عنوان مقاله:

Thermodynamic Modelling Phase Boundary of Hydrogen Hydrate in the Presence of Cyclopentane as a Promising Mechanism for Hydrogen Storage

محل انتشار:

چهارمین کنفرانس بین المللی نوآوری های اخیر در شیمی و مهندسی شیمی (سال: 1396)

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خلاصه مقاله:

Hydrogen has a great potential as an energy source and hydrogen in form of hydrate as a promisingtechnology for hydrogen storage aims has been identified. Hence in this work, a classical thermodynamicapproach for phase equilibrium boundary of hydrogen hydrate in the presence of cyclopentane as promotereffect on reduction formation condition pressure of hydrogen hydrate has been proposed. The cell potentialcalculation is adopted from contributions of three different shells. To determine the Kihara cell potentialparameters, viscosity and second virial coefficient data are utilized while, conventional van der Waals andPlatteeuw type models that fit these parameters to the experimental points of hydrates. The obtained resultsrevealed that the Percent absolute average deviations (%AAD) in the predicted hydrate equilibriumpressures for hydrogen + cyclopentane system is 0.28%. Thereby, acceptable agreement for the proposedhydrate modeling is observed.

کلمات کلیدی:

Clathrate Hydrate, Promoters, Thermodynamic modelling, Hydrogen Storage