FLotation of Nigerian Oil Sands
An Overview

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ABSTRACT

Discovery of Oil Sands in Nigeria is as old as its discovery in Canada, yet the Canadian oil sands industry has grown exponentially in the past half century to becoming a major player in synthetic crude oil production. Nigerian oil sands show significant promise and has been researched on with interest in it peaking around the late 80s to late 90s. Nigerian oil sands have not been extensively reviewed like their Canadian counterparts especially in the area of bitumen recovery via water based flotation technologies. This paper shows a proof of concept in addition to enumerating on an extensive overview of the flotation process. The intent of this paper is to provide anyone interested in pursuing research into Nigerian oil sands flotation all the necessary sources of information to get started.

Nigerian oil sands from Loda was shown to be a very high grade ore (18% carbon) with relatively low sulphur content. Cold rod milling proved to be an effective comminution step for feed prep. Flotation on Nigerian oil sands was successful and upgrades resulting in 50% carbon were observed from concentrate analysis. Mass balance and microwave drying revealed that basic drying methods were effective at eliminating most of the free and emulsified water. Microwave heating was an effective means of rapidly lowering viscosity to allow for sample mixing.

Ore and concentrate homogeneity is a major problem that must be addressed in order to determine accurate analytical results. Microwave absorption tests holds significant promise in other analytical characterizations of the bitumen concentrates.
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