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:

- TU Wien:
  - Institut für Festkörperelektronik
  - Institut für Sensor- und Aktuatorsysteme

Microelectronics Technology — Cleanroom Linz

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

- Johannes Kepler Universität Linz:
  - Institut für Halbleiter- und Festkörperphysik

Other Activities of the Society

In 2004, the GMe prepared its biennial seminar, the "*GMe Forum*", which meanwhile has taken place at the Vienna University of Technology on March 17 and 18, 2005. The intention of the "*GMe Forum*" is to present application-oriented results of international industrial and academic research and to indicate trends for future applications of research results. The "GMe Forum 2005" focused on the latest technologies and approaches such as carbon nanotubes, spintronics, or bioelectronics. Eight distinguished speakers from research and industry in Europe and the USA gave plenary lectures. In five invited oral and 29 poster presentations, members of the university institutes that receive support from the GMe presented their results, which would have been impossible to achieve without the contributions of the GMe to the laboratory infrastructure.

The program of the "GMe Forum 2005" was as follows:

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

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 2004 — 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 Annual Report for 2004 of the Society for Micro- and Nanoelectronics

The GMe is currently supporting the microelectronics technology activities of the cleanroom laboratories in Vienna and Linz. All projects described in this report were carried out in the cleanrooms in Vienna and Linz, respectively. 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.