

Accepted Manuscript

Development of a Log-Log scaling law approach for prediction of asphaltene precipitation from crude oil by n-alkane titration

Jalil Bahman, Khashayar Sharifi, Masoud Nasiri, Masoud Haghighi Asl



PII: S0920-4105(17)30863-X

DOI: [10.1016/j.petrol.2017.10.078](https://doi.org/10.1016/j.petrol.2017.10.078)

Reference: PETROL 4402

To appear in: *Journal of Petroleum Science and Engineering*

Received Date: 1 June 2017

Revised Date: 10 October 2017

Accepted Date: 26 October 2017

Please cite this article as: Bahman, J., Sharifi, K., Nasiri, M., Asl, M.H., Development of a Log-Log scaling law approach for prediction of asphaltene precipitation from crude oil by n-alkane titration, *Journal of Petroleum Science and Engineering* (2017), doi: 10.1016/j.petrol.2017.10.078.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Development of a Log-Log Scaling Law Approach for Prediction of Asphaltene Precipitation from Crude Oil by n-Alkane Titration

Jalil Bahman¹, Khashayar Sharifi^{2,*}, Masoud Nasiri³, Masoud Haghghi Asl^{2,4}

¹ Faculty of New Sciences and Technologies, Semnan University, Semnan, Iran

² Petroleum Refining Division, Research Institute of Petroleum Industry, Post Office Box 1485733111, Tehran, Iran

³ Faculty of Chemical, Gas and Petroleum Engineering, Semnan University, Semnan 35195-363, Iran.

⁴ Department of Engineering, Senior Process Engineer, South Pars Gas Complex, Assaluyeh, Iran

Abstract: One of the most significant problems that petroleum and gas industries tend to know much more is the behavior and the weight percent of Asphaltene precipitation in crude oils. A large number of researchers have been scrutinizing to develop new models for estimating Asphaltene precipitation. Of available approaches, scaling law which is not only relatively simple but also faster than other conventional mathematical methods is promising. In this study, the potential of Ashoori's scaling equation was firstly examined in detail. Afterwards, to solve its drawbacks, an alternative model was formulated exploiting the logarithm operator. Indeed, in this communication, the authors tried to drive a polynomial model that can estimate the amount of Asphaltene precipitation at all dilution ratio ranges with higher accuracy. To get proper outputs and to compare its results with Ashoori's and Rassamdana's outcomes, the polynomial function was fitted to experimental data points. The R^2 (R-squared) of the present model, namely Log-Log scaling law, was about 0.999, and the results indicate that the Log-Log scaling law has better performance than that determined by others for prediction of Asphaltene precipitation from crude oil by n-alkane titration.

Keywords: Asphaltene; Scaling Law; Precipitation; Dilution Ratio; Modelling.

Nomenclature

AAD

absolute average deviation factor

A_1 to A_4 (A_{L_1} to A_{L_4})

coefficient of polynomial in Eq. (3) (Eq. (17) that must be determined using tuning the model with experimental data

A in C32A+

non-precipitated part of heaviest component

Download English Version:

<https://daneshyari.com/en/article/8125552>

Download Persian Version:

<https://daneshyari.com/article/8125552>

[Daneshyari.com](https://daneshyari.com)