

PHYSICAL CHEMISTRY ASKS INDUSTRY FOR A DANCE: WHAT A REPLY???

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Introduction: Successful industrial applications of ionic liquids are based on the reliable physical-chemical properties. In recent time a scope of experimental and computational methods for obtaining these properties have been developed in our lab for pure ionic liquids and their mixtures with other solutes.

Results and discussion:

Pure Compounds

- vapor pressure measurements of Pure ILs
- vaporization enthalpies of Pure ILs
- energies of combustion of ILs
- enthalpies of formation of ILs in the condensed and gaseous phase
- *first-principles* calculations of ILs, thermodynamic analysis of side processes
- real thermal stability
- surface tension measurement

Mixtures

- activity coefficients at infinite dilution of Solutes
- limiting partial molar excess enthalpies of organic Solutes in IL
- activity coefficients (IL+ Solute) in the full concentration range
- VLE measurements of binary solutions of IL and solvent
- LLE-Liquid-Liquid equilibrium measurements
- solubility of gases in IL
- enthalpies of IL synthesis reaction

Conclusions: These methods will be discussed in aspects of their relevance for the practical applications of ILs.