MEMS Sensors & Actuators

Mission Statement:

- Create Innovation and transfer it to Industry

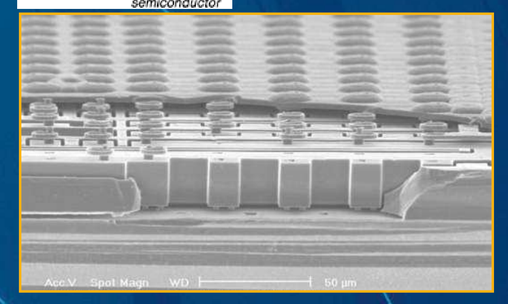
Examples of Industrial transfers:

Hygrometer

Pressure sensor for aerospace application

Accelerometer for Pacemaker

Geophone



Accelerometer for airbag triggering

Skills

Design

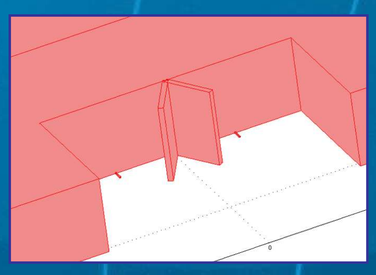
Modelling & Simulation

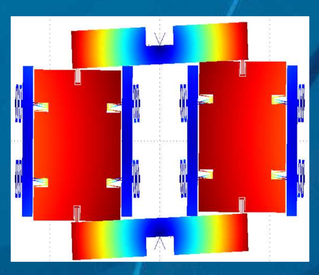
Fabrication in industrial like environment

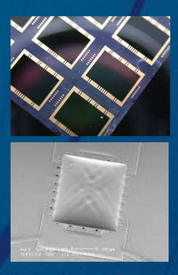
Integrated Packaging

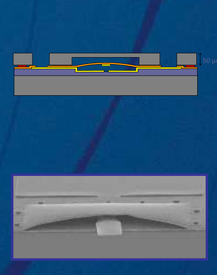
Characterization

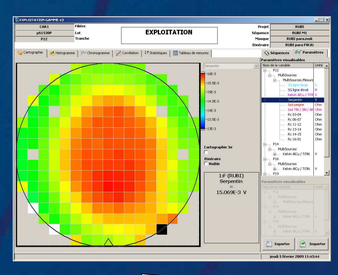
Reliability Assesment

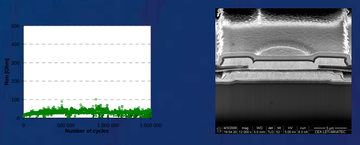


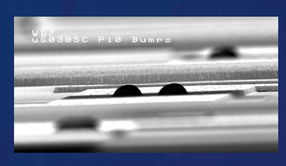




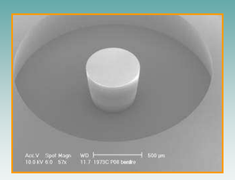


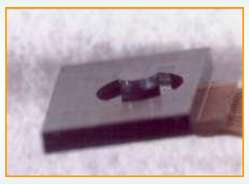


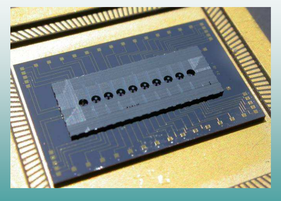




3D force sensor

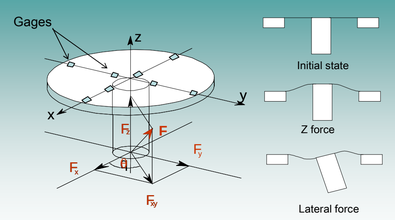


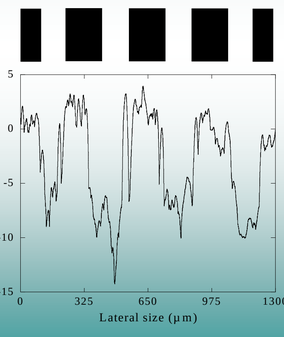




Line of 10 force sensors for a tactile sensors - Pitch : 1 mm

- **3-axis force sensor**
  - Range : 16 bars – 1N
  - Sensitivity : 30mV/V (for 5 bars FS)
  - Bandwidth 0 – 100 kHz
  - Pressure resolution : **10 Pa**

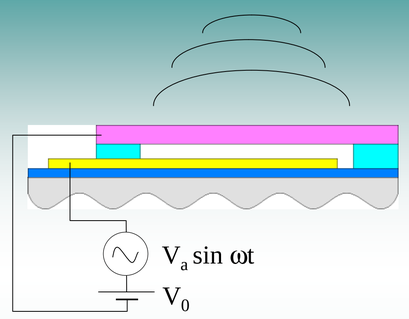




Parallel black ink lines printed using a Laser Printer, on plain commercial paper.

Typical profilometer profiles of patterned papers

Capacitive Micromachined ultrasonic transducer (CMUT)



MUTs present definite advantages with respect to traditional ceramic ultrasonic transducer

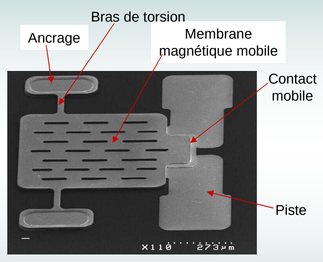
- Small size
- 2D component array compatibility
- Lower acoustic impedance than ceramic counterparts allowing better matching with external media
- Lower fabrication cost for volume production
- Enhanced reproducibility
- Improved acoustic radiation pattern
- Larger bandwidth

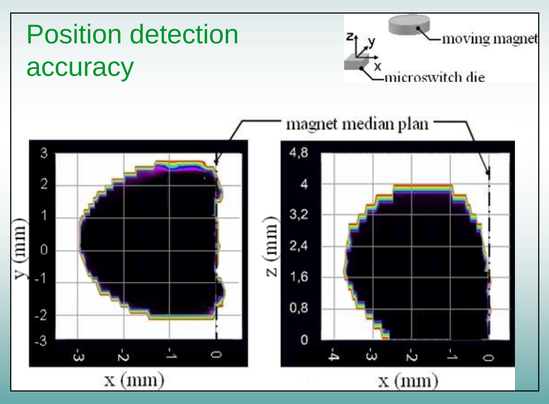
Sensor cross section view

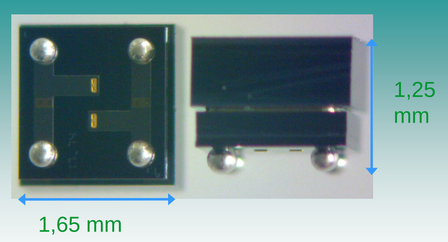
Sensor array

Micro switch magnétique pour mesure de position

Schneider Electric







	MEMS G1	Hall/GMR	Reed
			
Dimensions	1.6 mm	~ 3 mm	~ 8 mm
Powerless	x		x
Small size	x	x	
Switching Accuracy	x	x