## Accepted Manuscript

Thermodynamics of aggregation of imidazolium-based surface active ionic liquids in aqueous poly(ethylene oxide) media†

Satyajit Mondal, Dhiman Ray, Bijan Das

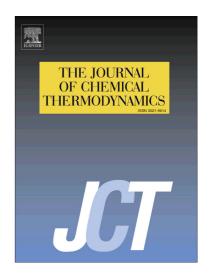
PII: S0021-9614(17)30316-6

DOI: http://dx.doi.org/10.1016/j.jct.2017.08.036

Reference: YJCHT 5195

To appear in: J. Chem. Thermodynamics

Received Date: 1 June 2017 Revised Date: 25 August 2017 Accepted Date: 28 August 2017



Please cite this article as: S. Mondal, D. Ray, B. Das, Thermodynamics of aggregation of imidazolium-based surface active ionic liquids in aqueous poly(ethylene oxide) media†, *J. Chem. Thermodynamics* (2017), doi: http://dx.doi.org/10.1016/j.jct.2017.08.036

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.

Thermodynamics of aggregation of imidazolium-based surface active ionic liquids in aqueous poly(ethylene oxide) media†

Satyajit Mondal,<sup>a</sup> Dhiman Ray,<sup>a</sup> and Bijan Das\*<sup>a</sup>

<sup>a</sup>Department of Chemistry, Presidency University, Kolkata 700 073, India.

E-mail: bijan.chem@presiuniv.ac.in; Tel: 91 33 94752 49401.

† Supporting information available. See DOI:

## Abstract

The aggregation behaviour of two imidazolium-based surface active ionic liquids (SAILs), e.g., 1-decyl-3-methylimidazolium chloride (C<sub>10</sub>MeImCl) and 1-hexadecyl-3-methylimidazolium chloride (C<sub>16</sub>MeImCl) in aqueous solutions was investigated in presence of varying amount of poly(ethylene oxide) (PEO) to explore the possible SAIL-PEO interactions. Electrical conductivity measurements were performed in aqueous solutions of PEO having two different molar mass over a selected temperature range. The critical micellization concentrations of the investigated SAILs in PEO-water media were always found to be higher than those in pure water. PEO was found to play a dual role in the SAIL-PEO-water ternaries. It has been concluded that the PEO molecules added to water modify the property of the medium besides binding a very small fraction of the surfactant ions prior to the commencement of the micellization of SAILs. The thermodynamic parameters of micellization such as Gibbs free energy ( $\Delta G_m^0$ ), standard enthalpy ( $\Delta H_m^0$ ), and standard entropy ( $\Delta S_m^0$ ) of aggregation were estimated from the temperature dependence of the critical micellization concentration values. The effects of concentrations of PEO, and molar mass of PEO on the self-aggregation of the C<sub>10</sub>MeImCl and C<sub>16</sub>MeImCl have been

## Download English Version:

## https://daneshyari.com/en/article/4907198

Download Persian Version:

https://daneshyari.com/article/4907198

<u>Daneshyari.com</u>