Contribution ID: **329** Type: **Poster (+) Presentation**

Interaction of Nanoparticles and Surfactant in Controlling Foam Stability

Tuesday, 1 June 2021 19:00 (1 hour)

Stability of foam in the presence of hydrocarbons is a crucial factor in the success of its use in various applications in porous media, such as soil remediation and enhanced oil recovery. (EOR).In this study, we investigate the effect of surfactants with different charges (anionic, cationic, and non-ionic) on foam stability in the presence of charge-stabilized silica (SiO2) nanoparticles. Toward this aim, a comprehensive series of experiments on a Hele-Shaw cell and a foam column is conducted at bubble and bulk-scale respectively, that is, investigating phenomenologies of foam coarsening separately by gas diffusion and gravitational drainage. Our results show nanoparticles, despite their ability to position themselves at liquid-gas interfaces and thus limit the resulting surface tension coefficient, do not necessarily have a positive effect on foam stability; the nature and magnitude of this effect depends strongly on the nature of the surfactant, its concentration and the concentration of nanoparticles. Both results from bubble-scale and the bulk-scale experiments suggest that compatibility experiments are pre-requisite to foam stability analysis to test the compatibility between surfactants and nanoparticles.

Time Block Preference

Time Block A (09:00-12:00 CET)

References

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Session Classification: Poster +

Track Classification: (MS6-B) Interfacial phenomena in multiphase systems