



## SERVICES & TECHNOLOGIES

Fraunhofer IMS works from design up to pilot fabrication of application-specific integrated circuits. We offer technology development on CMOS and MEMS processes. Furthermore, we develop embedded hardware-software systems. Our living labs at the Fraunhofer inHaus-Center provide nearby facilities for evaluation of concepts and demonstrators.

We operate three in-house cleanrooms for processing of 200 mm wafers: Our CMOS line offers acknowledged automotive quality with robust CMOS processes down to 0.35 µm. In our MEMS line we realize intelligent single-chip microsystems by complementing CMOS wafers with additional structures and functionalities. Furthermore, our service is complemented by facilities for test and assembly, including special capabilities for pressure and image sensors.

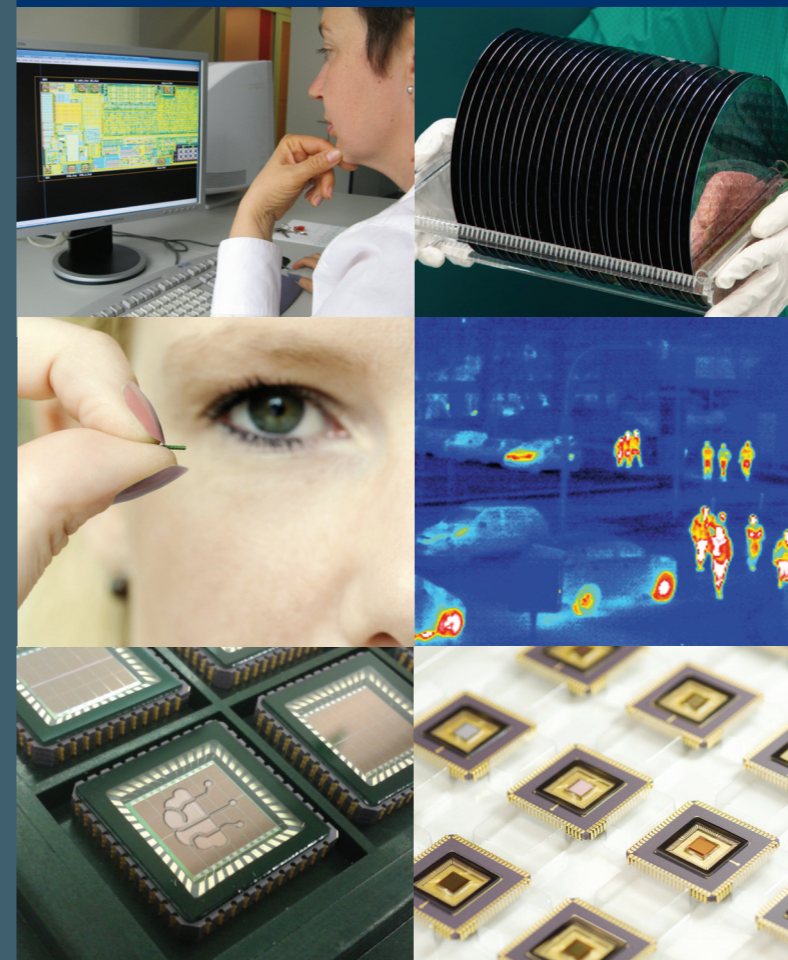
As part of the German public project „Forschungsfabrik Mikroelektronik Deutschland“ (Research Fab Microelectronics Germany) Fraunhofer IMS has been enabled to develop and realize “More Than Moore” CMOS ASICs and MEMS devices and sensors in its clean rooms.

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## EUROPEAN RESEARCH ACTIVITIES



## FRAUNHOFER IMS SHORT PROFILE

With more than 30 years of experience and proven expertise in microelectronic circuits and systems, Fraunhofer IMS carries out research, development and pilot fabrication of microelectronic solutions for industrial and public clients. We align our work with the requirements of our customers and partners focussing on strong, efficient and marketable developments. To tie our know-how adequately we have united our competencies in 9 business units:

- Devices & Technologies
- ASICs
- High Temperature Electronics
- IR Imagers
- CMOS Image Sensors
- Pressure Sensor Systems
- Biohybrid Systems
- Wireless and Transponder Systems
- Electronic Assistance Systems

# OPPORTUNITIES FOR COOPERATION



# REFERENCE PROJECTS



Fraunhofer IMS is interested in European research activities under Horizon 2020, ECSEL, Eurostars or similar funding opportunities. Here are some examples for possible cooperation with us:

## Next generation organ-on-chip

*DT-NMBP-23-2020 | Deadline 12/2019*

- Modular plug & play sensors in organ-on-chip
- Embedded optical sensors for 3D monitoring of cell environment, e.g. pH, T, O<sub>2</sub>, glucose/lactate, biomarkers

## Robotics in Application Areas / Robotics Core Technologies

*ICT-46-2020 | Deadline 04/2020*

- LIDAR and infrared sensors for cooperative robotics
- Tactile sensors for safe handling of sensitive objects
- Living-lab facilities for priority area healthcare

## Next generation multifunctional and intelligent airframe and engine parts, with emphasis on manufacturing, maintenance and recycling

*MG-3-5-2020 | Deadline 04/2020*

- High-temperature electronics and sensor systems for harsh environments
- AI for health monitoring and predictive maintenance

## AI for the smart hospital of the future

*DT-ICT-12-2020 | Deadline 04/2020*

- Digital biomarkers in the context of personal health
- Automatic handling and RFID based life-cycle management of sterile assets, e.g. surgical instruments
- Living-lab facilities for pilot demonstrators

## Energy-efficient manufacturing system management

*DT-FOF-09-2020 | Deadline 02/2020*

- Non-intrusive load monitoring
- Real-time process optimization towards energy efficiency

## Neuromorphic computing technologies

*FETPROACT-09-2020 | Deadline 04/2020*

- Energy-efficient neuromorphic arrays in low-power  $\mu$ Controllers
- In-memory computing and analog neuromorphic processing
- Fail-safe and resilient neuromorphic arrays using self-healing mechanisms and robust net topologies

# APPLAUSE

## Advanced packaging for photonics, optics and electronics for low cost manufacturing in Europe

APPLAUSE will provide new tools, methods and processes which are piloted in six use cases – related to automotive, production, medical, consumer and communication applications.

Fraunhofer IMS is developing innovative MEMS technology for two use cases: biocompatible encapsulation for miniaturized cardiac implants, as well as microbolometers for low-cost and high-performance thermal infrared sensors for applications in automotive, safety and security.

With the broad consortium of more than 30 leading experts, APPLAUSE will take the European expertise in advanced packaging and assembly to a new level.

This project has received funding from the ECSEL JU under grant agreement No 826588.



# DRONES4ENERGY

## Drones to ensure cheaper energy

Drones4Energy aims to build a collaborative, autonomous, and continuously operating drone system for accurate and frequent inspection of the power grid. State-of-the-art AI algorithms will enable autonomous operation and synchronization with other drones in the swarm.

Fraunhofer IMS is developing a lightweight powerline harvester to be carried by a drone. Thus, drones can be charged from the powerline cables without modifying the power grid's infrastructure. One particular objective is to achieve the longest possible flight time in order to make efficient use of autonomous operation. This will eliminate the need for expensive helicopter flights for infrastructure monitoring.

Drones4Energy has received funding from the Innovation Fund Denmark, project no. 8057-00038A.

