

# **The Society for Micro- and Nanoelectronics (GMe — Gesellschaft für Mikro- und Nanoelektronik)**

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## **Goals of the Society for Micro- and Nanoelectronics**

The Society for Micro- and Nanoelectronics (GMe) has been founded in 1985 as “*Society for Microelectronics - Gesellschaft für Mikroelektronik*” with the aim to “*support microelectronics technology and its applications*” in Austria. With the shift of the focus in research from micro to nano technologies the goals of the GMe changed accordingly. Therefore, the GMe has changed its name into “*Society for Micro- and Nanoelectronics — Gesellschaft für Mikro- und Nanoelektronik*” in 2003.

The GMe defines its tasks as follows:

- Support of university-based “high-tech” research in the areas of micro- and nanoelectronics, semiconductor technology, sensors, and opto-electronics;
- Operation of research facilities;
- Support and consulting for industry, in particular, for small and medium enterprises, within the area of micro- and nanoelectronics.

The central task of the GMe is to provide an internationally competitive *infra-structure* in the area of micro- and nanoelectronics technology. The GMe allocates funds to maintain research projects in the fields of semiconductor technology, sensors, opto-electronics, and ASIC design. Thus the infra-structure support generates a base for research projects that are funded by other funding agencies.

## **Activities of the Society**

Due to funding constraints, the present focal point activity of the GMe is the operation of university-based laboratories for microelectronics technology, where its main task is the operation of the cleanroom laboratories in Vienna and Linz. The GMe has coordinated the construction of the Center for Micro- and Nanostructures (ZMNS — *Zentrum für Mikro- und Nanostrukturen*; previously, MISZ — *Mikrostrukturzentrum*) in Vienna; the funds were supplied by the Austrian Federal Ministry of Science and Research. The GMe now finances a significant part of the operation costs for the cleanroom laboratories in Vienna and Linz.

## Microelectronics Technology — Cleanroom Vienna

The following university institutes receive support within this focal point activity:

- University of Technology Vienna:
  - Institute of Solid State Electronics
  - Photonics Institute
  - Institute of Sensor and Actuator Systems

## Microelectronics Technology — Cleanroom Linz

The following university institutes receive support within this focal point activity:

- Johannes Kepler University Linz:
  - Institute of Semiconductor and Solid State Physics

## Other Activities of the Society

Both in 2005 and 2006, the GMe has organized two seminars of its own, the “GMe Forum 2005” and the “GMe Workshop 2006”, respectively:

### GMe Forum 2005:

**Thursday, March 17, 2005**

10:00 – 10:30 Welcome, Coffee

**Opening:**

10:30 – 11:00 E. GORNIK (President of the GMe)

P. SKALICKY (President of the Vienna University of Technology)

**Nanoelectromechanical Systems:**

11:00 – 11:45 R. BLICK: *From Classical Mechanics to Quantum-Electro-Mechanics*

11:45 – 12:30 Ch. HIEROLD: *From MEMS to NEMS*

12:30 – 14:00 Lunch Break

**Micromachining with Femtolasers:**

14:00 – 14:45 A. ISEMANN: *Micromachining with Femtolasers*

**Bioelectronics:**

14:45 – 15:30 H.U. DODT: *Bioelectronics and Bioimaging - New Approaches for the Investigation of Brain Microcircuits*

15:30 – 16:00 Coffee Break

**Spintronics:**

16:00 – 16:45 L. ALFF: *Spintronics: A New Spin for the World of Electronics*

**Carbon Nanotubes:**

16:45 – 17:30 W. HÖNLEIN: *Carbon Nanotubes – A Successor to Silicon Technology?*

17:30 – 17:45 Break

**Evening Session:**

17:45 – 18:00 E. GORNIK: *Presentation of the Activities of the GMe*

18:00 – 19:00 Panel Discussion: *“Who supports technology in Austria?”*

**Friday, March 18, 2005****Technology:**

- 09:00 – 09:45 R. MINIXHOFER: *Semiconductor Process Simulation*  
09:45 – 10:30 H. OKORN-SCHMIDT: *Using Extreme Sono-Effects to Improve on the Selectivity of Particle Removal to Microelectronic Structure Damage below 65 nm*  
10:30 – 11:00 A. LUGSTEIN: *Focused Ion Beam Technology*  
11:00 – 11:30 Coffee Break

**Quantum Devices:**

- 11:30 – 12:00 T. MÜLLER: *Carrier Dynamics at Quantum Dots*

**Opto-Electronics:**

- 12:00 – 12:30 K. HINGERL: *Photonic Crystals: Optical materials for the 21st century*  
12:30 – 13:00 G. SPRINGHOLZ: *Lead-Salt Lasers*

**Sensors:**

- 13:00 – 13:30 D. ROCHA: *Sensor Interface Electronics*

**Poster Exhibition:**

- 13:30 Snacks and Poster Exhibition

**GMe Workshop 2006:****Friday, October 13, 2006**

- 09.00 – 10.00 Registration; Coffee  
10.00 – 10.15 Opening  
10.15 – 11.00 K. EBERL: *GaAs based High Power Laser Diodes from Lumics*  
11.00 – 11.30 M. BÖBERL *et al.*: *Narrow-band lead salt photodetectors and solution-processible nanocrystal photodetectors for the midinfrared*  
11.30 – 12.00 K. UNTERRAINER *et al.*: *Optical properties of IR quantum dots*  
12.00 – 13.30 Lunch Break  
13.30 – 14.15 S. CHRISTIANSEN: *Semiconductor nanowires: properties and applications*  
14.15 – 14.45 A. LUGSTEIN *et al.*: *Synthesis of nanowires in room temperature ambient with a focused ion beam*  
14.45 – 15.15 G. Chen *et al.*: *Initial stage of the 2D-3D transition of a strained Ge layer on a pit-patterned Si(001) template – Progress in Quantum Dot Array (QDA)*  
15.15 – 15.45 S. Kostner *et al.*: *On-Chip Cytometric Detection of Single Biological Cells Using Integrated Photodiodes*  
15.45 – 16.00 Coffee  
16.00 – 18.00 Poster Session

In addition, the GMe was the official coordinator of the “28<sup>th</sup> International Conference on the Physics of Semiconductors” (ICPS 2006 – <http://www.icps2006.at/>), which has taken place in Vienna from the 24<sup>th</sup> to the 28<sup>th</sup> July 2006. The ICPS 2006 was a successful international event with 1320 registered participants, eight plenary and 44 invited speakers which took place at the Vienna Hofburg.

One of the declared tasks of the GMe is to provide information on current Austrian academic activities in the field of microelectronics to industry, in particular to Austrian small- and medium enterprises (SMEs). To enhance the distribution of the results of the research work done with GMe support, the GMe has put the contents of its annual reports — 1995 through 2006 — and the proceedings of the latest seminars organized by the GMe on its Web server. This server provides a variety of search facilities into the reports, thus acting as a Microelectronics Knowledge Base. The GMe Web server is available under the address <http://gme.tuwien.ac.at/> .

## **The Biennial Report for 2005 – 2006 of the Society for Micro- and Nanoelectronics**

The GMe is currently supporting the microelectronics technology activities of the clean-room laboratories in Vienna and Linz. All projects described in this report were carried out in the cleanrooms in Vienna and Linz, respectively, and in special sensor technology laboratories closely associated with the Center for Micro- and Nanostructures in Vienna. They are *not* specific projects of the GMe but were funded by a variety of other sources. They all have in common that they use the infra-structure provided by the GMe. It would therefore not have been possible to carry out these projects without the support by the GMe.