عنوان مقاله:

Optimization of MEOR process conditions in Iran’s Ahwaz oil reservoirs

محل انتشار:

پنجمین کنگره بین المللی مهندسی شیمی (سال: 1386)

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خلاصه مقاله:

The challenge to increase the oil recovery from the reservoirs is a driving force behind the efforts to come up with alternative recovery processes. Consequently, various Enhanced Oil Recovery (EOR) methods are being evaluated including the optimization of process temperature, brine composition, pH and also the use of microbes in the reservoirs which is called Microbial Enhanced Oil Recovery (MEOR). Each of these factors including the bio-surfactant produced by the microbes can influence both the oil-water interfacial tension (IFT) and the wettability of the reservoir. In the recent project absorption of brine solution into oiled and oil free rock powdered tubes resulting from capillary pressure is studied and thus alteration of carbonate rock wettability is determined. Both systems showed an increase in water wetness with increase of temperature. Also in both systems pH proved to be an ineffective factor. In the oil free system maximum fluid absorption and in contrast in the oiled system minimum fluid absorption was detected at an intermediate brine concentration (3g/L) and bio-surfactant concentration (about 50-60 volume % of microbial solution). Consequently an overall optimum condition concerning all mentioned factors for each system individually is predicted by the Qualitek software.

کلمات کلیدی:

Microbial enhanced oil recovery, Bio-surfactant, Wettability, Capillary rise, Fluid absorption, Rock powder filled tubes