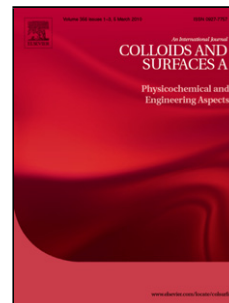


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Systematic investigation of the effects of mixed cationic/anionic surfactants on the interfacial tension of a water/model oil system and their application to enhance crude oil recovery

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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

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