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Introduction

The ELTE 2013 Conference on Electron Technology was the eleventh meeting in a periodical series that deals with advances in state-of-the-art electron technology in Poland. Historically this series of Conferences has evolved since 1980 due to the activity of the national research community active in electronic and photonic materials and components research. This community is located at government laboratories, universities, and recently at business research institutions. At the end of the 1970s and early eighties, representatives of three electron technology research institutions (Warsaw University of Technology, Wrocław University and AGH–University of Mining and Metallurgy in Kraków) decided to start a cyclic national meeting devoted solely to electronic materials and technologies. Since then, the conference has been organized rotationally between these strong research centers. The original aim of the conference, as defined more than three decades ago, was to build a solid forum for presentation and exchange of national achievements covering broadly understood electron technology.

The first Conference on Electron Technology ELTE'80 was organized in Wrocław (conference opening ceremony and plenary papers) and in Karpacz, on 24–27 September 1980, and was hosted by the Institute of Electron Technology, Wrocław University of Technology. The meeting gathered then more than 200 researchers, showing the strength of this branch of science and technology in Poland. The proceedings were published as a separate book in the series Research Works of Wrocław University of Technology, in the Conference sub-series as Vol 24 (4) in 1980. The volume contains 2 keynote papers, 25 plenary papers and 156 contributed papers. The conference works were divided into the following four topical sessions: Technology of High Vacuum; Technology of Electron, Ion and Photon Beams; Optoelectronics; and Hybrid Microelectronics. The Chairman of the ELTE'80 Conference Scientific Committee was Prof. Bohdan Paszkowski.

Electron Technology II – ELTE'84 was organized by the Institute of Electron Technology (later renamed to Institute of Microelectronics and Optoelectronics), Warsaw University of Technology, in Rynia near Warsaw on 13–16 June 1984. Similar to the first conference, a volume of proceedings was published containing abstracts of plenaries and contributed papers. The volume contains 348 paper abstracts. During the conference, four keynote plenary papers were presented on hot topics of electron technology: microelectronics industry in Poland, physical confinements and technological barriers in MOS VLSI development, material engineering and future of microelectronics, and surface research of electronic materials by electron and ion methods. The contributed papers were divided into the following topical sections: Microelectronics, with four section papers and 59 contributed papers; Optoelectronics, with 5 section papers and 71 contributed papers; High Vacuum, with 6 section papers and 99 contributed papers;

Electronic Materials, with 5 section papers and 44 contributed papers; Passive Electronic Components, with 4 section papers and 47 contributed papers. Full texts of some plenary papers were published in the SEP (Association of Polish Electrical Engineers) Technical Journal Elektronika No. 6, 7, and 8, 1984. The Honorary Chairman of the ELTE'84 Conference Scientific Committee was Prof. Janusz Groszkowski, the Chairman was Prof. Alfred Świt.

Electron Technology III – ELTE'87 was organized by the Institute of Physics of Adam Mickiewicz University in Poznań.

Electron Technology IV – ELTE'90 was organized again by the Institute of Electron Technology, Wrocław University of Technology.

Electron Technology V – ELTE'94 was organized by the Institute of Microelectronics and Optoelectronics, Warsaw University of Technology.

Electron Technology VI – ELTE'97 was organized by the Chair of Electronics, AGH—Academy of Mining and Metallurgy in Kraków.

Electron Technology VII – ELTE'2000 was organized by the Institute of Microsystems Technology (renamed from Institute of Electron Technology), Wrocław University of Technology.

Electron Technology VIII – ELTE'2004 was organized by the Institute of Microelectronics and Optoelectronics, Warsaw University of Technology. There were presented 10 plenary papers, 39 section papers, and around 150 contributed papers. Conference papers were divided into six topical sessions: Electronic Materials, Micorelectronics, Nanoelectronics, Vacuum Science and Technology, Microsystems, and Magnetoelectronics. Honorary Chairman of the Conference was Prof. Witold Rosiński, and Chairman was Prof. Wiesław Woliński.

Electron Technology IX – ELTE'2007 was organized by the Chair of Electronics, AGH—Academy of Mining and Metallurgy in Kraków on 4–7 September 2007. The Conference was associated with the 55th Anniversary of the Faculty of Electrotechnics, Automation, Informatics and Electronics of the AGH University. Conference Proceedings were published as a volume of abstracts and in technical journals: Measurement Science and Technology, Vacuum and Elektronika. The conference was traditionally accompanied by a technical exhibit. Prof. Tadeusz Pisarkiewicz was Chairman of the Scientific Committee of ELTE'2007.

The Jubilee Electron Technology X – ELTE'2010 – was organized by Wrocław University of Technology together with IMAPS-CPMT Poland 2010 Conference, on 22–25 September. Topical scope of the conference was divided into four parts: Microelectronics and Nanoelectronics, Photonics, Microsystems, and Electronic Materials. The scope of the IMPS-CMPT Poland 2010 Conference included: thin

and thick film technologies; thin and thick film sensors; modeling, design and simulation of multichip structures, components and circuits; modern technologies and applications of multichip modules; electrical, optical, mechanical and thermal characterization of film structures, components and circuits; packaging in electronics, photonics and Microsystems; quality and reliability of film structures and packaging processes. During ELTE 2010 there were presented 4 keynote papers, 48 plenary session papers and 146 contributed papers during poster sessions. The conference was accompanied by technical exhibit. Prof. Andrzej Dziedzic was a Chairman of the Scientific Committee of ELTE 2010.

Electron Technology XI – ELTE'2013 was organized by the Institute of Microelectronics and Optoelectronics, Warsaw University of Technology. ELTE'2013 gathered around 270 participants. There were presented 9 plenary papers, 50 oral papers and 165 poster papers. Scientific Committee of ELTE'2013 awarded 12 students and young researchers with the Best Presentation Award funded by the Conference and by the SPIE. The Conference Chairman was prof.Paweł Szczepański.

The topics and sessions of Electron Technology XI – ELTE 2013 were as follows:

1. Photonics:
    - Semiconductor light sources
    - Detectors and photovoltaic
    - New materials for optical applications
    - Passive optoelectronics devices
    - Nonlinear optical materials

2. Microsystems
    - Electrical, mechanical and thermal modeling and design of Microsystems
    - Design and fabrication of MEMS and MOEMS systems
    - Smart sensing structures
    - Lab-on-chip systems
    - Micro- and nanobiosystems

3. Materials Technology for Optoelectronics and Electronics:
    - Fabrication and full characterization of optoelectronics and electronics materials
    - Applying nanotechnology for manufacturing photonics as well as electronics materials
    - Bio- and nanomaterials for photonic, electronic and microelectronic systems
    - Advanced methods for characterization of materials and electronics devices
    - Hybrid and printed circuits boards technology

4. Microelectronics and Nonoelectronics
- Electrical, mechanical and thermal design and fabrication of semiconductor devices and integrated circuits
- Simulation of technological processes
- Micro- and nano technology (with using electron, ion and molecular beams)
- Spintronic and magnetoelectronic
- Characterization and diagnostic of technological processes of semiconductor devices and integrated circuits
- Packaging of photonics and microelectronics devices

The Conference ELTE 2013 provided material for two volumes of proceedings. One of them was published in Polish (a volume of abstracts of all conference presentations) and one in English (SPIE Proceedings). Additionally, a CD-ROM was added to the volume of abstracts containing extended abstracts of all papers. The editors of this volume present the full texts of around 100 chosen and reviewed articles by authors affiliated primarily with university and government-based laboratories.

The conference chairs and editors would like to thank personally the authors and conference contributors who made this book possible. A number of devoted reviewers from the conference Scientific Committee contributed a lot to the betterment of this book. Special thanks are also due to SPIE for supporting the conference by undertaking the publication of this proceedings volume. The Conference Committee announces with pleasure that the next meeting on Electron Technology ELTE 2016 is scheduled to be organized by the AGH University of Science and Technology in Kraków in 2016, under the chairmanship of Prof. Tadeusz Pisarkiewicz.

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