

Abstract

One of the major flow assurance problems afflicting the oil industry is the asphaltene precipitation during the production, transportation and storage of oil. The precipitation of these heavy compounds is responsible for changes in crude oil properties, increases in oil viscosity, and formation of deposits that reduce oil production and disable equipment leading to significant operational costs. In Algeria, the deposition of asphaltene in reservoirs and pipelines is a severe problem. During production the depressurization of reservoir fluid and the variations of thermodynamic conditions create the need to frequently pig the lines and, in some cases, to inject solvents and dispersants to maintain the production. The understanding of the asphaltene behavior and the prediction of its deposition in flow conditions is crucial to implement appropriate strategies for the prevention or remediation, especially in the wellbore region. In this work we used the CPA EoS to describe the asphaltene phase envelope and predict the PT regions of stability for five Algerian live oils. The model provides a very good description of the experimental behavior of live oils without and with gas injection. The sensitivity to SARA analysis data and its effect on the asphaltene phase boundaries were also analyzed