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Micro model studies for Enhanced Oil Recovery

The extraction of oil production from the reservoir is not an easy process due to various factors including reservoir pressure changes, multi-phase flow production, petro physical properties and well behavior. At one stage, the production recovery for mature wells declined significantly and may cause the well idle or restrict from flowing to the surface. Therefore, recovery system plays an important role to extract optimum amount of resources from the reservoir by altering the flow assurance and improve the reservoir properties. This phase is called as tertiary phase. The tertiary phase is also known as Enhanced Oil Recovery (EOR) phase. It is a collection of methods that allow for more effective oil extraction when the primary and secondary phases are not sufficient. Typically, it is used on hard terrain that is difficult to penetrate and irregular in formation. It is also useful in wells that contain heavier oil that is evidently more difficult to extract. Surfactant flooding boosts oil production by lowering interfacial tension, increasing oil mobility thus allowing better displacement of the oil by injected water. Surfactant in EOR improves the wettability of porous rocks allowing water to flow through them faster displacing more oil. Whereas, Polymer displacement increases the viscosity of water injected into the oil reservoir enabling it to exert more pressure on the oil without forcing its way past and simply flowing through. Because this method relies on increasing the viscosity of water and it is less effective on low permeability rock structures. Therefore, the combination of alkali, polymers and surfactants would optimize the oil recovery in an effective manner if the solutions designed properly. The combined solution of polymers and surfactants also called as polymeric surfactants potentially enhance the rheological and interfacial properties in one component. The accuracy and consistency of the polymeric surfactants would determine the EOR process achievement and revitalize the oil recovery.

Biography:

Ravindra Pogaku has diverse and intense, yet rewarding experiences in teaching, research, industry, executive and administrative fields spanning over 35 years. He was visiting Professor at the Pennsylvania State University and Cornell University, USA. Professor Pogaku has an expertise in the area of bioprocess engineering for high value products, biofuels and bioenergy. At present, his research group is focused on bioprocessing of palm oil waste and bio-derived energy for sustainable development. Over the course of his 35 years, he has published more than 225 articles in journals and proceedings along with edited 4 books, authored 8 books and 12 book chapters. He has reviewed more than 1200 journal manuscripts for reputed international journals. He has two patents and four copyrights. Professor Pogaku is bestowed with the national and international prestigious awards. Professor Pogaku was recipient of distinguished chemical engineer award from the Indian institute of Chemical engineers. He has received the best researcher award from the International Journal of Science and Technology. He was also a UNESCO consultant on Sustainable energy projects.

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