

Methane Gas Storage In Alcohol Hydrates and Its Spectroscopic Observation

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Because of existence of hydroxyl group in alcohols, alcohols are generally known to hydrate thermodynamic inhibitors via hydrogen bonds between water and alcohols. However, as the number of hydrocarbon groups in alcohols increases, the effects of the hydrogen bonds on water-alcohols interactions decrease, and then the hydrophobic balance become strong. The relationship between hydroxyl group and hydrophobic ends in alcohols therefore cannot be easily described. Here, we attempt to identify the formation of binary (alcohols + gaseous methane) hydrate through spectroscopic identification such as nuclear magnetic resonance, Raman, and powder x-ray diffraction methods and check the possibility of methane gas storage.