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Preface

Polish national symposia on Fast Ionic Conductors started in 1980. The XIth Symposium was held on 14–17 September 2008 in Grybów, Poland. At the same location in beautiful Beskidy mountain region, the Vth Symposium of the series was held in 1995. Comparison of the two meetings demonstrates the growth of the research fields of Solid State Ionics and Electrochemical Energy Sources. The Vth Symposium gathered 39 participants who listened to 10 lectures and 12 oral reports. The XIth Symposium brought together 82 participants including 32 students (Ph.D. and M.Sc.). The scientific program included 5 invited lectures given by foreign guests, 8 keynote lectures, 20 reports in oral sessions and 44 posters with short oral presentation.

The XIth symposium was opened by Prof. K. Funke, President of the International Society for Solid State Ionics, with invited lecture on “Decoupled, coupled, and localized ionic motion in disordered materials”. Invited lectures presented by Professors:

C.M. Julien on “New aspects on the ionic and electronic properties of LiMn_2O_4 and LiFePO_4 cathode materials for Li-ion batteries”

Abrahams on “Fluoride based phases in doped bismuth oxides”

B. Dabrowski on “Oxygen vacancy ordering and mix-conducting properties of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_{3-d}$ ”

P. Mustarelli on “Ionic liquids for rechargeable lithium batteries: state of the art and perspectives”

served as introduction to sessions devoted to related topics:

- (i) ionic transport in nanocrystalline and composite materials;
- (ii) polymer electrolytes—novel salts, polymer structures and composites;

- (iii) electrodes for Li-ion batteries;
- (iv) oxide ion and proton conductors;
- (v) electrodes for fuel cells;
- (vi) intercalation and photo-electrochemistry.

Publication of papers in the reputable journal accessible to the worldwide audience proves the scientific value of the contributions presented at the Symposium. Selected papers presented at the Xth Symposium on Fast Ionic Conductors have been published in *Journal of Power Sources* (vol. 173, 2007). This special issue of *Journal of Power Sources* is a collection of papers presented during the XIth Symposium and includes reports on basic research on fast ionic and mixed electronic–ionic conductors as well as on studies aimed at the application of these materials in batteries, fuel cells and photo-electrochemical devices.

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