

Proceedings of the XXXVI International School
on the Physics of Semiconducting Compounds
Jaszowiec, Poland, June 9–15, 2007

Editor of the Proceedings

Izabela Kuryliszyn-Kudelska

International Advisory Committee

Günther Bauer (Linz)
Elisha Cohen (Haifa)
Laurence Eaves (Nottingham)
Jacek K. Furdyna (Notre Dame)
Paweł Hawrylak (Ottawa)
Detlef Hommel (Bremen)

Hideo Ohno (Sendai)
Marek Potemski (Grenoble)
Maurice S. Skolnick (Sheffield)
Peter Vogl (Munich)
Wlodek Walukiewicz (Berkeley)
Dimitri Yakovlev (Dortmund)

Program Committee

Piotr Bogusławski
Witold Dobrowolski
Jan Gaj
Izabela Gorczyca
Marian Grynberg
Perła Kacman
Jacek Kossut
Izabela Kuryliszyn-Kudelska
(*Secretary*)
Jacek Majewski

Jan Misiewicz
Grzegorz Karczewski
Piotr Perlin (*Chairman*)
Tomasz Story
Jacek Szczytko
(*Tutorial Session Chairman*)
Dariusz Wasik
Andrzej Witowski
Jerzy Wróbel

Organizing Committee

Monika Arciszewska
Wojciech Kaliszek
Joanna Konwicka

Elżbieta Łusakowska
Bogusław Wieczorek
Janina Wołoszyn

Preface

The XXXVI International School on the Physics of Semiconducting Compounds “Jaszowiec 2007” was organized by the Institute of Physics of the Polish Academy of Sciences, Faculty of Physics of Warsaw University, the Institute of High Pressure Physics “UNIPRESS” of the Polish Academy of Sciences, and the Committee on Physics of the Polish Academy of Sciences. Like several previous meetings the School was preceded by the “Jaszowiec 2007” Pre-school, a special two-day Tutorial Session, which provided an introduction to the main topics of the School. In the organization of the Pre-school apart from the four above-mentioned institutions also Foundation “Pro Physica” was involved. In total over 230 colleagues from 17 countries participated in the School and over 140 colleagues from 15 countries participated in the Pre-school. There were 18 invited talks and over 160 contributed, both oral and poster presentations. As usual the School covered a broad range of topics related to the semiconductor physics and technology, with special accents put on semiconductors in optoelectronics, spintronics, and photonics. This year’s Tutorial Session was devoted to the problem of harnessing nanostructures.

The organization of the School and the Tutorial Session would be impossible without financial support of the following sponsors:

- Polish Academy of Sciences,
- Warsaw University,
- Polish Ministry of Science and Higher Education,
- SANDiE Network of Excellence,
- U. S. Air Force Office of Scientific Research,
- U. S. Army International Technology Center-Atlantic, Research Division.

Their contribution is greatly appreciated. It provided support for 59 young participants from 5 countries as well as all invited speakers.

We wish to express our gratitude to the members of the Program Committee and the International Advisory Committee for their significant contribution to the success of “Jaszowiec 2007”. We would also like to thank all the colleagues who helped to organize the School and the Tutorial Session. We address special acknowledgments to Jacek Szczytko — Chairman of the Tutorial Session, as well as the members of the Organizing Committee: M. Arciszewska, W. Kaliszek, J. Konwicka, E. Łusakowska, J. Wołoszyn, and B. Wieczorek.

This issue of *Acta Physica Polonica A* is a collection of publications from invited talks and selected contributed papers presented during the Tutorial Session and the School. Some more publications from invited talks and contributed papers will appear in a later issue.

Piotr Perlin (*Chairman*)

Izabela Kuryliszyn-Kudelska (*Secretary*)

Invited lectures at the Tutorial Session:

1. **Ch.P. Kocot** (Sunnyvale) — *Applied Photonics*
2. **W. Langbein** (Cardiff) — *Ultrafast Control of Quantum Nanostructures*
3. **Y. Nazarov** (Delft) — *Quantum Transport in Superconducting Nanodevices*
4. **D. Yakovlev** (Dortmund) — *Spin in Semiconductor Nanostructures*

Invited lectures at the School:

1. **M. Baj** (Warsaw) — *Tunnelling Spectroscopy of 2DEG and Localized States*
2. **G. Cassabois** (Paris) — *The Motional Narrowing in a Semiconductor Quantum Dot*
3. **D. Chiba** (Sendai) — *Current-Induced Magnetization Switching and Domain-Wall Motion in (Ga,Mn)As*
4. **P.A. Crowell** (Minneapolis) — *Spin Transport in Ferromagnet-Semiconductor Heterostructures*
5. **S. DenBaars** (Santa Barbara) — *Non-Polar and Polar Gallium Nitride Materials and Devices*
6. **D. Gamelin** (Seattle) — *Magnetic Dopants and Charge Carriers in Colloidal Semiconducting Nanocrystals*
7. **G. Grabecki** (Warszawa) — *Quantum Ballistic Transport in Nanostructures of Paraelectric PbTe*
8. **E.L. Ivchenko** (St. Petersburg) — *Fine Structure of Exciton States in Quantum Dots*
9. **T. Suski** (Warsaw) — *InN and InGaN: New Findings in Optical and Electrical Properties*
10. **J. Tworzydło** (Warsaw) — *Valley Filter in Graphene*
11. **Su-Huai Wei** (Golden) — *Overcoming the Doping Limit in Wide Gap Semiconductors. The Case of p-Type ZnO*
12. **J. Wunderlich** (Cambridge) — *Spin Hall Effect*
13. **A. Wyszomolek** (Warsaw) — *Magnetized Plasma in Polar Semiconductors*
14. **A. Zrenner** (Paderborn) — *Exciton Qubits: from Rabi Oscillations towards Optoelectronic Quantum Gates*