Structure and phase equilibrium of *tert*-butyl nitrite + CH_4 hydrate

성보람, 신규철, 차민준, 최숙정, 이 흔*
한국과학기술원
(h_lee@kaist.ac.kr*)

Gas hydrates has been considered as one of potential materials for gas storage and transportation. In particular, structure-H gas hydrate has been highlighted due to its higher storage capacity and thermal stability than structure-I or structure-II hydrate. In this study, we found a new structure-H former, *tert*-butyl nitrite, through identifying its CH_4 containing hydrate structure and guest distribution by powder X-ray diffraction and high-power decoupling ^{13}C NMR spectroscopy. The phase equilibrium of *tert*-butyl nitrite + CH_4 hydrate were also investigated and confirmed to be more stable than pure CH4 hydrate. With high polarity of *tert*-butyl nitrite expecting to improve hydrate formation kinetics, the present findings might contribute to the application of gas hydrate to natural gas storage and transportation.