

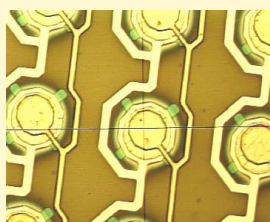
Staff: 260 researchers, professors, lecturers, engineers and technicians
240 PhD students, post-docs and temporary staff

Research fields:

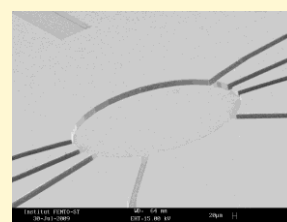
- Micro & Nano Multi-Physical & Multi-Material Systems
- Biomedical engineering, Energy & environment, Transportation
- Time-frequency & Telecommunication Systems
- Micromechatronics & micro-robotics
- Nanosciences

Research topics in Micro and Nano Systems

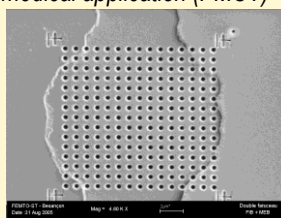
- Micro-optics and MOEMS
- Nano-photonics and Photonic Bandgap devices
- Acoustic sensors and Phononic crystals
- Micro & Nano Biosystems
- Distributed systems
- Fluidic & Opto-Fluidic components & systems
- Mechanical properties of microstructures & thin films
- Micro Atomic Clock
- Micro & Nano Instrumentation (near-field probes)
- Silicon Micro Fuel Cell



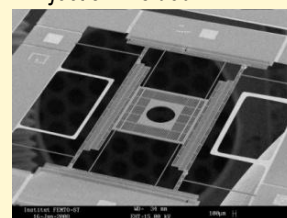
Array of ultrasound emitters for medical application (PMUT)



Bio-fluidic-chip injection-molded in PMMA



LiNbO₃ tunable photonic crystal optical modulator



X-Y micro-actuator (MOEMS)

Design, simulation & characterization tools

- Major FEM softwares for mechanics (ANSYS, LS-DYNA), optical design (BPM), electromagnetism
- Customized softwares for acoustics in piezoelectric materials & mechanical vibration analysis
- Commercial design softwares for microelectronics (CADENCE), MEMS (COVENTOR), ...
- Wide bandwidth vibrometer (femtometer sensitivity)
- Spectroscopic ellipsometry, XPS analysis, ...
- Nano-indenter
- Near-field microscopes (AFM, STM, SNOM, acoustic)
- Chromatography (for Bio Microsystem lab.)
- Micro fluidic & thermal characterization tools

Technology

- 800 m² clean rooms class 10.000 & 100
- Mask fabrication & Photolithography
- Dry etching (DRIE & FIB)
- Chemical etching (silicon, quartz,...)
- LIGA
- Wafer bonding technologies & prototype packaging
- Piezoelectric materials deposition & machining
- Femtosecond laser micromachining
- Micro-replication technologies of thermoplastics
- Pilot line for microfabrication of SAW components