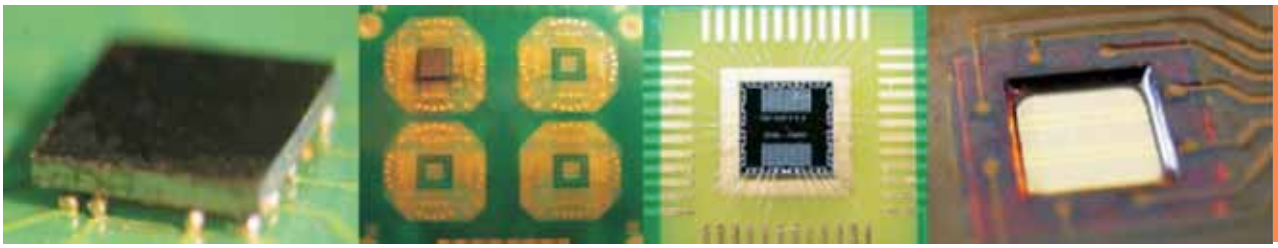
Centre of Microsystems Design and Technology - "COMBAT"
Warsaw University of Technology, Poland
http://srg.ise.pw.edu.pl/combat/



COMBAT

Centre of Excellence "COMBAT"
"COMBAT" is the Centre of Excellence granted by European Commission (FP5) at Warsaw University of Technology, based on 7 research groups from 3 different departments.
The Centre activity is focused on design,fabrication, modeling and testing of microsensors,microactuators, microsystems and dedicated signalprocessing and control. The members of the Centre areinterested inbroad cooperation with other laboratories inthesubjects listed in Main Activity.

The Centre Leaders
Prof. R. S. Jachowicz, Head of COMBAT andLeader of Sensors Research Group
Dr M. Baszun, Leader of Piezo MicrosystemsGroup
Prof. R. B. Beck, Leader of Microelectronic andNanoelectronic Devices Technology Group
Prof. Z. Brzozka, Leader of Chemical SensorsResearch Group
Prof. Z. Drozd, Leader of Division of Precision andElectronics Products Technology
Prof. M. Kujawinska, Leader of OpticalEngineering Division
Prof. J. Ogrodzki, Leader of Analog ElectronicCircuits Group

Offer
- Research and industrial cooperation in modeling, design and fabrication of microsystems and microsensors
- Digital and wireless sensors interferences, microsensors and microsystems packaging
- Implementation of microsensors and microsystems into medical application, environment protection, industrial application
- Automated tested of microsystems and microsensors operation, their mechanical parameters and geometrical dimensions, temperature distribution
- Design of distributed sensors systems
- Courses on microsystems technology for specialist from industry and research laboratories

Contacts
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Main Activity

Silicon sensors – humidity, moisture, pressure
- Thin films and semiconductor sensors, sensors modeling
- Semiconductor dew point detector, hygrometers, medical applications
- Moisture contents in solid, capacitive methods in radio frequency range
- Semiconductor capacitive pressure sensor and FET pressure sensor
- Smart Sensors: ASIC-s, sensors with standard LonWorks network interface, wireless interfaces

Piezo-microsystems
- Actuators, stack and bimorph type
- Actuators for rotary movements
- SAW sensors, especially SAW chemosensors,SAW biosensors
- SAW remote sensors
- Microsensors based on bulk piezoresonators.

CAD for microsystems and circuits
- Mathematical modeling of chemical sensors
- Mathematical modeling of mixed-domain systems and microsystems; application of HDLs.
- Numerical methods, algorithms and program development for systems and microsystems
- Computer-aided design
- Developed simulators: OPTIMA, SWITCH,SYMULAK and CAD tools: SCAD, GOSSIP,EXTRA, PRE.

Microsystems Packaging Technology
- SMT assembly and lead – free soldering
- COB – C&W technology
- Flip Chip technology
- Microsystems packaging reliability

Microsystems testing and reliability analysis:
- full-field static and dynamic interferometric studiesof microsystems,
- opto-numerical analysis of MEMS and MOEMS,
- design and manufacturing of measurement instrumentation for microsystems.

Chemical Sensors
- Design of modern analytical systems for environmental monitoring,
- Application of miniaturized chemical sensors,
- Integrated micro total analysis systems (iTAS).

Microelectronic and Nanoelectronic Devices
- Modeling of semiconductor devices
- Semiconductor devices manufacturing
- Characterization of materials and semiconductor structures
- Application of non-classical materials of siliconand wide-bandgap materials technology