

Hydrate-containing Phase Equilibria for Carbon Dioxide in the Presence of Aqueous Solutions of MEG, Methanol

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Thermodynamic hydrate inhibitors (THI) such as alcohols, glycols suppress the formation of gas hydrate. Hydrate-containing phase equilibria data in the presence of aqueous solutions of THI is required to prevent hydrate formation in carbon dioxide capture and sequestration process. Loading composition of carbon dioxide usually have not been specified in the existing hydrate phase equilibrium experimental data. In this work, the effect of the ratio of the amount of carbon dioxide to that of aqueous solutions on hydrate phase equilibrium conditions was measured. Dissociation temperature of gas hydrates was determined by heating the mixtures slowly until gas hydrates is completely disappeared while keeping the pressure constant by using a pressure generator. Dissociation temperature of gas hydrates is decreased as the loading fraction of carbon dioxide increases in the presence of aqueous solutions of methanol. It was found that the effect of the amount of carbon dioxide relative to the aqueous MEG solution on gas hydrate equilibria was weaker than that in the presence of methanol solution.