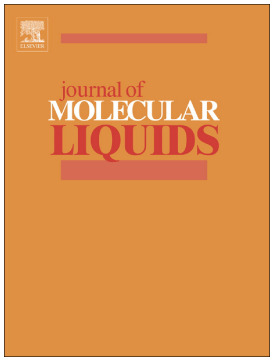

Conductometric studies of [emim][BF4] and [bmim][BF4] in propan-2-ol. Association of ionic liquids in alcohols

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Conductometric studies of [emim][BF_4] and [bmim][BF_4] in propan-2-ol. Association of ionic liquids in alcohols.

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ABSTRACT

The electrical conductivities of dilute solutions ($c < 0.004$ mol·dm^{-3}) of the ionic liquids 1-ethyl-3-methylimidazolium tetrafluoroborate [emim][BF_4] and 1-butyl-3-methylimidazolium tetrafluoroborate [bmim][BF_4] in propan-2-ol have been measured in the temperature range from 283.15 to 318.15 K at 5 K intervals. The limiting molar conductivities and ionic association constants were calculated using the low concentration Chemical Model (lcCM). Strong ion association was found for the ionic liquids in propan-2-ol within the investigated temperature range. From the temperature dependence of the limiting molar conductivities, the Eyring's activation enthalpy of charge transport was determined. The thermodynamic parameters of ion pair formation such as Gibbs energy, entropy, and enthalpy were evaluated and discussed. The results were discussed and compared with those obtained earlier for other alcohols.

Keywords:

Molar conductivity
Ionic association
1-Alkyl-3-methylimidazolium tetrafluoroborate
Propan-2-ol
Thermodynamic functions

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