Petroleum Science and Technology ›
Volume 33, 2015 - Issue 12

Original Articles

Effects of Nanoparticle Types on Carbon Dioxide Foam Flooding in Enhanced Oil Recovery

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Pages 1286-1294 | Published online: 17 Aug 2015

Cite this article https://doi.org/10.1080/10916466.2015.1057593 Check for updates

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Abstract

Enhance… f
nanopar… ia solid NPs
can pote… conducted
to exam… equired for
various … mance of
silico… nium dioxide
(TiO_2)… factant
(AOS) or… 0.5 wt%,
and 1 wt… vere
performe… h
nanopar… Miles
method using half-life measurements. All experiments were conducted at room

temperature and pressure. The results revealed that all different NPs used were able to improve the stability of CO_2 foam at certain concentrations. However, aluminum oxide NPs showed better results compared to others in terms of foam stability and half-life time. In addition, 0.1 wt% of all NPs types gave the highest foam stability and half-life time. In conclusion, a low concentration of NPs is recommended regardless of type for improving form stability.

Keywords: foam stability | nanoparticle | enhanced oil recovery | immiscible flooding | surfactant