

## Preface

The objective of the COST Action CM 1206 EXIL (Exchange on Ionic Liquids) Action was to *coordinate European research activities and knowledge exchange* on ionic liquids and to explore their full potential in the context of fundamental and applied chemistry, materials science and engineering. It provided a coordinated forum for an efficient intra- and interdisciplinary knowledge and expertise exchange, networking and dissemination of information and results, training and initiating collaborations. Through 99 short-team scientific missions (STSM) of PhD students in 21 different countries, one summer school, workshops, and joint publications, this network supplied the scientific community with systematic high-quality information on ILs and their applications through new and improved technologies and materials, through cleaner and safer production techniques. The Action aims to combat misinformation as well as to contradict data and reports.

This book provides an interesting snapshot of some of the main lines of current and new research regarding the properties and applications of ionic liquids. The chapters reflect the growing theoretical and computational work leading to new predictive properties of ionic liquids.

The accurate experimental determination of these properties (Villaneuva – thermal stability) and their mixtures with solvents (Bendova – liquid–liquid equilibria) or solute (Dinis – aqueous biphasic systems with mixtures of polymers) are firstly developed. Then, the modeling of ionic liquids and their mixtures (Wang – multi-granular modeling) is described. The impact of solid–liquid interfaces for energy applications (Costa – advanced energy applications), and solid liquids interface for the synthesis of nanomaterials (Minofar – silver nanoparticles in EMIMPF<sub>6</sub>), and surface treatments (Verpoort – surface treatment) are discussed.

We would like to heartily thank all 400 participants of the EXIL from 21 different countries, particularly group leaders, MC members, STSM responsables, and grant holders and the 99 PhD students who participated in the exchange program through STSMs.

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