



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.

TABLE OF CONTENTS

	Page
ABSTRACT	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	vi
LIST OF FIGURES	vii
CHAPTER 1 INTRODUCTION.....	1
1.1 RECOVERY	6
1.1.1 Steam flooding/SAGD	6
1.1.2 In Situ combustion	8
1.1.3 Water flooding	8
1.1.4 Surface Mining.....	9
1.2 NIGERIAN OIL SANDS.....	10
1.2.1 Study area.....	15
CHAPTER 2 OIL SANDS FLOTATION.....	19
2.1 Water Based Extraction Processes	21
2.1.1 Separation Vessels	23
2.2 Why is flotation possible.....	24
2.2.1 Bitumen Liberation	27
2.2.2 Contact Angles.....	29
2.2.3 Electric surface potential (Zeta potential).....	31
2.2.4 Bitumen Aeration.....	33
2.2.5 Bubble Size & Bitumen-Bubble Attachment.....	34
2.2.6 Temperature dependence of Flotation.....	37

2.2.7	Flotation and Metal Ions	38
CHAPTER 3	MECHANICAL Flotation cells.....	39
3.1	Types of Flotation Cells	39
3.2	Mechanical Flotation Cell Design.....	40
3.3	Cell Design.....	42
3.4	Impeller Design.....	43
3.4.1	Classification of flotation cell impellers	44
3.4.2	Gas induction mechanism	46
3.5	Denver Flotation cell design and characteristics.....	48
CHAPTER 4	EXPERIMENTAL	51
4.1	SAMPLE COLLECTION STUDY AREA.....	51
4.2	Initial Sample preparation and physical properties	54
4.3	Carbon and sulfur content analysis	57
4.4	Flotation	58
4.5	Sample drying	61
4.5.1	Water Prevention and Removal Strategies.....	61
4.5.2	MICROWAVE HEATING.....	66
4.5.2.1	Absorbed Microwave Power vs Time	70
CHAPTER 5	RESULTS AND DISCUSSION	72
5.1	Feed Preparation.....	72
5.2	Feed Carbon Sulphur.....	73
5.3	Flotation	74
5.4	Microwave Drying	74

CHAPTER 6	CONCLUSION	78
CHAPTER 7	REFERENCES	81

LIST OF TABLES

Table 1.1. Discovered natural bitumen and heavy oil [4].....	5
Table 3.1. Characteristics of Different Types of Reactors.....	40
Table 3.3. Comparison of Different Types of Impeller systems [49].....	44
Table 4.1: Comparison of elemental composition of the oil sands of Nigeria and Athabasca (ppm) [59].....	53
Table 4.2. Dimensions and characteristics of impeller/stator assemblies.....	59
Table 4.3. Comparison of Water-Removing technologies.....	62
Table 5.2. Carbon sulphur analysis showing high grade ore.	73
Table 5.1. Dried Froth concentrate weight distribution.....	74
Table 5.4: Temperature effect of Microwaving froth.....	75

LIST OF FIGURES

Figure 1.1. Oil sand samples and oil sand structure (inset)	1
Figure 1.3. The fragmentation of oil based on API oil classification [2]	2
Figure 1.4. Total world oil reserve composition. Bitumen (inset) [3]	3
Figure 1.5. Geographical distribution of natural bitumen. [4]	4
Figure 1.6. Steam-assisted gravity drainage (SAGD, pronounced sag-dee). A pair of parallel horizontal wells is drilled, one above the other. Steam is injected into the upper well to heat the heavy oil, reducing its viscosity. Gravity causes the oil to flow down towards the producer [5]. .	6
Figure 1.7. Cyclic steam stimulation (CSS), a single-well method applied in stages. First, steam is injected (left). Next, the steam and condensed water heat the viscous oil (center). Finally, the heated oil and water are pumped to the surface (right). The process is then repeated [5].....	7
Figure 1.8.Extraction, processing and application of products from oil sands. Adapted from [13]	10
Figure 1.11. Map showing the Cretaceous outcrop belt [15].....	12
Figure 1.10 History of analysis of the Nigeria tar sands [15].....	13
Figure 1.11 Ondo state, Nigeria.....	15
Figure 1.12 Mineral permits in Ondo State in 2009. Quarrying license dominates mining activities in the state [2]	16
Figure 1.13. Map showing mining settlements in proximity to oil sand mining leased locations [2].....	18
Figure 2.1. Oil sands processing flow sheet [23].....	20
Figure 2.2. Schema of the surface extraction process [12].....	22
Figure 2.3. Diagram of a conventional primary separation vessel (PSV) [26].....	23

Figure 2.4. Variables affecting the flotation process [31]	26
Figure 2.5. Conceptual stages for bitumen liberation and aeration [25].....	28
Figure 2.6. Visual representation of effect of contact angle on bitumen liberation [35].....	30
Figure 2.7 Variation of bitumen zeta potential with pH: Effect of calcium	32
Figure 2.8: Contact angle and contact area interaction between bitumen and air [35].....	35
Figure 2.9. Air-bitumen attachment: (1) Syringe arrangement, (2) air-bitumen for a good processing ore, (3) air-bitumen for a poor processing ore [44]	36
Figure 3.1. Hydrodynamic zones in a mechanical flotation cell.....	41
Figure 3.2. Typical tank designs in mechanical flotation cells [48].....	43
Figure 3.3. Three types of gas-inducing impeller designs. (1) Hollow shaft; (2) solid shaft; (3) standpipe; (4) stator; (5) stator vanes; (6) impeller. [49]	45
Figure 3.4. Vortex shapes formed in a stator-rotor system [52] : (A) before the onset of gas induction, $N < N_{CG}$; (B) at the critical speed for gas induction, $N = N_{CG}$; (C) at a speed higher than N_{CG}	47
Figure 3.5: Denver Flotation cell Schematic	49
Figure 3.6: Flotation Cell Schematic	50
Figure 4.1: Famous location where Nigerian President commissioned what was supposed to be the start of the Oil Sands mining industry in 2001.	51
Figure 4.2: Oil sands dug from the ground used for patching pot holes on roads.....	52
Figure 4.3: Dug out overburden revealing Oil Sands deposit.....	53
Figure 4.4: Mined sample showing bitumen fluid flow from within the mass.....	54
Figure 4.5: heterogeneity of Oil sands ore showing different coloration of comminution sample	55
Figure 4.6: Flowsheet of Experimental process.....	56

Figure 4.7 Denver Flotation cell in Mining Engineering Lab.	58
Figure 4.8. Broken impeller and fabricated impeller replacements; standard (middle), optimized (right) including dimensions.	59
Figure 4.9. Froth product recovery over time.	60
Figure 4.10 A Desiccator	65
Figure 4.11 Vacuum filtration apparatus with a trap	65
Figure 4.12: Schematic diagram of experimental setup[70].....	70
Figure 4.13. Typical plot of absorbed microwave power versus time [70].	71
Figure 5.1. Energy absorbed versus time for water removal from bitumen concentrate at different microwave powers	76
Figure 5.2. Absorbed Microwave power for different times. 300s (red), 600s (black)	76
Figure 5.3: Energy absorbed vs microwave power.....	77