

Measurements of Hydrate Phase Equilibrium for Guests of Nitric Oxide and Carbon Dioxide

노원구, 강성신, 강정원*

고려대학교

(jwkang@korea.ac.kr*)

Hydrate phase equilibria containing carbon dioxide are important in carbon dioxide sequestration for flow assurance. The captured carbon dioxide generally includes impurities such as SO_x and NO_x that affect the carbon dioxide hydrate-forming conditions. However, no literature data have been reported to present authors for the effects of NO_x. In this work, hydrate phase equilibria for single guest of nitric oxide and binary guest of nitric oxide and carbon dioxide were experimentally determined in aqueous liquid-hydrate-vapor three phase regions. Isobaric dissolution temperatures of formed hydrates were measured with predetermined overall loading compositions according to the Duhem's theorem. Hydrate phase equilibrium data for single nitric oxide guest were first reported, which may be used for model development. Nitric oxide in mixed guests of 10mol% nitric oxide and 90mol% carbon dioxide little affected carbon dioxide hydrate-forming conditions.