عنوان مقاله:

Developing a Fuzzy Logic Model to Predict Asphaltene Precipitation during Natural Depletion based on Experimental Data

محل انتشار:

فصلنامه علوم و فناوری نفت و گاز, دوره 4, شماره 2 (سال: 1394)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Although the asphaltene problems have been studied for many years, there are numerous controversialissues around the nature of asphaltene. Since asphaltene precipitation imposes significant costs on oilindustry, a comprehensive research must be done to address the issues about asphaltene structures. Itis extremely important to investigate the behavior of asphaltene precipitation and ways to minimize itunder changeable effective thermodynamic factors such as pressure, temperature, and composition.In this work, natural depletion tests were performed at three different temperatures of 200, 170, and135 °F on Iranian heavy oil samples. At each step of the experiments, IP 143 standard test was used tomeasure the precipitated asphaltene. Then, a fuzzy logic model capable of predicting asphalteneprecipitation in a range of temperatures was developed. The fuzzy logic model predicts experimentaldata accurately. The obtained results were finally compared with a solid model using the commercialsoftware implementing the mentioned model, and it was concluded that there was good agreementbetween the fuzzy logic model and the simulation results.

کلمات کلیدی:

Asphaltene Precipitation, Natural Depletion, Fuzzy Logic, Solid Model

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