

## The solubility of water in carbon dioxide and carbon dioxide - nitrogen mixture containing gas hydrate

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For disposal of carbon dioxide the flow assurance of carbon dioxide rich stream is as important as that of the conventional natural gas transfer pipe. Also vast amounts of energy are required to separating process of water and nitrogen gas from carbon dioxide rich phase. The solubility of water in carbon dioxide and the effects of nitrogen in the presence of hydrate are key factors.

Recently published new indirect method\*<sup>1</sup> used for the measurement of carbon dioxide in water was modified and used in this study. The equilibrium temperature was kindly measured for the known composition of carbon dioxide rich phase with water and nitrogen. The compositions of system were predetermined using a syringe pump, sampling valve, and gas cylinder. The results were analyzed by a lattice base equation of states.

[1] Kim, Y. S., B. D. Lim, et al. (2008). "Solubilities of Carbon Dioxide, Methane, and Ethane in Sodium Chloride Solution Containing Gas Hydrate." J. Chem & Eng Data 53(6): 1351-4.