**The Influence of Cation and Anion Structure on the Surface Tension of Ionic Liquids**

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There has been growing interest in the study of surface tensions of ionic liquids over the last decade due to their use in areas such as colloid and interface science. In this work, surface tensions of thirty-six ionic liquids are measured by using the pendant drop method. The ionic liquids are classified into several groups, based on cations including N-alkylimidazolium ($[C_n im]^+$, *n* = 2 to 10) and 1-alkyl-3-methylimidazolium ($[C_n mim]^+$, *n* = 2 to 10) and anions including bis-(trifluoromethylsulfonyl)imide ($[Tf_2N]^-$), methanesulfonate ($[CH_3SO_3]^-$) and trifluoromethanesulfonate ($[CF_3SO_3]^-$). The measurement of surface tension is conducted with a drop shape analyzer (KRUSS DSA100S) in a dried nitrogen atmosphere to eliminate the effect of moisture in the air as water is a common impurity and has a large impact on the behavior of ionic liquids. The correlation between the surface tension and the existence of proton, alkyl chain length of the cations and different structures of the anions are studied. By measuring surface tension at different temperatures (20 to 80 $^oC$), the dependence of surface tension on temperature is studied, as well. Furthermore, samples surface tensions are measured to investigate the effect of water impurities in these ionic liquids on their surface tensions. These results add to the growing body of surface tension data available to provide a better understanding of interfacial behavior of ionic liquids.