Co-Host Clathrate Hydrate in (Ionic molecules + Ammonia + Water) System

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

In this study, we present "co-host" clathrate hydrate that the host lattice framework is composed to water and ammonia molecules in the (tetramethylammonium hydroxide (Me_4NOH) + ammonia) clathrate hydrate using solid-state ^1H NMR spectroscopy and powder X-ray diffraction. The adding NH_3 to ionic hydrate system leads to structural transition from orthorhombic Pnma to cubic Fd3m. The shifting of host lattice peak toward up-field region in ^1H NMR spectra strongly implies that NH_3 participating in ionic hydrate system occurs on the host lattice framework. This co-host inclusion first observed in this study is expected to open new division in inclusion chemistry.