Synergy Effect onMethane Hydrate Inhibition :The Inhibitorconsistedof Ionic Liquid and Polymer

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Recently, ILs has attracted great attention in oil industry because they can act as an inhibitor for gas hydrate inhibition.This research the concept of combining ionic liquids (ILs) with polymer inhibitors to more effectively inhibit methane hydrate formation.We investigated the inhibition effect of the new kinetic hydrate inhibitor (KHI)on the methane hydrate formation. This new KHI is consisted of ILs and PVCap. We measure the induction time of each samples for check the kinetic inhibition effect.
Each samples had enough induction time of 120.3 min ([EMIM][BF4] + PVCap), 65.8 min ([BMP][BF4] + PVCap), 184.9 min ([HEMP][BF4] + PVCap) at 1 wt% (0.5 wt% IL + 0.5 wt% PVCap) in water. The inhibition effect of Ionic liquids with PVCap is outstanding compared with the single ionic liquid such as [EMIM][BF4] (79.4 min), [BMP][BF4] (47.2 min), [HEMP][BF4] (91.2min). It was found that the presence of a hydroxyl group on IL provided the most powerful inhibition effect by forming hydrogen bonds between IL and water molecules.