

Proceedings of the 50th International
School & Conference on the Physics
of Semiconductors

“Jaszowiec 2022”

Szczyrk, Poland,
June 4–10, 2022

Editors of the Proceedings:

Agnieszka Wołoś
Maria Kamińska
Aneta Drabińska

WARSAW

POLISH ACADEMY OF SCIENCES
INSTITUTE OF PHYSICS

Program Committee:

Maria Kamińska (*Chairman*)
Tomasz Jakubczyk (*Chair of the Tutorial Session*)
Aneta Drabińska (*Secretary*)
Agnieszka Wołoś (*Secretary*)

Members:

Michał Borysiewicz	Ewa Płaczek-Popko
Joanna Jadczyk	Czesław Skierbiszewski
Tomasz Jakubczyk	Tomasz Story
Piotr Kossacki	Jan Suffczyński
Bogdan Kowalski	Jakub Tworzydło
Stanisław Krukowski	Piotr Wojnar
Paweł Machnikowski	Tomasz Wojtowicz
Michał Matuszewski	Jerzy Wróbel

Advisory Committee:

Günther Bauer (Linz)	Hideo Ohno (Sendai)
Laurence Eaves (Nottingham)	Marek Potemski (Grenoble)
Jonathan Finley (München)	Maurice S. Skolnick (Sheffield)
Jacek K. Furdyna (Notre Dame)	Luis Viña (Madrid)
David Gershoni (Haifa)	Dmitri Yakovlev (Dortmund)
Paweł Hawrylak (Ottawa)	

Organizing Committee:

Anna Reszka (*Chair*)
Zbigniew Adamus
Jacek Szczepkowski

This issue relates to grant no. DNK/SP/545684/2022 awarded by the Ministry of Education and Science, Poland, and grant no. W911NF-22-1-0100 awarded by the U.S. Army Combat Capabilities Development Command.

The views, opinions, and/or findings contained in this issue are those of the author(s) and should not be construed as an official Department of the Army or U.S. Government position, policy, or decision, unless so designated by other documentation.

Preface

This issue of *Acta Physica Polonica A* includes some of the presentations given at the 50th International School & Conference on the Physics of Semiconductors “Jaszowiec 2022”. The program of this jubilee event was special. In addition to regular sessions, it included a reminiscence session on the most important achievements in the field of semiconductor physics over past years in the institutions organizing the Conference, which are:

- Institute of Physics of the Polish Academy of Sciences,
- Faculty of Physics (Institute of Experimental Physics and Institute of Theoretical Physics), University of Warsaw,
- Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology,
- Institute of High Pressure Physics of the Polish Academy of Sciences,
- Łukasiewicz Research Network — Institute of Microelectronics and Photonics.

The program also included a session devoted to the history of two companies that developed key semiconductor technologies in Poland, i.e., VIGO Photonics and AMMONO.

As every year, outstanding world experts in the broad field of semiconductor physics, working both in foreign research centers (51 participants from 19 countries) and in Poland (211 participants from 11 scientific institutions and 8 companies), took part in “Jaszowiec 2022”. The topics of the Conference focused mainly on semiconductor nanostructures, two-dimensional (2D) materials, topological states of matter, spintronics, nanophotonics, quantum computing and quantum information processing, synthesis and characterization of semiconductor materials and electron devices. The Tutorial Session (School), addressed mainly to MSc students, PhD students, and young scientists, traditionally preceded the Conference, and this year it covered the subjects of 2D materials, quantum bits, non-linear spectroscopy, and photovoltaics.

We would like to express our gratitude to the members of the Program and the Advisory Committees for their wonderful work and contribution to the success of the jubilee “Jaszowiec 2022”. The most heartfelt thanks go to Anna Reszka and the Organizing Committee led by her, who made “Jaszowiec 2022” run smoothly and retain its magical atmosphere of a friendly scientific meeting. We also address special acknowledgments to Tomasz Jakubczyk, chairman of the Tutorial Session.

Finally, we would like to thank all the sponsors of the Conference: the Ministry of Education and Science, the Polish Academy of Science, the U.S. Army Combat Capabilities Development Command, and institutions organizing “Jaszowiec”, as well as commercial sponsors: COMEF, Technolutions, EDVAC, LABIS, Dr. Eberl MBE-Komponenten GmbH, and nextnano GmbH, for their financial and material support.

Agnieszka Wołoś
Maria Kamińska
Aneta Drabińska

Guest Editors