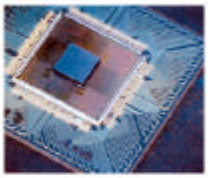

Fraunhofer Institut Zuverlässigkeit und Mikrointegration

Excellence in Microelectronic Packaging

Fraunhofer Gesellschaft

The Fraunhofer with its 58 institutes and 12 500 employees is the leading establishment of applied research in Germany.

- The institutes undertake contract research on behalf of industry, the service sector and the government.
- They provide rapid, economical and immediately applicable solutions to technical and organizational problems.
- 90 % of the Fraunhofer budget of 1 billion euro is generated through contract research.

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Profile Fraunhofer IZM

Our main objective at the Fraunhofer IZM is to support companies in the broad application of microelectronic and microsystem technologies.

- Technologies for system integration
- Assembly and interconnection technologies
- Material and substrate development, characterization and simulation
- Advanced system engineering and electrical testing
- Application of thin silicon for flexible products and 3D integration, wafer level packaging
- Polytronic systems, reel-to-reel manufacturing
- Sensors, micro components, micro mechatronics and microsystems
- Environmental engineering

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The Fraunhofer IZM Financing Model

Financing of contract research

- 50% contract financing (industry)
- 30% public financing (among others federal state, EU)
- 20% basic funds

In 2002, total proceeds amounted to 24.7 million euro, of which 12.6 million euro came frome industrial contracts.

Since 1993 Fraunhofer IZM has always generated around 50 % of its turnover from industrial contracts.

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Partners (selection)

AMD · ALCATEL · BOSCH · DAIMLERCHRYSLER

Infineon technologies

Consumer · Communication · Automotive

CREE

Fraunhofer Institut Zuverlässigkeit und Mikrointegration

Technische Universität Berlin
Forschungsschwerpunkt Technologien der Mikroperipherik

DOW
Living. Improved daily.

BMW

SUSS MicroTec

Equipment Manufacturers · Material Suppliers

EPCOS

PHILIPS · NOKIA · SIEMENS · MOTOROLA

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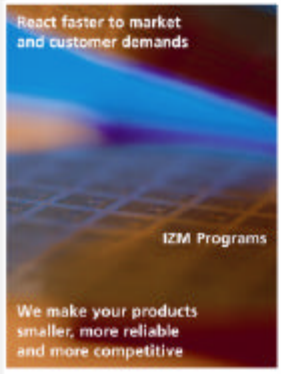
„IZM Programs"



- Photonic Packaging
- RF & Wireless
- 3D System Integration
- Micro Reliability and Lifetime Estimation
- MEMS Packaging
- Wafer Level Packaging
- Thermal Management

Aims:

- Address new requirements in packaging and microsystem integration
- Focus on application-oriented research activities
- Provide fast, innovative and tailormade solutions
- Reflect strategic aims with regard to future technology and application roadmaps

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Current Research Topics
Wearable Computing

Integration of electronic components into pieces of clothing

Examples of Fraunhofer IZM developments:

- Audio / video player integrated into a jacket, which is operated using a textile keyboard.
  Playing of audio and video files via earphones and a head-mounted display
- Textile transponder for identification, access control and logistics of textiles
- Modular wearable computer with bus system made of conductive fiber, based on MIThril (system architecture by MIT Media Lab)

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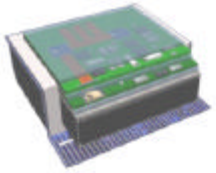
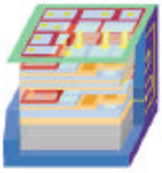
Current Research Topics
Electronic Grain (e - Grain)





A new approach to system integration:

- tiny autonomous functional electronic units (size: a few cubic millimeters)
- able to communicate with each other (wireless)
- freely programmable and to a certain degree modular
- electronic units are capable of meeting their own energy requirements autonomously

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National and International Networking

South-Korea

Center for Electronic Packaging Materials

KAIST

Technische Universität Chemnitz

Taiwan

Industrial Technology Research Institute

Japan

Univ. Tokyo RCAST

Research Center for Advanced Science and Technology

BeCAP

Technische Universität Berlin

USA

Georgia Institute of Technology

BTU

Brandenburgische Technische Universität Cottbus

France

leti

adhesives in electronics

netpack

GLOBAL ENVIRONMENTAL GECI COORDINATION INITIATIVE

Global Environmental Coordination Initiative

EcoDesign

Demonstrationszentrum Produktkreisläufe

Berlin MicroMat 2000 Conference

Systemintegration in der Mikroelektronik

SMT HYBRID PACKAGING

MATCH-X modulare mikrosysteme

iMAPS

BKM

inno mat Entwicklung innovativer Materialien

Reel to Reel

CPMT

IEEE Components, Packaging, and Manufacturing Technology Society

IEEE

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Thank you for your attention!

Fraunhofer-Institut für
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