

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.

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We welcome your comments and contributions.  
Happy reading & best wishes for a successful year 2007!

Patric Salomon  
*NoE Patent-DfMM News Editor*

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## News from the NoE Patent-DfMM

### **PATENT-DfMM and NEXUS MWG Design Modelling Simulation Workshop, 25 Jan 2007, Berlin, Germany**

The objective of this workshop is to identify needs of the Microsystems/MEMS industry (fabless design houses, manufacturers, etc.) in terms of design methodology, services and software tools. The "Design for Micro & Nano Manufacture Network of Excellence (PATENT-DfMM)" has defined an internal project to assess these needs and to initiate the research to address these needs. As an outcome, PATENT-DfMM aims at a first draft road map identifying key challenges as well as probable developments associated with future design methodologies and tools in the areas of DfT (Test), DfR (Reliability) and DfP (Packaging) strategies for MNT, summarised under DfMM.

MEMS designers from industry and research labs, as well as MEMS software tool providers are welcome to participate in this workshop. Participation is free of charge. A copy of the resulting "roadmap documentation" will be distributed to all active participants and to those who contribute to the work remotely. The workshop is jointly organised by the NEXUS MWG Design Modelling Simulation (DMS) and the PATENT-DfMM NoE. The workshop will be structured into short presentations, work groups and plenary discussion sessions. We hope this format will provide the best opportunities for participants to hear about latest developments, network, discuss needs and ideas in small groups and generate outcomes that will focus future research in DfMM on the real needs of the industry.

Draft Schedule:

- Introduction and PATENT results in the fields of Design for Test, Design for Reliability, Package Engineering and on Modelling and Simulation methods in general
- Industry keynote presentations addressing: "DfMM Methodologies used in industry and needs for further research"
- Short presentations on "Research activities in DfMM for MNT"
- Software tool suppliers' Panel: "The Design Modelling Simulation Tool(s) of the Future"
- Workgroup sessions towards a roadmap of Industry Needs in DfMM
- Presentations/Discussion addressing: "Design Modelling Simulation Services to Industry – Needs and Business models"

The following Workgroup sessions are planned:

- Needs for modelling and simulation of multi physical systems
- How to integrate process scattering into the design flow?
- Reduced order modelling of nonlinear systems
- Modelling of MNT packages/packaging
- How to integrate testability into a design flow?
- Modelling and simulation challenges on the way from micro- to nanosystems

The following keynote presentations have already been confirmed / inquired:

- Design and Virtual Manufacture in INTEGRAMplus, Gerold Schröpfer (Coventor) with co-authors from QinetiQ, Lancaster University and ITE
- Towards an Integrated Design Approach for Si+NonSi MEMS Methodology, Markus Dickerhof, Irmgard Langbein (FZ Karlsruhe), Rainer Brück, Kai Hahn (Siegen University)
- Europractice Service Clusters - Opportunities for new Projects in FP7
- Concept for the commercialisation of Design Services in the framework of the TechNet Alliance, Wolfgang Brose, CADFEM

If you like to give an additional short presentation about "experience with DfMM" or "research in DfMM", please let us know asap. A registration form will be available from the PATENT website within the next few days.

Contact: Patric Salomon, 4M2C, Germany, E-mail: [patric.salomon@4m2c.com](mailto:patric.salomon@4m2c.com), [www.patent-dfmm.org](http://www.patent-dfmm.org)

### **PATENT-DfMM/ NEXUS/ MEMUNITY workshop, 27-29 Nov 2006, Milan, Italy - Presentations now available**

Most presentations from the workshop are now available from the PATENT-DfMM website free of charge.

NEXUS MWG Reliability & Test in collaboration with PATENT-DfMM, MEMUNITY and CANEUS

DfMM Tutorial Session and MEMUNITY workshop

NEXUS Annual General Meeting and EC FP7 Workshop

[www.patent-dfmm.org](http://www.patent-dfmm.org)

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## News from the DfMM community

### **NPL Report on MEMS sensor metrology - now available from the Patent-DfMM website**

The MEMS sensor market is growing rapidly. However, the metrology that supports the fabrication of MEMS sensors is struggling to keep pace with the expanding limits of MEMS technology. The purpose of this report is to gauge the metrological requirements of the MEMS industry, review current MEMS manufacturing and metrology techniques, and highlight how metrology affects some of the key types of MEMS sensor. The metrology techniques reviewed include profilometry, micro co-ordinate measuring machines, electron microscopy, optical microscopy, white light interferometry and laser Doppler velocimetry.

The complete report is available at <http://www.patent-dfmm.org/site/press.php> free of charge.

### **QinetiQ leads MEAD consortium to explore MEMS**

QinetiQ, acting in partnership with 21 other organisations from industry, academia and the UK defence supply chain, has formed the MEMS Applications for Defence (MEAD) consortium. Its remit is to take a new approach to developing MEMS technology for defence purposes in an MoD backed project worth £3.2m over three years. The MEAD consortium will bring together world-class organisations, including SMEs spanning systems integration and MEMS device supply with key groups from the world of academia and research. Initially, the MEAD consortium will road map the technology, explore exploitation routes and investigate novel MEMS approaches for use in two defence application areas.

Please find the complete release at

[http://www.qinetiq.com/content/home/newsroom/news\\_releases\\_homepage/2006/4th\\_quarter/mead\\_consortium.html](http://www.qinetiq.com/content/home/newsroom/news_releases_homepage/2006/4th_quarter/mead_consortium.html)

### **GeniSys announces Layout Lab Simulation Software enabling Design for Manufacture for MEMS (DfMM)**

Developers of MEMS and flat panel displays now have a powerful new development and productivity tool from GeniSys GmbH, a provider of software solutions for efficient processing optimization of microstructure fabrication. GeniSys introduced Layout LAB, a flexible, easy-to-use simulation platform for mask aligner lithography that lets users virtually model, redesign and optimize device layouts and processes. As with advanced IC manufacturing, where lithography simulation has enabled technologies such as Optical Process Correction (OPC) and Design for Manufacture (DfM), the "virtual lab" approach to MEMS not only saves time but also helps realize lower costs, higher manufacturing yield and faster time-to-market.

Contact: Nezhir Ünal, GeniSys GmbH, Germany, E-mail: [unal@genisys-gmbh.de](mailto:unal@genisys-gmbh.de), [www.genisys-gmbh.de](http://www.genisys-gmbh.de)

### **CytoCentrics subsidiary open for prototyping and small volume production of Micro System Technology products**

CytoCentrics BV officially announced that it is open for collaboration with external customers in prototyping, development and small scale production of thin film products. It aims to attract companies that want their Micro System Technology (MST) product ideas to be realized by subcontracting or co-development. CytoCentrics BV uses the facilities of MiPlaza (Mi-crosystems Plaza) in the centre of the High Tech Campus Eindhoven. MiPlaza offers a world-class infrastructure and expertise enabling customers and partners to carry out high-tech research and development programs in the most cost-effective way.

More at: <http://www.cytocentrics.nl/home/news301106.html>

### **New book available at SPRINGER: "Fast Simulation of Electro-Thermal MEMS/ Fast Simulation of Electro-Thermal MEMS"**

Fast Simulation of Electro-Thermal MEMS provides the reader with a complete methodology and software environment for creating efficient dynamic compact models for electro-thermal MEMS devices. It supplies the basic knowledge and understanding for using model order reduction at the engineering level. Emphasis is placed on the application of the Arnoldi method for effective order reduction of thermal systems. This tutorial is written for MEMS engineers and is enriched with many case studies which equip readers with the know-how to facilitate the simulation of a specific problem.

More information: <http://www.springer.com/east/home/generic/search/results?SGWID=5-40109-22-173667412-0>

### **NEXUS Market Report 2005-2009 now also available on CD ROM; Price reduction for NEXUS Roadmap Report**

Over the next five years, the market of MEMS/MST is predicted to grow at a rate of 16% per year from \$12 billion in 2004 to \$25 billion in 2009 across a spectrum of 26 MEMS/MST products. The latest NEXUS Market Report had been published in January 2006 in print format, and is now available on CD ROM as well. Print or CD ROM version: €1100, bundle of both: €1300. The NEXUS Roadmap report (published end 2003) is now available at €200, or if bought as an add-on to the market report for €100.

More information: Patric Salomon, E-Mail: [patric.salomon@4m2c.com](mailto:patric.salomon@4m2c.com), [www.enablingmnt.com](http://www.enablingmnt.com)

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## Event Announcements

### **Integration & Commercialization of Micro & Nanosystems, 10-13 Jan 07, Sanya, Hainan, China**

PATENT-DfMM is a media sponsor of this networking event that offers the exchange of ideas with nearly 500 global experts who have submitted state-of-the-art micro and nano advances to the MicroNanoChina conference. Best early-bird rates available until November 24, 2006. Co-organized by the Nanotechnology Institute of American Society of Mechanical Engineers (ASME), the Micro/Nano Manufacturing Technology Institution of the Chinese Mechanical Engineering Society (CMES), & the Micro and Nanotechnology Commercialization and Education Foundation (MANCEF), the conference will focus on the state-of-the-art research & development in micro- & nano-scale phenomena, devices, systems, manufacturing, & commercialization of micro- & nano-technologies.

To register, exhibit or sponsor please visit: [www.asmeconferences.org/micronanoChina07](http://www.asmeconferences.org/micronanoChina07).

### **COMS2007- International Conference on Commercialisation of Micro and Nano Systems, 2-7 Sep 07, Melbourne, Australia**

For the first time COMS will be held in the Asia-Pacific region. COMS2007 will focus on the commercialization of micro and nano systems – bringing together hundreds of international delegates to hear from and interact with a broad range of industry experts, including researchers, suppliers, end-users and venture capitalists. Come and discover Australia's dynamic nanotechnology community, participate in interactive sessions, product demonstrations and facility tours.

The official COMS 2007 website is currently under development; please register your interest at:

<http://www.anbf.com.au/coms07/register.html>

## Other Events

10 - 13 January 2007

### **Integration & Commercialization of Micro & Nanosystems**

Sanya, Hainan, China

[www.asmeconferences.org/micronanoChina07](http://www.asmeconferences.org/micronanoChina07)

17 - 18 January 2007

### **The Manufacturing in FP7 Conference**

Cardiff, UK

<http://fp7manufacturing.iproms.org/>

21 - 25 January 2007

### **MEMS 2007 IEEE International Conference on Micro Electro Mechanical Systems**

Kobe, Japan

[www.conferences.jp/mems2007](http://www.conferences.jp/mems2007)

25 January 2007

### **PATENT-DfMM and NEXUS MWG Design Modelling Simulation Workshop**

Berlin, Germany

[www.patent-dfmm.org](http://www.patent-dfmm.org)

27 - 28 March 2007

### **Smart System Integration 2007**

Paris, France

[www.mesago.de/de/SSI](http://www.mesago.de/de/SSI)

## Abstract deadlines for conferences

### **MiNaT 2007 Congress on Science and Technology in the Micro and Nano Scale**

11 - 15 June 2007

Stuttgart, Germany

**Abstract Deadline: 8 January 2007**

[www.minat-congress.de](http://www.minat-congress.de)

### **MicroNanoReliability 2007**

2 - 5 September 2007

Berlin, Germany

**Abstract Deadline: 31 Jan 07**

[www.micronanoreliability.com](http://www.micronanoreliability.com)

**4M2007 Conference**

3 - 5 October 2007

Borovets, Bulgaria

**Abstract Deadline: 28 Feb 07**

[www.4m-net.org/Conference/4M2007](http://www.4m-net.org/Conference/4M2007)

CAS2007 International Semiconductor Conference

15 - 17 October 2007

Sinaia, Romania

**Abstract Deadline: 10 Jun 07**

[www.imt.ro/cas](http://www.imt.ro/cas)

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Next issue planned : **6 February 2007** (deadline for contributions: **1 Feb 07**)

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

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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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Published on behalf of the project "Design for Micro & Nano Manufacture (Patent-DfMM)", a Network of Excellence funded by the European Commission DG INFSO E5 within the Information Society Technologies (IST) Programme of FP6.

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