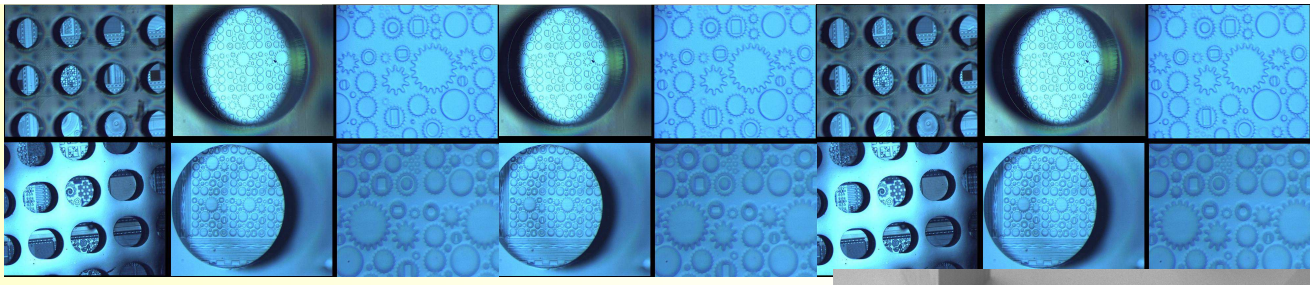
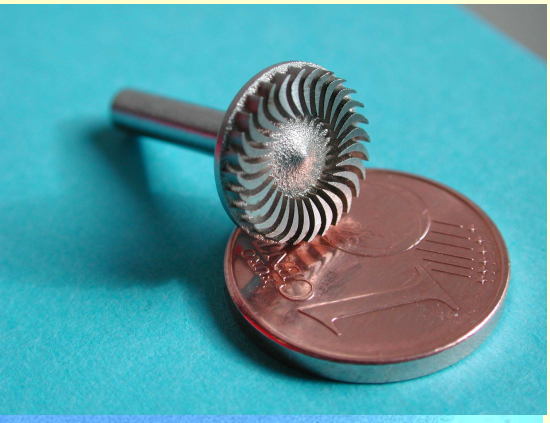
www.elettra.trieste.it

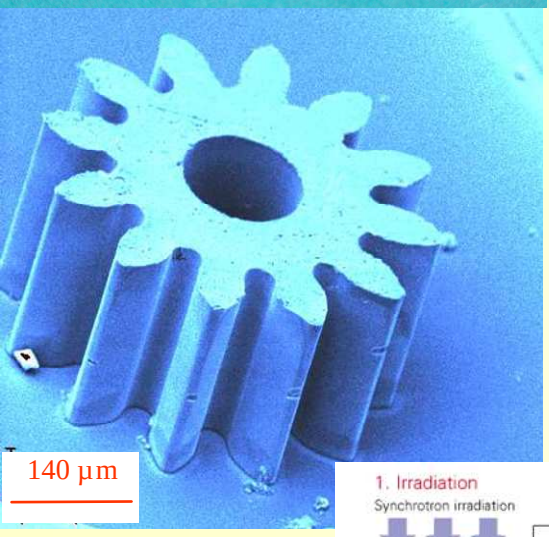


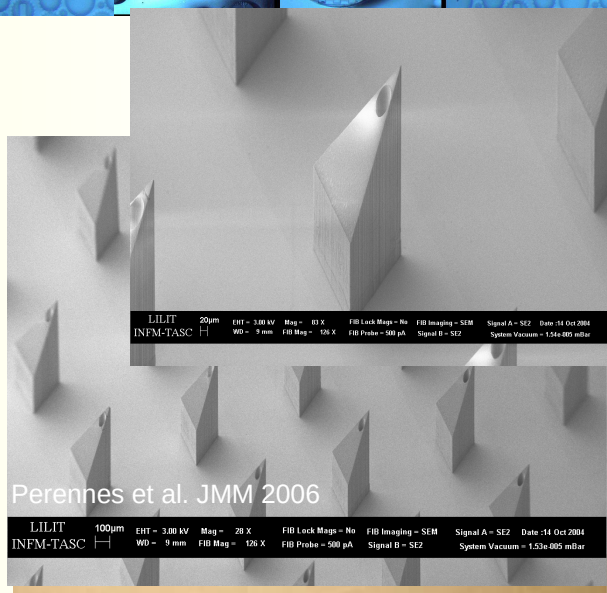
Elettra Sincrotrone Trieste

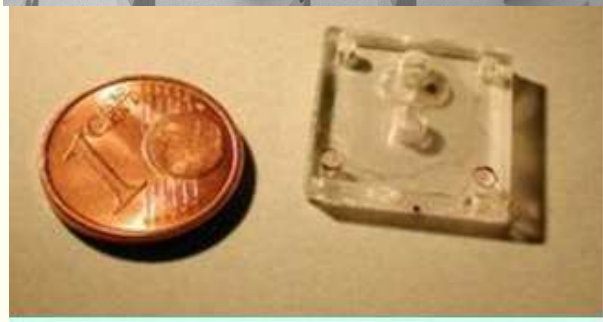
Deep X-Ray Lithography

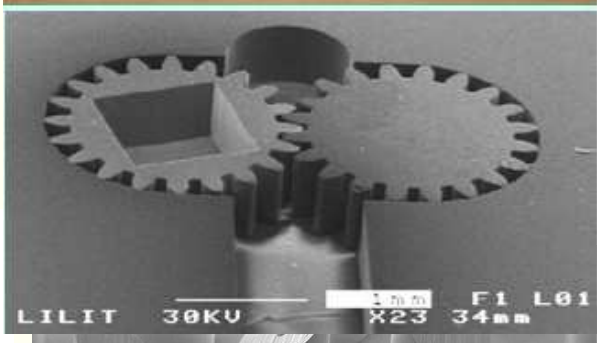


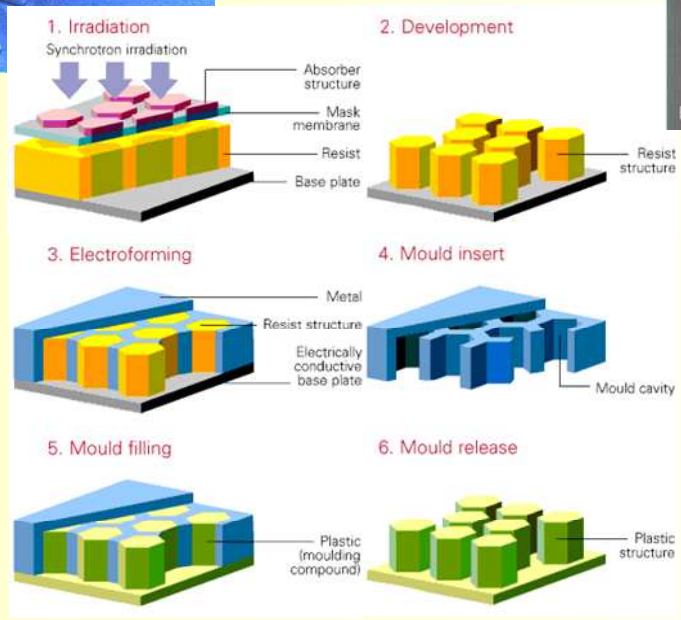
Elettra Sincrotrone Trieste is a multidisciplinary European institute for research based in North East of Italy, specialized in the analysis of matter.
Elettra offers also the possibility to perform X - Ray Lithography for the fabrication of micro and nanodevices.
Deep X-Ray Lithography (DXRL) is a manufacturing process by which a material, which changes its dissolution rate in a liquid solvent (developer) under high energy irradiation, is exposed through an X-ray mask to synchrotron radiation.
The pattern of the mask is transferred to the material. This is possible by the availability of synchrotron radiation characterized by high resolution, high intensity and extreme parallelism.



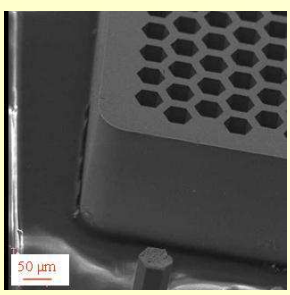


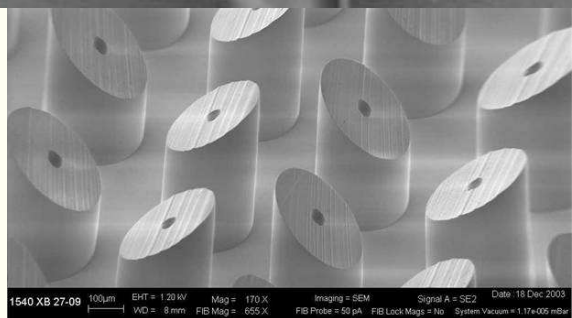


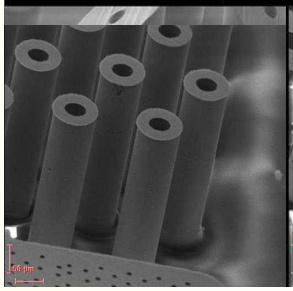


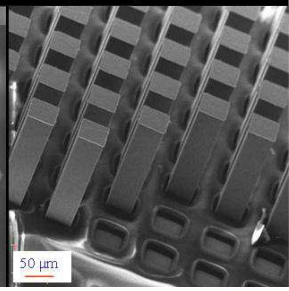


Microsctructures have been obtained with high spatial resolution (200nm for a wall thickness of 100 µm), high aspect ratios (up to 40), great structural heights (up to 3mm) and parallel edges.



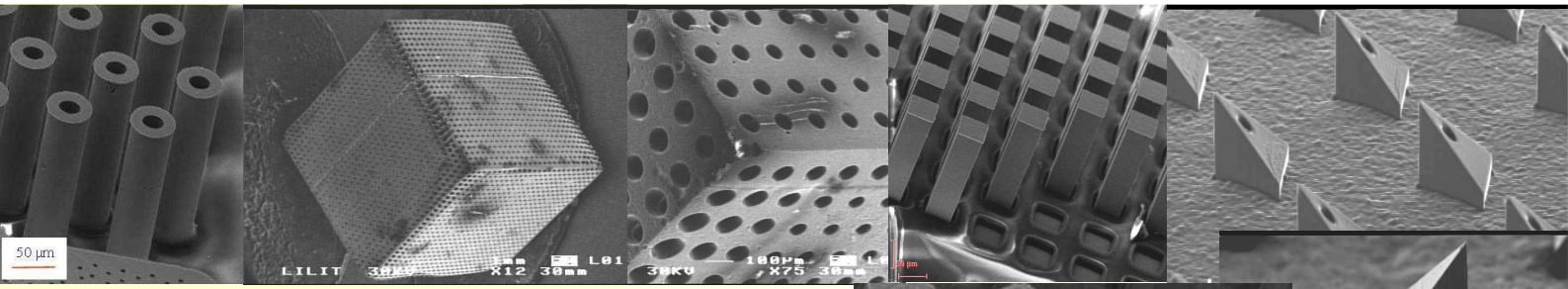


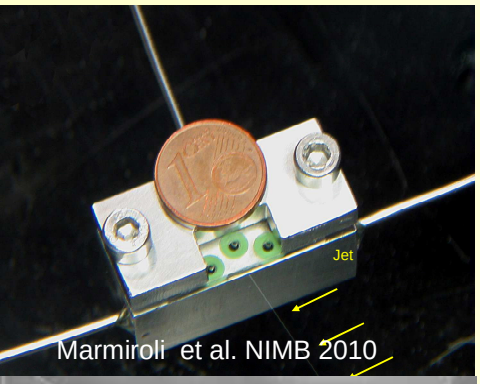




http://www.elettra.trieste.it/elettra-beamlines/dxrl.html
http://www.elettra.trieste.it/ILO/

Deep X-Ray Lithography Applications





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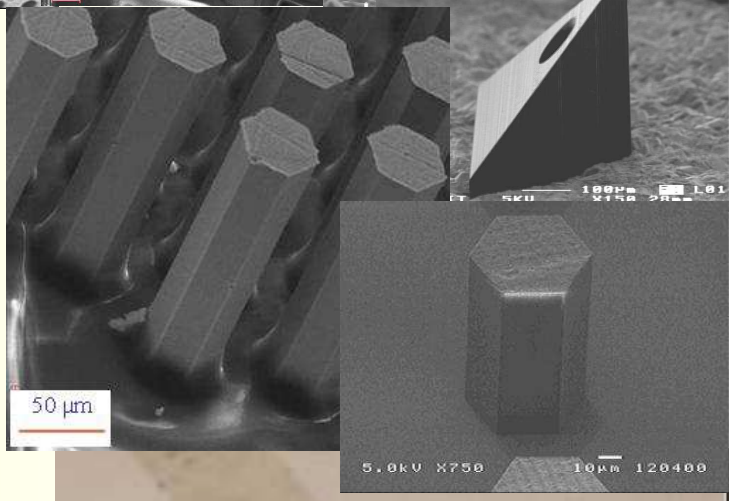
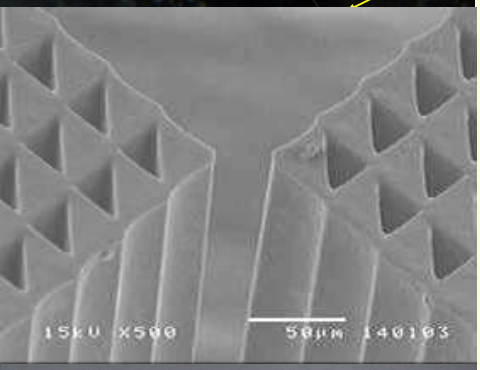
MEMS
- Microgears
- Microturbines
- Microgenerators

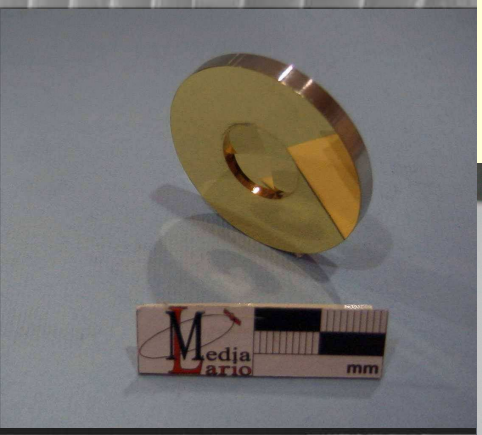
MICROFLUIDICS
- Drug delivery system
- Micro gearpumps
- Microneedles
- Lab on chip

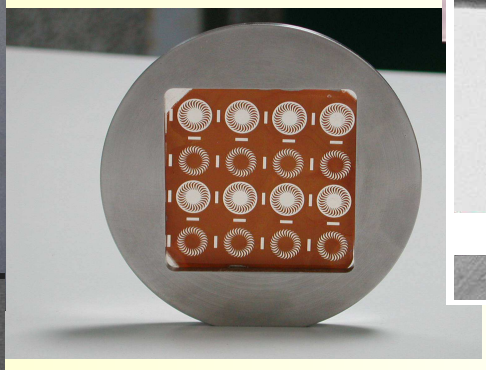
MICRO OPTICS
- Difractive lenses
- Optical micro prisms

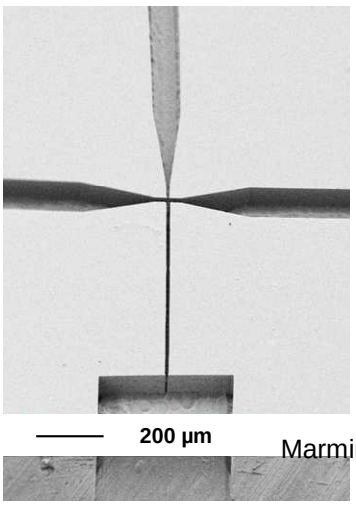
FABRICATION TOOLS
- Electro Discharge Machine Electrodes

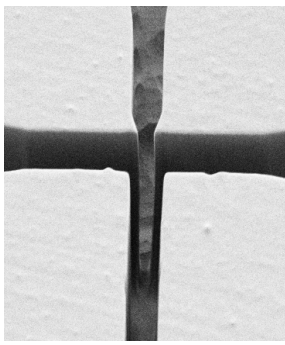


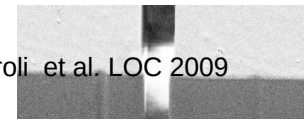




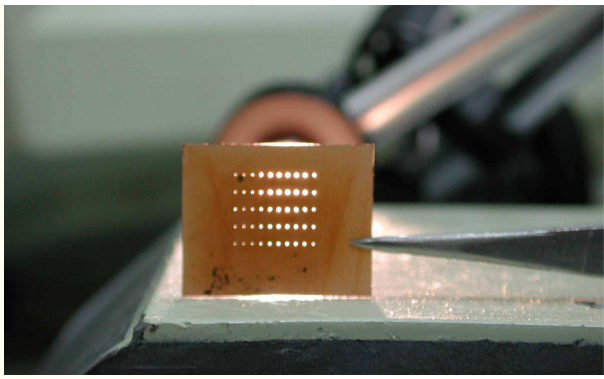








Marmiroli et al. LOC 2009



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