

Foreword

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The manuscripts presented in this special issue of the Journal of Applied Electrochemistry summarize a selection of papers presented during the *Electromembrane Processes and Materials (ElMemPro)* conference held from August 26 to 29, 2012 in Český Krumlov, Czech Republic, as a Satellite Meeting of the 63rd ISE Annual Meeting.

What was the motivation for selecting this topic? It may seem to be only partly connected with electrochemistry and electrochemical engineering. However, the opposite is true. Membrane technologies are receiving increasing attention in well-developed industrialized countries. Electromembrane processes represent an important part of them, offering solutions to the numerous issues currently facing society. This concerns not only modern, large, medium, and small-scale technologies providing high purity and added value products with minimum pollution of the environment, but also technologies related to the hydrogen economy (fuel cells, water electrolysis) that are widely discussed both in scientific and political circles. Electromembrane separation processes like electrodialysis and electrodeionization are further important technologies. Despite these facts and despite the significant progress these technologies have made during the last few years, they are only seldom discussed as an important interdisciplinary subject at the interface between materials science and electrochemical engineering. The aim of this meeting was to offer a specialized forum for researchers as well as industrialists involved in this field as well as for those interested in obtaining an up-to-date overview. The

specialized focus of this event also aimed to attract the attention of experts outside the field of electrochemistry, thus creating a truly interdisciplinary event so vitally important for rapid advances in this field.

The *ElMemPro 2012* Conference comprised 62 oral presentations, including 1 plenary and 5 keynote lectures, and also 25 posters. Interest was evenly distributed between the fields of ionically conductive (or selective) membrane materials, electromembrane separation processes (including industrial and combined processes), fuel cells and energy conversion processes (including high-temperature ones), and mathematical modeling. The scientific program thus provided an interesting overview of this field and succeeded in bringing together not only specialists from various fields of research, but also from industry.

The scope of this special issue is limited, thus it was only possible to include a selection of examples of the topics discussed during the event. Energy conversion is represented by contributions on various aspects of high-temperature PEM fuel cells and by one focusing on carbon dioxide reduction in high temperature solid oxide electrolysis. The field of electromembrane separation processes is covered by papers dealing with the characterization of bipolar membranes and the design and evaluation of the electrodialysis plant for waste water desalination. A relatively small number of papers reflects two facts: (i) the important participation of industry, which is concerned about protecting its intellectual property and (ii) the interdisciplinarity of the event. A significant number of the participants are publishing their results in other scientific journals.

At this juncture, I would like to thank the authors for preparing the manuscripts based on their contributions presented during the symposium and for their constructive reactions to the comments and suggestions made by the

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referees. I would also like to express my appreciation of the work performed by the referees of the individual manuscripts. Their efforts have contributed greatly to the quality of papers and have helped to maintain the high standard both of this issue and of the journal in general. Last but not

least, I am grateful to Professor Botte for making it possible to publish this Special Issue of the Journal of Applied Electrochemistry and thus providing space for publicity about this interesting and important field of applied electrochemistry.