Fraunhofer IMS

Die Fraunhofer-Gesellschaft ist die führende Organisation für angewandte Forschung in Europa.
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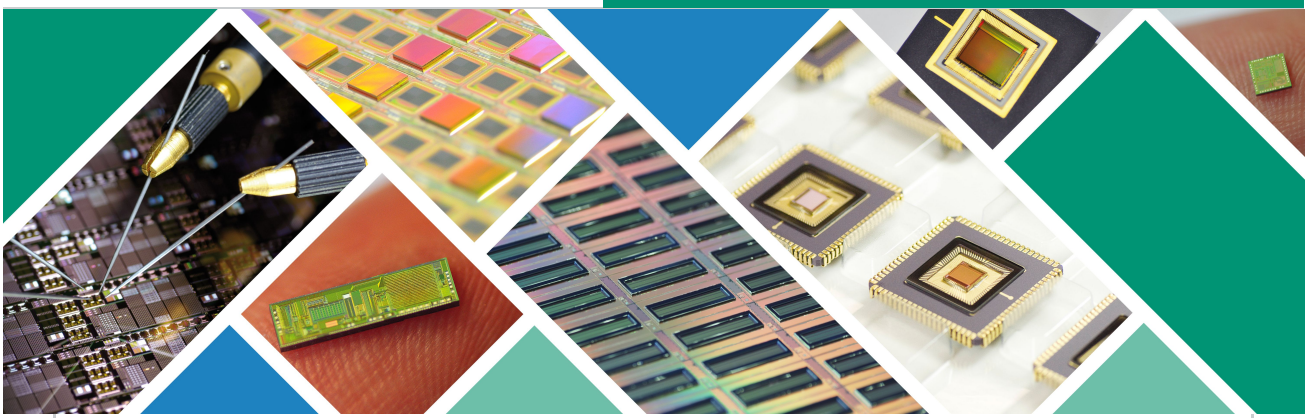


The Fraunhofer IMS is in a state of change. Not only are technologies and innovations constantly being developed further at our institute, but we as a research institution are also moving forward. In the course of redesigning our website, we would like to present our new business areas and core competencies to you today.
We are sure that there is something interesting for you as well.

We wish you all the best and stay healthy,

Your Fraunhofer IMS Team

GF H

Business Unit **Health**

In the interdisciplinary business unit Health at the Fraunhofer Institute for Microelectronic Circuits and Systems (IMS), we develop smart next-generation biomedical sensor systems for medical implants, in-situ diagnostics and non-invasive healthcare applications. We have unique selling points in the field of implantable pressure sensors, single photon detectors (SPADs) for e.g. flow cytometry and non-contact vital sign sensing for e.g. blood pressure measurement. Our sensor solutions are specifically adapted to the requirements of the target application in the fields of medicine, life science, biotechnology, food, pharmaceutical and environmental technology. Together with our customers, we bring these systems through to approval.

For further information please click here:

HEALTH

GF I

Business Unit **Industry**

High productivity and increased flexibility in manufacturing coupled with minimal resource consumption are the challenges of an industry of the future. The necessary digitization and networking, as well as the use of autonomously operating machines and robotic systems, require innovations for sensor technology, artificial intelligence and safety. The Industry business unit supports you in identifying technologies and transferring them to practical applications. Through the development of smart sensor systems, as well as their integration and networking in various application environments, we pursue the vision of emission-free production at any location, the protection of data against manipulation and the reduction of downtime.

For further information please click here:

INDUSTRY

GF M

Business Unit **Mobility**

On the new mobility business unit pages, you will find our current key topics & contributions for safer and more efficient mobility. Relieving road congestion in urban areas and on highways, as well as climate protection, are key drivers for rethinking passenger and freight transportation for the future.

Some keywords of our activities: "Safe hardware for flight systems in urban areas (UAM)", "Predictive failure detection of fuel cells and other vehicle components", "Fast and long-range LiDAR for various mobility applications".

Thereby, we offer excellent sensor know-how (design, manufacturing, qualification) and hurdle-free access to the use of Machine Learning methods on embedded systems with our AI framework AIfES.

Visit our pages and if you don't find what you are looking for right away, just contact our business unit directly.

You can find more information here:

MOBILITY

GF SPS

Business Unit **Space and Security**

The business unit Space and Security of Fraunhofer IMS offers the complete range of services from development to pilot production of customized and innovative MEMS sensors with a focus on optical sensors.

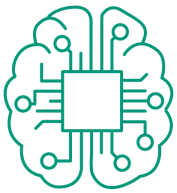
State-of-the-art technologies from the Fraunhofer IMS portfolio such as BSI SPAD arrays for three-dimensional detection of the environment, CMOS CCD detectors in TDI operation for Earth observation from orbit or uncooled IRFPA sensors for passive detection of persons or objects enable flexible, future-proof and reliable customer end applications for observation as well as monitoring of critical (infra-)structures, both on Earth and from space.

For more information, please click here:

SPACE AND SECURITY

KK-ESA

Core Competence **Embedded Software and Artificial Intelligence**



Embedded Software and AI

The activities of the IMS core competence ESA focus on the topic of "Embedded AI" and thus take into account the worldwide trend of distributed, intelligent systems. Wherever large amounts of data are generated, machine learning (ML) methods can be used to extract higher-value information from this data, which can be used, for example, to identify the status of systems or predict imminent machine failures. Embedded AI can also be used in healthcare for diagnostic purposes, for example. The IMS core competence ESA researches and develops AI algorithms for smart, small and resource-constrained systems. Among other things, it has developed the AIfES (Artificial Intelligence for Embedded Systems) toolkit for this purpose.

For more information, click here:

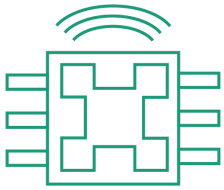
EMBEDDED SOFTWARE AND AI

KK-SSS

Core Competence **Smart Sensor Systems**

The core competence "Smart Sensor Systems" bundles all hardware design competencies to enable comprehensive smart sensor systems. Our strong expertise in the design of

mixed-signal integrated circuits and systems including integrated sensors enables highly integrated sensor solutions. These capabilities are complemented by system design, wireless sensors and optical systems. Special emphasis is placed on high precision sensor signal conditioning, RISC-V based embedded microcontrollers including application specific hardware accelerators, sensor transponders (LF to SHF), LiDAR and low light imaging. We offer development services from initial concept or feasibility studies to full-fledged smart sensor solutions.



Smart Sensor Systems

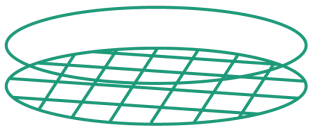
For more information, click here:

SMART SENSOR SYSTEMS

KK-T

Core Competence **Technology development for smart sensor systems**

With the development of CMOS and MEMS-based sensor technologies, we are opening up the possibilities for state-of-the-art smart sensor systems for all business areas. Our technologies for optical sensors cover the range from X-rays to UV and far infrared. We serve biomedical applications with technologies for pressure sensors, nanoneedles for cell contacting and CarbonNanoTube-based bionano-sensors for the identification and detection of biomolecules. In order to offer our customers an optimal solution in each case, we rely on fully integrated sensor technologies as well as on the integration of our sensor technologies as post-processing with foundry technologies.



Technology

For further information please click here:

TECHNOLOGY DEVELOPMENT

Infrastruktur CST

Center for Sensor Technology

In 2000 m2 of clean room space, we manufacture new innovative sensors on state-of-the-art equipment and facilities at the Center for Sensor Technology. We offer a wide range of technologies from electronic device fabrication to 3D MEMS integration, as well as wafer and device level electrical sensor testing. Encapsulation by Atomic Layer Deposition (ALD), chip-level and wafer-level bonding in combination with high-temperature electronics enables your sensor to pass even the toughest requirements.
In our fully automated line on 200mm silicon wafers, experienced staff realize your solution from single

Center for Sensor Technology

demonstrator to pilot production. We are part of the Forschungsfabrik Mikroelektronik Deutschland (FMD).

For further information please click here:

CENTER FOR SENSOR TECHNOLOGY

Fachausschuss Mikro- und Nanosysteme

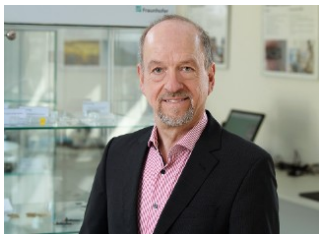
The technical committee has elected!

New speaker of the technical committee is:
Prof. Dr.-Ing. Karsten Seidl - Fraunhofer Institute for Microelectronic Circuits and Systems (IMS), University of Duisburg-Essen.

Deputy spokespersons are:
Univ.-Prof. Dr. med Frank T. Hufert - Brandenburg Medical School
Dr. med Hendrik Kohlhof - Rheinische-Friedrich-Wilhelm University of Bonn

We wish the new speakers much success and thank the previous, long-time speaker Prof. Dr. Gerald A. Urban most sincerely for the good cooperation.

Contact



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The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities

are conducted by 72 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of more than 26,600, who work with an annual research budget totaling more than 2.5 billion euros. Of this sum, more than 2.1 billion euros is generated through contract research. Around 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. International collaborations with excellent research partners and innovative companies around the world ensure direct access to regions of the greatest importance to present and future scientific progress and economic development.

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