

Development of a new high-pressure, high-temperature protocol for microbial enhanced oil recovery processes

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Injection of chemical surfactant solutions into oil reservoirs in Enhanced Oil Recovery (EOR) projects is an effective conventional method of enhancing oil recoveries. This is usually achieved by improving the microscopic displacement efficiency; reduction of Interfacial Tension (IFT) between crude oil and brine water. However, the risk posed to the environment and human by these chemicals can be high. Stakeholders are therefore considering more environment-friendly alternative techniques to replace the use of chemical surfactants. Several attempts have been made at replacing these chemicals with the use of more environmentally benign techniques of microbial cultivation and EFBS generation; albeit, only at Low Pressure Low Temperature (LPLT) conditions. In this work, new environment-friendly bio surfactants (EFBS) from cultured strains of microbes were developed for MEOR purposes. This involves cultivation, production and screening processes under in situ conditions. The generation of the EFBS is coupled with advanced interfacial phenomenon characterization and dynamic displacement experiments through porous media under High Pressure High Temperature (HPHT) conditions.

Biography: Dr. Lateef Akanji is a senior lecturer at the University of Aberdeen UK since 2014. His research interests include fluid flow and transport in porous media, petroleum reservoir flow simulation and characterisation, subsurface production and enhanced oil recovery. He has authored and co-authored more than 20 technical papers and served as a peer reviewer for many prestigious journals. He holds a PhD in petroleum engineering from Imperial College London UK. Lateef is a board member of Series Editorial Board for Springer Briefs in petroleum geoscience and engineering and editorial board member of Journal of Oil, Gas and Petrochemical Sciences. He is a chartered engineer, chartered petroleum engineer, fellow of higher education academy, EUR ING, and a member of the Energy Institute UK and the Society of Petroleum Engineers, SPE.

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