

عنوان مقاله:

A critical review on nanoparticle-assisted enhanced Oil recovery: Introducing scaling approach

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نویسندگان:

Arifur Rahman - *Petroleum Systems Engineering, Faculty of Engineering and Applied Science, University of Regina, Regina, SKS4S 0A2, Canada*

Ezeddin Shirif - *Petroleum Systems Engineering, Faculty of Engineering and Applied Science, University of Regina, Regina, SKS4S 0A2, Canada*

Farshid Torabi - *Petroleum Systems Engineering, Faculty of Engineering and Applied Science, University of Regina, Regina, SKS4S 0A2, Canada*

Aria Rahimbakhsh - *Petroleum Systems Engineering, Faculty of Engineering and Applied Science, University of Regina, Regina, SKS4S 0A2, Canada*

خلاصه مقاله:

Nanotechnology has the capability to modernize both the upstream and downstream oil and gas industry. It has been effectively used in exploration, drilling, production, refinery as well as in enhanced oil recovery (EOR) fields. Understanding the basics of scaling criteria development along with nanoparticle stabilized EOR mechanism will assist petroleum engineers in designing, analyzing, and evaluating nanoparticle-assisted EOR techniques. This paper aims to deliver a critical review on nanoparticle-assisted EOR methods along with introducing scaling approaches and their applications in EOR. Scaling criteria can be employed to assess the performance of a specific EOR technique so that it can be accurately applied to the field scale. In this study, scaling criteria or dimensionless approaches are briefly summarized along with their applications in EOR. In addition, it reviews how scaling criteria can be derived using a mathematical model along with their benefits and shortcomings. This work concentrates on assessing the application of nanoparticles in EOR processes and addresses the process controlling parameters. This study briefly evaluates a few appropriate analytical and semi-analytical studies directly related to nanoparticle-assisted EOR techniques. Several nanoparticles assisted experimental works have been reviewed for both core flooding and micromodel systems.

کلمات کلیدی:

Dimensional Analysis, Enhanced oil recovery, Inspectional Analysis, Micromodel, Nanoparticle, Scaling Criteria

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