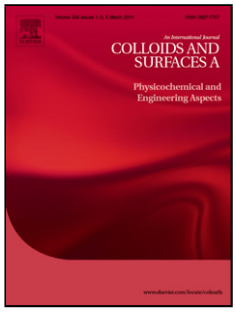

Title: Systematic <!–<query id="Q1">Please check the D̈OC headf̈or correctness.</query>–>investigation of the effects of mixed cationic/anionic surfactants on the interfacial tension of a water/model oil system and their application to enhance crude oil recovery

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PII: S0927-7757(17)30617-9
DOI: http://dx.doi.org/doi:10.1016/j.colsurfa.2017.06.055
Reference: COLSUA 21742

To appear in: *Colloids and Surfaces A: Physicochem. Eng. Aspects*

Received date: 14-5-2017
Revised date: 20-6-2017
Accepted date: 20-6-2017

Please cite this article as: {http://dx.doi.org/

Systematic investigation of the effects of mixed cationic/anionic surfactants on the interfacial tension of a water/model oil system and their application to enhance crude oil recovery

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Graphical Abstract

Abstract

A mixed cationic surface-active ionic liquid/anionic surfactant system consisting of N-dodecyl-N-methylpyrrolidinium bromide (L12) and sodium dodecyl sulfate (SDS) was used for chemical enhanced oil recovery (EOR). The mixed L12/SDS surfactant system could cause remarkable effects on the interfacial tension (IFT) between water and a model oil (toluene and n-decane, v:v = 1:1), and the strength of the effect depended on the L12/SDS molar ratio. The effects of temperature and salinity on the IFT were systematically investigated to verify the mechanism of the mixed surfactants at the interface. Moreover, the mixed L12/SDS surfactant system showed the desired ability to reduce the IFT of water/crude oil, greatly improving oil recovery with the assistance of a polymer in core flooding tests.

KeyWords: Chemical enhanced oil recovery; Mixed surfactants; Interfacial tension; Core flooding tests.

1. Introduction