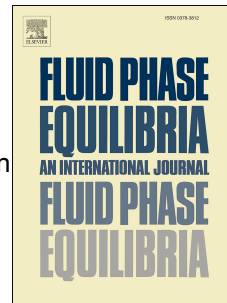


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Monoethanolamine-based Deep Eutectic Solvents, their Synthesis and Characterization

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Abstract:

Since reporting the Reline (choline chloride and urea at 1:2 molar ratio) deep eutectic solvent (DES) few years ago, a diversity of similar solvents have been prepared, characterized and used in different practical applications. The need is still available for converting some conventional solvents into a eutectic formulation for different reasons. In this work, the monoethanolamine (MEA) is combined with three different quaternary salts to form DES at different molar compositions. The resulting DESs were characterized by measuring their main physical properties including melting point, density, viscosity, surface tension, and refractive index within the temperature range of 298.15-358.15 K. An FTIR analysis was also conducted to provide an evidence of any chemical structural changes. These new eutectic fluids have melting points below 279.15 K and of relatively low density and viscosity values. The molar composition of these DESs have significant effect on their physical properties. These new fluids can be utilized for a variety of applications involving adsorptive gas separation and particularly carbon dioxide capture.

Keywords: *monoethanolamine; choline chloride; methyltriphenylphosphium bromide; tetrabutylammonium bromide; eutectic solvents; MEA; properties*

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