

## Multi-Component Density Measurement of Aqueous Ionic Liquid Solutions

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The density of multi-component aqueous ionic liquid (IL) solutions is of importance to understand their behavior when developing a process associated with separation. Some data for pure components have been reported as compared to a similar properties and systems. However, the properties of mixtures of the 1-butyl-3-methylimidazolium [bmim] halide systems have not been researched and measured. In this study, densities over a wide composition range for binary/ternary system of IL solutions of [bmim] halide + water and/or alcohol were measured in a various temperature range from 288.15 to 323.15 K with a step of 5 K under an atmospheric pressure by using a vibrating U-tube density meter. The limit of mole fraction of ILs in the mixture was set to be 0.5 or less considering their solubilities. The density increases as the ILs concentration increases or the temperature decreases.