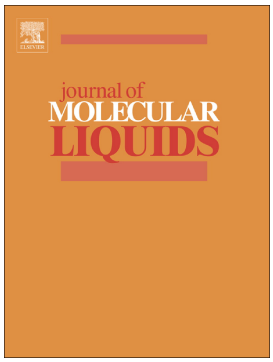
Accepted Manuscript



Exploring beneficial structural features of ionic surfactants for wettability alteration of carbonate rocks using QSPR modeling technique

Gholamreza Hasanebrahimi, Siavash Riahi, Mojtaba Fallah Fini

PII: S0167-7322(16)34135-6
DOI: doi: 10.1016/j.molliq.2017.05.009
Reference: MOLLIQ 7301

To appear in: *Journal of Molecular Liquids*

Received date: 20 December 2016
Revised date: ###REVISEDDATE###
Accepted date: 3 May 2017

Please cite this article as: Gholamreza Hasanebrahimi, Siavash Riahi, Mojtaba Fallah Fini , Exploring beneficial structural features of ionic surfactants for wettability alteration of carbonate rocks using QSPR modeling technique, *Journal of Molecular Liquids* (2017), doi: 10.1016/j.molliq.2017.05.009

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.

ACCEPTED MANUSCRIPT

Exploring Beneficial Structural Features of Ionic Surfactants for Wettability Alteration of Carbonate Rocks using QSPR Modeling Technique

Gholamreza Hasanebrahimi, Siavash Riahi*, Mojtaba Fallah Fini

Institute of Petroleum Engineering, Faculty of Chemical Engineering, College of Engineering, University of Tehran, Tehran, Iran

Abstract

Surfactant induced wettability alteration of reservoir rocks is an efficient process that enhances oil recovery of carbonate reservoirs. Finding a suitable surfactant for such a process is an interesting challenge in petroleum industry. To this purpose, generating a database of surfactant properties would be a good idea but property measurement of hundreds of surfactants and then screening them is a highly time consuming and expensive method. Therefore, the application of a mathematical model for prediction of surfactant properties may well be so helpful for our purpose. Quantitative structure-property relationship (QSPR) is a mathematical model that relates a specific property of materials to their structural characteristics. For the sake of QSPR modeling a dataset of 24 structurally different surfactants was created through the measurement of contact angles (as the most important surfactant characteristic in the wettability alteration process). Contact angle measurement was carried out through imaging a drop of n-decane as the model oil resting on a carbonate rock which has spent 2 days immersed in surfactant solution. For this dataset a linear QSPR model of oil contact angle on carbonate rocks was derived using genetic algorithm based on multi-linear regression (GA-MLR) and verified by

* Corresponding author. Tel.: +982161114714; fax: +982188632976.
Email address: riahi@ut.ac.ir (S. Riahi)

Download English Version:

https://daneshyari.com/en/article/5408063

Download Persian Version:

https://daneshyari.com/article/5408063

Daneshyari.com