



## Use of *Mucuna solannie* Additive for Advancements in Drilling and Wellbore Cementing Technology through Experimental Analysis

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This is pioneering the use of *Mucuna solannie* for advancements in the formulations of drilling fluids and lead cement slurry. Elemental and oxide compositions were carried out using X-Ray Fluorescence Cu-Zn method. Rheological properties, fluid loss control and emulsion stability measurements were conducted for oil-based mud. Also, the rheological properties and the fluid loss control effectiveness of water-based mud were also investigated. Organophilic clay, Sodium Asphalt Sulfonate and Polyanionic Cellulose-R, Polyanionic Cellulose-L were used as control for both oil based mud and water based mud respectively. The degree of the effectiveness of *Mucuna solannie* as an extender, fluid loss control, retarder, compressive strength to cement slurry were also tested; and their results were then compared with that of bentonite extender. From the results obtained, the elemental and oxides compositions, it showed that *Mucuna solannie* contains 97% Carbon ash, 0.72% SiO<sub>2</sub>, 0.26% CaO, 0.12% Al<sub>2</sub>O<sub>3</sub>. In terms of drilling fluids application, both oil based mud and water based mud formulated from *Mucuna solannie* and that of the existing one gave good results but that of *Mucuna solannie* is slightly better than the existing muds in terms of yield point, gel strength and emulsion stability. The results of cement slurry measurements also portrayed the *Mucuna solannie* at low concentration gave very little or zero free water, better compressive strength even at high temperatures, better rheological properties and good thickening time when compared with cement slurry prepared with bentonite extender.

## Biography

A very well seasoned Petroleum Engineer, Mud engineer per excellence, with over 20years of real-time hands-on (international) oil field experience that borders around drilling of oil & gas wells, spans across all aspects of Drilling Fluids, Completions Fluids, Cementing, Mud-logging and Well head operations. Also with research and Lecture-room experience of close to 22years, current an Associate Professor, with over 45 research publications in reputed journals and a text book published in Germany and one patent. Looking for new challenging opportunities in the areas of new products Research and Development for Drilling fluids, Production, Cementing chemical products, Oilfield-Technical-Training-Classroom work, where all my years of dutiful experience will be exploited to enhance the Corporations technical competitive edge and expertise competence.

## Biography

Dr. N. Uwaezuoke graduated with a B.Eng. degree as the best graduating student, the department of Petroleum Engineering, Federal University of Technology, Owerri, Nigeria. He did the National Youth Service in Rivers State in Schlumberger Oilfield Services (Drilling and Measurements), 2001. After a brief stay in the company, as a drilling engineer, he proceeded to the University of Stavanger, Norway, for an M.Sc. in Petroleum Engineering, 2009. He obtained a PhD in Petroleum Engineering (2018) from the Federal University of Technology, Owerri, Nigeria. He is currently a lecturer in the department. He has research publications in International Journals, and his research interests currently are in the use of Local Materials as additives in drilling fluids and Natural Gas Engineering. He is a member of SPE, Nigerian Society of Engineers (#16352) and COREN (R.12886). Email: nnaemeka.uwaezuoke@futo.edu.ng