

Observation of TBAB Clathrate Hydrate by THz spectroscopy

강혜리, 고동연, 박주운, 이 혼*

KAIST

(hlee@kaist.ac.kr*)

Nonionic clathrate hydrates are stabilized by van der Waals interaction between guest molecules and the host framework. In contrast, ionic clathrate hydrates are formed by an ionic interaction between an ionic guest and a surrounding host water framework.

Tetra-*n*-butyl ammonium bromide (TBAB) hydrate, one kind of ionic clathrate hydrates, forms two types of semiclathrate hydrate according to its hydration number. At atmospheric pressure, the melting points are between room temperature and freezing point of water.

In this work, ²H NMR spectra and conductivity of TBAB.38 H₂O have been obtained over the temperature range of 183–253 K. The presence of isotropic spectra above 183 K indicates that the deuterons (protons) are relatively mobile even below the melting temperature of TBAB. In addition, terahertz (THz) spectroscopy is applied to TBAB hydrate for the first time.