



# Hahn-Schickard Stuttgart



## Applied research for industry

- Budget 2016: 23,1 Mio. € (5,1 Mio. € industry)
- Employees 2016: 181 FTE (228 persons)
- Part of the Innovation Alliance Baden-Württemberg (innBW)



DIN EN ISO 9001:2008



Hahn-Schickard Stuttgart



Hahn-Schickard Villingen-Schwenningen



Hahn-Schickard Freiburg

## Applied research within innBW

- Strong alliance of 13 independent and unique research institutes
- Research policy linked to business/economic interests
- Applied and results-oriented research for key enabling technologies
- Link between science and economy
- innBW in numbers (2012):
  - 1.156 employees
  - 109 Mio. € turnover, thereof 21% by institutional funding by the state of BW
  - 2.217 projects for industry clients, thereof 1.247 projects together with SME



# Hahn-Schickard Stuttgart and IFM



**Hahn-Schickard Stuttgart**

[www.hahn-schickard.de](http://www.hahn-schickard.de)



**Institut für Mikointegration  
der Universität Stuttgart**

[www.ifm.uni-stuttgart.de](http://www.ifm.uni-stuttgart.de)



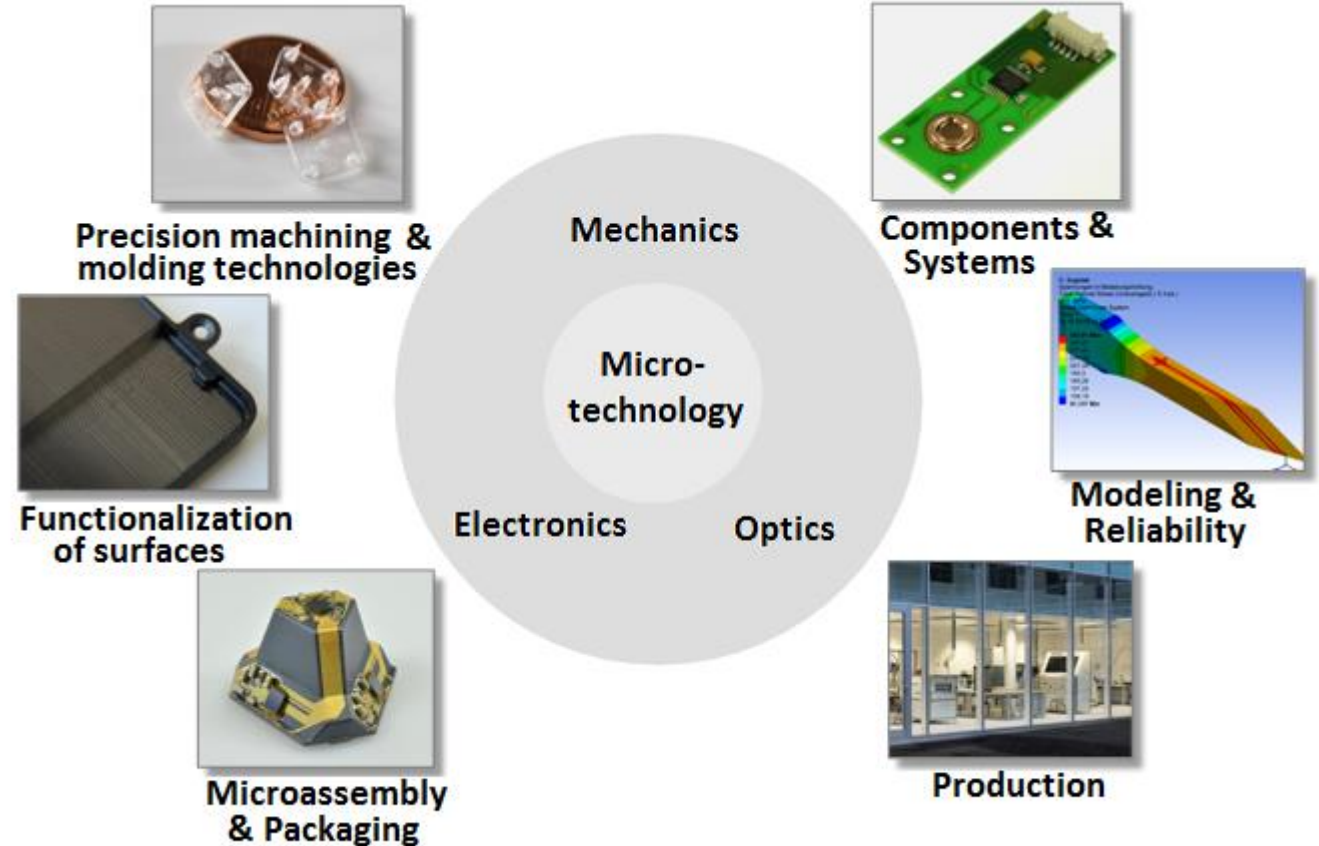
**We create innovations from research to transfer into industrial application**

## Visions to products

- Hahn-Schickard supports companies with its streamlined portfolio of services and its comprehensive infrastructure in all phases of product innovation:
  - Research, product ideas, feasibility studies, development and validation of samples and prototypes, preparation of serial production, serial production
- We are operating in the following markets:
  - Automotive, life sciences, production & automation, household appliances, sensor- & measurement technologies, information- & telecommunication technologies



- Microtechnology – an interdisciplinary field of research
- Cross-sectoral key technologies
- Important enabling factor for innovative products



**Microtechnology – interdisciplinary, cross-sectoral, innovative.**

## Precision machining

- Simulation and design (CAD and CAM)
- Precision tool making and mold making
- Ultra-precision machining

## Injection molding

- Micro injection molding
- 2 shot injection molding
- Ceramics
- Thermoset
- Micro-optical and microfluidic components



## Available technologies

- MID technologies (LPKF-LDS<sup>®</sup>, semi-additive)
- Laser structuring
- Metallization
- Hot embossing (metals on plastics)
- Printing technologies

## Possible applications

- Conductive tracks
- Passive components, sensor elements
- Protective surfaces, masks
- 2D and 3D surfaces
- Substrates: thermoplastics, ceramics, thermosets



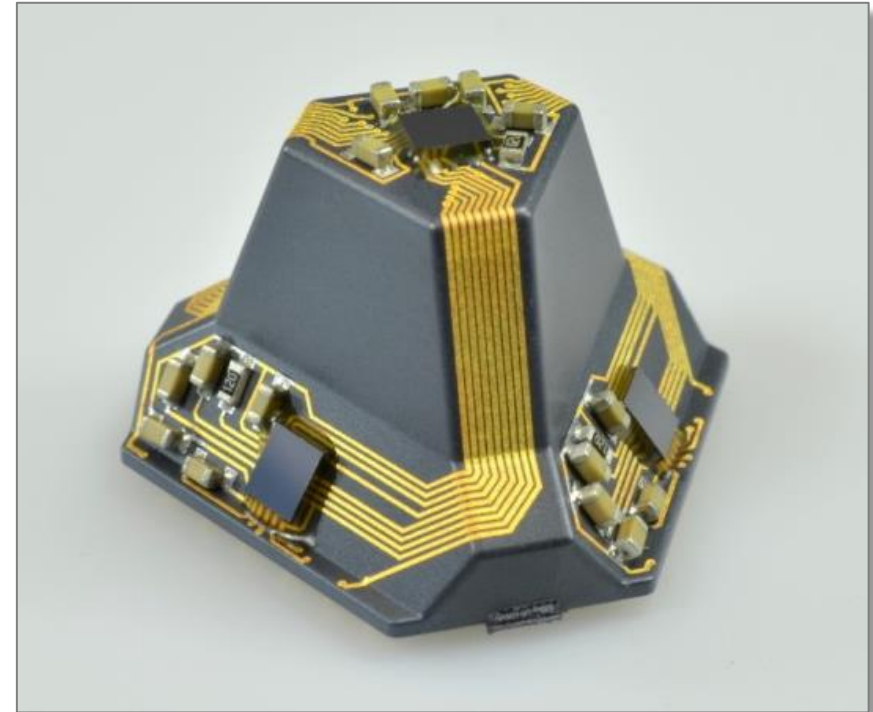


## Assembly

- Chip placement & wire bonding
- Flip chip
- Lead-free SMD assembly (soldering, gluing)
- 2D and 3D placement
- High-precision assembly of optical components
- Transfer molding

## Substrates

- Molded interconnect devices
- Printed circuit boards
- Flexible substrates
- Ceramics



## Sensors

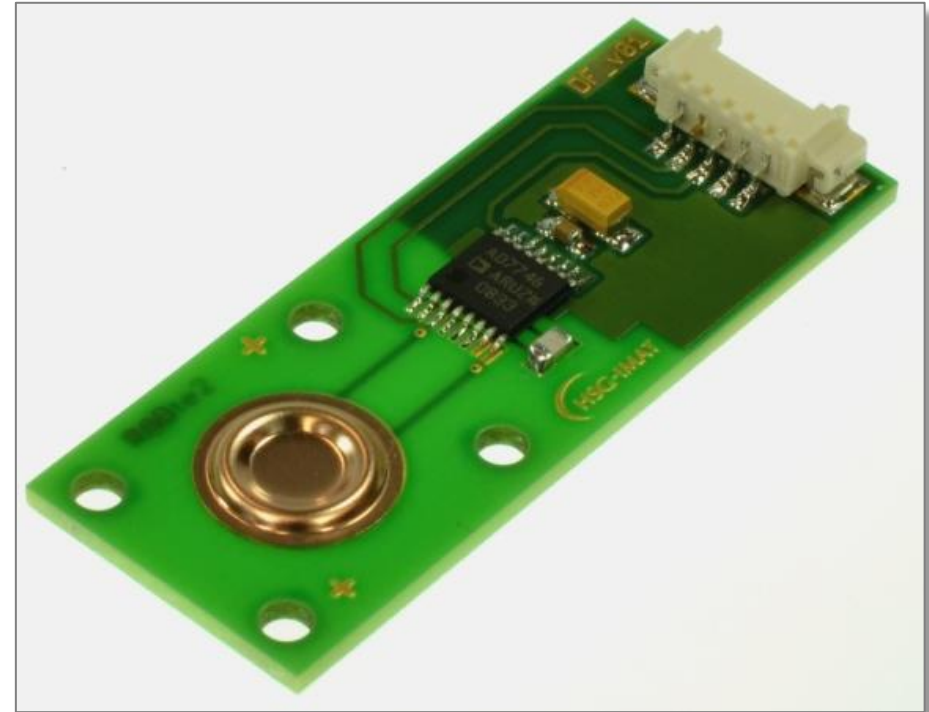
- Pressure sensors
- Inclination sensors
- Rotary encoders
- Position sensors

## Actuators

- Contamination free pump

## Systems

- Conceptual development
- Customer specific solutions

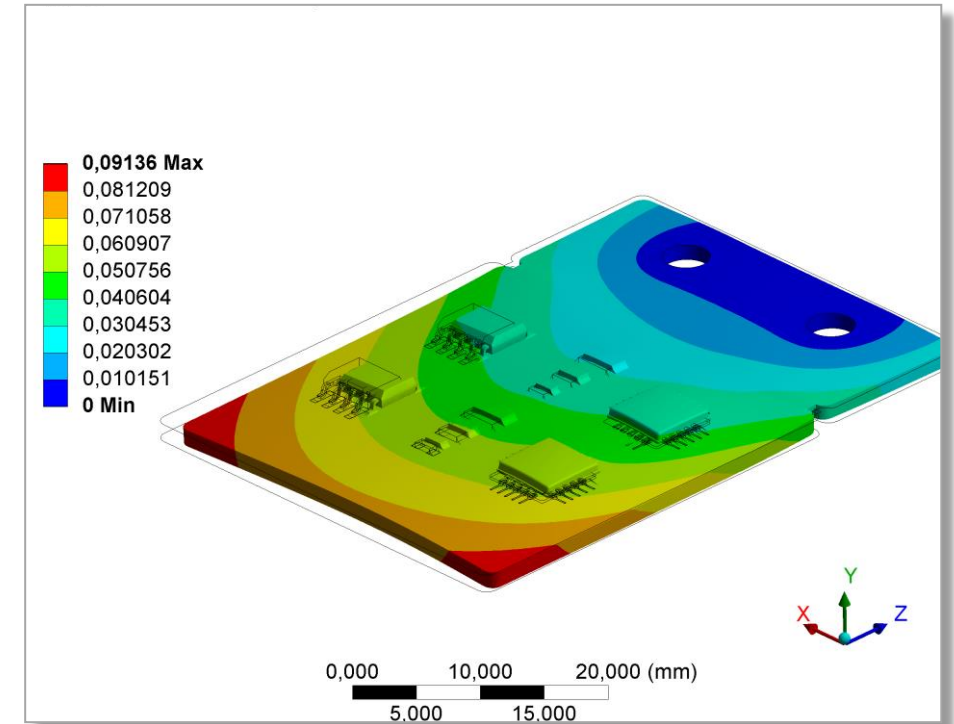


## Modeling

- Injection molding simulation (Sigmasoft®)
- Finite element analysis (Ansys®)
- Lifetime prediction

## Reliability and Analysis

- Material characterization
- Environmental testing
- Statistical analysis
- Crack inspection
- Failure analysis



## TransferFab

- Job shop for miniaturized systems
- Access to all available technologies at Hahn-Schickard Stuttgart
- Automated processes

## Service portfolio

- Prototypes
- First and small batch series
- Process transfer

## Certification

- ISO-9001:2008



# Application examples from different industrial branches

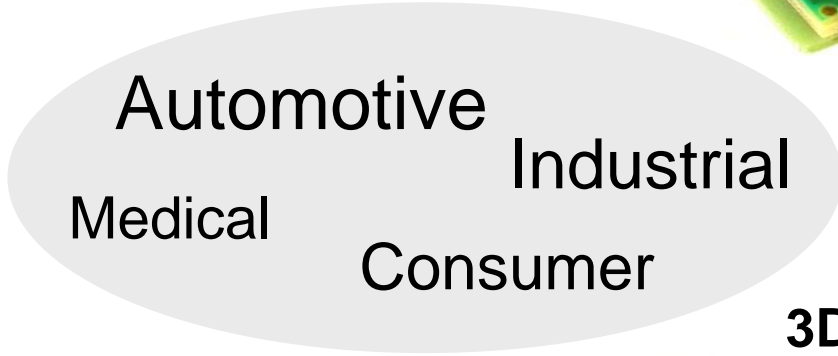
## Automotive sensors



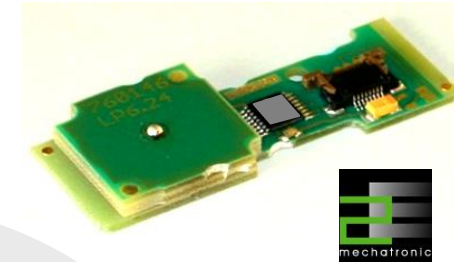
Wheel speed sensor



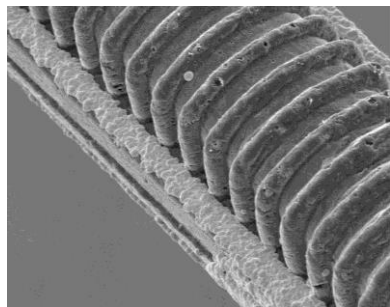
Pressure sensor



## Inclination sensors



## Medical engineering sensors



Ischemia sensor

The Product

The IscAlert system provides simultaneous sensing on three channels per ECU and comprises:

- Sensor element
- ECU (Electronic Conditioning Unit)
- Calibration Unit



**Sensocure**  
Early warning - Early action

## 3D Display



# Hahn-Schickard – Your partner for innovation

- Complete solutions for microsystems
- Full support of industrial clients from idea to production
- High flexibility and fast realization
- Access to innovative solutions
- Overcome the gap between R&D and commercialisation through the infrastructure for manufacturing of first and small batch series
- Control of complex process chains based on understanding of cause-effect-relationships
- Regionally enrooted and globally networked

**We are looking forward to your challenge and develop solutions together with you.**





**Website: [www.hahn-schickard.de](http://www.hahn-schickard.de)**

