عنوان مقاله:

Pore scale investigation of salinity effect on the oil recovery factor in brine injection: A CFD study

محل انتشار:

هشتمین کنفرانس ملی کاربرد CFD در صنایع شیمیایی و نفت (سال: 1396)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Due to decreasing in the exploration of new oil reservoirs and also running out of many oil resources, enhanced oil recovery methods for reservoirs that are still a significant amount of oil remaining in them has great importance. One of the most effective methods for enhanced oil recovery is low salinity water flooding. Therefore, in this study, the effect of saline water injection was simulated by a computational fluid dynamics method. For generating the micromodel geometry the commercial software gambit was used. Also, the governing equations of the model such as momentum, continuity and volume fraction were solved by fluent software and the injection of brine in a porous medium was investigated. At first, for validation of the micromodel, results of the simulation were compared with experimental work and good agreement with experimental data was observed. After that, by injecting different brine concentrations such as 0, 10,000, 50,000 and 200,000 ppm the recovery factor was estimated and the effect of different concentrations on oil recovery was investigated. At the beginning of brine water injection the IFT value decreases dramatically, but with increasing of salt concentration, it gradually increases. The optimum brine .concentration which improves the oil recovery is approximately 50000 ppm

کلمات کلیدی:

Computational Fluid Dynamics, Enhanced Oil Recovery, Low salinity water flooding, Volume of Fluid