

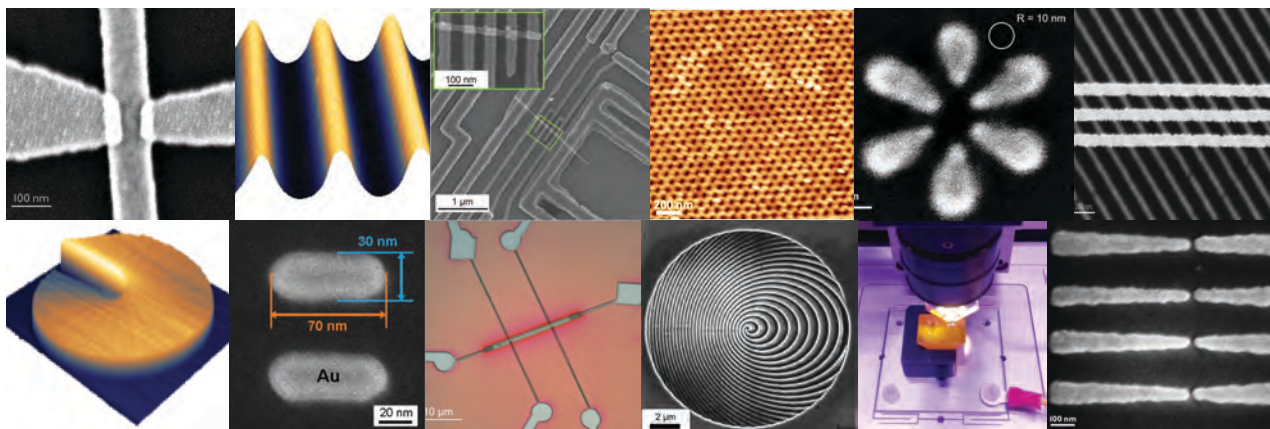


NanoFrazor[®] Scholar

Unique low cost tool for rapid prototyping of high quality 3D nanostructures

Features:

- Entry level system for NanoFrazor technology at lower cost:
 - Maximum sample size 20 x 20 mm²
 - Small footprint; possible to fit inside a glove box
 - Manual environment control enables writing in an inert gaseous atmosphere
- Features and applications similar to NanoFrazor Explore[®] (see back for comparison)
 - Direct-write greyscale nanolithography
 - In-situ inspection provides additional topography information and accuracy
 - No electron damage to sensitive materials
 - Precise overlay & stitching capabilities based on imaged topography
 - Intuitive and easy to use software interface
 - Automatic tip temperature calibration, surface detection and approach
 - Low maintenance cost
 - Operates in ambient / nitrogen atmosphere



Specification Data Sheet

	NanoFrazor Scholar	NanoFrazor Explore
Sample		
Maximum sample size (X,Y,Z)	30 mm, 30 mm, 10 mm	100 mm, 100 mm, 20 mm
Substrate material	No restrictions (transparent, conducting, magnetic...)	No restrictions (transparent, conducting, magnetic...)
Patterning		
Lateral patterning resolution (feature size and half-pitch in resist)	< 30 nm	< 25 nm
Vertical (3D) patterning resolution (distinguishable step size in resist)	< 3 nm	< 2 nm
Topography Imaging		
Lateral imaging resolution (topography feature size)	< 10 nm	< 10 nm
Vertical imaging resolution (topography sensitivity)	< 0.3 nm	< 0.3 nm
Overlay & Stitching		
Stitching accuracy	< 30 nm	< 20 nm
Overlay accuracy	< 30 nm	< 20 nm
Scanner		
Scan range Z scanner	15 um	20 um
Scan range XY scanner	50 um x 50 um	75 um x 75 um
Resolution of positioning sensors	< 0.3 nm	< 0.15 nm
Scan speed (during patterning and imaging @ 30 nm pixel size)	0.5 mm/s	1 mm/s
Long Range Positioning System		
Travel range (X,Y,Z)	30 mm, 30 mm, 15 mm	100 mm, 100 mm, 25 mm
Resolution of positioning sensor	< 150 nm	< 5 nm
Travel speed	20 mm/s	20 mm/s
Optical Microscope		
Resolution (diffraction limit of optics)	3.6 um	2.4 um
Field of view	1.3 mm x 1 mm	1.3 mm x 1 mm
Environment Control		
Damping quality of vibration isolation (vertical & horizontal)	vibration isolation not included	> 98 % @ 10 Hz, resonance < 1.5 Hz
Housing		
Footprint	50 cm x 32 cm (excl. external controller)	128 cm x 78 cm
Height	30 cm (excl. external controller)	185 cm
Weight	100 kg	650 kg
Upgrade Options		
Trade-in upgrade to NanoFrazor Explore	possible	not applicable
Integrated Laser Writer Unit	not possible	yes (under development)
Multi-tip cantilever operation (chip with up to 10 cantilevers)	not possible	yes (under development)



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