

عنوان مقاله:

Association thermodynamics modeling of asphaltene precipitation

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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خلاصه مقاله:

In this work, an association asphaltene deposition modeling through application of continuous thermodynamics for crude oil mixture is introduced. It is assumed that a binary system forms consist of a non-precipitating crude oil solvent system and a precipitating, asphaltene component in which pure asphaltene component only participate in deposition phase. A simple association factor as an association term has been incorporated in an equation of state. Obtained from molecular weight distribution (fractional molecular weight) and average asphaltene molecular weight. A simple association factor as an association term has been incorporated in set of equations for minimization of gibbs free energy, which Obtained from molecular weight distribution (fractional molecular weight) and association ability of system. For characterization of asphaltenes, asphaltene segment distribution function and the association term are applied at equilibrium condition. The necessary and sufficient condition is defined to minimize the Gibbs free energy relation and equality of the fugacity of each liquid and solid phase. In addition, we used two-phase flash calculations with Peng- Robinson and Lee-Kesler equation of state for the live and tank crude oil systems to describe asphaltene (association) - crude oil solvent (non-association) mixture. The association parameters of asphaltene component are adjusted with our experimental data at different conditions.

کلمات کلیدی:

Asphaltene precipitation; Segment distribution function; Association; two-phase flash calculation

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