

### Hydrate-Containing Phase Equilibria for Mixtures of Carbon dioxide + 1-butyl-3-methylimidazolium tetrafluoroborate ([C4min][BF4]) + water

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Ionic liquids (ILs), a promising alternative for organic solvent, were found to have the inhibition effect on the CO<sub>2</sub> hydrate formation [1]. In this study we measured the dissociation temperature of CO<sub>2</sub> hydrate containing 1-butyl-3-methylimidazolium tetrafluoroborate ([C4min][BF<sub>4</sub>]) at constant pressure and determined loading composition of all components. With 0.1 molar ratio of IL to aqueous solution, three-phase equilibrium conditions in Lw-H-V below the vapor pressure of CO<sub>2</sub> and Lw-H-Lg above were determined by varying the relative amount of CO<sub>2</sub> to IL-H<sub>2</sub>O mixture. The result shows that in spite of its small amount, ILs inhibit the CO<sub>2</sub> hydrate formation.

[1] Q. Chen, Y. Yu, P. Zeng, W. Yang, Q. Liang, X. Peng, Y. Liu, Y. Hu, Effect of 1-butyl-3-methylimidazolium tetrafluoroborate on the formation rate of CO<sub>2</sub> hydrate, Journal of Natural Gas Chemistry, 17 (2008) 264-267.