Welcome address

The economic success of manufacturers and users from the application branches automation, automotive, aerospace, telecommunication, medical technology, logistics, RFID and life sciences is largely dependent upon system-oriented design, microsystem and component development and miniaturized packaging of electronic products. In this environment a high level of technology is a requirement for remaining competitive in the long-term. A multitude of technologies and materials have to contribute via system integration to produce a complete new product. Nanotechnologies, special surfaces and nano materials are as important as micro systems, MEMS components and reliability aspects.

Intelligent system integration is thus required over all the links of the value-added chain in order to realize product developments in increasingly short development times and to be able to achieve added value in the future too. The impact and the importance of system integration is enormous from a technological as well as from an economical point of view.

Thus, one challenge for the future is to identify the optimal combination from a multitude of technologies, materials and functions continually over the whole product development phase and to build the intelligent system taking account of all technical and environmental requirements as well as those demanded by the place of application, whilst still maintaining reliability.

Prof. Dr. Thomas Geßner
Fraunhofer Institute for Reliability and Microintegration, Berlin, Germany
Conference Chair SMART SYSTEM INTEGRATION 2007

Conference Topics

- Smart Systems: design, technologies and integration
- Microsystems packaging and system integration
- Assembly and interconnect technologies
- Nano materials and structures
- Product / Commercialization
- Special aspects of integration
- Reliability, testing and quality of components and systems
- Advanced MEMS and MOEMS technologies
- Bonding and reliability for 3D mechanical, optical and fluidic systems
- Integrated Microsystems
- Special Session: EpoSS
- Special Session: EU Initiatives

Keynote Speakers

- Dr. Rosalie Zobel, European Commission
- Dr. Klaus Schymaniec, EADS
- Dr. Fred van Roosmalen, NXP Semiconductors
- Dr. Günter Lugert, Siemens
- Dr. Pietro Perlo, FIAT
- Jean-Pierre Tual, Gemalto

Organizer: Fraunhofer Institute for Reliability and Microintegration
Co-Organizer: EpoSS - European Technology Platform on Smart Systems Integration
Part of the activities of: EpoSS - European Technology Platform on Smart Systems Integration
Welcome
8:30 Opening by the Conference Chair
Prof. Dr. Thomas Geßner, Fraunhofer IZM Institute for Reliability and Microintegration, Berlin, D

Keynote-Sessions I
Chairman: Prof. Dr. Thomas Geßner, Fraunhofer IZM, D
8:45 Smart Systems Integration in FP7 – Challenges and Options for Europe
Dr. Klaus Dieter Lang, Fraunhofer IZM, D
9:10 Strategic research objectives in Smart Systems Integration: MEMSland – A Euregional Microsystems Consortium in Nanoelectronics
Dr. Fred van der Hoogen, Director of Global Government and Industrial Relations, NXP Semiconductors, NL

Dr. Günter Lugert, Head of Department Corporate Technology, Power & Sensor Systems, Sensor & Actuator Systems, Siemens, D
Chairman: Dr. Laurent Malier, Laboratoire d’Electronique de Technologie de l’Information, Grenoble, F
10:30 Smart Systems Integration as a strategy for energy savings and simplicity in automotive
Dr. Pietro Perlo, Director of Senior Scientist Technology Division, Centro Ricerche FIAT, I
11:30 Jean-Pierre Tual, Technology and Innovation Director, Industrial Relations, Gemalto, F

COFFEE BREAK AND EXHIBITION

Keynote-Sessions II
Chairman: Dr. Laurent Malier, Laboratoire d’Electronique de Technologie de l’Information, Grenoble, F
10:30 Smart Systems Integration as a strategy for energy savings and simplicity in automotive
Dr. Pietro Perlo, Director of Senior Scientist Technology Division, Centro Ricerche FIAT, I
11:30 Jean-Pierre Tual, Technology and Innovation Director, Industrial Relations, Gemalto, F

LUNCH BREAK AND EXHIBITION

Session I
Smart Systems: design, technologies and integration
Chairman: EPoSS
13:30 Smart active implantable microsystem for cardiac rhythm management: Towards a new generation of integrated therapy
Alain Ripart, Senior Vice President CTO, SORGROUP, CH
13:50 MEMS based laser display system
Dr. Rosalie Robu, 3D-Micromac, D
14:10 A mass spectrometer on a chip
Jan-Peter Hauschild, TU Hamburg-Harburg, D
14:30 Design for miniaturization of wireless sensor nodes based on 3D-packaging technologies
Michael Niedermayer, Fraunhofer IZM, D
14:50 Parametric reduced order modelling for industrial MEMS design processes
Denis Gugel, Robert Bosch, D

Session II
Products/Commercialization
Chairman: Prof. Dr. rer. nat. Wilfried Meikle, RWTH Aachen, D
Tommy O. Reinikainen, Instituutio Nokia de tecnología-IN, BR
13:50 e-manufacturing with micro laser sintering
Tino Petsch, 3D-Micromac, D
14:10 Slotting of inkjet printer chips using the water-jet-guided laser technology
Dr. Tuan Ahn Mai, Synova S.A., CH
14:30 Non-contact handling for sensitive parts
Dr. Christoph Querkamp, TU Chemnitz, D
14:50 New emerging MEMS applications
Dr. Eric Mounier, Yole Developpement, F
15:10 How much MEMS does a system manufacturer need?
Dr. Henning Wicht, WTC - Wicht Technologie, D

Session III
Assembly and interconnect technologies
Chairman: Dr. Markus Riester,
AT & S Austria Technologie & Systemtechnik, A
16:00 Advanced integration and packaging technologies for miniaturized systems
Dr. Klaus-Dieter Lang, Fraunhofer IZM, D
16:20 The OEM view: Challenges & road-map for electronic assembly driven by PWB level integration
Dr. Stefan Kuhn, Motorola, D
16:40 Bonding of SPR sensors on glass chips to thermoplastic microfluidic scaffolds
Dr. Janko Auerswald, CSEM S.A., CH
17:00 Black silicon as a smart structure for the bonding of polymers with silicon
Mike Stubenrauch, TU Ilmenau, D

Session IV
Tutorial I
Bonding and reliability for 3D mechanical, optical and fluidic systems
Chairman: Dr. Markus Riester,
AT & S Austria Technologie & Systemtechnik, A
13:50 – 17:15
Speaker:
Maik Wiemer, Fraunhofer IZM, D
Jörg Bagdahn, Frauenhofer IWM, D
Dr. Erik Beckert, Fraunhofer IOF, D
Marko Eichler, Fraunhofer IZM, D
Dr. Andreas Holländer, Fraunhofer IAP, D
Dr. Dietmar Vogel, Frauenhofer IZM, D
One well established technology for the fabrication of 3D devices is wafer bonding. During the tutorial we will address some important aspects of the different bonding techniques like surface chemistry, plasma treatments for the modification of material surfaces, various bonding methods for different materials and their mechanical, optical and fluidic applications as well as the reliability of the bonding.

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Conference Dinner / Boat Trip
You will enjoy a delicious dinner passing by all the impressive monuments and bridges of Paris illuminated at night. SMART SYSTEMS INTEGRATIONS’ Conference Dinner will take you on an unforgettable Dinner Cruise on the Seine. Registration required.

www.smartsystemsintegration.com/conference
Wednesday, 28 March 2007

Session IV
Microsystems packaging and system integration I
Chairmen: Dr. Klaus-Dieter Lang, Fraunhofer IZM, D
Andreas Nebeling, Elmos Semiconductor, D

8:30 Advanced MEMS Packaging for Automotive and Consumer Applications
Dr. Horst Mözfall, Robert Bosch, D

8:50 Electrical feedthrough wafers for waferlevel packaging of MEMS-conductive vias through silicon and glass wafers
Thomas Höffmann, Plan Optik, D

9:10 Development in wafer bonding for micro-systems packaging
Markus Gabriel, SUSS Lithography, D

9:30 Direct writing for Smart Systems packaging and integration
Martin Hedges, Neotech Services MTP, D

9:50 Technologies for functional hetero-system integration on foil
Dr. Karlheinz Bock, Fraunhofer IZM, D

Session V
Nano materials and structures
Chairmen: Irmgard Langbein, Forschungszentrum Karlsruhe, D
Prof. Mihai Adrian Ionescu, EPFL, CH

8:30 Sub-micron backend-of-line structures and advanced materials - Challenges for analytics
Dr. Ehrenfried Zschech, AMD Saxony, D

8:50 GMR based position sensors – Nanoscreen printing into the real world
Dr. Jan Marien, Sensitec Na, D

9:10 Controlled cantilever-tips adapted form the scanning probe microscopes as active working elements in smart systems
Prof. Dr. rer. nat. Michael Hietschold, TU Chemnitz, D

9:30 AIN as a piezoelectric material for integrated micro and nano sensors on silicon
Tobias Polier, TU Ilmenau, D

9:50 Mechanical and piezoresistive properties of diamond-like carbon for MEMS
Dr. Erwin Peiner, TU Braunschweig, D

10:10 Zinc oxide photoductive antenna for terahertz near-field microscopy
Kentaro Iwami, Tohoku University, J

COFFEE BREAK AND EXHIBITION

Session VI
Special aspects of integration
Chairmen: Dr. André Perret, CSEM, CH

10:40 Integration technologies for smart MST-based sensors in automotive applications
Torsten Eggers, Hella Fahrzeugkomponenten, D

11:00 Smart hip joint implants
Mario Baum, Fraunhofer IZM, D

11:20 Development of wafer level packaging for MEMS micro mirrors
Jörg Frömelt, Fraunhofer IZM, D

11:50 A smart datalogger with wireless communication interface for life science applications
Dr. Walter Smetana, TU Vienna, A

12:10 Integration aspects of a polymer based SPR biosensor
Dr. Karla Hiller, TU Chemnitz, D

LUNCH BREAK AND EXHIBITION

Session VII
Reliability, testing and quality of components and systems
Chairmen: Dr. Peter Pflugrath, ADETS Microsystems, F
Thomas Otto, Fraunhofer IZM, D

14:05 Reliability analysis for Smart Systems on the way from micro to nano
Dr. Bernd Michal, Fraunhofer IZM, D

14:25 NanoCT: Visualizing of internal 3D-Structures with submicrometer resolution
Thomas Hemberger, phoenix|x-ray, D

14:45 Localized high-resolution stress measurements for microsystems
Dr. Dietmar Vogel, Fraunhofer IZM, D

Session VIII
Advanced MEMS and MOEMS technologies
Chairmen: Irina V. Popova, Gyrooptics, Russia
Prof. Dr. Roland Zengerle, Albert-Ludwig University, D

13:45 Electrical feedthrough for wafer level packaging and arrayed MEMS
Prof. Dr. Masayoshi Esashi, Tohoku University, J

14:05 Wireless Microsystems powered by homeotherms
Vladimir Leonov, IMEC, B

14:25 Electrostatic energy scavengers for wireless autonomous sensor nodes
Dr. Geert Altena, Holst Centre IMTEK, Germany-Switzerland

14:45 Arrays of sensors with variable stiffness
Alexey Shaparin, TU Chemnitz, D

COFFEE BREAK AND EXHIBITION

15:30 MEMS parameter identification on wafer evel using laser doppler vibrometry
Stephan Michael, Melexis, D

15:50 Improved reliability tests for electric components by innovative micro condensation sensors
Arno Stöhrke, CIS Institut für Mikro sensorik, D

16:10 Void growth and distribution in the sub 100 microns array SnAg solder bumps and the effects on solder reliability
L. Luo, Labshop Inc., CON

15:30 Development of two-Dimension MEMS mirror array device with new structure
Koichi Ohtaka, Ricoh Company, J

15:50 New screen-printed MEMS : study of a metallic thermal microactuator
Claude Luat, Université de Bordeaux, F

16:10 Through-wafer copper vias in silicon wafers
Hannu Lusto, VTT Research Center of Finland, FIN

The special sessions are free of charge to all conference participants, exhibitors and visitors.

Online registration: www.smartsystemsintegration.com
Poster Session

The posters will be presented within the Poster Session scheduled for Tuesday, 27 March 2007, 17:30 - 19:00. During the Poster Session the poster presenters will be available at their posters for questions and discussions.

For poster titles see detailed program at www.smartsystemsintegration.com/content
**Registration information**

### Conference Fees

<table>
<thead>
<tr>
<th></th>
<th>Registration until 16 Feb 2007</th>
<th>Registration as of 17 Feb 2007</th>
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<tbody>
<tr>
<td>Full conference</td>
<td>880,00 EUR</td>
<td>940,00 EUR</td>
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<tr>
<td>Full conference university staff*</td>
<td>590,00 EUR</td>
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<td>Full conference students* (with service package)</td>
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<tr>
<td>One day ticket</td>
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<tr>
<td>Boat Trip &amp; Conference Dinner</td>
<td>85,00 EUR</td>
<td>85,00 EUR</td>
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Registration on-site: add. 30,00 EUR per person. All fees plus 19.6 % VAT.

*University Staff and Students must enclose a copy of their university ID-card to receive the special rates

### Conference Package

The conference fee includes participation in the conference parts booked, proceeding book (incl. CD-ROM), lunch on the days registered, coffee breaks and free admission to the exhibition.

### Venue

Les Espaces CAP 15 3, Quai de Grenelle 75015 Paris www.cap15.com

### Conference Office

The conference office will open 1 hour before the beginning of the conference.

### Headquarter Hotel

NOVOTEL Paris Tour Eiffel ****
61, Quai de Grenelle 75015 Paris www.novotel.com

**Book your hotel early in advance!** For more hotels, booking forms and detailed information see www.smartsystemsintegration.com/Travel & City/Hotels.

### Registration form

Please use a separate form for each participant! I herewith register as follows (please tick)

**Conference**
- Full Conference
- Full Conference University Staff
- Full Conference Students with service package
- Full Conference Students without service package
- Day Ticket Tue 27 March 2007
- Day Ticket Wed 28 March 2007
- Conference Dinner and Boat Trip

I plan to participate in (no additional charges)
- Tutorial I
- Tutorial II
- Special Session I
- Special Session II

**Registration terms**

Registrations are accepted online (www.smartsystemsintegration.com) or with the official registration form via mail or fax. Upon receipt of the registration participants will receive an invoice, serving as booking confirmation. Registrations after 16 March 2007 may not be confirmed on time but are obligatory as well. On-site registrations are possible. The additional on-site registration fee is 30,00 EUR per person. Cancellations will be accepted in written form only. If Mesago receives your cancellation until 23 February 2007 a processing fee of 80,00 EUR becomes due. After this date and if the participant does not attend, the full fee becomes due. In case a participant should not be able to attend, a substitute can be nominated. Beyond reimbursement of already paid participation fees additional claims will not be fulfilled. Program or speakers are subject to change and do not entitle to any claims. Participation without payment will not be allowed. Therefore, make sure that the organizer receives payments prior to the event. Please make use of your credit card for advance payment of participation fees. The following credit cards are accepted: Eurocard, MasterCard and Visa.

Registration via mail to:
Mesago Messe Frankfurt GmbH
Rotebuehstr. 82-85
70178 Stuttgart
Germany

**Contact:**
Christina Katz
Phone: +49 711 61946-86
Fax: +49 711 61946-90
katz@mesago.de

Payment via bank transfer upon receipt of invoice (cheques and bank transfers sent/made from outside Germany will be charged with EUR 10,00)

Your details are used only for events within the Mesago Group and are not transmitted to a third party. If you do not wish to receive further information, please inform us immediately.

### Access to SMART SYSTEMS INTEGRATION

**By public transportation**

From the airports (Charles de Gaulle and Orly): RER B, change at stop «St Michel/Notre Dame» to RER C, get off at stop «Champs de Mars Tour Eiffel». When taking RER A change at stop «Charles de Gaulle Etoile» to Métro Line 6 until stop «Bir Hakeim».

**By car**

Parking garage in the basement of CAP 15 (55 parking spaces).

Other parking possibilities nearby. Direct access for parking at CAP 15: 2, Bd. De Grenelle, 75015 Paris, France.
SMART SYSTEMS INTEGRATION

European Conference & Exhibition
is the communication platform on Smart Systems Integration
for R&D and academia

SMART SYSTEMS INTEGRATION 2007 covers
the application industries as well as the underlying technologies.

- Microsystems technology
- Nanotechnology
- Sensors and Actuators
- Optics and Fluidics
- Biotechnology and Chemistry
- Communication technologies
- and others
- Automation
- Automotives
- Aerospace
- Telecommunications
- Medical Technologies
- Logistics/RFID
- Life Sciences
- and others

Exhibition

The conference is accompanied by an exhibition. Visitors can gain free entry to SMART SYSTEMS INTEGRATION 2007 exhibition by registering at www.smartsystemsintegration.com

Exhibitors

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(as by 22 December 2006)

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