عنوان مقاله:

Effect of various types of equation of state on gas consumption in simple gas hydrate formation with or without presence of kinetic inhibitors

محل انتشار:

دوازدهمین کنگره ملی مهندسی شیمی ایران (سال: 1387)

تعداد صفحات اصل مقاله: 10

نویسندگان:

M.R. Talaghat - *Chemical and Petroleum Engineering Department Shiraz University, Shiraz – Iran*

F Esmaeilzadeh

J. Fathikaljahi

خلاصه مقاله:

The rate of hydrate formation is directly proportional to gas consumption. Several models have been published on the basis of the crystallization theory for the prediction of gas hydrate formation. One of the most important parameters in these models is driving force. The best definition for the driving force is supersaturation (ΔG), where it is defined as the difference between the Gibbs free energy of the hydrate unit in the supersaturated aqueous phase and the hydrate phase. This paper compares the effects of using various types of equation of state (1PR, 2SRK, 3ER and 4PT) on the calculated rate of gas consumption based on the Kashechiev and Firoozabadi model in simple gas hydrate formation for methane, ethane with experimental published data with or without the presence of kinetic inhibitors at various pressures and temperatures. For this purpose, 295 experimental gas consumption data points in simple gas hydrate formation with or without the presence of kinetic inhibitors from published literature were selected. In order to have an unbiased comparison between the PR, SRK, ER and PT equation of states, van der Waals mixing rules are used without using any adjustable parameters (kij= 0). Also, no pure component parameters are adjusted. Comparison results between the calculated and experimental published data of gas consumption indicate that the PR and ER equations of state have fewer errors than the SRK and PT equations of state. The total average absolute deviation was found to be 7% for the PR and ER equations of state in simple e gas hydrate formation, respectively. Therefore, the PR and ER equations of state have a greater capability to correlate the experimental gas consumption .data related to other equations of state

کلمات کلیدی:

gas consumption rate, inhibitors, equation of state, Kashechiev and Firoozabadi model, simple gas hydrate formation, driving force