

EXPERIMENTAL STUDY OF SWELLING CAPACITY OF EWEKORO SHALE, SOUTH WESTERN NIGERIA: CASE STUDY-USING OIL-IN-WATER EMULSION MUD.

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- **Author(s):** Onuh, C. Y.; Dosunmu, A.; Anawe, P. A. L.; Ogunkunle, T. F.; Rotimi, O. J.; Ogbogu, N.
- **Abstract:** The formulation of drilling mud plays a very important role in providing optimum drilling operations in reducing or preventing the occurrence of challenges in the wellbore. One of the most challenging formations faced by the drilling operators is the shale; it is been discovered that approximately 90 % of formation drilled in the oil and gas industry is shale, and about 70 % of the challenges during drilling are shale related. This study is focused on investigating the swelling capacity of shale from Dahomey basin in Nigeria in emulsion mud formulated with diesel oil and non-edible plant oils (*Hura crepitans* and *Calophyllum inophyllum*). The shale sample was studied under the influence of water-based mud and emulsion mud. The physicochemical properties of plant oil samples were analyzed, the mud was formulated and rheological and filtration properties were measured. The swelling rate and water absorbed of the shale samples were determined. It was discovered that the plant oil performed better than the diesel oil, with oil from *Hura crepitans* been efficient in reducing the shale/fluid interaction and by so doing, reducing the swelling rate and water absorbed by the shale. The volume of fluid loss was discovered to be less than that observed from diesel and *Calophyllum inophyllum* oil.
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