

Experimental investigations of thermodynamic stability for methane hydrate containing thermodynamic hydrate inhibitors

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Herein, we investigated the thermodynamic stability of methane hydrate containing thermodynamic hydrate inhibitors in a temperature range of 275.25 – 286.05 K and a pressure range of 6.0 – 10.6 MPa. The measured equilibrium temperature and pressures of methane hydrate containing thermodynamic hydrate inhibitors were compared to those of pure methane hydrate, and the hydrate inhibition performance increased as the effective mole fraction of thermodynamic hydrate inhibitors increased. Thermodynamic consistency of the measured equilibrium temperature and pressures of methane hydrate containing thermodynamic hydrate inhibitors were assessed using the criteria of the hydrate dissociation enthalpy and the water activity, and our results might be reliable.

KEYWORD Clathrate, Hydrate, Phase equilibria, Thermodynamic inhibitor