

عنوان مقاله:

A Pore Scale Evaluation of Produced Biosurfactants for Ex-situ Enhanced Oil Recovery

محل انتشار:

فصلنامه علوم و فناوری نفت و گاز، دوره 6، شماره 2 (سال: 1396)

تعداد صفحات اصل مقاله: 15

نویسندگان:

Mohammad Hossein Shabani - *M.S. Student, Department of Chemical Engineering, Tarbiat Modares University, Tehran, Iran*

Arezou Jafari - *Assistant Professor, Department of Chemical Engineering, Tarbiat Modares University, Tehran, Iran*

Seyed Mohammad Mousavi - *Associate Professor, Department of Chemical Engineering, Tarbiat Modares University, Tehran, Iran*

خلاصه مقاله:

Microbial enhanced oil recovery (MEOR) is an economical method used to improve the oil recovery from reservoirs. In the MEOR techniques, by applying different microorganisms, a variety of products such as bioacid, biogas, biosurfactant, and biopolymer are generated, among which biosurfactant, one of the important metabolites, is produced by bacteria. It is worthy to note that bacteria are suitable candidates to enhance oil recovery due to their small size, rapid growth, capability of tolerating reservoir conditions, and production of different metabolites. Therefore, in this research, two bacteria, namely *Enterobacter cloacae* subsp with PTCC: 1798 isolated from oil-contaminated soil in south of Iran and *Acinetobacter Calcoaceticus* with PTCC: 1318, are used to produce biosurfactants. In order to evaluate the performance of generated biosurfactants, ex-situ flooding tests were performed in a glass micromodel to visualize the oil displacement and fluid front flow. In addition, water flooding is performed as a common EOR method for the better investigation of the produced biosurfactants. The results represented that injecting *Enterobacter* with a salinity concentration of 6% and *Acinetobacter* with a salinity concentration of 3% respectively increases the oil recovery factor by 27 and 35% compared to water flooding. In other words, the highest reduction in interfacial tension is achieved by the biosurfactant produced from *Enterobacter* and *Acinetobacter* at 6% and 3% salinity respectively, and the sequent changes in the interfacial tension are from 45 to 7 and 45 to 4 mN/m

کلمات کلیدی:

Biosurfactant, Microbial Enhanced Oil Recovery, Micromodel, Ex-Situ, Interfacial Tension

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