

A Weighting Matrix Approach as a Substitute for Binary Interaction Parameters

A. Al-matar^{C,S}

Chemical Engineering Department, University of Jordan, Amman, Jordan
aalmatar@ju.edu.jo

Mixing rules play an important part in the ability of an equation of state to accurately model the behavior of various phases at equilibrium. Many mixing rules have been proposed in the literature. However, due to the shortcomings of the mixing rules and/or the equations of state, binary interaction parameters have been introduced to improve the accuracy of models.

This work proposes an alternative to binary interaction parameters based on a weighting matrix. The proposed weighting matrix approach is shown to be an improvement over binary interaction parameters. It is demonstrated that for the Peng-Robinson EoS, as applied to prediction of the solubility of various species in supercritical CO₂, that indeed the weighting matrix is superior to the binary interaction parameter approach.