

**ET-1**

**Micellization behavior of anionic surface active ionic liquid 1-butyl-3-methyl imidazolium dodecylbenzenesulphonate in the presence of cationic polyelectrolyte poly(diallyldimethylammonium chloride) [PDADMAC] and non-ionic polyelectrolyte polyvinylpyrrolidone (PVP): Insights into competing mechanisms.**

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**Abstract**

In the present study, we have reported a comprehensive assessment of interactional behavior of surface active ionic liquid (SAIL) 1-butyl-3-methylimidazolium dodecylbenzenesulfonate [C<sub>4</sub>mim][DBS] in the presence of cationic polyelectrolyte poly(diallyldimethylammonium chloride) [PDADMAC] solution and non-ionic polyelectrolyte polyvinylpyrrolidone (PVP) in aqueous solution. Various techniques such as surface tension, isothermal titration calorimetry (ITC), conductivity, dynamic light scattering (DLS) and turbidity have been employed to get insight into interactions among these systems. Various surface parameters such as surface excess concentration ( $\Gamma_{cmc}$ ), surface pressure at interface ( $\Pi_{cmc}$ ), minimum area occupied by one molecule of SAIL at interface ( $A_{min}$ ), adsorption efficiency ( $pc_{20}$ ) and surface tension at critical micelle concentration (cmc) ( $\gamma_{cmc}$ ) have been calculated from tensiometric measurements. Thermodynamic parameters i.e. standard free energy of micellization ( $\Delta G_m^\circ$ ), standard enthalpy of micellization ( $\Delta H_m^\circ$ ) and standard entropy of micellization ( $\Delta S_m^\circ$ ) have been evaluated from conductivity measurements. The size of complexes formed have been characterized using DLS and turbidimetry.