

**Seminar at University of Alabama
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Ionic Liquids: Are they Salts or High Boiling Organic Liquids?

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It has been widely believed that ionic liquids were molten salts with no measurable vapour pressure. Recent work indicates that many ionic liquids are distillable at around 470 K with no significant decomposition. The mechanism for this transfer from the liquid to vapour remains unresolved. Hence it is appropriate to ask “what thermophysical properties of should be used to classify materials as a salt”. Such properties can include vapour pressure, the electrical conductivity of the liquid salt, the electrical conductivity of the salt at low dilution in a polar solvent such as water or ethanol, and the zero frequency relative permittivity. In addition properties of mixtures of ionic liquids with organic compounds, such as vapour-liquid equilibria, liquid-liquid equilibria, excess enthalpies, and excess volumes can give a clue as to the nature of ionic liquids. Theoretical calculations based on *ab-initio* methods can also give a guide as to whether ionic liquids exist primarily as ions or as associated ion pairs in the pure liquid state and in mixtures with organic liquids.

Interpretations of the measurements of the above properties for ionic liquids as well as the theoretical calculations will be reviewed.