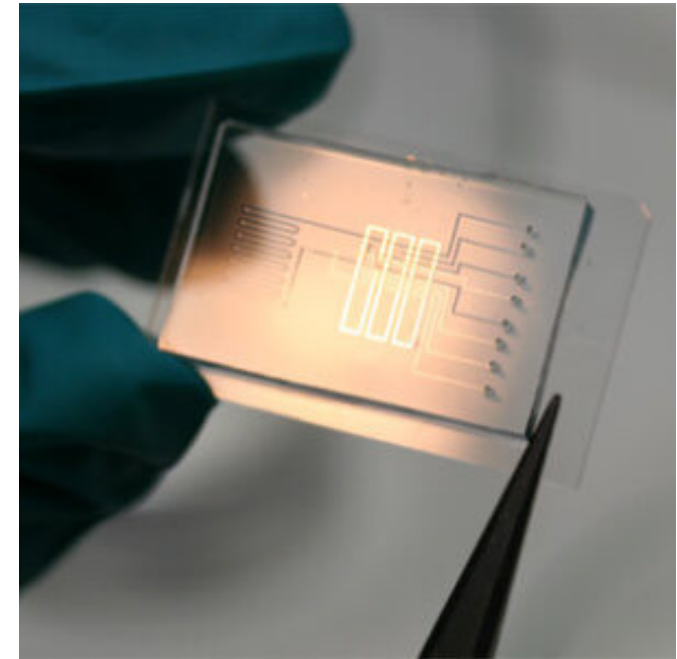


Nanofabrication and Nanocharacterization techniques

Prof. Dr Angelo Di Bernardo

Course logistics

- Total credits: 10
- Format: online (Webex). Lecture materials on ILIAS
- 4 hours of lectures/week
- plus 2 hours of exercises/week
- Final exam: oral examination (45 min)
- For more info please email angelo.dibernardo@uni-konstanz.de



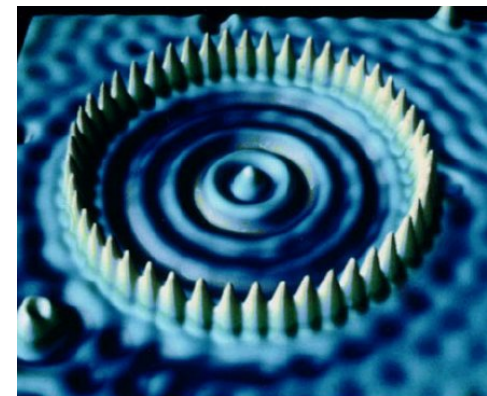
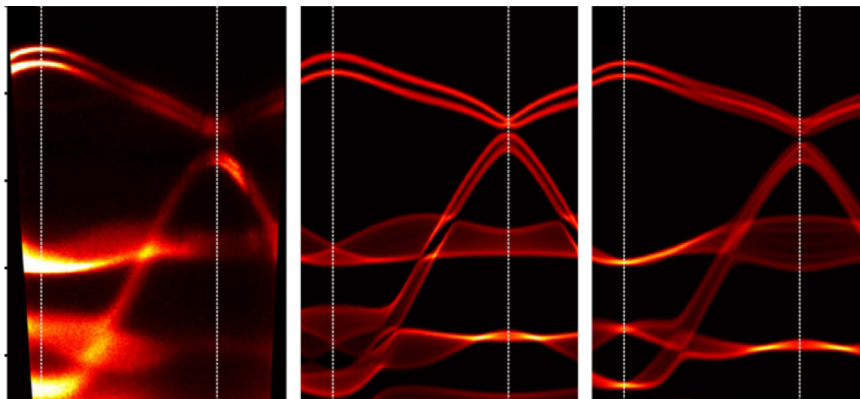
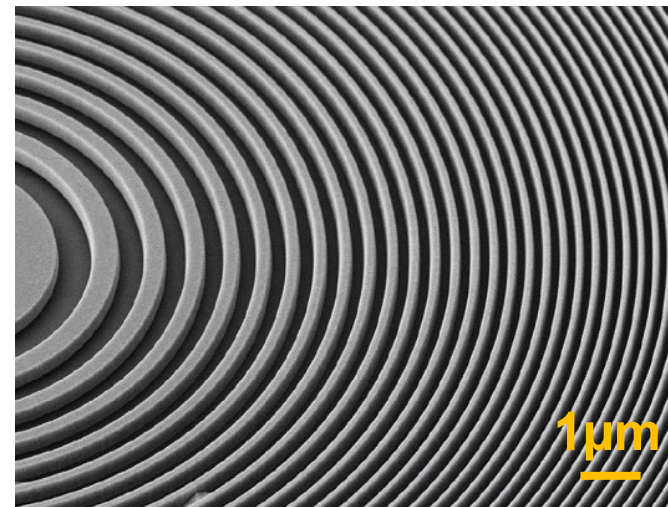
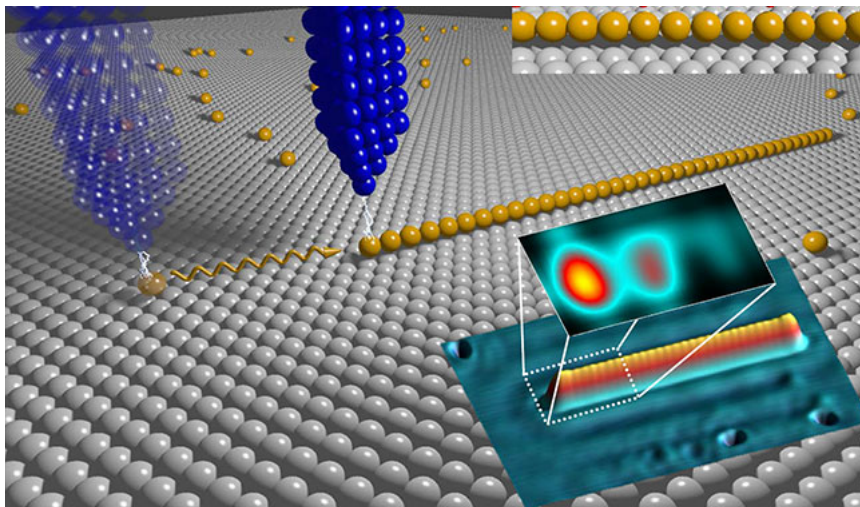
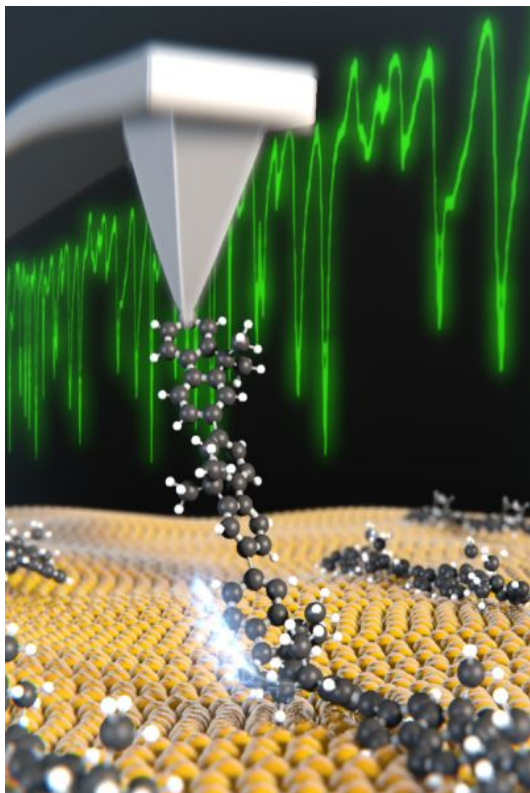
Aim of the course

- To explain the fundamentals and applications of the main techniques used for fabrication and characterisation of nanoscale devices and systems



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Sources

- <https://analyticalscience.wiley.com/doi/10.1002/imaging.4367/full/>
- http://www.nanoscience.de/HTML/news/pm/pm_2018_05_11_english.html
- <https://analyticalscience.wiley.com/doi/10.1002/micro.1190/full/>
- <https://www.nature.com/articles/srep26197>



Alexander von Humboldt
Stiftung/Foundation

Nanofabrication and Nanocharacterization techniques

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Course outline

- Basics
Diffraction, electronic excitations in solids, quantum tunneling
- Nanofabrication techniques (top-down approach)
UV-lithography, e-beam lithography, focus ion beam lithography, nano imprint
- Nanofabrication techniques (bottom-up approach)
Self-assembly, single-molecule manipulation
- Nanocharacterisation techniques (surface topography and crystal structure)
Atomic force microscopy, X-ray diffraction, electron microscopy
- Nanocharacterisation techniques (spectroscopy)
Raman spectroscopy, X-ray magnetic circular dichroism, muon spectroscopy, Angle-resolved photoemission spectroscopy, scanning tunneling microscopy

