



Stimulation Action on MEMS and SiP







## Welcome and short intro to the EUROPRACTICE and STIMESI projects

*Carl Das – IMEC, Belgium*



STIMESI Workshop 28 November 2008 | Carl Das
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## Workshop Program

08.30	Registration and coffee
09.30	Welcome and short intro to the EURORACTICE and STIMESI projects <i>Carl Das – IMEC, Belgium</i>
09.40	EUROPRACTICE offer of MEMS CAD tools <i>John McLean – STFC (RAL), UK</i>
09.55	EUROPRACTICE offer of MEMS MPW services <i>Carl Das – IMEC, Belgium</i>
10.10	MEMSOI - MPW service on 60µm SOI-DRIE with hermetic WLP <i>Dr. Joël Collet – TRONICS, France</i>
10.30	Coffee and networking
10.55	Poly-MUMPS, SOI-MUMPS & Metal-MUMPS – MEMSCAP MPW services <i>Buzz Hardy – MEMSCAP, France</i>
11.15	Short Course Masters Level Microsystem Education <i>Michael C L Ward The Department of Mechanical Engineering, University of Birmingham, UK</i>
11.40	Virtual prototyping of micro-thermal actuators <i>Marc Desmulliez - MicroSystems Engineering Centre, Heriot-Watt University, UK</i>
12.05	Examples of use of the MultiMEMS foundry services at Vestfold University College for applied research and education purposes <i>Per Ohlckers, Christopher Grinde, Craig Lowry and Stein Ivar Hansen Vestfold University College, Norway</i>
12:30	Lunch and networking



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14.00	<b>Microfluidic Platforms and Lab-on-a-Chip Foundry Services</b> <i>Roland Zengerle – IMTEK, University of Freiburg, Germany</i>
14.25	<b>MEMS devices for precision nanoscale measurements</b> <i>Peter Cumpson</i> <i>National Physical Laboratory, UK</i>
14.50	<b>Microtechnology: Online fabrication process of a microsystem</b> <i>María Cruz Acero, Jaume Esteve, José Antonio Plaza – CNM, Spain</i>
15.15	<b>RF MEMS and NEMS</b> <i>Adrian Ionescu – EPFL, Switzerland</i>
15.40	<b>Coffee and networking</b>
16.00	<b>Metamaterials: an emerging technology for RF/microwave/millimeter wave components and microsystems</b> <i>F. Martín, J. Bonache - CIMITEC, Universitat Autònoma de Barcelon, Spain</i> <i>G. Posada, G. Carchon and W. De Raedt - IMEC, Belgium</i>
16.25	<b>Design and fabrication with Multi-User MEMS processes</b> <i>Manuel Domínguez-Pumar, Universitat Politècnica de Catalunya, Spain</i>
16.50	<b>MEMS research activities and teaching at the electrotechnical department, KULeuven</b> <i>BoB Puers – KULeuven</i>
17.15	<b>Closing remarks</b>
17.20	<b>Reception and networking</b>

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## STIMESI : Project goals




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- Stimulation project for European universities and research institutes
  - “More experienced” universities active in MEMS design/technology: increase MEMS research and design and fabricate more MEMS circuits
  - Stimulate “others” to start actively teaching/research MEMS activities
  - Promote EURORACTICE MEMS technologies, developed in previous projects
- 4 year project : 1 Jan 2006 – 31 Dec 2009

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**Partners**




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- **IMEC in Belgium**
  - Coordination in close collaboration with Europractice IC service network of 650 univ and research institutes in Europe
  - RF-SiP technology
- **RAL (STFC) in UK**
  - Access to MEMS CAD tools for univ through Europractice IC Service
  - Coordination in close collaboration with Europractice IC service network of 650 univ and research institutes in Europe

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**Partners/foundries**




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- **MEMSCAP in France/USA**
  - PolyMUMPS
  - SOIMUMPS
  - MetalMUMPS
- **QINETIQ in UK**
  - Polysilicon surface micromachining
  - Metal-Nitride surface micromachining
  - SOI micromachining
- **SENSOROR/Infineon in Norway**
  - Bulk micromachining (MultiMEMS)
- **TRONIC's in France**
  - MEMSOI

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Activities



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- Delivery of training courses
  - **Main activity**
  - 2 times per year (1<sup>st</sup> year once) in different technologies - ~ 30 training courses over 4 year
  - Training is given by the foundry partners
  - Rotate courses over Europe to increase coverage including former Eastern countries
  - Courses are free to European universities and research centers
  - Companies can attend but pay fee

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Activities




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- Design kit update
  - Design kits in various technologies will be updated and upgraded
  - User friendly
  - Will be used during the training courses
- Course material development
  - Creation of material
  - Update of material
  - Include hands-on exercises

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**Activities**




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- **Post-training homework support**
  - Support course attendees
    - Creation of MEMS/SiP curricula
    - Use of design kits
    - do exercises
  - 2 months after the course
- **Dissemination**
  - Creation and support of STIMESI Web site: [www.stimesi.org](http://www.stimesi.org)
  - Use excellent network of existing 650 universities served by Europractice IC project
  - Promote courses through Eurotraining
  - Promote project via partners
  - Organise annual Workshop

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**Example courses**



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STIMESI courses on MEMS technologies:


- [MEMS Design and INTEGRAMplus Silicon MEMS Prototyping Services, Institute of Electron Technology \(ITE\), Warsaw, Poland - 16-19 April 2007](#)
- [SensoNor & Tronics : MEMS processes - EPFL Electronics Laboratory, Lausanne Switzerland - 24-26 April 2007](#)
- [Imec: RF-SiP design and RF system integration, IMEC, Belgium, 30 May - 1 June 2007](#)
- [MEMSCAP: MUMPS \(Multi User MEMS\) processes , Technical university of Catalonia \(UPC\), Barcelona, Spain - 18-20 June 2007](#)

- [SensoNor and Tronics MEMS processes, Rutherford Appleton Laboratory, Didcot \(Oxford\), United Kingdom, 24-26 September 2007](#)
- [MEMSCAP: MUMPS\(r\) \(Multi-User MEMS\) processes, Middle East Technical University, Ankara, Turkey, 23-25 October 2007](#)
- [MEMS Design and INTEGRAMplus Prototyping Services, École supérieure d'ingénieurs en Électronique en Électrotechnique \(ESIEE\), Paris, France, 5-8 November 2007](#)
- [RF-SiP design and RF system integration, CIMITEC, Universitat Autònoma de Barcelona, Spain, 19-21 November 2007](#)

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