



## Foreword

On behalf of the Scientific Committee of the Baltic Polymer Symposium 2011 I have the pleasure of introducing this special issue of selected papers presented at the symposium.

The Baltic Polymer Symposia have a long tradition. These meetings were initiated more than ten years ago by universities and research institutions in the Baltic States. Today their importance is growing continuously and so is the number of the participating researchers and countries. This year we had participants from the Netherlands, Belarus, Russia, Ukraine, Finland, Hungary, Taiwan, and Nepal and of course numerous participants from the Baltic States.

A characteristic feature of this symposium was a large number of doctoral students and young researchers among the participants. The scope of the symposium was broad including theoretical as well as practical questions of polymer materials: synthesis, processing technology, and practical applications of natural as well as synthetic polymers, composite materials, and hybrid structures with inorganic compounds.

Traditionally a number of reports were dedicated to mechanical, structural, physical, and chemical properties of polymers and their dependence on the preparation technology. Development and design of biobased biodegradable polymers and composite materials have been stimulated by the continuously growing public concern about the pollution of our environment. Also properties of degradable plastics have been investigated by many scientists in recent years.

The number of presentations devoted to polymer materials as functional materials has been increasing from year to year. It is remarkable that besides traditional polymer materials a strong position has been won by a new class of functional materials: electrically conductive polymers and organic charge-transporting materials, hydrazones. A number of papers treating these materials were presented also at this symposium.

Hybrid organic–inorganic molecular-organized materials based on conjugated polymers and inorganic nanoparticles are of great interest for developing new types of bulk heterojunction-based plastic solar cells and light emitting diodes, sensors, and catalytic and electrocatalytic systems. Physical properties of hybrid structures

for solar cells consisting of conjugated polymers and fullerenes  $C_{60}$  were reported. The influence of technological parameters such as temperature or chemical composition on the photovoltaic properties of hybrid inorganic polymer heterostructures was investigated by many authors from different countries and interesting results were presented at our symposium. Also reports about the molecular imprinting as a promising technology for preparing artificial receptors based on molecularly imprinted polymers containing tailor-made recognition sites were presented.

A number of presentations treated organic charge-transporting materials such as thiophene-based polymers used for the manufacture of various optoelectronic devices like light emitting diodes, photovoltaic cells, organic transistors, and electrographic photoreceptors. Physical and chemical properties of organic charge-transporting materials such as hydrazones used in optoelectronic and electronic devices including electrophotographic photoreceptors, organic light emitting diodes, and photovoltaic cells were investigated and reported by many authors.

Chemical modification of chitosan is an important topic for the production of biofunctional materials with wide practical applications in many areas such as pharmacy, medicine, and cosmetics. Chitosan can be used for the preparation of various polyelectrolyte complexes with natural polyanions for controlled release of encapsulated drugs and biomolecules. In this symposium synthesis, characterization, and application of magnetic microcapsules from graft chitosan for the immobilization of enzyme maltogenase was discussed.

Altogether the programme of the symposium included 25 oral and 69 poster presentations, covering practically all aspects of polymer engineering, science, and technology. In this special issue only a limited number of papers from the symposium are published. However, they give an overview of the wide range of topics in polymer science investigated nowadays.

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Baltic Polymer Symposium 2011