

**SOLVATION PROPERTIES OF PROTIC IONIC LIQUIDS
WITH DIFFERENT NANOHETEROGENEOUS STRUCTURE**

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Ionic liquids (ILs) are promising solvents for the separation and extraction of hydrocarbons, gas purification, desulfurization, and as a medium for organic reactions. Many ILs with a hydrocarbon substituent in the cation have a nanoheterogeneous structure consisting of polar and apolar domains in their bulk phase. The domain structure can be altered by changing the structure of the cation and/or anion. Nanosegregation in the liquid phase strongly affects the solvation properties of ILs and consequently their potential for use in various processes.

In this work, the activity coefficients at infinite dilution (γ^∞) of different organic solutes in thiocyanate- and hydrosulfate-based protic ILs were determined by gas chromatographic headspace analysis. The influence of the liquid phase structure probed by small-angle X-ray scattering and molecular dynamics simulations on the solvation properties of protic ILs was analyzed. The possible use of the studied ILs for various industrial separation problems is discussed.

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