

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!

Patric Salomon  
*NoE Patent-DfMM News Editor*

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## News from the NoE Patent-DfMM

### DfMM Service Cluster Update

Over the past 18 months the PATENT-DfMM NoE has been assessing the potential of six key areas of activity for commercial roll out. The final selection meeting took place in September 2007 and provided a mandate and budget for the development for the following two clusters:

#### **Health and Usage Monitoring Microsystems ( $\mu$ HUMS)**

A technical cluster led by the Institute for System Level Integration, Scotland, UK offering:

- Feasibility studies on embedded  $\mu$ HUMS solutions / systems where diagnostics, prognostics or condition monitoring are required.
- Access to extensive information databases and consultancy on methods to achieve on-line test, fault tolerance and diagnostic capabilities.
- Design services for  $\mu$ HUMS sensors using silicon and non-silicon based micro technology and both electrical stimulus generation and response processing.
- Prototyping facilities based on silicon, ceramic or flexible substrates as well board based solutions.

The cluster involves Heriot-Watt University, Lancaster University, Budapest University of Technology and Economics, and BCF Designs.

#### **European Microsystems Reliability Service Cluster (EUMIREL)**

A cluster of experts offering consultancy, training and reliability analysis services led by four key service hubs IMEC, IMT Bucharest, Polytechnic of Milan and Fraunhofer IMS, supported by 4M2C in marketing and coordination. Eumirel is offering the following services:

- Consultancy: Design for Reliability, Physics of failure, Test structures, FMEA studies, Reliability test strategies.
- Training: Failure Analysis techniques, Accelerated Life Testing, Reliability Assessment, Failure Modes and Physics of Failure.
- Reliability analysis: Accelerated Reliability Test, Qualitative Life Testing, Functional Test, Failure Analysis, Test Structure Design.

The cluster offers access to a wide range of equipment and facilities together with a database for matching the needs of clients to specific capabilities within partner facilities. In addition to the lead partners mentioned above, the team includes CSL Liege, Warsaw University Technology, Budapest University of Technology and Heriot-Watt University plus key industrial reliability service providers.

Contact: [services@patent-dfmm.org](mailto:services@patent-dfmm.org)

### Report from the Design for Manufacture Summit at Lancaster University, 2-4 Oct 07

A "Big event" for "Small Systems" was the headline that appeared in the press release from UK journalists covering this event. In the context of the events diary across the globe, 84 delegates can hardly justify labelling this event as "Big" but for the delegates this was indeed a highly significant meeting as it formed the main showcase for the technical work carried out within the FP6 Network of Excellence in Design for Micro & Nano Manufacture (PATENT-DfMM).

This 3 day conference aimed to pull together the technical research work initiated by the PATENT-DfMM project. This included work fully supported by the project and activities stimulated by the NoE through both partial funding, feasibility projects and mobility.

The presentations delivered were clearly rich in terms of engineering research outputs associated with new concepts for embedded test and packaging technologies, reliability engineering and demonstrator focused activities. The majority of the presentations provided the audience with examples of how collaboration between conventionally isolated disciplines could deliver major benefits. Specific examples here were evident around new application focused work that have been launched by the NoE in the fields of Health and Usage Monitoring (HUMS) and Micro Electro Fluidics (MEF). In the case of HUMS, embedded test experts, sensor engineers and packaging specialists have come together to drive forward concepts around miniaturised devices able to monitor and test higher level systems. In the case of MEF, fluidic modellers, test engineers and system-on-chip designers have collaborated to deliver concepts around chip based digital fluidics that feature active devices operating across the electronics to Biology interface.

14th November 2007

Presentations that the organisers have been given permission to distribute are available from [www.patent-dfmm.org](http://www.patent-dfmm.org). A number of contributions from related activities, in particular the UK 3D-Mintegration ([www.3d-Mintegration.com](http://www.3d-Mintegration.com)) and IeMRC ([www.IeMRC.org](http://www.IeMRC.org)) were integrated into the program to provide "cross-fertilisation between the NoE and these national programs.  
*Contact: Andrew Richardson, University of Lancaster, UK, E-mail: [A.Richardson@Lancaster.ac.uk](mailto:A.Richardson@Lancaster.ac.uk)*

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## News from DfMM Community

### **Online Seminar: "Complete Optical Analysis of MEMS using Laser Vibrometry, Stroboscopic Video Microscopy and White Light Interferometry", Jens Klattenhoff, Polytec, Germany, 28 Nov 07, 11-12 am (German time)**

The presentation introduces the innovative concept, theory and products used to characterize MEMS/microstructure dynamics with laser Doppler interferometry and stroboscopic video microscopy. Furthermore you will learn how white light interferometry enables a fast and precise measurement of the surface topography of MEMS devices and other microstructures.

*More information and registration at: <https://polytec-de.webex.com/polytec-de/onstage/g.php?t=a&d=921368181>*

### **Post: Research Assistant in Embedded Test at Lancaster University**

Expressions of Interest are invited for a full time, fixed contract research post focussing on embedded test strategies for System-in-Package technology and intelligent Microsystems featuring multi-sensor integration. The work will involve collaborative work with a range of companies including NXP, Coventor, BCF Designs and MicroCircuit Engineering and a cluster of other universities in both the UK and mainland Europe. We are particularly interested in enquiries from researchers with skills in self-test and on-line test engineering for MEMS and Analogue Systems in addition to SiP / SoC as well as longer term research in hardware / software based techniques for building fault tolerance and self repair into electronic systems.

*Please email expressions of interest to Prof. Andrew Richardson at [A.Richardson@Lancaster.ac.uk](mailto:A.Richardson@Lancaster.ac.uk) before 30th November 2007.*

### **MINAM established industrial management board and starts new services**

Following the establishment of their Industrial Management Board, the European Technology Platform for Micro- and Nanomanufacturing (MINAM) is happy to announce its official launch event to be held in January 2008. At MINAM more than 400 stakeholders today are contributing to orient the R&D excellence in Europe towards a fast transfer of results into industrial production technologies and applications. The secretariats are hosted by Fraunhofer IPA, VDMA and euspen. The platform is supported by the European Commission, its projects  $\mu$ Sapient, IPMMAN, 4M and is linked to the umbrella of Manufuture [www.manufuture.org](http://www.manufuture.org). MINAM is an open community, established around research, industry and European funding programmes. The goal is to speed up the successful implementation of new technologies, encourage the coordination of industrially focused R&D and the fast transfer from laboratory to industry in a socially acceptable manner.

The official launch event will take place on January 23, 2008 in Brussels, Belgium, with high-level representatives from European Commission, industry and academia. The following day, January 24, 2008, a brokerage event will offer partner search, technology information, and proposal assistance to all Micro-and Nano- stakeholders.

*Details will be announced on [www.minamwebportal.eu](http://www.minamwebportal.eu)*

### **Final Call for Paper - Sensors Journal's special issue entitled "Modeling, Testing and Reliability Issues in MEMS Engineering"**

**Deadline for submission: 30 Nov 07**

The aim of this special issue is to collect high quality research results on all DfMM-related aspects of

MEMS engineering. Because it has been a free online journal (an Open Access journal), papers rapidly published in Sensors (ISSN 1424-8220) will receive very high publicity. Papers published in Sensors are rapidly indexed by databases including Chemical Abstracts and Science Citation Index expanded (Web of Science). Papers accepted will be published immediately. Finally, all the papers belonging to this special issue will be gathered together in a homepage. Please send your paper by e-mail to [sensors@mdpi.org](mailto:sensors@mdpi.org) and send copies to [stefano.mariani@polimi.it](mailto:stefano.mariani@polimi.it). The subject title of the message should be "Manuscript for Special Issue "MODELING, TESTING AND RELIABILITY ISSUES IN MEMS ENGINEERING" for the journal SENSORS".

More information: [www.mdpi.org/sensors](http://www.mdpi.org/sensors)

Contact: Dr. Stefano Mariani, Politecnico di Milano, Italy, E-mail: [stefano.mariani@polimi.it](mailto:stefano.mariani@polimi.it)

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## Abstract Deadlines for Conferences

### **Call for papers: DTIP 2008 Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, 9-11 Apr 08, Nice, France**

**Extended abstract deadline: 13 Nov 07**

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. You are encouraged to participate by submitting an abstract for one of the two Conferences.

Submission will be electronically only at: <http://cmp.imag.fr/conferences/dtip2008/>

### **Call for papers: EWME 2008 European Workshop on Microelectronics Education, 28-30 May 08**

**Deadline for submissions: 10 Dec 07**

EWME 2008 is the 7th workshop on microelectronics education in Europe. The workshop will be organized by the Department of Electron Devices of the Budapest University of Technology. The purpose of the workshop is to provide a forum to exchange ideas and to discuss developments and challenges in education and research on Microelectronics, Microsystems and related areas. Topics and submission guidelines are available on the website.

EWME 2008 is encouraging an increased participation of the MSc and PhD students. At this edition, abstracts describing the content and achievements of outstanding MSc projects are particularly encouraged and will be awarded three Best European MSc Award. Limited travel support for accepted MSc papers will be available.

More information: [www.eet.bme.hu/ewme2008](http://www.eet.bme.hu/ewme2008)

### **PATENT-DfMM will be a Media Sponsor of COMS 2008, 31 Aug – 4 Sep 08, Puerto Vallarta, Mexico**

The Commercialization of Micro and Nano Systems Conference (COMS) is among the world's most important meeting places for all those attempting to bring emerging small technologies from concept to the marketplace. It addresses issues on an international front, gathering input from MNT leaders representing regions all over the globe. Participants will learn from industry visionaries who are shaping the micro and nano landscape, network with investors and technologists from the MNT industry and venture community, meet with the leading customers and end users of small technology, and discover the latest developments and trends in MNT.

COMS08 will be comprised of keynote talks, break-out sessions, networking and workshops, with an extensive supporting exhibition covering all aspects of the technologies related to commercialization, thus providing an ideal environment for the exchange of ideas and new business development. A Call for papers will open soon.

More information: [www.mancef-coms2008.org](http://www.mancef-coms2008.org)

**MNT Concept Project Workshops at the CANEUS 2008 Conference**

9 - 11 April 2008

Sao Paulo, Brazil

**Abstract Deadline: 7 Nov 07**

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

**World Congress of Computational Mechanics + ECCOMASS**

30 June - 5 July 2008

Venice, Italy

**Abstract Deadline: 28 Feb 08**

<http://congress.cimne.upc.es/iacm08/frontal/default.asp>

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**Events Announcements**

**CEMMNT and Taylor Hobson Metrology Open Day, 21 Nov 07, Leicester, UK**

The Centre of Excellence in Metrology for Micro and Nano Technologies (CEMMNT) and Taylor Hobson are holding an open day for industry to launch a new state of the art clean-room measurement and analysis facility for industry. The facility combines cutting edge metrology instrumentation with a UKAS accredited calibration laboratory. Presentations from leading UK experts will highlight case studies where measurement and characterisation at the micro and nanoscale has accelerated product and process development. A tour of the Taylor Hobson factory and new CEMMNT clean room facility will be followed by the opportunity to see equipment in action and discuss specific challenges and samples with metrology specialists. This event will benefit anyone from industry with an interest in accessing metrology and characterisation expertise and equipment to solve product and process challenges. Delegates have an option of attending either a morning (9.30 - 12.00) or afternoon (13.00 - 15.30) event.

*More information:* [www.cemmnt.co.uk](http://www.cemmnt.co.uk)

**Session on Nanoelectronics at CADFEM Users Meeting, 22 Nov 07, Dresden, Germany**

Simulation technologies in structural mechanics, computational fluid dynamics, or multiphysics are moving ever closer toward one another. These disciplines will "converge" at the very first users' conference held jointly by CADFEM GmbH, ANSYS Germany GmbH and Fluent Deutschland GmbH at the Dresden International Congress Center from November 21st to 23rd 2007. As part of this event, CADFEM GmbH will organize a special session on Nanoelectronics and Nano Modeling Issues on 22nd November from 2:00pm until 6:00pm.

*More information and registration:* [www.usersmeeting.com](http://www.usersmeeting.com)

**NEXUS Annual General Meeting (AGM) and Systems Engineering Workshop, Loughborough, UK, 10-11 Dec 07**

The next NEXUS AGM is scheduled for 10 Dec 07. The AGM will convene at noon and will be hosted by the SEIC at Loughborough in the UK. Details on the agenda and directions will be made available to those interested. All NEXUS members are encouraged to participate and contribute their views and opinions.

Systems Engineering for the MNT community - The UK's Centre of Excellence in Metrology for Micro and Nano Technology (CEMMNT) in collaboration with the Patent-DfMM project and the Systems Engineering Innovation Centre (SEIC) plans to hold a one-day workshop on 11 Dec 07 at the SEIC in Loughborough, England. The workshop will be centred on processes, methodologies and systems engineering-based disciplines as applied to MNT product design and evolution. The workshop will include presentations on aspects of Design-for-Testing/Validation and Integration as well as examples of system modelling and simulation. For those interested in participating in the workshop, please contact either Ayman El-Fataty ([a.el-fataty@lboro.ac.uk](mailto:a.el-fataty@lboro.ac.uk)) or Andrew Richardson ([a.richardson@lancaster.ac.uk](mailto:a.richardson@lancaster.ac.uk)).

*Contact for NEXUS AGM:* Alan Greatbatch, NEXUS Association, Switzerland, E-mail: [info@nexus-mems.com](mailto:info@nexus-mems.com)

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## Other Events

13 - 16 November 2007  
**PRODUCTRONICA 2007**  
Munich, Germany  
[www.productronica.de](http://www.productronica.de)

16 November 2007  
**microBUILDER Workshop "Design, Prototyping and Fabrication Services for Lab-on-a-Chip Devices"**  
Dusseldorf, Germany  
[www.microbuilder.org](http://www.microbuilder.org)

19 November 2007  
**NEXUSplus European Microfluidics Experts Workshop**  
Braga, Portugal  
[www.nexus-mems.com](http://www.nexus-mems.com)

19 - 20 November 2007  
**ENCASIT Workshops**  
Leicester, UK  
[www.cemmnt.co.uk](http://www.cemmnt.co.uk)

22 - 23 November 2007  
**Nanotechnology Forum Hessen**  
Frankfurt/Main, Germany  
[www.hessen-nanotech.de](http://www.hessen-nanotech.de)

2 - 4 December 2007  
**EUSPEN Topical Meeting: Thermal Effects in Precision Systems**  
Maastricht, The Netherlands  
[www.maastricht2007.euspen.eu](http://www.maastricht2007.euspen.eu)

3 - 4 December 2007  
**European Nano Systems Conference 2007**  
Grenoble, France  
<http://cmp.imag.fr/conferences/ens/>

6 - 7 December 2007  
**edaForum07**  
Munich, Germany  
[www.edacentrum.de/edaforum](http://www.edacentrum.de/edaforum)

11 December 2007  
**NEXUS Systems Engineering Workshop**  
Loughborough, UK  
[www.nexus-mems.com](http://www.nexus-mems.com)

23 - 24 January 2008  
**MINAM Launch and Brokerage Event**  
Brussels, Belgium  
[www.minamwebportal.eu](http://www.minamwebportal.eu)

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Next issue planned: **January 2008** (deadline for contributions: **12 Dec 2007**)

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

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**14th November 2007**

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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