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Phase behavior modelling of asphaltene precipitation utilizing MLP-ANN approach

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ABSTRACT

Since the sedimentation of heavy hydrocarbons such as asphaltenes, is the highlighted concern in production and operational, many studies were focused on this challenge in the petroleum industry. Therefore, the petroleum engineers should access to the asphaltene precipitation as an essential factor in order to conquer its problems. In this study, an empirical model for prediction asphaltene precipitation by multi-layer perceptron artificial neural network (MLP-ANN) is offered that takes the effect of the temperature, dilution ratio, and molecular weight for different n-alkanes. The output of this model showed 0.9999 for correlation coefficient (R^2) and 0.000495 for mean squared error (MSE). This value illustrates the high quality of this model in compare of other available models. So far, MLP-ANN can offer significant accuracy in predicting asphaltene precipitation of asphaltene and other heavy oil.

KEYWORDS:

asphaltene precipitation | n-alkane | artificial neural network | scaling equation | statistical analysis

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