



**Contact Applied Research Center IMS:**  
**Prof. Dr. Monika Saumer**  
Hochschule Kaiserslautern  
Amerikastraße 1  
66482 Zweibrücken  
Germany  
e-mail: [monika.saumer@hs-kl.de](mailto:monika.saumer@hs-kl.de)  
phone: +49 (0)631/3724 -5420  
[www.hs-kl.de/ims](http://www.hs-kl.de/ims)

**Hochschule Kaiserslautern - University of Applied Sciences**

- Campus Kaiserslautern I, Morlauerer Straße 31, 67657 Kaiserslautern
- Campus Kaiserslautern II, Schoenstraße 6, 67659 Kaiserslautern
- Campus Pirmasens, Carl-Schurz-Straße 10-16, 66953 Pirmasens
- Campus Zweibrücken, Amerikastraße 1, 66482 Zweibrücken

Applied Research Center  
**Integrated Miniaturised Systems  
(IMS)**



The complex scientific and technological challenges of modern life require the synergetic interaction of the natural sciences and engineering.

This has been the driving force behind the Applied Research Center "Integrated Miniaturised Systems" (IMS), which develops innovative solutions in science and technology.

The developments and results from our research are used in the fields of biomedicine, healthcare, high tech industry, automotive industry, and information technology.

The focus of our research benefits from the interaction of the complementary expertises of our Applied Life Sciences and the Micro Systems and Nano Technologies research groups. As a result we go beyond the boundaries of traditional disciplines to generate new scientific and technical solutions.

A key aspect of our work is the application of methods from micro and nano technology to research into and to interact with biological systems at the macro, micro, and nano levels.

These methods can be used for a wide range of applications from measuring single cells with nano wire sensors, or making artificial tissue, to analysing perfused organs, or testing body sensors for human beings.

Numerous public and industry funded projects prove the relevance and attractiveness of our research topics. We work together with companies, as well as other universities and research institutes in Germany and abroad.

Our research projects are carried out by engineers, Ph.D. students, and post-docs. The research groups also benefit from the active participation of undergraduates, and they in turn develop research skills.

**Applied research and research-based education benefit from our modern facilities:**

- a well- equipped clean room, 300 square metres, up to class 10 (US FED STD 209E)
- microsystems packaging laboratory
- physical and chemical analytics
- biomedical and molecular biological techniques
- laboratories for material mechanics

**Research groups:**

**Biomedical Measurement Technology** (Prof. Dr. Sven Ingebrandt)

Chip-based bioelectronics and biosensors; electronic cell-sensor arrays; electronic DNA chip; graphene-based biosensors

**CAE and Tool Based Micromachining** (Prof. Dr. Patrick Klär)

Design and simulation of MEMS parts; fabrication of micro parts with tool based micromachining; microstructuring with use of microcutting

**Chemical Processes in Microsystem Technology** (Prof. Dr. Monika Saumer)

Micro- and nano-scale electroforming; lab-on-chip for chemical analysis; microstructuring for biomedical and sensor applications

**Enteric Nervous System** (Prof. Dr. Karl-Herbert Schäfer)

Enteric nervous system (ENS); neuronal stem cells from ENS and cell therapies; tissue engineering of the gastrointestinal tract

**Experimental Physics** (Prof. Dr. Hildegard Möbius)

Magnetic materials; organic light-emitting diodes; polymer physics

**Materials Science** (Prof. Dr. Joachim Ernst Hoffmann)

X-ray diffraction analyses (residual stress, textures, phases, structure); surface optimisation; dynamic strength of macro- and micro components of different materials

**Microsystem Integration, Automation and Process Optimization** (Prof. Dr. Marko Baller)

Integration of microstructures and microfluidics into usable devices and instrumentation, LabView, Six Sigma

**Molecular Oncology** (Prof. Dr. Dr. Oliver Müller)

Intracellular signal transduction; molecular diagnostic techniques; new cancer drugs

**Nanomedicine for Healthcare and Cosmetics** (Prof. Dr. Cornelia Keck)

Nanocrystals & Nanolipids for improved delivery of pharmaceutical and cosmeceutical actives

**Packaging in Microsystems Technology** (Prof. Dr. Antoni Picard)

Smart textiles; application-oriented product and component development in MST; innovative concepts for basic and advanced training

**Thin Film Technology** (Prof. Dr. Peter Pokrowsky)

Thin film technology; optical thin film technology; laser applications in process and measurement technology

