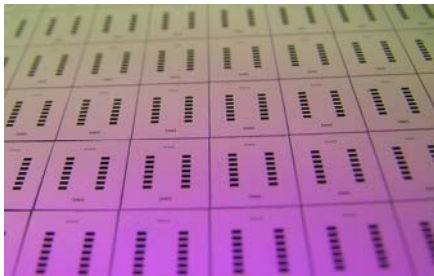


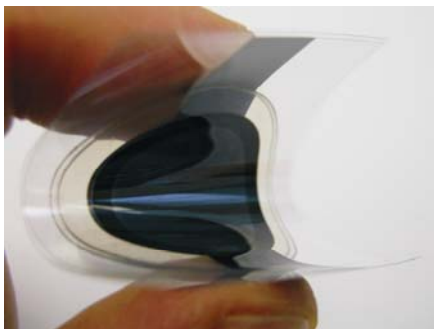


Press Release

Chemnitz,
July 2008



Encapsulated chips of vibration sensors
(Photo: Fraunhofer ENAS)



Printed Functionalities
(Photo: Fraunhofer ENAS)

Smart Systems Integration by using micro and nano technologies

The Fraunhofer Gesellschaft extends their activities in the field of nano technologies in Saxony. The Chemnitz Branch of the Fraunhofer Institute for Reliability and Microintegration became the Fraunhofer Research Institution for Electronic Nano Systems ENAS on July 1st, 2008. Prof. Dr. Thomas Gessner is the director of Fraunhofer ENAS.

The scientists will continue the work in the fields of micro and nano systems, reliability and smart systems integration. The back-end of line for micro and nano electronics as well as 3D-integration are in the focus, too. Fraunhofer ENAS belongs to the Fraunhofer Group Microelectronics.

The micro and nano system technologies as well as electronics are playing a key role in today's product development and industrial progress. They enable the integration of mechanical, electrical, optical, chemical, biological and other functions into a very small space with dimensions ranging from sub micrometers up to some millimeters. Combined with intelligence, power supply and communication ability these systems are multi device integrated and should be developed for use inside the host. Systems integration will determine the economic success of manufacturers and users coming from consumer electronics, telecommunication, mechanical engineering, medical technology, and automotive in a high degree. To keep long term competitiveness a sophisticated technological potential is necessary. The Fraunhofer ENAS positions itself to these challenges and takes part very actively in the further development of Smart Systems Integration and the needful gap bridging from NANO to MICRO and to the MACRO world.

The main research activities of the Fraunhofer ENAS can be divided in the following topics:

Multi Device Integration: development of MEMS/NEMS, prototyping of sensor and actuator devices, integration of such devices together with micro and nanoelectronic components to systems, design of component and systems, development and implementation of test and characterization of MEMS/NEMS. Examples are miniaturized spectrometer, inclination sensors, high precision acceleration sensors and gyroscopes, Fabry Perot Interferometer.

Development of Advanced Technologies: core competence in development and application of wafer bonding processes for MEMS/NEMS packaging (chip and wafer bonding including combinations of new materials and bonding at low temperatures), 3D-patterning technologies for silicon and non silicon materials, CMP (chemical mechanical polishing).

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Back-end of Line (BEOL): material, process and technology development for manufacturing on-chip interconnects and metallization for nanoelectronics/ 3D-integration/ multi device integration, simulation and modelling of processes, equipment and interconnect systems.

Reliability of Micro and Nano Systems: thermo-mechanical reliability of micro and nano components in high tech systems, core competence combination of thermo-mechanical simulation with advanced experimental methods, security.

Printed Functionalities: utilizing ink-jet and mass printing technologies for efficient industrial fabrication processes of printed components for smart systems, technology development and adapted measurement techniques

Advanced System Engineering: electromagnetic reliability and compatibility, development and design of custom specific electronic modules.

In general the strategic alliance between the Fraunhofer Research Institution for Electronic Nano Systems and the Center for Microtechnologies ensures strong synergies in the technology and device development.

Both, the Fraunhofer ENAS and the Center for Microtechnologies ZfM belong to the smart systems campus Chemnitz. It is located nearby the campus of the Chemnitz University of Technology. Within the building of the Institute of Physics new clean room facilities of the ZfM have been finished end of last year. Currently the building of Fraunhofer ENAS and a building for start up companies is under construction. Both will be finished in May 2009. Companies specialized in the field of micro system technologies will build their own building in the business park nearby.

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