

عنوان مقاله:

Application of Nanoparticles for Chemical Enhanced Oil Recovery

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خلاصه مقاله:

In this paper, the potentials of using particles, especially nanoparticles, in enhanced oil recovery is investigated. The effect of different nanoparticles on wettability alteration, which is an important method to increase oil recovery from oil-wet reservoirs, is reviewed. The effect of different kinds of particles, namely solid inorganic particles, hydrophilic or hydrophobic nanoparticles, and amphiphilic nanohybrids on emulsion formation (which is cited as a contributing factor in crude oil recovery) and emulsion stability is described. The potential of nanohybrids for simultaneously acting as emulsion stabilizers and transporters for catalytic species of in situ reactions in reservoirs is also reviewed. Finally, the application of nanoparticles in core flooding experiments is classified based on the dominant mechanism which causes an increase in oil recovery from cores. However, the preparation of homogeneous suspensions of nanoparticles is a technical challenge when using nanoparticles in enhanced oil recovery (EOR). Future researches need to focus on finding out the proper functionalities of nanoparticles to improve their stability under harsh conditions of reservoirs.

کلمات کلیدی:

Amphiphilic Nanohybrids, Enhance Oil Recovery, Nanoparticle, Pickering Emulsions, Porous Media, Wettability Alteration

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