DISSOCIATION BEHAVIORS OF PROPANE HYDRATE BY INJECTING ETHYLENE GLYCOL SOLUTION

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ABSTRACT
Ethylene glycol (24.2, 40.3, 59.5, and 80.1°C) were injected by the same injecting rate (25mL/min) and mass concentration (99.5 wt%), respectively, as inhibitors in 3.5 L transparent self-made reactor. The temperature and pressure characteristics of propane hydrate dissociation by different temperature (24.2, 40.3, 59.5, and 80.1°C) ethylene glycol injection were investigated. The results indicate that the liquid temperature decreased slowly and the gas phase pressure in the reactors grew linearly when the dissociation reaction began, moreover, the dissociation time decreased with the increase of ethylene glycol temperature, but the degree of decrease became weaker. The average dissociation rates are 60.63-140.70 mmol/(min·L), and increase linearly with the temperature of ethylene glycol solution. Compared with pure water injection, ethylene glycol injection reduces dissociation heat of gas hydrate and accelerates gas hydrate dissociation rate. The enhancement of temperature of ethylene glycol is benefit to promote dissociation of hydrate.

Keywords: Ethylene glycol; inhibitor; propane hydrate; dissociation

INTRODUCTION
Natural gas hydrates (NGH) are crystalline compounds in which small molecules such as methane or ethane stabilize the cages formed by hydrogen-bonded water molecules at low temperatures and high pressures, are considered as a potential energy source1. The investigation into natural gas production from hydrate reservoir is attracting a great...