

International Conference and Expo on **Oil and Gas**

November 16-18, 2015 Dubai, UAE

New mathematical solver on modeling of prediction of mineral scale deposition: Case study

Mohammad Parvazdavani

Research Institute of Petroleum Industry, Iran

Water injection is conventional method for pressure maintenance or enhanced oil recovery in oil reservoirs. Mineral scale deposition in near wellbore regions of injection wells is one of the main challengeable issues during the water injection process which magnify the importance of robust model in predicting the amount of mineral scale deposition due to supersaturation of salts. One of the main defects in previous models is related to wrong procedure and value in estimation of first kind/value of precipitant contributed in scaled exposition reactions as well as inconsistent temperature/pressure dependent coefficients of model. The objective of this study is to develop a model that can accurately predict the formation and amount of mineral scales in multicomponent aqueous systems by three major tools; utilization the best temperature and pressure dependent thermodynamic interactive ion coefficients (MSE Model: Pitzer), developing our tuned iterative mathematical solver and verification of the results of model by large number of accurate experimental data ranging from infinite dilution to the fused salt limit. This model is based on an iterative procedure for scale precipitation calculation in mixed-solvent electrolyte solutions. The results showed that at the optimum value of precipitant (10%) in scale deposition reactions and by defining the best temperature and pressure dependent coefficients, we can attain the best accuracy in prediction of mineral scale deposited amount (less than 3 percentages as relative error compared to commercial software by more than 18 percentages underestimation).

Biography

Mohammad Parvazdavani obtained his BS degree in Mining Engineering from Isfahan University of Technology, Iran (IUT) in 2009 and his MS degree in Petroleum Engineering from Sharif University of Technology (SUT) in 2011. Currently, he is PhD candidate of Petroleum University of Technology in common with Sharif University of Technology. He works in Research Institute of Petroleum Industry related to NIOC (National Iranian Oil Company) and his field of interest is EOR study.

parvazdavanim@ripi.ir

Notes: