

عنوان مقاله:

Thermodynamic modeling of methane hydrate stability conditions in the presence of alkanolamine aqueous solutions

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خلاصه مقاله:

Gas hydrate formation is a worrisome and harmful event in gas transmission pipelines. To eliminate or even hinder gas hydrate formation, a variety of techniques can be executed such as depressurization, heating and pipeline isolation, water elimination, and hydrate inhibitors. In this work, the hydrate stability conditions in the presence of a variety of alkanolamine aqueous solutions are theoretically studied. For modeling, the vdW-P solid solution theory is employed for the hydrate phase, the PR EoS is utilized to compute the methane fugacity in the vapor/gas phase, and the NRTL activity model was applied to calculate the nonideality of the aqueous phase. The average absolute deviation, AAD, of the hydrate dissociation points for alkanolamine aqueous solutions is ۰.۴۳ K. Also the results showed the alkanolamine compounds were weaker strength compared to conventional thermodynamic hydrate inhibitors such as ethylene glycol, however, they can be used as a gas sweetening agent and also hydrate inhibitor.

کلمات کلیدی:

.Alkanolamine;van der Waals-Platteeuw;NRTL; Gas hydrate

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