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Zwitterionic ionic liquids-like compounds and their applications

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PURPOSE OF THE ABSTRACT

The remarkable properties of ionic liquids (ILs) and the increased interest in their application as alternative solvents have led to the search and development of new families of compounds based on them. A new class of zwitterionic compounds of high structural similarity with ILs - here designated as zwitterionic ionic liquid-like compounds (ZILs) - was thus proposed.[1] Unlike ILs that are constituted by separated ions, ZILs are constituted by a covalently bonded ion pair, linked through an alkyl spacer and with a neutral total net charge. Like ILs, these compounds also present tunable structures and properties by the change of headgroups, spacers and functional groups that compose them. Still, despite their structural similarity to ILs, ZILs exhibit added complexity and diversity suggesting that their properties and behavior should be different from those of ILs. Aiming to explore the potential advantages on the use of ZILs, we have designed and developed novel ZILs and evaluate their properties and potential application in different fields. In this work will be presented an overview of our most recent works concerning the application of different ZILs for the preparation of thermoreversible separation systems, integrated biocatalytic processes and as solubility enhancers (hydrotropes).[2,3] ZILs aquatic toxicity and the relationship between their structure and ecotoxicity will also be addressed, showing that studied ZILs present a more benign character than their ILs counterparts.[4]

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FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

zwitterionic compounds | aqueous biphasic systems | hydrotropes | ecotoxicity

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