World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:9, No:03, 2015

Mixed Micellization Study of Adiphenine Hydrochloride with 1-Decyl-3-Methylimidazolium Chloride

Authors : Abbul B. Khan, Neeraj Dohare, Rajan Patel

Abstract : The mixed micellization of adiphenine hydrochloride (ADP) with 1-decyl-3-methylimidazolium chloride (C10mim.Cl), was investigated at different mole fractions and temperatures by surface tension measurements. The synergistic behavior (i.e., non-ideal behavior) for binary mixtures was explained by the deviation of critical micelle concentration (cmc) from ideal critical micelle concentration (cmc*), micellar mole fraction (Xim) from ideal micellar mole fraction (Xiideal), the values of interaction parameter (β) and activity coefficients (fi) (for both mixed micelles and mixed monolayer). The excess free energy (ΔGex) for the ADP- C10mim.Cl binary mixtures explain the stability of mixed micelles in comparison to micelles of pure ADP and C10mim.Cl. Interfacial parameters, i.e., Gibbs surface excess (Γmax), minimum head group area at air/ water interface (Amin), and free energy of micellization (ΔG0m) were also evaluated for the systems.

Keywords : adiphenine hydrochloride, critical micelle concentration, interaction parameter, activity coefficient
Conference Title : ICC 2015 : International Conference on Chemistry
Conference Location : Paris, France
Conference Dates : March 30-31, 2015