

## عنوان مقاله:

Using Genetic Programming to Develop A New Correlation of Bubble Point Pressure

## محل انتشار:

اولین همایش ملی توسعه تکنولوژی در صنایع نفت، گاز و پتروشیمی (سال: 1389)

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## خلاصه مقاله:

Bubble point pressure is one of the crucial parameters in reservoir engineering computations. Normally, it is determined experimentally. In some cases, it is neither available nor reliable and empirically derived correlations are used to predict bubble point pressure. However, most of these empirical equations have a large deviation from real data. Artificial intelligence techniques such as neural networks, fuzzy logic, and genetic algorithms are increasingly powerful and reliable tools for petroleum engineers to analyze and interpret different areas of oil and gas industry. In this paper, we propose an approach to develop new correlation of bubble point pressure based on the application of genetic programming (GP). GP is a class of evolutionary algorithms, which operates by codifying the solution of the problem. This type of algorithm provides a diagnosis output in the form of a decision tree with given functions and data. We considered three independent methods for developing bubble point pressure correlations. In the first method, we used empirical correlations to calculate bubble point pressure. In the second model, a Fuzzy neural network model called Local Linear Neuro-Fuzzy Model (LLNFM) constructed. This model uses local linear model tree (LOLIMOT) algorithm for training network. For the third model, we used GP to develop new correlation. The results show that genetic programming correlation gives the minimum error when compared to other intelligent models and empirical correlations.

## کلمات کلیدی:

Bubble point, neural network, fuzzy logic, genetic programming, LLNFM

## لینک ثابت مقاله در پایگاه سیویلیکا:

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