Spectroscopy Analysis and Phase Equilibria of (Isopropylamine, Dimethylamine, and Trimethylamine) Hydrates

윤여범, 차민준, 이 흔*
KAIST
(hlee@kaist.ac.kr*)

In this study, we introduce a new hydrate formers, Isopropylamine, Dimethylamine, and Trimethylamine. And we identify the structure and guest distributions through spectroscopic tools including High-Resolution Powder Diffraction (HRPD), ^{13}C solid-state NMR and Raman spectroscopy. Isopropylamine has sII structure. But other hydrate structures are unexpected one because Dimethylamine is too small to make sH hydrate and Trimethylamine hydrate has no 5^{12}cage for CH_4. And here, the (L + H + V) phase equilibrium data of (X + CH_4) hydrates (X = Isopropylamine, Dimethylamine, and Trimethylamine) were also measured at pressures from (5 to 11) MPa. And we change the concentration of host amine(5.56mol%, 4mol%, 2mol%,), then we get more phase equilibrium data.