

## Surfactant Improved Heavy Oil Recovery in Sandstone Reservoirs by Wettability Alteration

**Authors :** Rabia Hunky, Hayat Kalifa, Bai

**Abstract :** The wettability of carbonate reservoirs has been widely recognized as an important parameter in oil recovery by flooding technology. Many surfactants have been studied for this application. However, the importance of wettability alteration in sandstone reservoirs by surfactant has been poorly studied. In this paper, our recent study of the relationship between rock surface wettability and cumulative oil recovery for sandstone cores is reported. In our research, it has been found there is a good agreement between the wettability and oil recovery. Nonionic surfactants, Tomadol® 25-12 and Tomadol® 45-13, are very effective in wettability alteration of sandstone core surface from highly oil-wet conditions to water-wet conditions. By spontaneous imbibition test, Interfacial tension, and contact angle measurement these two surfactants exhibit the highest recovery of the synthetic oil made with heavy oil. Based on these experimental results, we can further conclude that the contact angle measurement and imbibition test can be used as rapid screening tools to identify better EOR surfactants to increase heavy oil recovery from sandstone reservoirs.

**Keywords :** EOR, oil gas, IOR, WC, IF, oil and gas

**Conference Title :** ICPGES 2022 : International Conference on Power-to-Gas Energy Storage

**Conference Location :** Rome, Italy

**Conference Dates :** July 21-22, 2022