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Dielectric Spectroscopy of $Pyr_{14}TFSI$ and $Pyr_{12O1}TFSI$ Ionic Liquids

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Abstract

Due to the conductivity of ionic liquids (IL), the dipolar dynamics are covered by charge separation phenomenon, which leads to difficulties extracting necessary parameters, i.e. static dielectric permittivity. We suggest a procedure, which allows relatively easy extracting parameters of dipolar dynamics of IL. Our experiments were performed on $Pyr_{14}TFSI$ and $Pyr_{12O1}TFSI$ ILs. Obtained results allowed comparing the dipolar dynamics of both materials. The factor, which makes the static dielectric permittivity of $Pyr_{12O1}TFSI$ to be higher than that of $Pyr_{14}TFSI$ may be accounted for the permanent dipole of Pyr_{12O1}^{+} cation.

Keywords