

An experimental investigation of dual function inhibitor for gas hydrate

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Unexpected formation of gas hydrates during production, transportation and processing in the petroleum industry has long been a severe problem. The hydrate formation may occur and block gas pipelines, which can lead to safety hazards. To deal with these problems, the oil and gas industry are continuously looking for hydrate inhibitors showing great performance and cost effectiveness. In general, there are three kinds of hydrate inhibitors; thermodynamic, anti-agglomerants and kinetic hydrate inhibitors. There is demand for new inhibitors or a combination of inhibitors that are cost effective and efficient. Adidharma and Xiao first identified ionic liquids(ILs) as a novel methane hydrate inhibitor which are able to act as both thermodynamic and kinetic function, which are referred to as dual function inhibitors. In this study we suggest organic compound as dual function inhibitor. It is not ionic liquids. However, it could shift the hydrate phase equilibrium curve and slow down the hydrate formation rate. Their performance is experimentally investigated by non-isothermal and isothermal methods. Furthermore, powder X-ray diffraction pattern of gas hydrate was measured to characterize their structure.