

Dear Reader,

The Network of Excellence (NoE) Patent-DfMM aims to establish a collaborative team to provide European industry with support in the field of "Design for Micro & Nano Manufacture (DfMM)" to ensure that problems

affecting the manufacturing and reliability of products based on micro & nano technologies (MNT) can be addressed before prototyping and production. For more information: <http://www.patent-dfmm.org/>



Welcome to the new edition of our bi-monthly E-Newsletter, which will keep you updated on project related activities, but also on other DfMM activities that run outside of the project.

We apologise in case you have been added to our database in error: if so, please reply by e-mail with "UNSUBSCRIBE" in the subject field. We welcome your comments and contributions.

Happy reading!

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In this edition:

News from the NoE Patent-DfMM

Workshop on Design for Reliability and Manufacturability in MNT, 25 April 2006, Stresa, Lago Maggiore, Italy
Technology Roadmapping for Packaging of MOEMS and RF MEMS
New DfMM R&D Projects funded

Event Announcements

2nd International Workshop on Wafer Bonding for MEMS Technologies, 9-11 Apr 06, Halle/Saale, Germany
EuroSimE 2006 Conference, 23 – 25 Apr 06, Como, Italy
DTIP 2006 - Symposium on Design, Test, Integration and Packaging of MEMS/ MOEMS, 26 - 28 Apr 06, Stresa, Italy
iMEMS 2006 International MEMS Conference, 9-12 May 06, Biopolis, Singapore
MINOS-EURONET Strategy Forum on the impact of converging technologies, 25 - 26 May 06, Bucharest, Romania

List of Events

Abstract Deadlines for Conferences

Call for Papers: IMSTW'06 International Mixed-Signals Testing Workshop, 21-23 Jun 06, Edinburgh, UK
Call for Papers: COMS2006, Florida, 27-31 Aug 2006
Call for Papers: EUROSENSORS XX, 17 - 20 Sep 06, Göteborg, Sweden

Other DfMM-related News

Job opportunities at C2V, Enschede, The Netherlands
Job opportunity "Research Post in Integrated Micro & Nano Technology (MNT) Platforms" at Lancaster University, UK
MSc in Micro and Nanotechnology at Lancaster University, UK

News from the NoE Patent-DfMM

Workshop on Design for Reliability and Manufacturability in MNT, 25 April 2006, Stresa, Lago Maggiore, Italy

Co-organised by PATENT-DfMM and the NEXUS Methodology Working Groups "Reliability & Test" and "Design Modelling Simulation". Main emphasis will be on reliability and test problems, where design methodologies can lead to significant improvements. Industry's design and reliability needs will be discussed and latest research results and new approaches will be proposed by the research community.
Morning session: Industry needs and current research in Reliability and Test for MNT

- How do industrial microsystems manufacturers deal with reliability and test?
- What is specific for reliability and test in high volume production?
- What are the main challenges for research?
- Presentation of current research initiatives and projects in reliability and test

Afternoon session: Building Reliability and Test into the MNT design flow

- How are reliability and test issues currently built into an industrial design flow?
- What do Design, Modelling and Simulation Tools offer to support reliability and test?
- How can methodologies, tools and databases be combined?
- Presentation of current research initiatives and projects to build reliability and test issues into tools
- How can researchers help industry (especially SMEs) to optimise reliability and test?

PATENT-DfMM is also organising a panel discussion at DTIP (27 Apr) on "Design for Reliability and Test of Microsystems" with key industry panelists.

Contact: Patric Salomon, 4M2C, Berlin, Germany, E-mail: Patric.salomon@4m2c.com

Technology Roadmapping for Packaging of MOEMS and RF MEMS

The first roadmapping PATENT-DfMM event, hosted by HWU (16 Feb 06, Edinburgh), was a great success. With more than half of the 30 participants coming from industry, technological trends, bottlenecks and investment opportunities in packaging of MOEMS and RF MEMS were collected and discussed in small working groups. The workshop was viewed as innovative and very useful by all participants and a lot of progress was made during this meeting. The transcription process into a roadmap format through the project team has begun. The second meeting will be held at the Fraunhofer IZM Berlin in Germany on 8 Jun 06 – further active contributors are welcome to attend. For more information please visit our website.

Contact: Fabien Holler, Heriot-Watt University, Edinburgh, UK; E-mail: f.holler@hw.ac.uk

New DfMM R&D Projects funded

The following internal projects have been recently approved for funding as part of the PATENT-DfMM research, education and integration activities:

MEMS test structures for materials, process and reliability characterization (WP 3)

This project will build an offer to industry on MEMS test structures(TS) usable for material and process characterization,

but also for evaluating and preventing specific failure mechanisms. Research amongst PATENT partners will be further

integrated, Round Robin studies (at partners) are planned on MEMS material, process parameters and failure mechanisms.

Contact: Marius Bazu, IMT Bucharest, Romania, E-mail: Mbazu@imt.ro

Biocompatible packaging for implanted sensor system (WP 4)

For in vivo use, an extremely miniaturised, fully biocompatible package is needed. The development of a telemetric devices

with biocompatible package is a highly multidisciplinary topic involving areas such as electronic design, material properties

study and deposition technology, biomedical engineering and in-vivo testing.

Contact: Jeroen de Coster, KULeuven, Belgium, E-mail: jeroen.decoester@esat.kuleuven.ac.be

Coupling of Modos into SMASH (WP 7)

A project aimed to link "MODOS"- as an optimization tool compatible with the widely used "SMASH" simulator to automate the

design process of MEMS and other microsystems.

Contact: Dagmar Peters, ITEM, Germany E-mail: peters@item.uni-bremen.de

Course in MEMS damping (WP 5&6)

To develop a course that addresses Experimental characterisation of damping, Simulation of fluid damping by means of

continuum approaches, Simulation of fluid damping with the tools of kinetic theory: DSMC-BGK, and

Simulation of thermoelastic

damping.

Contact: Attilio Frangi, Politecnico di Milano, Italy, E-mail: attilio.frangi@polimi.it

More information will be published on our website www.patent-dfmm.org.

Event Announcements

2nd International Workshop on Wafer Bonding for MEMS Technologies, 9-11 Apr 06, Halle/ Saale, Germany

This workshop is focused on industrial components, integration of wafer bonding into MEMS fabrication, process developments of wafer bonding techniques and will address as well quality and reliability issues. The goals of the workshop are stimulation and improvement of know-how in the waferbonding field, as well as the establishment of cooperation between attendees. An exhibition of waferbonding equipment manufactures as well as of companies providing waferbonding service will also be available. More information: www.microtesting.de

EuroSimE 2006 Conference, 23 – 25 Apr 06, Como, Italy

The EuroSimE conference is especially dedicated to thermal, mechanical and multiphysics simulation and experiments in microelectronics and Microsystems. It aims to promote further development and application of simulation methodologies and tools for the electronics industry, improve communication and exchange information between methodology & tool-developers and industry users and strengthen co-operation between industry, universities, and research institutes.

MEMS/MST specific topics have been scheduled for the first day in order not to overlap with the DfMM workshop (24 Apr) and DTIP (25-27 Apr). Participants who are attending EuroSimE on 23 Apr and the DfMM workshop on 24 Apr may be eligible for a reduced registration fee at EuroSimE - please request more information from Patric Salomon (patric.salomon@4m2c.com).

More information: www.eurosim.org

DTIP 2006 - Symposium on Design, Test, Integration and Packaging of MEMS/ MOEMS, 26 - 28 Apr 06, Stresa, Lago Maggiore, Italy

This Symposium will be a follow-up to the very successful issues held in 1999 and 2000 in Paris, in 2001, 2002 and 2003 in Mandelieu-La Napoule and 2004 and 2005 in Montreux, Switzerland. This series of Symposia is a unique single-meeting event expressly planned to bring together participants interested in manufacturing microstructures and participants interested in design tools to facilitate the conception of these microstructures. Again, a special emphasis will be put on the very crucial needs of MEMS/MOEMS in terms of packaging solutions. The goal of the Symposium is to provide a forum for in-depth investigations and interdisciplinary discussions involving design, modeling, testing, micromachining, microfabrication, integration and packaging of structures, devices, and systems. About 90 submissions were received from 20 countries.

More information: <http://tima.imag.fr/conferences/Dtip/DTIP2006/>

iMEMS 2006 International MEMS Conference, 9-12 May 06, Biopolis, Singapore

It aims to provide an opportunity for academicians, professionals & industrialists in various related fields from all over the world to come together and learn from each other. An additional goal of the conference is to provide a place for academicians, professionals, industrialists with cross-disciplinary interests related to MEMS to meet and interact with members inside and outside their own particular disciplines.

For topic areas please visit the conference website <http://nanomicro.org/imems06/>.

MINOS-EURONET Strategy Forum on the impact of converging technologies, 25 - 26 May 06, Bucharest, Romania

The Micro-NanOSystems EUROpean NETwork (MINOS-EURONET) is devoted to stimulating, encouraging and facilitating the participation of New Member States (NMS) and the Associated Candidate Countries (ACC) in the activities of IST. The proposal has a pan-European focus on one strategic objective in IST, namely micro- and nanosystems. This first Strategy Forum will be hosted by the Chamber of Commerce and Industry of Romania in Bucharest.

More information: www.minos-euro.net

List of Events

7 - 8 March 2006

4th International One-on-One Cooperation Forum "Microsystems"

Munich, Germany

www.baikem.de/microsystems2006

22 - 23 March 2006

4M Ceramic Cluster Workshop "Micro Machining of Ceramics"

Germany

www.4m-net.org/node/1227

3 April 2006

International MEMS/MST Industry Forum

Munich, Germany

www.semi.org/semiconeuropa

3 - 7 April 2006

Photonics Europe 2006

Strasbourg, France

<http://spie.org/conferences/calls/06/epe/>

4 - 6 April 2006

SEMICON Europe 2006

Munich, Germany

www.messe-muenchen.de

9 - 11 April 2006

Workshop on »Wafer Bonding for MEMS Technologies«

Halle, Germany

www.microtesting.de

23 - 26 April 2006

EuroSimE 2006

Como, Italy

www.eurosime.org

23 - 26 April 2006

MicroTechnology/ Hannover Fair 2006

Hannover, Germany

www.hannovermesse.de/homepage_e

25 April 2006

PATENT Workshop "Design for Reliability and Manufacturability" at DTIP2006

Stresa, Italy

www.patent-dfmm.org

25 - 27 April 2006

AMAA 2006 - Advanced Microsystems for Automotive Applications

Berlin, Germany

www.amaa.de

26 - 28 April 2006

DTIP 2006 - SYMPOSIUM on Design, Test, Integration and Packaging of MEMS/MOEMS

Stresa, Italy

<http://tima.imag.fr/conferences/dtip/>

9 - 12 May 2006

iMEMS 2006

Singapore

<http://temasek.nus.edu.sg/imems06>

25 - 26 May 2006

First MINOS-EURONET Strategy Forum on the impact of converging technologies

Bucharest, Romania

www.minos-euro.net

Abstract deadlines for conferences

Call for Papers: IMSTW'06 International Mixed-Signals Testing Workshop, 21-23 Jun 06, Edinburgh, UK

Extended Submission Deadline: 5 March 2006

The IEEE International Mixed-Signals Testing Workshop (IMSTW) is a forum for discussing all aspects of testing, design-for-test and reliable design of integrated mixed-signals/mixed-technology functions and systems. This includes testing and design verification of monolithic mixed-signal/mixed-technology systems (SoC), heterogeneous systems including system-in-package and printed circuit board implementations of mixed signal functions. The technology spectrum includes analogue, mixed-signals, high-speed IO, RF, MEMS (inc. optics, bio-chemical and microfluidics), and nanotechnology. Test topics such as design-for-test techniques, BIST, fault diagnosis, test generation, on-line and off-line testing, fault modelling, fault simulation and design of fault tolerant systems are all considered. Mixedsignals infrastructure, embedded core testing and application specific topics are also welcome. The IMSTW Program Committee invites authors to submit papers in the above areas. More information:

<http://www.comp.lancs.ac.uk/microsystems/conferences/imstw06>

Contact: Andrew Richardson, Lancaster University, UK, E-mail: a.richardson@lancaster.ac.uk

Call for Papers: COMS2006, Florida, 27-31 Aug 2006

Abstract Submission Deadline: 21 Apr 2006

The 11th International Conference on the Commercialization of Micro and Nano Systems (COMS 2006) will be held in St Petersburg, Florida, USA, 27-31 Aug 2006. COMS fosters the commercialization of micro and

nanotechnologies and addresses commercialization issues unique to these emerging and disruptive technologies. COMS 2006 will bring together key personnel from all over the world and from every sector of the supply chain, including government representatives, top researchers in the field, educators, relevant publication sources, equipment suppliers, end users, and financial experts. The small tech community gathers at COMS conferences to learn from others, share their own knowledge, discuss and argue points of view - all of which contribute to the advancement of this emerging field. COMS 2006 addresses the issues related to building successful MNT firms, regions and educational programs. An exhibition of equipment suppliers, service providers, product suppliers and consultants will be held in conjunction with COMS 2006. More information: www.mancef-coms2006.org

Call for Papers: EUROSENSORS XX, 17 - 20 Sep 06, Göteborg, Sweden
Submission Deadline: 28 April 2006

Since its establishment in 1987, the Eurosensors series of conferences is the only European forum to cover the entire field of Microsystem technology. The Eurosensors conference provides an excellent opportunity to bring together European scientists and engineers from academy, research institutes and companies to present and discuss the latest results in the general field of solid-state sensors, actuators, microsystems and nanosystems. The conference goals are to stimulate interaction and knowledge exchange between the delegates in a friendly atmosphere.

Subjects for papers and further details: www.EUROSENSORS2006.com

IMSTW'06

21 - 23 June 2006

Edinburgh, UK

Abstract Deadline: 5 March 2006

<http://www.comp.lancs.ac.uk/microsystems/conferences/imstw06>

Eurosensors XX Conference

17 - 20 September 2006

Göteborg, Sweden

Abstract Deadline: 28 April 2006

www.eurosensors2006.com

IMAPS Nordic 2006 Conference

17 - 20 September 2006

Gothenburg, Sweden

Abstract Deadline: 29 April 2006

www.imapsnordic.org

SEMST-2 Scientific and Technical Conference

"Sensors Electronics and Microsystems Technology"

26 - 30 June 2006

Odessa, Ukraine

Abstract Deadline: 30 April 2006

<http://www.onu.edu.ua/en/conference/semst2.html>

**EMRS - European Material Research Society Conference -
2006 Fall Meeting**

4 - 8 September 2006

Warsaw, Poland

Abstract Deadline: 5 May 2006

www.e-mrs.org/meetings/fall2006

CAS 2006 International Semiconductor Conference

27 - 29 September 2006

Sinaia, Romania

Abstract Deadline: 28 May 2006

www.imt.ro/cas

MNE 2006 International Conference on Micro- and Nano Engineering

17 - 20 September 2006

Barcelona, Spain

Abstract Deadline: 9 June 2006

www.mne06.org

Other DfMM-related News

Job opportunities at C2V, Enschede, The Netherlands

MEMS product engineers

The product engineer takes part in project teams that carry out design and product development of high-tech next generation MEMS based products. The candidate supports different aspects of custom product development, such as mechanical, technological, assembly and testing. The product engineer communicates on a technical level with the customers and participates in microtechnology, assembly, and test activities. The candidate has a M.Sc. in technical disciplines such as mechanics, electronics or physics and has relevant experience in working with MEMS or IC components.

Precision engineers

The precision engineer will work in the prototyping and product development of high-tech systems and manage contacts with subcontractors for production. The engineer is part of a product development team and will take care of the design, realization and testing of customized MEMS components, using CAD software and precision machining tools. Assembly process development will be part of the assignment. Higher technical degree (MBO/HBO) level in the (micro or precision-) mechanic area. Experience in the area of MEMS or IC packaging and assembly is preferred.

Contact: Trees van Kalmthout, C2V, The Netherlands, E-mail: jobs2006@c2v.nl, www.c2v.nl

Job opportunity "Research Post in Integrated Micro & Nano Technology (MNT) Platforms" at Lancaster University, UK

Lancaster University is seeking applications from researchers and industrial engineers to join a team contributing to the European Integrated Project "Integrated MNT Platforms and Services" (INTEGRAMplus). The technology focus of the project is in the integration of Silicon-based MEMS components, which provide smart functionality, with polymer backplanes and platforms to provide additional functions such as fluidic delivery, interfacing to the macro-world and encapsulation. These technologies will be made available to the MNT community together with design support and training.

The candidate should ideally have a PhD in a MNT related discipline and/or industrial experience in the areas of MNT integration & packaging. A key requirement of the post will be a willingness to develop training material around the target processes and design methodologies, manage the training portfolio and participate in delivery. This position will provide the successful candidate with the opportunity to take a leading role in the launch of new mixed technology process and associated packaging and integration technologies to deliver multi-functional MNT enabled systems to the academic and industrial community.

Contact: Andrew Richardson, Lancaster University, UK, E-mail: A.Richardson@Lancaster.ac.uk

MSc in Micro and Nanotechnology at Lancaster University, UK

The Micro and Nanotechnology Masters course is a unique and timely opportunity for an engineering or physics graduate to enter an interdisciplinary research or commercial R&D career in MNT. A good balance between technical, management and social science content makes this course directly applicable to entrepreneurs in existing, as well as new businesses in the MNT area. This course is organised in a modular structure that allows part time intensive learning. List of modules and further information:

<http://www.engineering.lancs.ac.uk/postgraduate/nano>

Contact: Evelyn Shaw, Lancaster University, UK, Email: evelyn.shaw@lancs.ac.uk

Next issue: **4 April 2006** (deadline for contributions: **1 April**)

Please feel free to send us any DfMM-related news that might be of interest for our readership.

This e-mail newsletter contains public information, only. Please feel free to distribute it to anyone who might be interested in the topics.

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