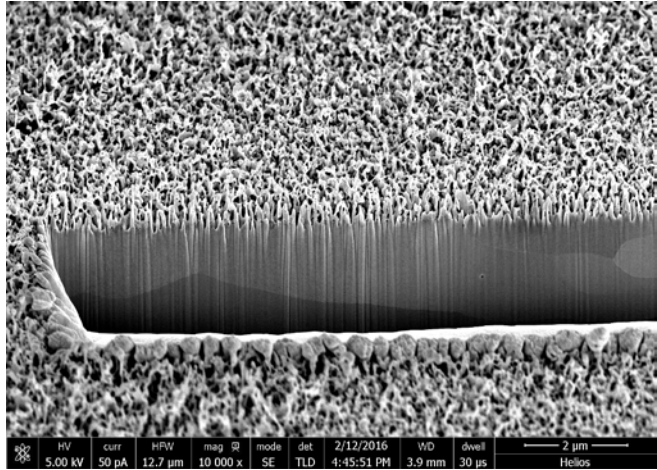


Master Thesis :

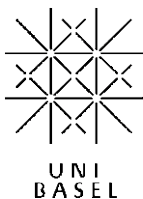


Nanostructuring of metallic coatings by helium plasma

Supervisor: Laurent Marot, Lucas Moser, Roland Steiner , Ernst Meyer -
Nanolino Lab

You will perform experiments to deposit metallic films by magnetron sputtering and exposed then to a helium plasma at several temperatures for several ion energies. Will be study tungsten, nickel, aluminium, copper and eventually silicon, for the deposition conventional magnetron sputtering or unbalanced magnetron will be used.

The idea is to investigate the surface modification by ion bombardment and analyses the growing phenomenon of filament structure. Helium is mostly not soluble in metal and form bubble which move metallic atom and form pin holes, pillars and filament structure. These structures have potential interest for catalytic applications or light absorption, such as photo electrochemical water splitting. Different techniques like X-ray Photoelectron Spectroscopy (XPS), Scanning Electron Microscopy (SEM), Atomic force microscopy (AFM), X-ray diffraction (XRD) and spectrophotometer will be used to characterize the surface.



Department of Physics, University of Basel
Klingelbergstrasse 82, CH-4056 Basel

Dr. Laurent Marot
Tel: ++41 61-267 37 20 **Fax** ++41 61-267 37 84
laurent.marot@unibas.ch