عنوان مقاله:

Application of constraint multivariable search methods for prediction of asphaltene precipitaion conditions

محل انتشار:

سومین همایش ملی نفت و گاز و صنایع وابسته (سال: 1394)

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خلاصه مقاله:

Asphaltene precipitation causes rigorous problems in petroleum industry such as: relative permeability reduction, wettability alteration, blockage of the flow, etc. Therefore, accurate determination of onset pressures of asphaltene precipitation is necessary. These pressures can be obtained by experimental measurements on representative samples of the crude oils; however, laboratory analysis of crude oil samples is costly, time consuming and cumbersome. In this communication, three simple and accurate correlations for the prediction of lower and upper onset pressures of asphaltene precipitation as well as saturation pressure have been proposed. To this end, 33 crude oil samples were collected from open literature sources. Afterward, two constrained multivariable search methods, namely generalized reduced gradient (GRG) and successive linear programming (SLP), were employed for modeling and expediting the process of achieving a good feasible solution. Then, comparative studies were conducted between the developed correlations and equations of state as well as empirical correlations. The results illustrated that the developed correlations are accurate, reliable and superior to all other published models. Besides, it was found that molecular weight of heptane-plus fraction has the greatest impact on the lower onset pressure, while methane has the most significant effect on both of the saturation and upper onset pressures

کلمات کلیدی:

Asphaltene precipitation, onset pressure, saturation pressure, constrained multivariable search method, correlation

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