

NoE PATENT-DfMM Status Update

The 3rd quarter of activities within PATENT-DfMM has been dedicated to the launch of activities that aim to put in place the foundations for Virtual Laboratories in Test Engineering, Reliability Engineering, Packaging and Modelling & Simulation.

In the area of **Test Engineering (WP1)**, the process has been initiated through the launch of an embedded project to compile an inter-active database of design for testability solutions for new designs that embed MNT. The database targets designers who recognise that embedded test solutions are crucial to meet cost and quality targets in manufacture and require an efficient information source to enable them to identify what techniques are available for specific types of MEMS and MNT based systems.

The **Modelling and Simulation Cluster (WP2)** has initiated discussions with the EDA community and is close to reaching an agreement with MEMSCAP and Dolphin Integration on tool availability. A number of research actions have been approved, e.g. thermal modelling for microfluidic coolers, modelling of flow-paths in microcirculation vessels for Bio-MEMS applications, review of optical simulation and modelling strategies for MOEMS, simulation of stiction in metal to metal resistive contacts, fault modelling and simulation of Flow-FET based systems. An RF project investigating stiction will be carried out in close collaboration with the NoE AMICOM.

The **Reliability Engineering Virtual Laboratory (WP3)** set-up was ini-

tiated by an identification of partner capabilities, know-how and services. Initial work targets the creation of several databases, specifically compilation of material properties, fault and degradation mechanisms and instrumentation availability across the cluster. The **Package Engineering (WP4)** activity is taking a similar approach in first compiling know-how and capability database and compiling state of the art in the field.

The upcoming months will see the development of integration plans and the **Training (WP5)** portfolio. It is our intention to engage with a number of community events that are taking an interest in design for manufacture technology for MNT, including the IEEE conferences on Design Integration and Packaging (DTIP) and the European Test Symposium (ETS). Involvement with NEXUS is planned to increase through the active participation in the Methodology Working Group (MWG) Reliability that will complement PATENT-DfMM **Networking (WP6)** through the MWG Design, Modelling and Simulation (DMS). Tighter collaboration with the MEMS Industry Group (MIG) in the USA is also planned. In this context PATENT-DfMM will participate actively in the next meeting in Pittsburgh to strengthen links and develop plans for further collaboration.

The creation of a **Service Organisation (WP7)** over the coming 4 years will be supported by the Industrial Advisory Board (IAB) that has already provided valuable guidance to the management team in the context of long-term objectives. Technical work

in the context of cross-work package activities towards a DfMM methodology has been initiated. This project will focus on the development of a methodology to assess the effect of packaging on the performance and reliability of microsystem devices. Collaboration across all of the PATENT-DfMM technical work packages will provide the required test, modelling and simulation, reliability and packaging skills.

SME support has been provided through the approval of a project to develop a thermal test methodology and associated equipment.

DfMM Contact

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The NoE Patent-DfMM aims to establish a collaborative team to provide European industry with support in the field of "design for micro nano manufacture" to ensure that problems affecting the manufacture and reliability of products based on micro nano technologies (MNT) can be addressed before prototype and pre-production.



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DfMM Summer School to run 15-17 Sep 2004, ISLI, Livingston, Scotland

- Day 1: MEMS tutorial, covering MEMS fundamentals, Design for Testability, Packaging, Reliability and Modelling.
- Day 2: Presentations related to research in "Design for Micro & Nano Manufacture".
- Day 3: Vendor tools and hands-on training on EDA tools.

PATENT-DfMM Reliability (WP 3) Workshop, 7-8 Oct 2004

The First Workshop organized by the Reliability Cluster of PATENT-DfMM will be held in Sinaia, Romania, jointly with CAS (4-6 Oct 2004), organised by IMT-Bucharest.
www.imt.ro/Cas/Default.htm