

The Eyring's Theory Combined with a Cubic Equation of State and gE Mixing Rule for High-Pressure Viscosity Prediction of Binary Mixtures

Siyuan He^s, Xiaopo Wang^c and Zhigang Liu

*Xi'an Jiaotong University, MOE Key Laboratory of Thermo-Fluid Science and Engineering, Xi'an, Shaanxi, China
wangxp@mail.xjtu.edu.cn*

The modeling of high-pressure viscosity of liquid mixtures containing highly asymmetric systems is of fundamental importance in many chemical and engineering processes. In this work, a cubic equation of state and a modified Huron-Vidal gE mixing rule have been combined with the Eyring's theory to calculate viscosities of liquid binary mixtures, the studied symmetric and asymmetric systems include associative binary mixtures of alkanes, alcohols, amines, cyclic alkanes. For the asymmetric mixtures, the calculation results were briefly discussed. It's successful in predicting high-pressure viscosities of these mixtures using parameters determined from the experimental viscosity data at a given pressure.