

Preface

The Summer School on Synthesis of Nanostructured Materials for Polymer Batteries was held in Augustów, Poland, 22–26 June 2005. The school was organized in the frame of the European Research Network of Excellence ALISTORE. The meeting brought together 48 participants including PhD and MSc students, people from battery industry and experts in the field of nanostructured materials and batteries who presented a selection of plenary lectures on topics related to the scope of the school. The electronic versions of these lectures were collected and distributed among the participants of the school. They are also available upon request from the organizers of the school. The topics of the lectures presented together with the name of lecturer are listed below:

1. “Molecular modelling of polymer electrolytes”—Prof. J. Thomas, University of Uppsala.
2. “Synthesis of polymer matrices for polymeric electrolytes”—Prof. Z. Florjańczyk, Warsaw University of Technology (WUT).
3. “Supramolecular compounds as useful additives in polymer batteries”—Prof. G. Rokicki, WUT.
4. “Designing of new nano- and micro-fillers for electrolytes and electrode materials”—Prof. M. Marczewski, WUT.
5. “An overview of energy conversion and storage devices for Electric Vehicles applications”—Prof. A. Czerwiński, Institute of Industrial Chemistry, Warsaw.
6. “Active materials—current collector interface: a key issue to control performance improvement in energy storage devices”—Prof. P. Simon, University Paul Sabatier.
7. “Synthesis of nano-powders for electrode materials in Li-ion batteries”—Prof. J. Kelder, TU Delft.
8. “Random Resistor Network modelling of composite polymeric electrolytes”—Dr. M. Siekierski, WUT.
9. “Conjugated polymers as electrode materials”—Prof. J. Plochanski, WUT.
10. “EIS as a powerful tool for materials and battery characterization – Part 1 – the electrical properties of electrolytes”—Prof. R. Bouchet, University of Marseille.
11. “Crystalline polymer electrolytes”—Prof. Y. Andreev, University of St. Andrews.
12. “Composite polymeric electrolytes: old tricks and new approaches”—Prof. W. Wiczonek, WUT.
13. “In situ studies of the effect of crystallinity on ionic transport in polymer electrolytes”—Prof. J. Dygas, WUT.
14. “EIS as a powerful tool for materials and battery characterization – Part 2 – the anodic and cathodic interfacial electrochemical properties”—Prof. R. Bouchet, University of Marseille.
15. “Moving from plastic Li-ion batteries to room temperature polymer batteries”—Prof. L. Sannier, LRCS, Amiens, France.
16. “Materials for electrochemical supercapacitors”—Prof. P. Kulesza, Warsaw University.

As can be seen from the above program we started the school from very basic lectures on the synthesis of polymer and filler materials used in the preparation of electrolytes and electrodes applied in lithium and lithium-ion batteries. This was followed by a series of lectures on the preparation and characterization of particular electrode and electrolyte materials. Finally, there were also presentations regarding the characterization techniques used and new application possibilities such as, e.g. electrochemical capacitors.

The young participants of the school presented their results during the poster session. This special issue of Journal of Power Sources is a collection of the best papers presented during the poster session and covers the area of basic research on polymeric electrolytes (both lithium and proton conductors) together with studies devoted to the application of nanostructured materials in batteries, fuel cells and electrochromic devices.

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