

Measurement of bubble points of CO₂ and effects of an ionic liquid cation on the CO₂+ ionic liquids system

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Most of organic solvents are very toxic and cause an environmental pollution. Ionic liquids are liquid at room temperature or below. Ionic liquids are electrically conductive and have extremely low vapor pressure. Many have low combustibility, good thermal stability, a wide liquid range. In this reason, the ionic liquids (IL's) receive attention recently as a green solvent for reaction and separation.

Solubilities of CO₂ in ILs, 1-butyl-1-methylpyrrolidinium trifluoromethanesulfonate ([BMP][TfO]), 1-Butyl-1-methyl-pyrrolidinium bis(trifluoromethylsulfonyl)imide ([BMP][Tf₂N]), 1-octyl-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide ([OMP][Tf₂N]), 1-Hexyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide ([HMP][Tf₂N]) have been experimentally studied for development of a separation process of mixed gas containing CO₂. The range of temperature for the experimental measurements is from 303.15 K to 373.15 K. At high CO₂ concentrations in ionic liquids, the equilibrium pressure increased. When raise the temperate, the solubility of CO₂ in the IL's decreased.