

Accepted Manuscript

Volumetric and sound speed study of ammonium-based ionic liquid mixtures with ethanol

Ângela F.S. Santos, Maria-Lúisa C.J. Moita, João F.C.C. Silva, Isabel M.S. Lampreia

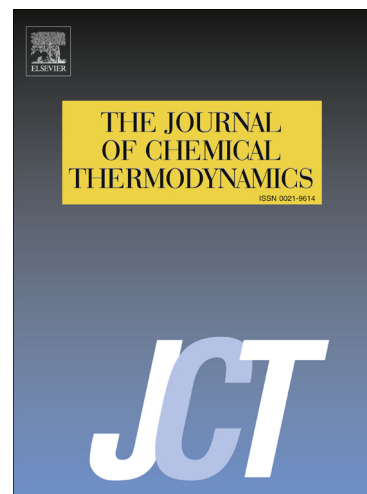
PII: S0021-9614(16)30283-X
DOI: <http://dx.doi.org/10.1016/j.jct.2016.09.024>
Reference: YJCHT 4813

To appear in: *J. Chem. Thermodynamics*

Received Date: 19 July 2016
Revised Date: 16 September 2016
Accepted Date: 17 September 2016

Please cite this article as: A. F.S. Santos, M-L. C.J. Moita, J. F.C.C. Silva, I. M.S. Lampreia, Volumetric and sound speed study of ammonium-based ionic liquid mixtures with ethanol, *J. Chem. Thermodynamics* (2016), doi: <http://dx.doi.org/10.1016/j.jct.2016.09.024>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Volumetric and sound speed study of ammonium-based ionic liquid mixtures with ethanol

Ângela F.S. Santos ^a, Maria-Luísia C.J. Moita ^b, João F.C.C. Silva ^a, Isabel M.S.

Lampreia ^{a,*}

^a*Departamento de Química e Bioquímica, Centro de Química Estrutural, Faculdade de Ciências, Universidade de Lisboa, 1749-016 Lisboa, Portugal*

^b*Departamento de Química e Bioquímica, Centro de Química e Bioquímica, Faculdade de Ciências, Universidade de Lisboa, 1749-016 Lisboa, Portugal*

Corresponding author. Tel: +351217500995; fax: +351217500088.

E-mail addresses: milampreia@fc.ul.pt (I.M.S. Lampreia), afsantos@fc.ul.pt (A.F.S.

Santos), mlmoita@fc.ul.pt (M.-L.C.J. Moita)

ABSTRACT

Thermodynamic studies embracing molecular interactions between ionic liquids (ILs) and molecular solvents are scarce and are required to explore molecular interactions and structural effects with interest in engineering applications. Ammonium-based are interesting ILs since they can be tailored to provide information concerning both chain length and solvophobic/solvophilic effects. In this work from accurately measured density and sound speed data in the systems ethanol + {[N₄₁₁₁]; [N₄₄₄₁] or [choline]}[NTf₂] derived quantities such as excess partial molar volumes and isentropic compressions including their limiting values were obtained. The reasoning of the results permitted to conclude that while in the [N₄₄₄₁][NTf₂] case packing effects due to the difference in size of the components prevail, in the other two cases specific interaction ethanol–cation explains both the lower minimums in the excess properties and the higher magnitude of the negative limiting excess partial molar, volumes and isentropic compression values in the mixture containing [N₄₁₁₁][NTf₂] in relation to [N₄₄₄₁][NTf₂] and the negative limiting partial molar isentropic compression in the [choline][NTf₂] case in contrast with positive values for the other two ILs.

Download English Version:

<https://daneshyari.com/en/article/4907430>

Download Persian Version:

<https://daneshyari.com/article/4907430>

[Daneshyari.com](https://daneshyari.com)