

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/>



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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!

Patric Salomon  
*NoE Patent-DfMM News Editor*

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## News from the NoE Patent-DfMM

### Design for Micro and Nano Manufacture Workshop, 30 - 31 May 2005, Montreux, Switzerland

This public workshop will present European research activities in the areas of MEMS Test and Packaging, discuss objectives, and aims at getting feedback on industry needs in the Design for Micro and Nano Manufacture. It also includes tutorials on Failure Analysis and Thermal Characterisation.

Monday 30 May

- 14:00 – 15:30 **Latest Advances in MEMS Testing**, Organised by P. Nouet, LIRMM, France  
This session will address a selection of Design for Test (DfT) solutions recently proposed to reduce the cost of MEMS testing.
- 15:50 – 17:20 Tutorial “**Techniques for Failure Analysis of MEMS and MEMS Packages**”, I. De Wolf, IMEC, Belgium  
The focus of this tutorial is on failure analysis (FA) of MEMS and MEMS packaging. Techniques commonly used for FA of IC's and IC-packages that can also be used for MEMS, are discussed. But also new techniques specific to MEMS FA will be introduced and their application field, advantages and disadvantages will be discussed.

Tuesday 31 May

- 09:00 – 10:30 Tutorial “**Thermal Characterisation of MEMS Structures and Packages**”, M. Rencz, BUTE/MicReD, Hungary  
This tutorial gives an introduction to the thermal characterisation of MEMS elements and packages. It introduces the theory of the thermal transient characterisation method and presents how to use it for structure integrity checking and for model generation.
- 10:50 – 12:20 **European Research Programmes in MEMS Packaging / Package Engineering**, Organised by A. Brown, QinetiQ, UK  
European research programmes in MEMS packaging will be presented. These include an overview on the “package engineering” projects within the PATENT-DfMM project.
- 14:00 **NEXUS MWG-DMS and NoE PATENT-DfMM Workshop “Design Modelling Simulation (DMS) of Microsystems”**  
This workshop is co-organised by the NEXUS Methodology Working Group "Design Modelling Simulation" (MWG-DMS), formerly USC-CAD, and the EC-funded Network of Excellence "Design for Micro & Nano Manufacture" (PATENT-DfMM). Its objective is to share latest developments and ideas for “Design for Manufacture” methodologies and their potential implementation into algorithms and design tools.
- 14:00 – 15:30 Session 1: **DMS Methodologies towards a "Design for Micro Nano Manufacture Approach"**  
Chaired by P. Salomon (E-Mail: [patric.salomon@4m2c.com](mailto:patric.salomon@4m2c.com)), 4M2C PATRIC SALOMON GmbH, Germany  
Overview on the NoE PATENT-DfMM, Andrew Richardson, Lancaster University, UK,  
NoE PATENT-DfMM: Methodology Development and Interface to Users, Nicolas Cordero, Tyndall, Ireland  
New Development for mor4ansys: Parametric and Nonlinear Model Reduction, E.B.Rudnyi, J.G.Korvink, IMTEK, Freiburg, Germany  
Co-simulation of autonomous microsystems, Karine Matou, TIMA, Grenoble, France  
Overview on the PROMENADE project (Process management and design system for microsystem technologies), Rainer Brück, Kai Hahn, University of Siegen, Germany
- 15:30 Break
- 15:50 – 17:20 Session 2 (joint session with the AMICOM workshop): **DMS Tools for RF MEMS and DfMM**  
Co-chaired by Larissa Vietzorreck, TU Munich, Germany and Patric Salomon, 4M2C, Berlin, Germany  
NoE PATENT-DfMM: Interface to Tools and EDA Providers, NN,  
Recent DfMM Developments in CoventorWare, Gerold Schröpfer, Coventor, France  
SoftMEMS Approach to DfMM, Ridha Hamza, Mary Ann Maher, SoftMEMS, France/USA  
... and 3 further presentations from AMICOM and RF MEMS Tool providers

## Design for Micro & Nano Manufacture (DfMM) Newsletter#6, 03 May 2005

17:20 – 17:50 Discussion of future needs and wrap-up

Venue Hôtel Eden au Lac, Montreux, Switzerland

Registration fee €150 (including coffee breaks, lunch on 31 May and proceedings)

Please register for this 1.5 day Workshop on Design for Micro & Nano Manufacture through the DTIP registration form at <http://tima.imag.fr/conferences/dtip/DTIP2005/>. Hotel information is also available from the DTIP website.

The detailed programme of the workshop will be updated at: [www.patent-dfmm.org](http://www.patent-dfmm.org).

Contact: Patric Salomon, 4M2C PATRIC SALOMON GmbH, Berlin, Germany, E-mail: [patric.salomon@4m2c.com](mailto:patric.salomon@4m2c.com)

More information on DTIP: <http://tima.imag.fr/conferences/dtip/DTIP2005/>

### **MEMS Summer School to run 5-7 September at Montpellier, France**

Plans are under way for the “MEMS by the Med” 3-day event at LIRMM, Montpellier, France. This will be the second summer school presented under the PATENT-DfMM Network of Excellence, and will introduce industry delegates to the range of topics currently in development by the various partners in the network. Interested students and academics are also most welcome. Presentations will include selected topics from existing or planned PATENT-DfMM training courses, and will address current issues in Design for Manufacturability and MEMS Test.

The planned programme scheduled for 5-7 September 2005 already includes following sessions:

- MEMS Failure Analysis
- DFM CAD tools
- Modelling of microfluidic mixers
- DfMM markets & roadmaps
- advanced modelling of Damping .

Full details of the programme will be available on the PATENT-DfMM website ([www.patent-dfmm.org](http://www.patent-dfmm.org)) as details are confirmed.

Contact: George Bell, ISLI, UK, E-Mail: [george.bell@isli-institute.ac.uk](mailto:george.bell@isli-institute.ac.uk)

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### **Event Announcements**

#### **COMS - Commercialization of Micro and Nano Systems Conference 21 - 25 Aug 2005, Baden Baden, Germany**

The 10th International Conference on the Commercialization of Micro and Nanosystems (COMS 2005) is the leading conference on the commercialization of MEMS/MST/micromachining and nanotechnology. COMS 2005 will be jointly organized by Forschungszentrum Karlsruhe and the Micro and Nanotechnology Commercialization and Education Foundation (MANCEF).

The Conference fosters the commercialization of micro and nanotechnologies and addresses commercialization issues unique to these emerging and disruptive technologies. COMS 2005 will bring together key people from across the world and from every sector of industry, including leading practitioners in the field, equipment suppliers, end users, customers, Government representatives, education and financial experts.

More details: <http://www.mancef-coms2005.org/>

#### **Conference MicroCar 2005 - Micromaterials and Nanomaterials for Automotive Application Leipzig, Germany, June 21/22, 2005**

After the very successful conference MicroCar 2003 where all German automotive manufacturers and many appliers were present. This conference will focus on reliability issues in automotive electronics, mechatronics and testing and simulation of micro- and nanocomponents and -materials for automotive applications.

For details see: [www.microcar2005.de](http://www.microcar2005.de)

Contact: Prof. Dr. B. Michel, Fraunhofer IZM Berlin, E-mail: [bernd.michel@izm.fraunhofer.de](mailto:bernd.michel@izm.fraunhofer.de)

### European EcoDesign Campaign launched

In April, the Europe-wide "EcoDesign Awareness Raising Campaign" started with workshops in Sofia and Nuremberg. Its purpose is to inform especially small and medium sized companies of the electric and electronics sector regarding Eco-Design methods, European legislation and policies, and smart strategies for the realisation of business benefits through Eco-Design. The presentation of best practice examples and extensive discussions complement the programme. Financed by the European Commission, 26 additional workshops all over Europe are offered free-of-charge by the Fraunhofer Institute for Reliability and Microintegration IZM, Berlin, Germany, and its 17 regional partners until September 2005.

Enterprises and other stakeholders are cordially invited to join the upcoming workshops in Barcelona, Budapest, Bordeaux, Berlin, Cardiff, Lisbon, Riga, Poznan, Rome and many more cities throughout Europe. The findings of the workshop series and further information will be the basis for the development of SME specific multi-media teaching material. Companies also have the chance to promote their own eco-design activities via the project's website.

Next Workshops "Business benefits through Eco-Design" :

10 May - Lisboa, Portugal ; 11 May - Cardiff, UK ; 12 May - Bordeaux, France; 13 May - Barcelona, Spain and Thessaloniki, Greece; 17 May - Brno, Czech Republik; 18 May - Milan, Italy; 25 May - Chemnitz, Germany; 26 May - Ljubljana, Slovenia; 03 June - Salzburg, Austria and Riga, Latvia; 10 June - Budapest, Hungary; 14 June - Berlin, Germany and Barcelona, Spain; 21 June - Poznan, Poland

For further information, workshop dates, venues, and programmes, registration and latest updates please visit <http://www.ecodesignarc.info/>.

Contact: Gregor Steffenhagen, Fraunhofer IZM, E-mail: [gregor.steffenhagen@izm.fraunhofer.de](mailto:gregor.steffenhagen@izm.fraunhofer.de)

### Abstract deadlines for conferences

#### EMRS 2005 European Material Research Society Conference

05 - 09 September 2005

Warsaw, Poland

Abstract Deadline: **20 May 2005**

<http://www.e-mrs.org/meetings/fall2005/>

#### CAS 2005 International Semiconductor Conference

03 - 05 October 2005

Sinaia, Romania

Abstract Deadline: **25 May 2005**

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

#### MNE 2005 International Conference on Micro- and Nano Engineering

19 - 22 September 2005

Vienna, Austria

Abstract Deadline: **12 June 2005**

[www.mne05.org](http://www.mne05.org)

#### Nanotech-Montreux 2005

#### European Conference on Micro & Nanoscale Technologies for the Biosciences

15 - 17 November 2005

Montreux, Switzerland

Abstract Deadline: **30 June 2005**

[www.nanotech-montreux.com](http://www.nanotech-montreux.com)

## List of Events

08 - 11 May 2005

### **EUSPEN 2005**

Le Corum, Montpellier, France

<http://euspen2005.univ-montp2.fr>

08 - 12 May 2005

### **Nanotech 2005**

Marriott & Convention Center, Anaheim, CA, USA

[www.nanotech2005.com](http://www.nanotech2005.com)

10 - 12 May 2005

### **Sensor + Test 2005**

Exhibition Center, Nuernberg, Germany

[www.sensor-test.com](http://www.sensor-test.com)

22 - 25 May 2005

### **ETS'05 European Test Symposium**

Reval Hotel Olümpia, Tallinn, Estonia

<http://ati.ttu.ee/ETS/>

30 - 31 May 2005

### **Design for Micro and Nano Manufacture Workshop**

Hotel Eden au Lac, Montreux, Switzerland

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

01 - 03 June 2005

### **DTIP 2005 Design, Test, Integration and Packaging of MEMS/MOEMS**

Hotel Eden au Lac, Montreux, Switzerland

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

05 - 09 June 2005

### **Transducers'05**

COEX, Seoul, Korea

[www.transducers05.org](http://www.transducers05.org)

12 - 15 June 2005

### **EMPC 2005 European Microelectronics and Packaging Conference & Exhibition**

Oud Sint Jan, Brugge, Belgium

[www.empc2005.be](http://www.empc2005.be)

21 - 22 June 2005

### **RF MEMS Cluster Meeting**

EPFL, Lausanne, Switzerland

<http://memswave2005.epfl.ch/>

22 - 25 June 2005

### **MIXDES 2005**

### **International Conference Mixed Design of Integrated Circuits and Systems**

Hotel Pegaz, Kraków, Poland

[www.mixdes.org](http://www.mixdes.org)

23 - 24 June 2005

### **MEMSWAVE 2005**

EPFL, Lausanne, Switzerland

<http://memswave2005.epfl.ch/>

29 June - 01 July 2005

### **4M 2005 Multi Material Micro Manufacture**

Forschungszentrum Karlsruhe, Germany  
[www.4m-net.org](http://www.4m-net.org)

04 - 05 July 2005

**NEXUS IP&NoE Meeting**

Budapest University of Technology and Economics, Hungary  
[www.nexus-mems.com](http://www.nexus-mems.com)

10 - 15 July 2005

**INCOSE Symposium "International Council on Systems Engineering"**

Rochester Riverside Convention Center, NY, USA  
<http://www.roceng.org/INCOSE05/index.htm>

## **EuroTraining Courses**

EuroTraining offers a summary of available European Microelectronics and Microsystems courses given by professional course vendors. Please visit the EuroTraining Course Directory (<http://www.eurotraining.net/>, <http://ecd.eurotraining.net/>) for detailed course descriptions and direct access to the course providers' web-sites. Also, in the course directory you will find an extensive list of worldwide conferences and events regarding microelectronics, Microsystems and nanotechnologies.

Selected courses:

- 10 May 2005 Start-up Creation in the Field of Microsystems Barcelona, Spain
- 19 May 2005 Minimising EMI through PCB Design and Material Selection Milan, Italy
- 23 May 2005 Flip Chip & CSP Technology for Electronic and MEMS Devices Berlin, Germany
- 06 Jun 2005 Practical RF / Microwave Design Oxford, UK
- 09 Jun 2005 Smart Materials in Robotics and Microtechnology Lausanne, Switzerland
- 13 Jun 2005 Modelling and Simulation of Micro Fluidic Systems Mainz, Germany
- 21 Jun 2005 Wafer Bonding Zürich, Switzerland
- 22 Jun 2005 Fullwave Modelling for EMC and Signal Integrity Oxford, UK
- 22 Jun 2005 Troubleshooting, Verification, and High Frequency Measurements in SI & Design Oxford, UK
- 30 Jun 2005 Minimising EMI through PCB Design and Material Selection Paris, France
- 04 Jul 2005 Circuit Challenges in Nanometer-Scale CMOS Lausanne, Switzerland
- 14 Jul 2005 Practical Antenna Design Oxford, UK

Contact: Helma Elens, EuroTraining-COREP, Italy, E-mail: [eurotraining@polito.it](mailto:eurotraining@polito.it)  
Caroline van Oosterhout, EuroTraining-DTU, Denmark, E-mail: [eurotraining@oersted.dtu.dk](mailto:eurotraining@oersted.dtu.dk)

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## **Other DfMM-related News**

### **Lectureship/Senior Lectureship in Micro & Nano Systems Engineering, Instrumentation and Design PhD job opportunity at Lancaster University, Department of Engineering**

Lancaster University is seeking applications from researcher with a successful track record and the ability to contribute to a significant research growth area at Lancaster. Applicants must have a PhD in Electronics, Physics or a closely related subject and experience which is relevant to research in the engineering of microtechnology based instrumentation systems.

You will have the skills and experience that will enable you to develop your own research portfolio with an emphasis on micro-sensing, instrumentation and/or micro-fluidics in the biological, industrial or environmental fields. In addition you will contribute to the teaching of related electronics at both undergraduate and postgraduate levels. An interest in Lancaster's innovative suite of part-time industrial MSc courses would be encouraged. You are required to perform the normal function of a lecturer/senior lecturer within the department and will be subjected to the standard workload allocation model that takes account of teaching, administration and research.

Contact: Andrew Richardson, Lancaster University, Email: [A.Richardson@lancaster.ac.uk](mailto:A.Richardson@lancaster.ac.uk)

**School of Engineering and Physical Sciences; Department of Electrical, Electronic and Computer Engineering**  
**Scottish Manufacturing Institute (SMI) - MicroSystems Engineering Centre (MISEC)**  
**Research Associates (three posts)/ Ph.D. Studentships (four posts)**

The Scottish Manufacturing Institute, based at Heriot-Watt University, has recently been awarded a £4M multi-university research project from the Engineering and Physical Sciences Research Council (EPSRC). The project, called 3D-Mintegration, has for goal to look at novel manufacturing techniques of 3-dimensional miniaturised systems. The project is supported by 26 companies which are providing over £2.8M of contribution. 6 Universities and the National Physical Laboratory (NPL) are also taking part in this project.

The team, composed of 3 Research students and 4 Ph.D. students, will be interacting strongly over 20 Research Associates and Ph.D. students employed with the other 6 Universities. All candidates should all have a physics or electrical engineering degree. The different positions will be either in the design, process or packaging of 3D systems, in particular microsystems.

These posts offer exciting and challenging opportunities for bright and motivated individuals who can work independently but also within a research team. All posts are fixed term for three years. Only candidates with a Ph.D. degree in physics and electrical engineering can apply for Research Associates positions. Additional technical information concerning the project can be obtained at the following Website address:

<http://www.3D-Mintegration.com>

Closing date: 31st June 2005

Contact: Dr Marc Desmulliez, Heriot Watt University, Email: [M.Desmulliez@hw.ac.uk](mailto:M.Desmulliez@hw.ac.uk)

**Update information on mor4ansys from IMTEK, Freiburg, Germany**

A new version of mor4ansys has been released. Now all information from the FULL file can be read into mor4ansys. This simplifies the transfer of information from ANSYS significantly. Two additional methods to deal with the second order systems have been added: the transformation to the first order system and the Second Order ARnoldi (SOAR) algorithm developed by Prof Bai. The code was rewritten in great extent. Now the computational routines make the mor4ansys library that can be used on its own. In addition to the source distribution, a binary distribution is also available for Windows, Linux and Sun. Several new papers have been added to the publication page (check sections Parametric Model

Reduction, Nonlinear Model Reduction, Connecting Reduced Models, Vibrational Simulation of a Knuckle).

Links:

- 1) Code, documentation and binary distribution: <http://www.imtek.uni-freiburg.de/simulation/mor4ansys/>
- 2) Papers related to mor4ansys: <http://www.imtek.uni-freiburg.de/simulation/mor4ansys/publications.html>

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Next issue: **04 July 2005** (deadline for contributions: **01 July 2005**)

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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