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Title: Synthesis and Purification of Imidazolium and Pyrazolium Based Ionic Liquids and Their Application in Electrochemistry

Date: June, 2003

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Abstract

The imidazolium and pyrazolium based room-temperature ionic liquids: 1-butyl-3-methylimidazolium tetrafluoroborate, BMIBF$_4$, 1-ethyl-1-2, 3-dimethylimidazolium tetrafluoroborate, EDMIBF$_4$, 1-butyl-2, 3-dimethylimidazolium tetrafluoroborate, BDMIBF$_4$, 1-butyl-3-methylpyrazolium bis(pentafluoroethylsulfonyl) imide, BMPBETI, were synthesized and characterized.

Several different preparation procedures were examined in order to obtain the ionic liquids in pure form. Their thermal, chemical, and electrochemical properties were investigated. BMIBF$_4$ was used as a solvent for electrochemical and spectroelectrochemical study of ferrocene (FeCp$_2$), NbCl$_4$(AN)$_2$, and NbBr$_4$CH$_3$CN.