



Induction time of Methane Hydrate formation in the presence of electrolyte solutions of sodium chloride and sodium sulfate

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Abstract

Devising methods to prevent hydrate formation is of the important issues in natural gas industry. Since a great deal of money is annually spent on using hydrate inhibitors, identification of new inhibitors with higher degrees of efficacy is economically justifiable. Bearing in mind the significant role of hydrate inhibitors in prevention of natural gas pipelines' getting blocked, the present study attempts to investigate two compounds of NaCl and Na₂SO₄ as inhibitors of hydrate methane's formation so as to respond to "what is the inhibitive kinetic impact of electrolyte compounds of NaCl and Na₂SO₄ on the formation of methane hydrate?" To do so, this study measures the induction time of methane hydrate crystals in the presence of electrolyte solutions of NaCl and Na₂SO₄ and compares the results obtained with the state lacking such inhibitors.

Keywords : Electrolyte Solutions, Induction Time, Methane Hydrate, Sodium Chloride, Sodium Sulfate.

Research Highlight

- Induction time of methane hydrate formation in the absence and in the presence of inhibitors of sodium chloride and sodium sulfate was recorded.
- Both electrolytes reveal an inhibitive impact on hydrate formation
- The effect of sodium chloride is outperforms that of sodium sulfate.