

JARA-FIT Lab Course Nanoelectronics 2008

Bert Voigtländer

CNI-Center of Nanoelectronic Systems for Information Technology

The JARA-FIT Lab Course Nanoelectronics introduces students to current research topics of nanoelectronics. Therefore the experiments take place using genuine laboratory research equipment. Addressees are students of physics, electrical engineering /computer science, chemistry and the materials science after the Vordiplom/Bachelor. The third Lab Course took place from 08.09.-12.09.2008 in the Research Center Juelich. On the first day the fundamentals of the topics covered by the experiments are introduced in lectures. Subsequently the students performed in small groups one experiment per day from the following list of ten experiments.

Experiments of the JARA-FIT Lab course 2008:

- Fabrication and electrical characterisation of 'Pseudo MOSFETs' (J. Moers, S.Mantl, Q.Zhao, C. Urban, C. Sandow)
- Nanocontact Printing (D. Mayer, S. Meffert)
- Quantum transport in semiconductor nanostructures (Th. Schaepers)
- Spin transport in magnetic nanostructures (D. Bürgler)
- Non-volatile memory concepts (C. Kuegeler, R. Dittmann)
- Cell-transistor coupling for bioelectronic sensors (S. Ingebrandt, J. Wallys)
- Scanning probe methods (B. Voigtländer, L. Kliuienko)
- Resonant quantum tunnel structures (M. Lepsa)
- GaN nanowires (R. Calarco, M. Marso)
- Carbon Nanotubes (C. Meyer, P. Kögerler, C. Spudat)

18 Students mainly from the Aachen-Bonn-Cologne-Düsseldorf region, however, also from all over Germany, from Kiel to Stuttgart and Kassel to Aachen participated in the JARA-FIT Lab Course Nanoelectronics 2008 the whole week. This year the JARA-FIT Lab course was also simultaneously part of the advanced lab course in physics at the RWTH Aachen University. As part of this advanced lab course 80 students performed one experiment on a research apparatus, a so called lab experiment in Jülich. At one evening a special event with a talk on "Spintronics" given by the Nobel prize laureate Peter Grünberg was an additional highlight of the program.

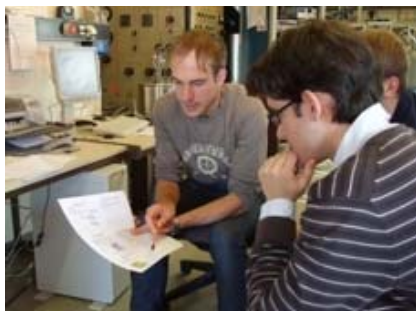


Fig. 1 Students of the JARA-FIT Lab course discussing about Quantum transport in semiconductor nanostructures



Fig. 2 Peter Grünberg presenting his talk about spintronics

For the students the course was a chance to come into direct contact with current research topics in nano electronics and also to learn about the research opportunities in JARA-FIT. More information about the JARA-FIT Lab Course Nanoelectronics including a booklet with the lecture notes and the descriptions of the experiments can be found under: http://www.fz-juelich.de/ibn/Nanoelektronik_Praktikum/