Proceedings of the International Conference on Oxide Materials for Electronic Engineering fabrication, properties and applications (OMEE–2017)
Lviv, Ukraine, May 29–June 2, 2017

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Preface

The International Conference on Oxide Materials for Electronic Engineering – fabrication, properties and applications (OMEE–2017) held on May 29–June 2, 2017 in Lviv, Ukraine, was the fifth of the series organised by Lviv Polytechnic National University every two–three years since 2007.

This conference continues the good tradition to gather experienced scientists and young researchers, experimentalists and theoreticians in different fields of physics and chemistry, technology and engineering, dealing with wide variety of oxides properties and even more wide diversity of their applications. At OMEE Conference they have a forum for direct and unimpeded discussion of their results and new trends in their fields, exchange of knowledge and ideas, joining their efforts in collaboration and multidisciplinary research. About 150 participants from more than 100 scientific, educational and industrial institutions from 16 countries (Belarus, Brazil, Czech Republic, Germany, Israel, Republic of Korea, Latvia, Lithuania, Poland, Portugal, Russia, Slovakia, Turkey, UK, Ukraine, USA) presented contributions at OMEE-2017.

The Conference Program covered topics of material science and technology, chemistry and physics of solid state, structure peculiarities on different scales, interconnection of chemical composition, structure and properties of oxides, their modification under external influence, developments of new methods of study and new applications of oxide materials in many fields of electronic engineering and not only. Particularly, invited speakers from 9 countries have presented 22 keynote lectures, listed in alphabetical order below:

Anatolii Belous, Vernadsky Institute of General and Inorganic Chemistry, Ukraine — Ferromagnetic Nanomaterials: Synthesis and Properties

Ulrich Bismayer, Mineralogical Petrographic Institute, Hamburg University, Germany — Hard tissue implant materials

Pablo Esquinazi, Institute for Experimental Physics, Universität Leipzig, Germany — Defect induced magnetism in ZnO: a first device application

Marek Godlewski, Department of Technology of Oxide Nanostructures, Institute of Physics, Polish Academy of Science, Poland — New generation of fluorescent markers for application in Medicine

Roman Golovchak, Department of Physics and Astronomy, Austin Peay State University, USA — Glasses for bioscaffold applications

Yuri Grin, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany — Spark-Plasma-Sintering for preparation of oxidic and ceramic materials

Sergey Istomin, Department of Chemistry, Moscow State University, Russian Federation — Tuning the high-temperature properties of perovskite-related oxides for electrochemical applications

Agata Kamińska, Department of High-Pressure Spectroscopy, Institute of Physics, Polish Academy of Science, Poland — Study of luminescence properties of Yb³⁺-doped oxides using high hydrostatic pressure

Aivaras Kareiva, Vilnius University, Lithuania — Sol-gel synthesis of layered double hydroxides Mg₃/Al

Miroslav Kučera, Faculty of Mathematics and Physics, Charles University, Czech Republic — Thin-film oxide scintillators

Matteo Leoni, University of Trento, Italy; International Centre for Diffraction Data (ICDD), USA — Life after Scherrer formula: modern methods of nanostructure analysis using diffraction

Vasily Lutsyk, Chemical Department, Buryat State University, Russian Federation — Assembled Phase Diagram as a Novel Tool of Materials Science

Tatiana Prikhina, V. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Ukraine — Role of oxygen distribution in the structure of magnesium diboride-based materials on their superconducting characteristics

Anatoliy Senyshyn, Research Neutron Source Heinz Maier-Leibnitz (FRM II), Technical University of Munich, Germany — Lithium diffusion pathways in modern solid state electrolytes

Alexander Serga, State Research Centrum OPTIMAS, TU Kaiserslautern, Germany — Kinetic instability, magnon condensates and room-temperature supercurrents in YIG films
Mykhailo Shatruk, Department of Chemistry and Biochemistry, Florida State University, USA — Core-shell nanoparticles with strong magnetic anisotropy as potential building blocks for permanent magnets

Sergey Sholom, Oklahoma Center for Radiation Physics, Oklahoma State University, USA — Emergency OSL/TL dosimetry with components of mobile phones and other personal items

Valdas Sirutkaitis, Laser Research Center, Vilnius University, Lithuania — Last trends in micromachining of transparent materials with femtosecond laser pulses

Gunnar Suchanek, Institute for Solid State Electronics, TU Dresden, Germany — A new application of relaxor ferroelectrics: Electrocaloric cooling

Mikhail Trubitsyn, Department of Solid State Physics and Optoelectronics, Oles Honchar Dnipro National University, Ukraine — Ionic conductance in multiphase lithium-germanium oxides

Mário Valerio, Physics Department, Federal University of Sergipe, Brazil — How computer modelling can aid materials processing and defect driven effects

Besides the above, 162 contributions were presented in either oral or poster presentations.

This volume contains papers after contributions presented at the OMEE-2017 Conference, which have passed the standard blind peer-reviewing procedure. All included papers have passed the standard blind peer-reviewing procedure and were accepted for publication in Acta Physica Polonica A journal. We would like to thank to members of the Program Committee of OMEE-2017 and other experts involved in the reviewing process which have ensured the high scientific quality of the presented papers. We also kindly acknowledge the members of the Editorial Staff of Acta Physica Polonica A for their efforts and enthusiasm, which made it possible to issue this volume.

S. Ubizskii, L. Vasylechko, Ya. Zhydachevskyy, D. Sugak, Guest Editors

Participants of the 5th International Conference on Oxide Materials for Electronic Engineering (OMEE–2017).