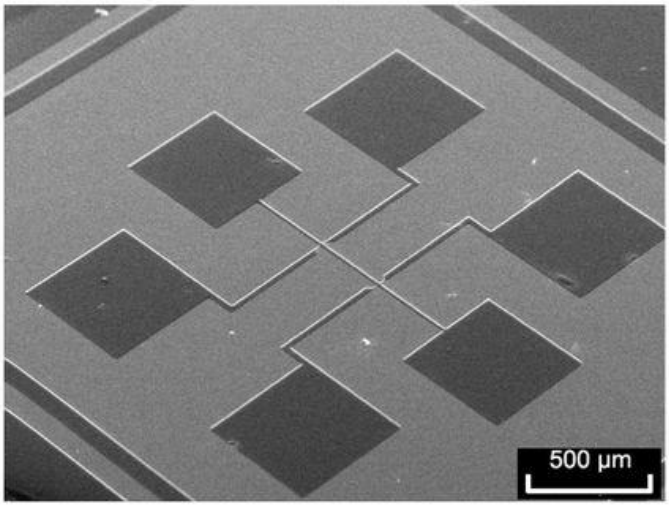
Speed doubles in bidirectional writing mode

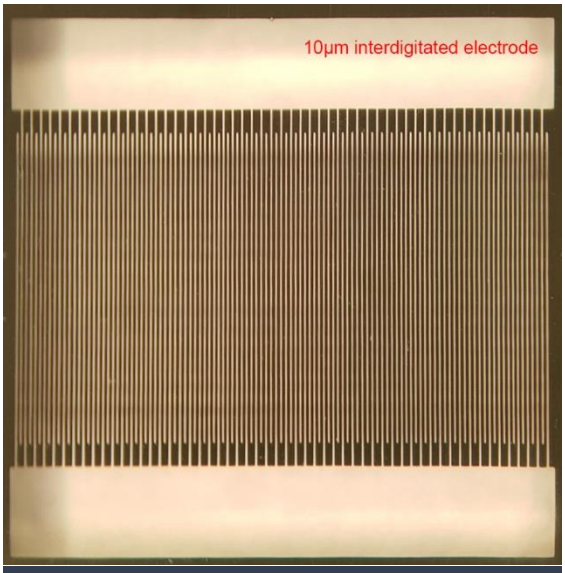




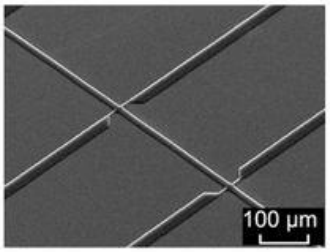
Optional rotary stage for aligning

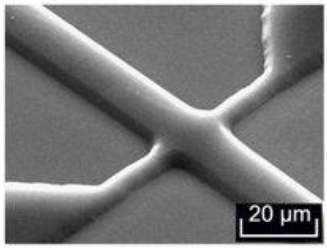
Examples: Electrical transport



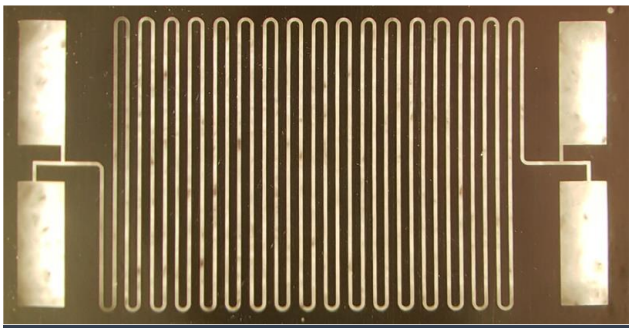


10 µm interdigitated capacitor

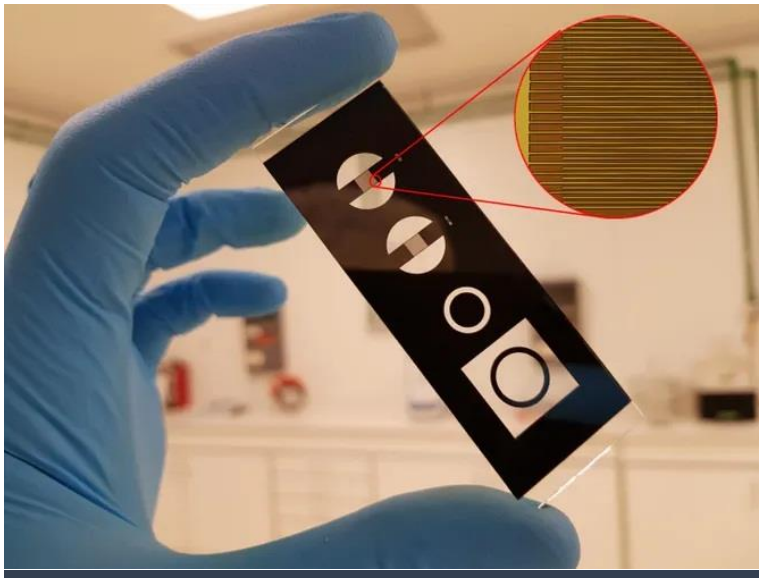




Current and voltage contacts with longitudinal and parallel configuration

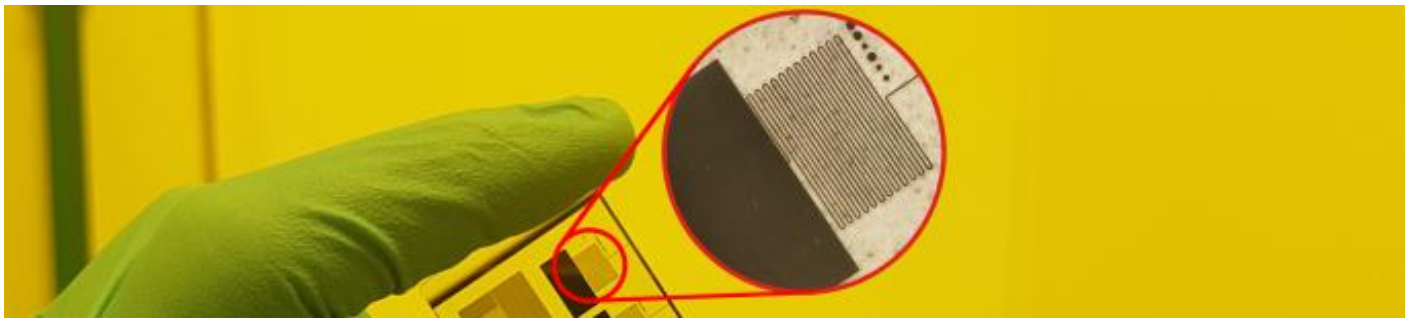


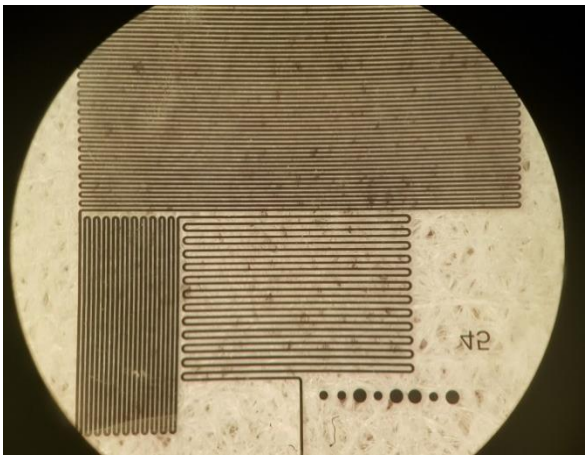
Mask for a platinum resistor for temperature measurement (40 µm track)

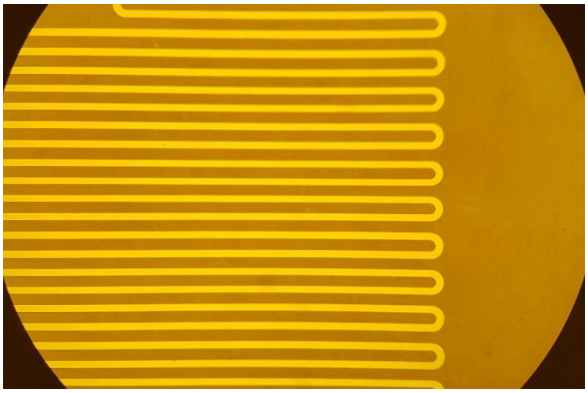


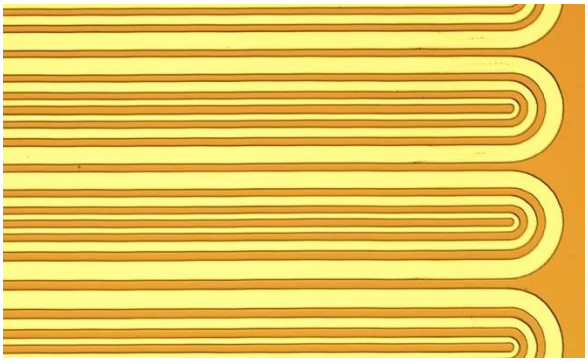
Full microscope slide mask with small 12 µm features

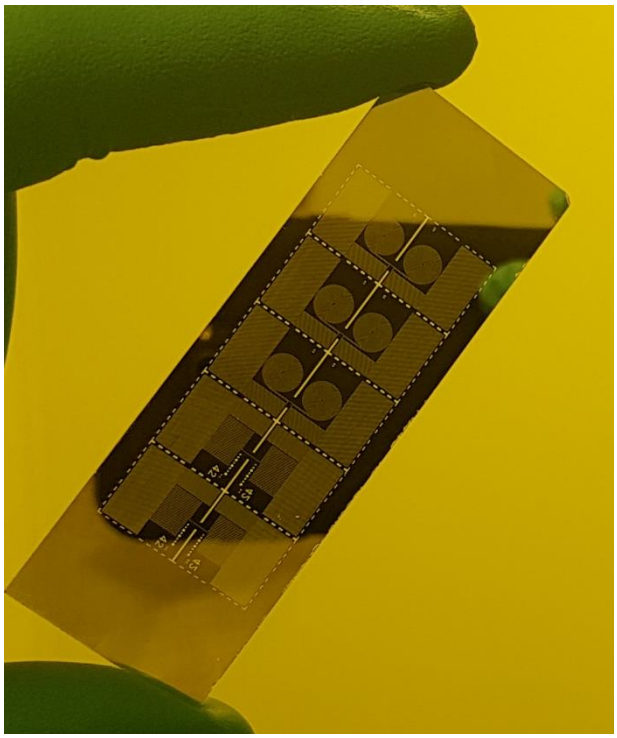
Examples: Microfluidics



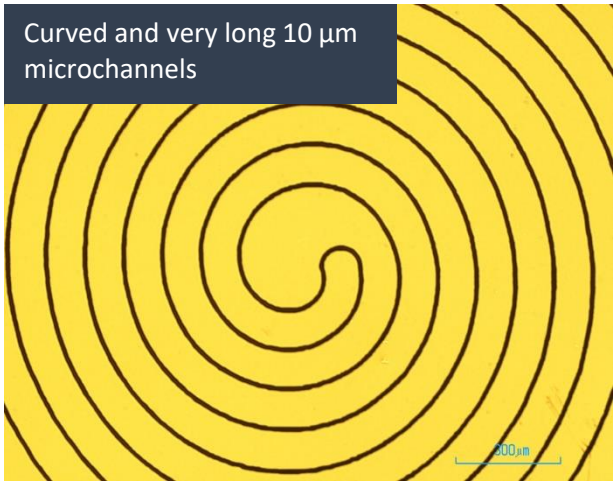




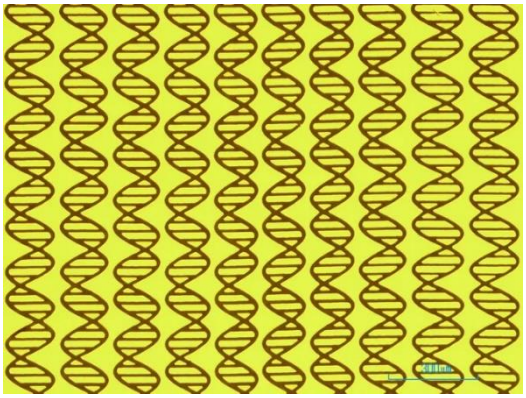




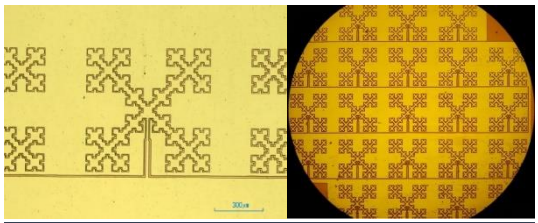
Curved and very long 10 µm microchannels



Examples: Other uses



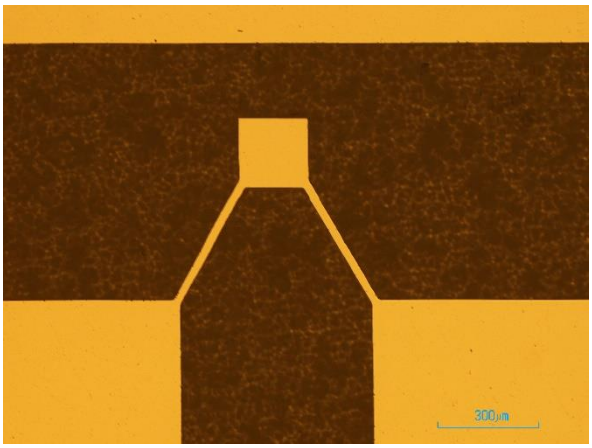
DNA diffraction writing



Fractal micro antennas



Positive and negative text

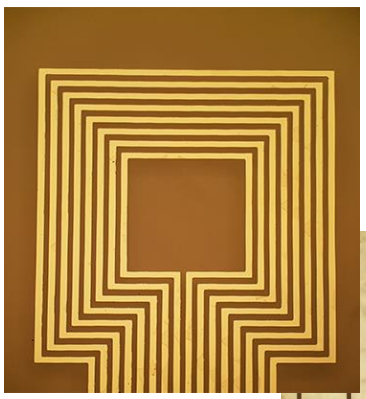


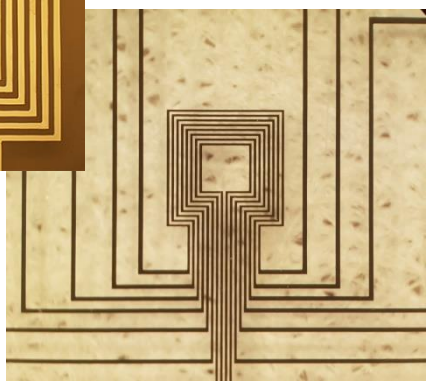
MEMS oscillator

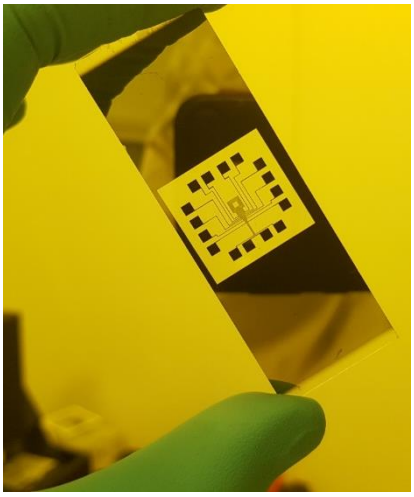
Low resolution (fast) mode

This demo is using the 4x objective with 5 µm raster step

- The tracks of the example are 50 µm
- This writing takes 40min in bidirectional mode







CONTACT US

www.mutech.com.ar

MSc. Lucas Neñer
Scientific director
+54 9 294 4263481
lucas.nener@mutech.com.ar

Dr. Martin Sirena
Business director
+54 9 294 4237776
martin.sirena@mutech.com.ar