

Cubic structure II hydrate formation using sodium dodecyl sulfate

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Methyl iodide (CH₃I) is known to form structure II (sII) clathrate hydrate, but it is hard to form due to its insoluble nature in water. Here, an anionic surfactant, sodium dodecyl sulfate (SDS) is added to methyl iodide in order to form clathrate by dispersing CH₃I to water. Cubic structure of clathrate hydrates are confirmed via x-ray diffraction analysis and behaviors of formation and dissociation are observed by differential scanning calorimetry and P-T trace with methane. We suggest a new approach using surfactant that enables insoluble organic molecules to form clathrate hydrates without secondary gas molecules, and enhances hydrate conversion ratio with methane molecules.