Hungarian Academy of Sciences, Budapest

Founded in 1825

37 research institutions, supervised by HAS

Research Institute for Technical Physics and Materials Science

Budapest, Hungary

Mission of the institute

Interdisciplinary research performed on complex functional materials and structures, studies of physical, chemical principles, development of characterization techniques, implementation into integrated micro- and nanosystems.

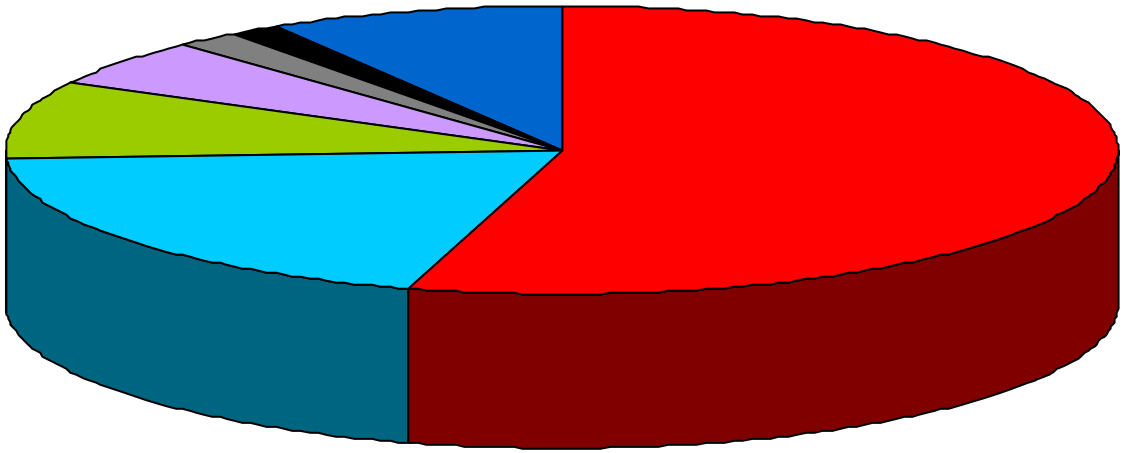
Dissemination of the results in international programs, involvement in education and in industrial R&D, with special attention to the needs of SME-s

Personnel

- **Total staff: 150**
- **Scientific qualification:**
  - **Member of HAS (1)**
  - **DSc 14 (+5)**
  - **PhD/CSc 46**
- **Research staff: 100**
  - **Emeritus Professor Instituti (6)**
  - **Sci. councillor 14**
  - **Senior researcher 34**
  - **Sci. researcher 38**
  - **Junior researcher 14+5**
  - **Graduate student 13**
- **Technical, administrative staff: 50**

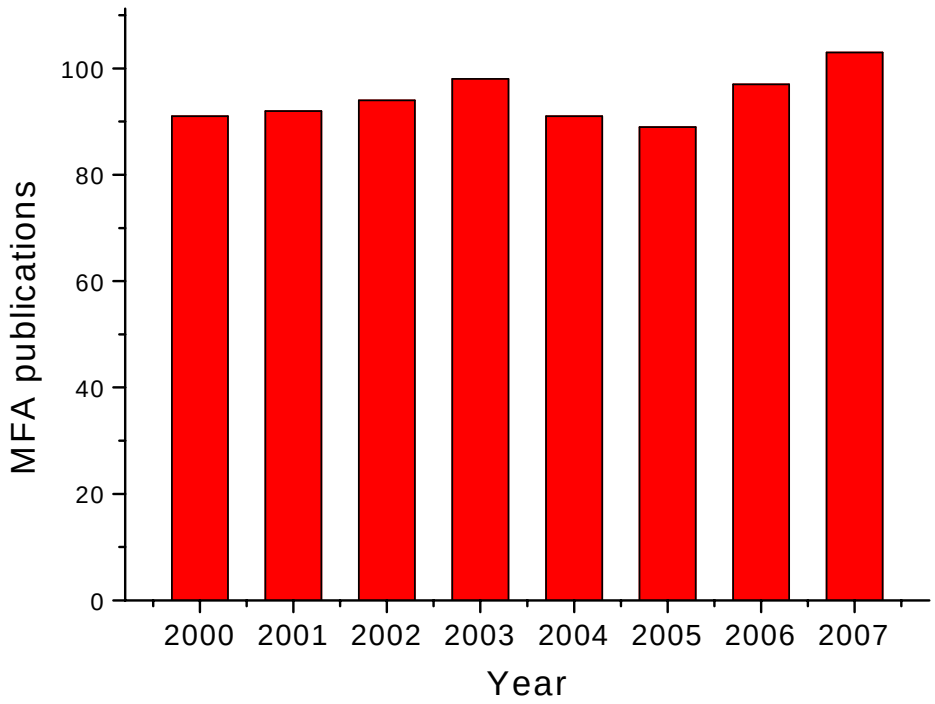
Financing

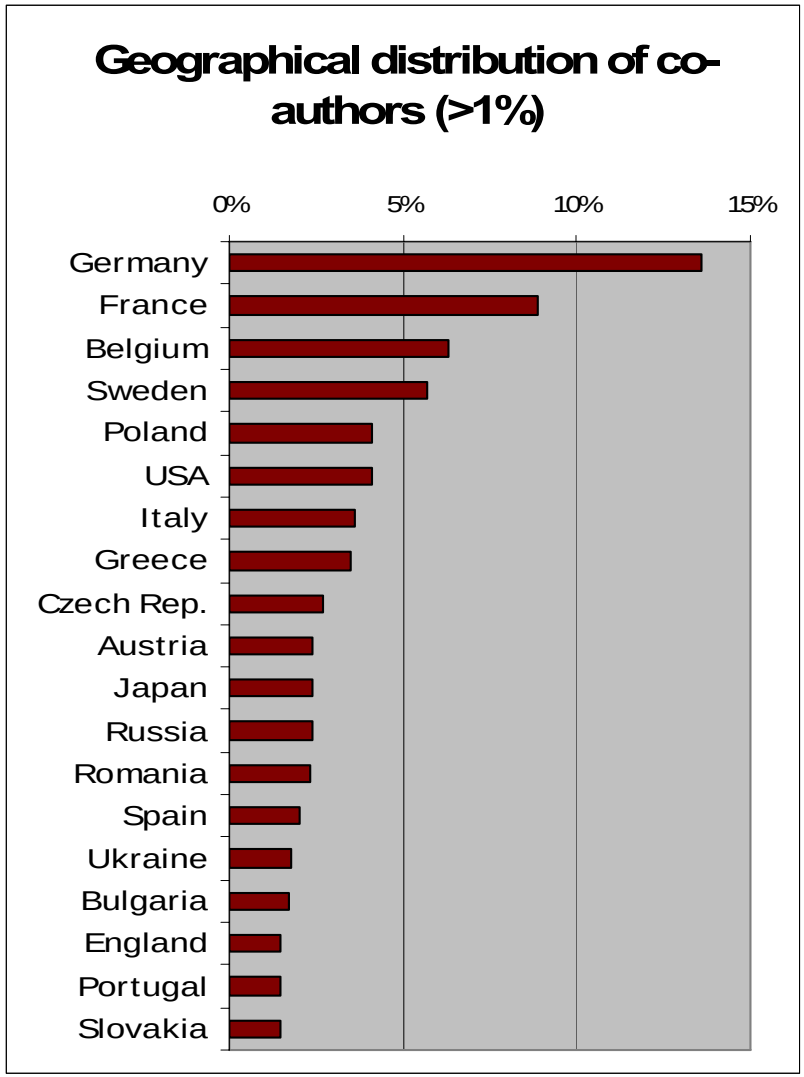
Total budget: cca. € 5.3 M



- Central subsidy (MTA) 54,6%
- Domestic project funding 19,6%
- EU & NATO project funding 8,5%
- Industrial RD contracts 5,5%
- Profit-oriented activities 1,8%
- R&D equipment subsidy 1,5%
- Miscellenous categories 8,5%

ISI Web of Knowledge (2000-2007)



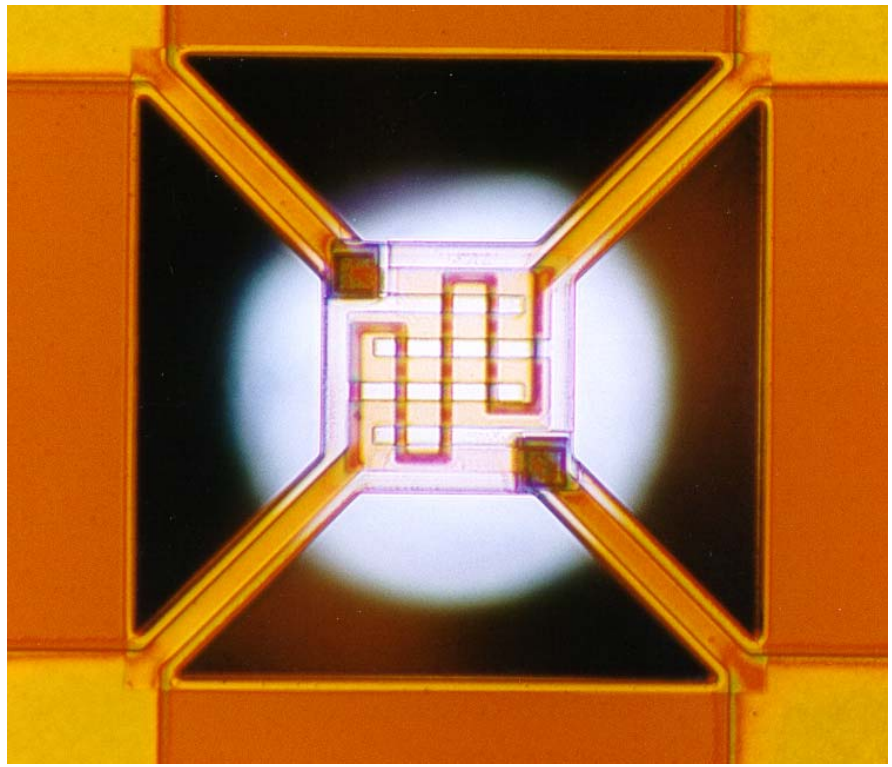


Points of excellence

- Clean lab (Class 10-10000) and Mask facility
- Electron Microscopy, Auger and Scanning Probe Lab
- Thin film, Surface Physics and Structures
- Ion Implantation and Ion Beam Analysis
- Optical Characterization, Ellipsometry
- Semiconductor Lasers and different LPE Techniques
- Sensorics; semiconductor (pressure, gas, microwave); magnetic (cracks in steel); optical waveguides (biosensor)
- Computing applications; medical (biopotentials, automatic cell identification, telemedicine)
- Porous silicon preparation and studies, SiC studies
- Carbon nanotubes, preparation and studies
- Computational physics
- Ceramics, high pressure, high temperature press; refractory metals

”Micro hotplate” for Taguchi and pellistor-type gas sensors on a MEMS SAFEGAS project

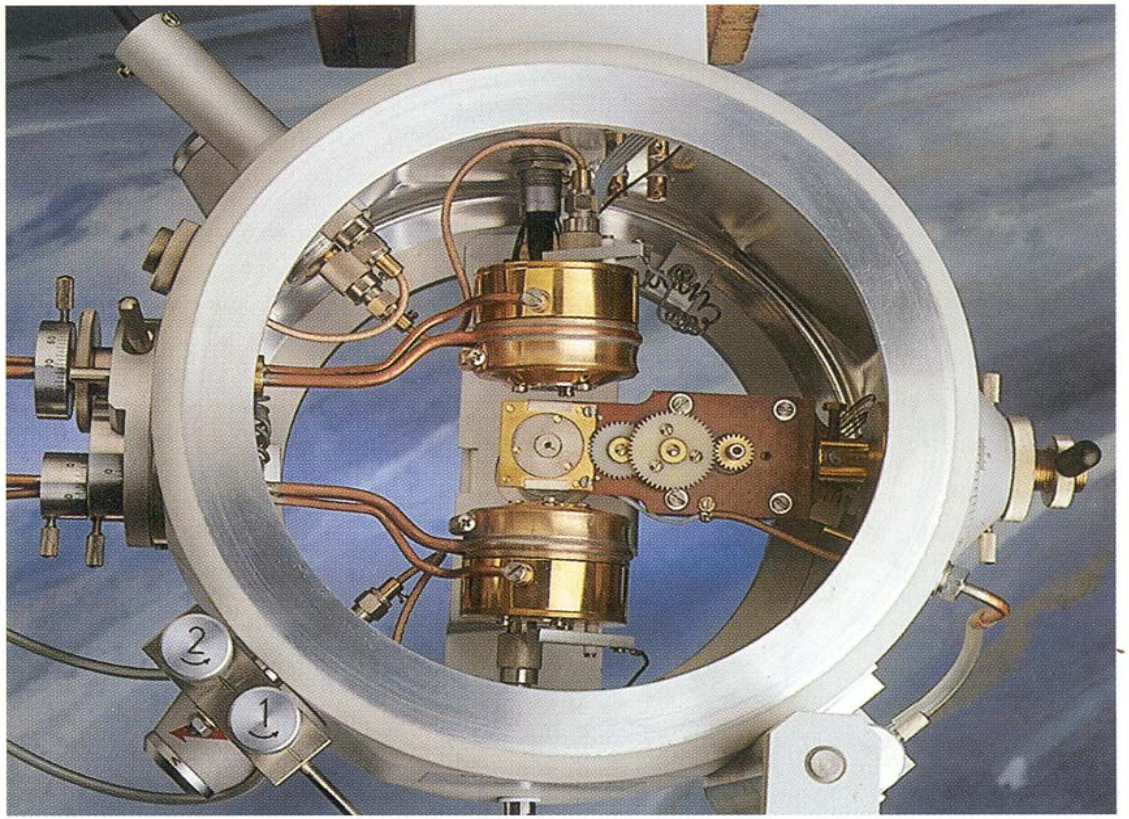
Gas sensing or catalytic material on the floating, heated 70x70 μm^2 Si/SiN membrane with heater + Pt thermometer



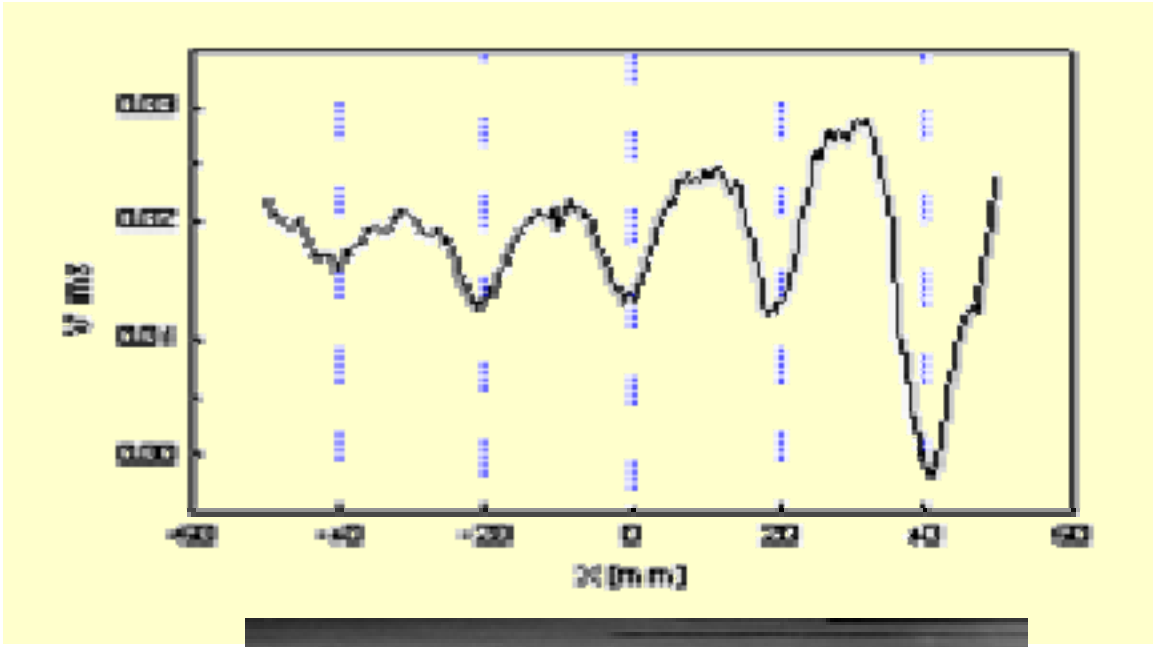
MFA

Extreme low-energy ion gun for artifact-free surface layer removal

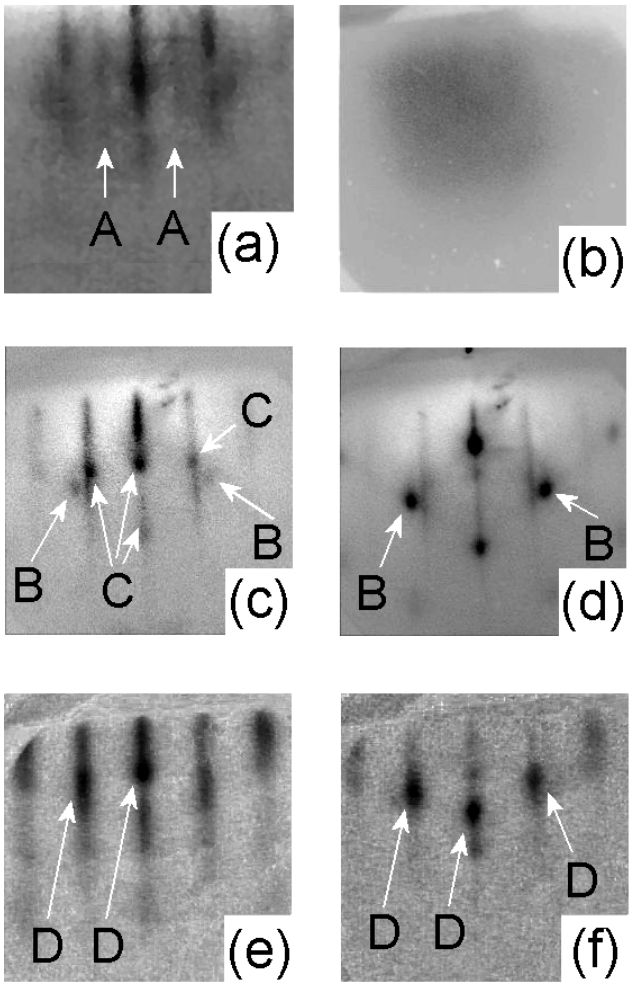
Nanotechnology, NKFP



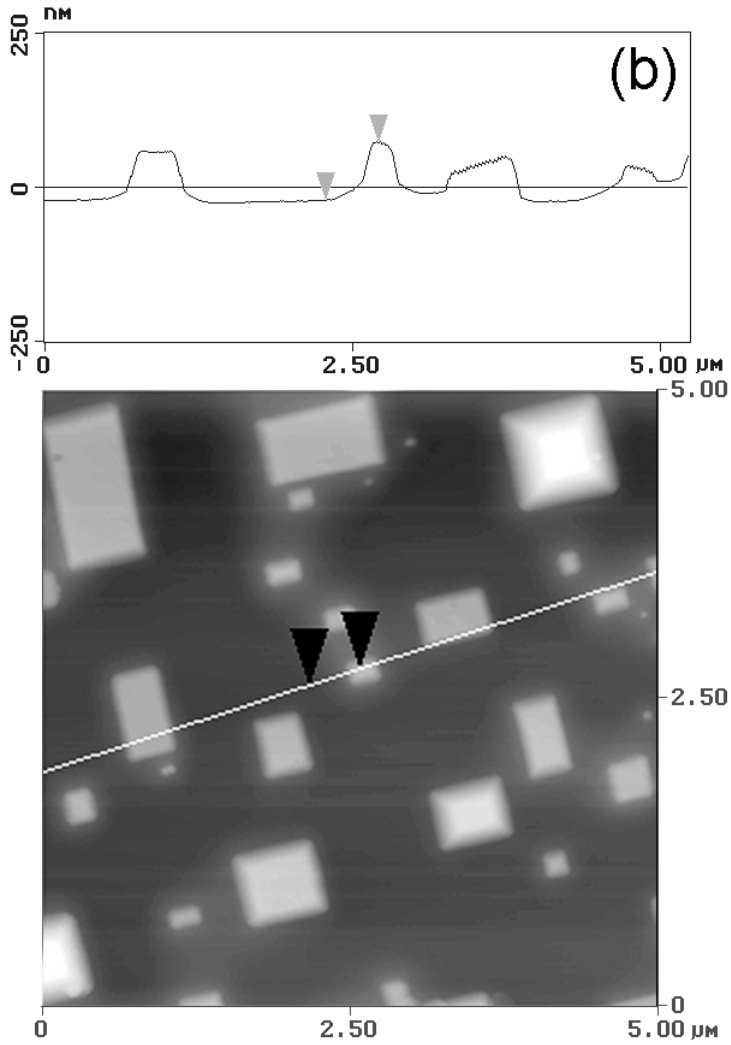
Magnetic sensor in Eddy current measurement for metal integrity



MBE-type (UHV, RHEED) thin film deposition and nanocrystal growth



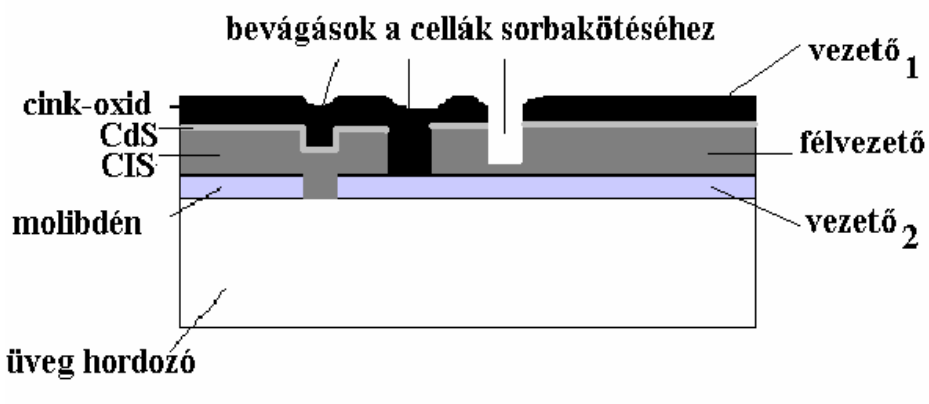
In situ **observation of the formation of epitaxial erbium-silicide by RHEED**



AFM studies of the epitaxial ErSi island formation

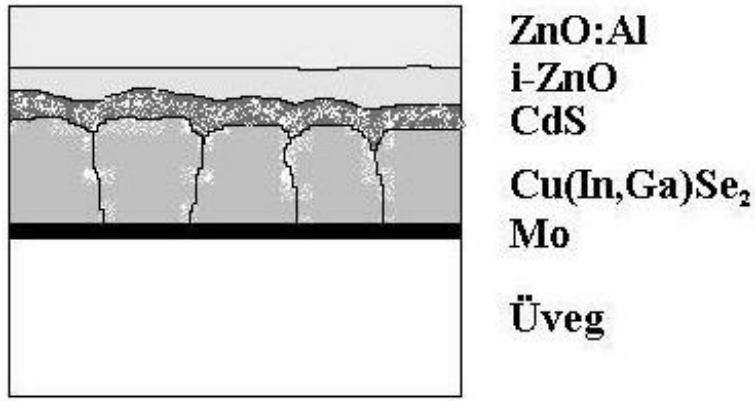
Solar cell technology

Processing line for CIGS on 30 X 30 cm^2 glass substrate

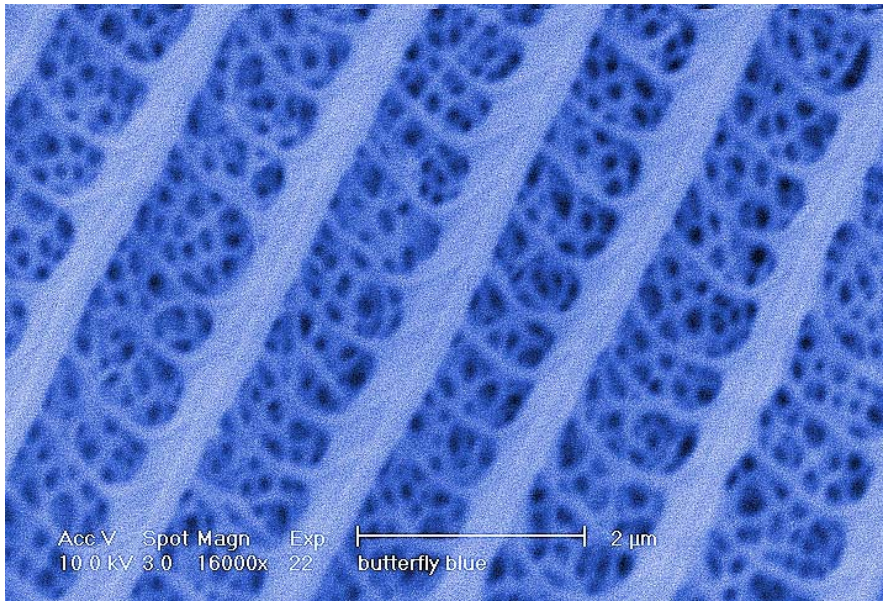


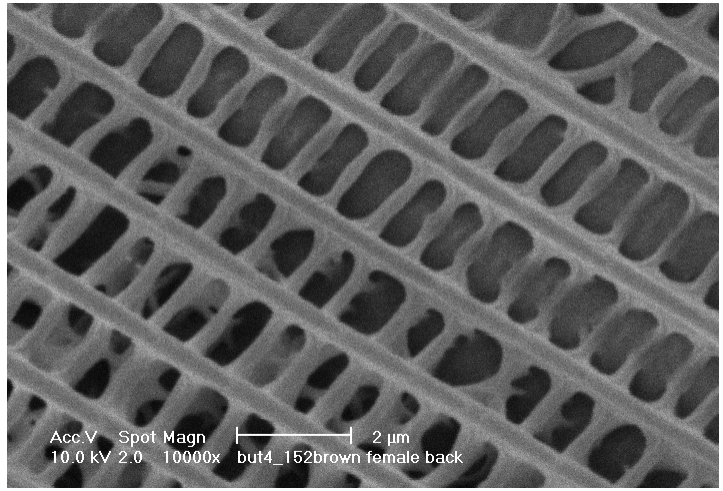
The 3-magnetron sputter unit (Mo, ZnO)

Cross section of the device, and the policrystalline multilayer structure (right)



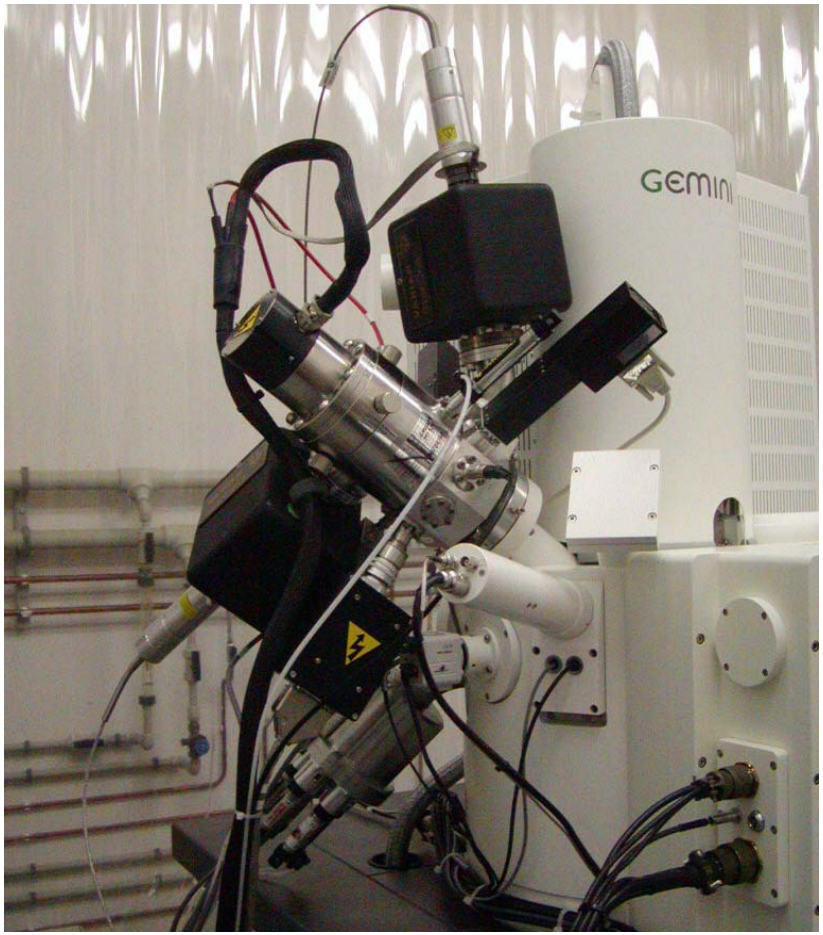
PHOTONICS is the technology of generating and harnessing light and other forms of radiant energy, whose quantum unit is *the photon*.

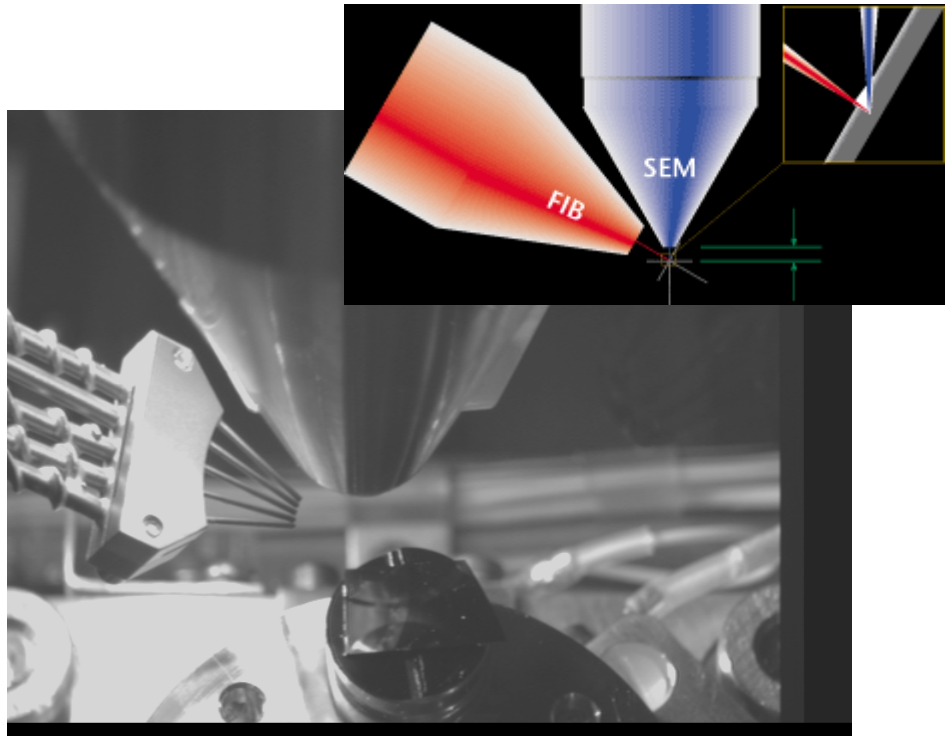




Nanostructuring facility – FESEM/FIB-GIS

LEO1540XB

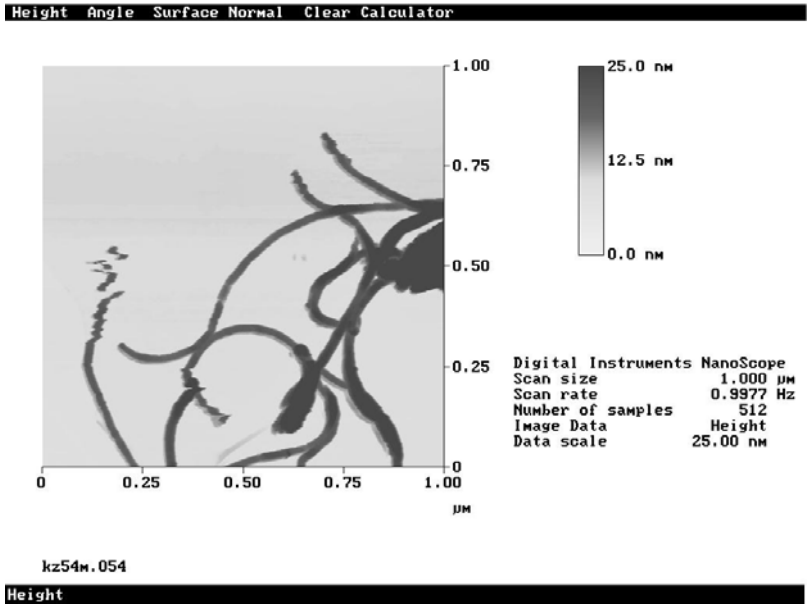


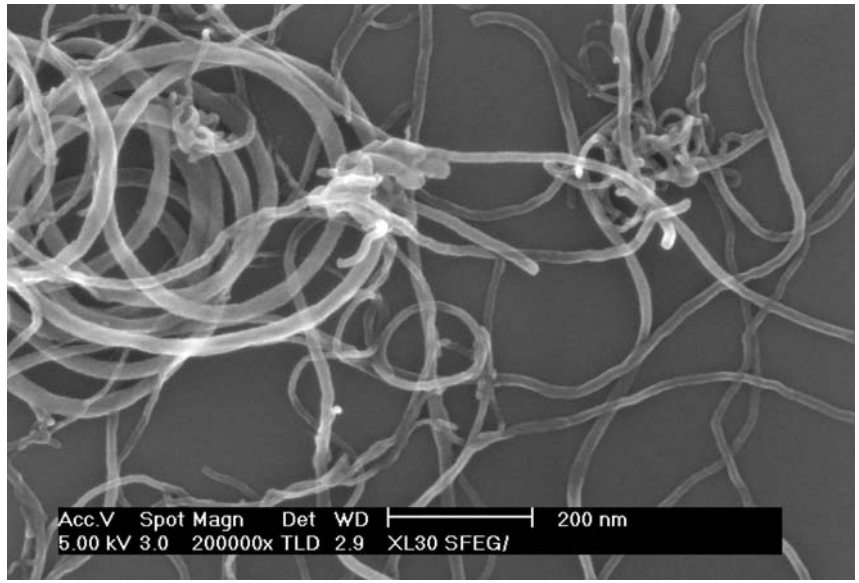


LEO crossbeam system with five gaslines for eching and IBAD formation of insulators, conductors

MFA

Carbon NanoTube studies





Carbon NanoTubes imaged by AFM and FESEM using similar magnification in both techniques