Micro Nano Patterning

Electron Beam Lithography

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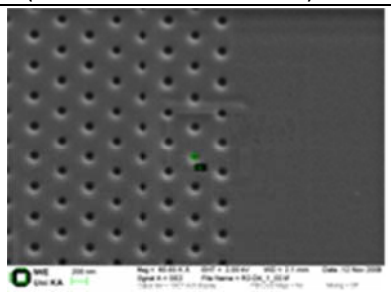
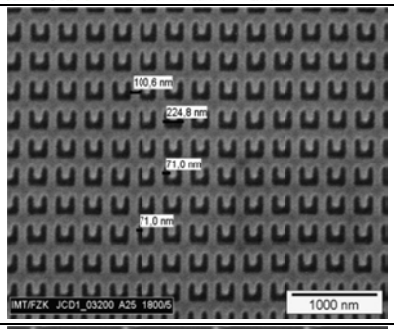
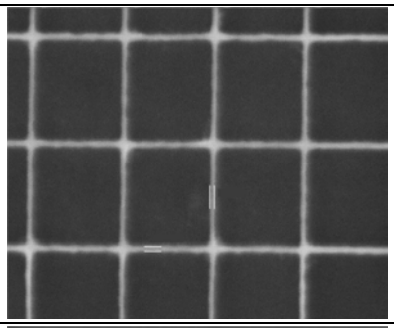
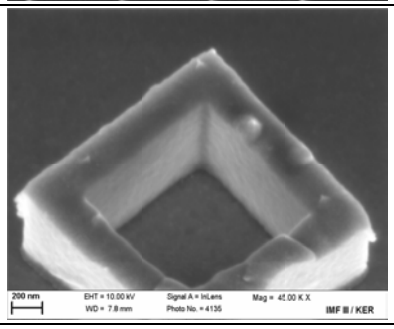
Material class:	Silicon	Polymer X	Metal (X)	Ceramic	Glass	Organic	Other
Short technology description:	– E-Beam VB6 UHR-EWF Substrate: 4" and 6" wafer; special piece parts (on request) High voltage: 100 kV Main field: ≤1310 µm Resolution: < 1 nm (depends on main field size) – E-Beam lithography in extremely thick PMMA (3200 nm) with structural details in sub micron range (~200 nm) – E-Beam lithography down to 20 nm scale in PMMA and HSQ (resist thickness < 100 nm)						
Typical structures and designs:		**PMMA (200 nm) pattern** with holes Ø 100 nm					
		**Metamaterial pattern in PMMA** (200 nm)					
		**9 nm lines in HSQ** thickness ~ 40 nm					
		**Gold structure** frame width 200 nm thickness ~ 1.3 µm					

Special features:	– Aspect ratio up to 10 depending on geometry – Structural details ≥ 20 nm – Resist thickness up to 3200 nm (e.g. for electroplating of high-aspect ratio gold structures required for X-ray lithography)
Limitations, constraints:	– Resist: PMMA (standard) (HSQ on request)
Design rules:	– Rounding of structural edges – Design of dummy structures for stress reduction – Homogeneous structure allocation (in case of subsequent electroplating)