Berekotry Ltd

PROJECT : CLOSED LOOP PALM DATES & WASTES CONVERSION VIA NON PYROLYSIS CELLULOSE BIOMASS LIQUEFACTION FOR THE PRODUCTION OF GREEN INDUSTRIAL PRODUCTS -PATENTED.

By

Taslim Owonikoko Ceo /Head R&D

www.berekotry.com



INTRODUCTION

•We have developed & patented processes that convert all PALM DATES based Cellulose materials and wastes to VERSATILE Liquid with vast application areas globally.

• We are the current best innovative company in Nigeria courtesy UNDP & Federal Government of Nigeria.

TECHNOLOGY

• Liquefaction of Cellulosic biomass using conventional chemicals and safely too .

• The liquefied biomass is primarily applicable in upstream Oil& Gas HSE, Agrochemicals, weed-control and secondary application in Wood substitutes, Bioplastics & Bioresin with 3-D Printing potentials and valuable Bioindustrials via Emulsion polymerization of all plant oils & Odor-free Leather Processing

• This patented Novel Non Pyrolysis Cellulose biomass Liquefaction is unique in that no reported breakthrough like this is available worldwide.

• We are the only operator of this heat-free liquefaction technology Worldwide .

• Our cellulose biomass process is uniquely based on novel Non pyrolysis(i.e. Consumes no heat) liquefaction of all agro biomass stocks including Dates & Palm Wastes .

• A proprietary patented process using conventional popular and simple chemical treatment (100% heat free) but highly exothermic to liquefy the biomass completely in just a single cycle.

• The aqueous liquefied product is so versatile and more valuable than the popular bioOil or the fermentable C5 -C6 sugar from similar processes on Cellulose wastes worldwide e.g Gevo, DSM,Dynmotive e.t.c .

COMPARATIVE ADVANTAGES TO COMPETING TECHNOLOGIES

- Our production process is cheap and proven to be commercially viable as we already produced hundreds of liters per batch at a table scale for now.

- Our simplified patented and cheap process of converting products could have been only possibly carried out at advanced costly automated pilot-scale plant by western standards .

- We equally sell these hundreds of liter products in make-shift plastics industrial containers at very good prices at US$8 per liter for the wood preservative, since 2004.

- Some Schools ,federal Universities & Research Institutes are among the current buyers both for field works and trial runs from us till date.

- The secondary products are still at prototype stage due to lack of industrial complex to consume them in Africa presently

- We seek out-licensing opportunities on this Nigerian Patent .In addition to licensing our technology We seek advanced commercializing partners who would be willing to facilitate our acquisition of other advanced global protection with a view to expanding our patent

portfolio and protection beyond our present National focus in Nigeria .

The Liquefied DATES & PALM WASTES



The Process At A Glance

CURRENT BEST UNDP-Nigeria INNOVATOR & PATENT Owner Recently In Abu Dhabi – U.A.E Hosted Scientist



US$Billion Palm- Dates Value Addition - PATENTED. Berekotry Ltd

DATE FRUITS

DATE SEEDS

DATE GRANULES



LIQUEFIED DATES



FAST ODOR-FREE LEATHER PROCESSING



BIOPLASTICS FOR 3D-PRINTING



MASTERBATCH



ANTI-FUNGAL FOR PHARMA

Aspergilus Flavus

Aspergilus Niger

Rhizopus Sp

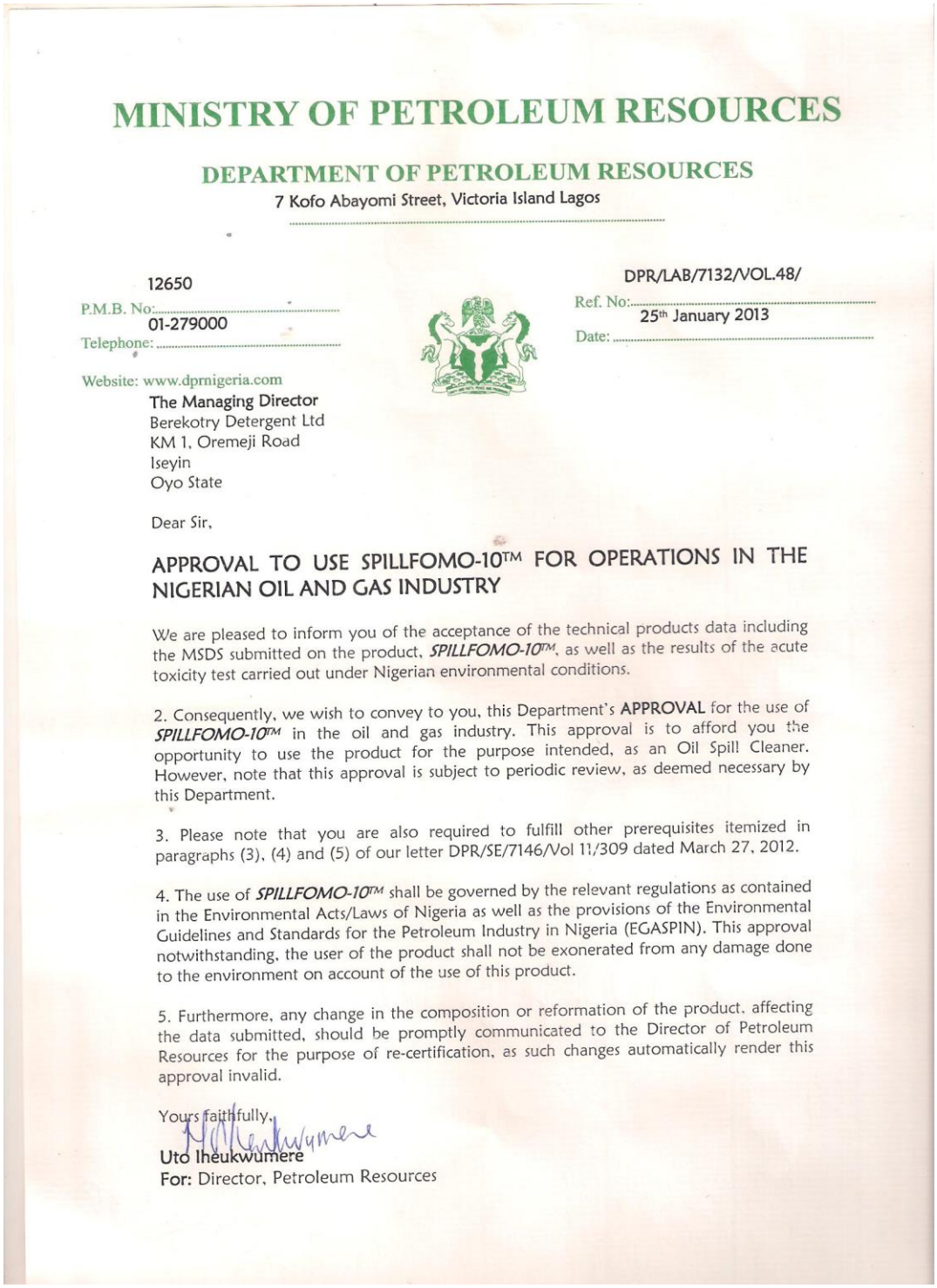
NON –ARSENIC

WOOD PRESERVATIVE

FERTILIZER



Regulatory Approval For One Our Oil&Gas Biobased Upstream Cleaners



MINISTRY OF PETROLEUM RESOURCES

DEPARTMENT OF PETROLEUM RESOURCES

7 Kofo Abayomi Street, Victoria Island Lagos

P.M.B. No: 12650

Telephone: 01-279000

Website: www.dprnigeria.com

Ref. No: DPR/LAB/7132/VOL.48/

Date: 25th January 2013

The Managing Director
Berekotry Detergent Ltd
KM 1, Oremeji Road
Iseyin
Oyo State

Dear Sir,

APPROVAL TO USE SPILLFOMO-10™ FOR OPERATIONS IN THE NIGERIAN OIL AND GAS INDUSTRY

We are pleased to inform you of the acceptance of the technical products data including the MSDS submitted on the product, ***SPILLFOMO-10™***, as well as the results of the acute toxicity test carried out under Nigerian environmental conditions.

2. Consequently, we wish to convey to you, this Department's **APPROVAL** for the use of ***SPILLFOMO-10™*** in the oil and gas industry. This approval is to afford you the opportunity to use the product for the purpose intended, as an Oil Spill Cleaner. However, note that this approval is subject to periodic review, as deemed necessary by this Department.

3. Please note that you are also required to fulfill other prerequisites itemized in paragraphs (3), (4) and (5) of our letter DPR/SE/7146/Vol 11/309 dated March 27, 2012.

4. The use of ***SPILLFOMO-10™*** shall be governed by the relevant regulations as contained in the Environmental Acts/Laws of Nigeria as well as the provisions of the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN). This approval notwithstanding, the user of the product shall not be exonerated from any damage done to the environment on account of the use of this product.

5. Furthermore, any change in the composition or reformation of the product, affecting the data submitted, should be promptly communicated to the Director of Petroleum Resources for the purpose of re-certification, as such changes automatically render this approval invalid.

Yours faithfully,

Uto Iheukwumere

For: Director, Petroleum Resources

Biobased Odor-Free Leather Processing Agent @ €5B Global Valuation

OUR GREEN PROCESS SHORTLISTED By SofinnovaParis For TOP 5 Best Global Renewable Chemistry 2015

SOFINNOVA PARTNERS

€4.8 B Evaluation For H2020 EU Program 2016

www.alientt.com

ALIEN
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Collaboration By African Start-up

KOTRY B
BEREKOTRY

GREEN ODOR-FREE LEATHER PRODUCT READY FOR MARKET

OUR GREEN PROTOTYPE Phytochemically Screened By Federal Institute Of Leather Science- Nigeria NILES



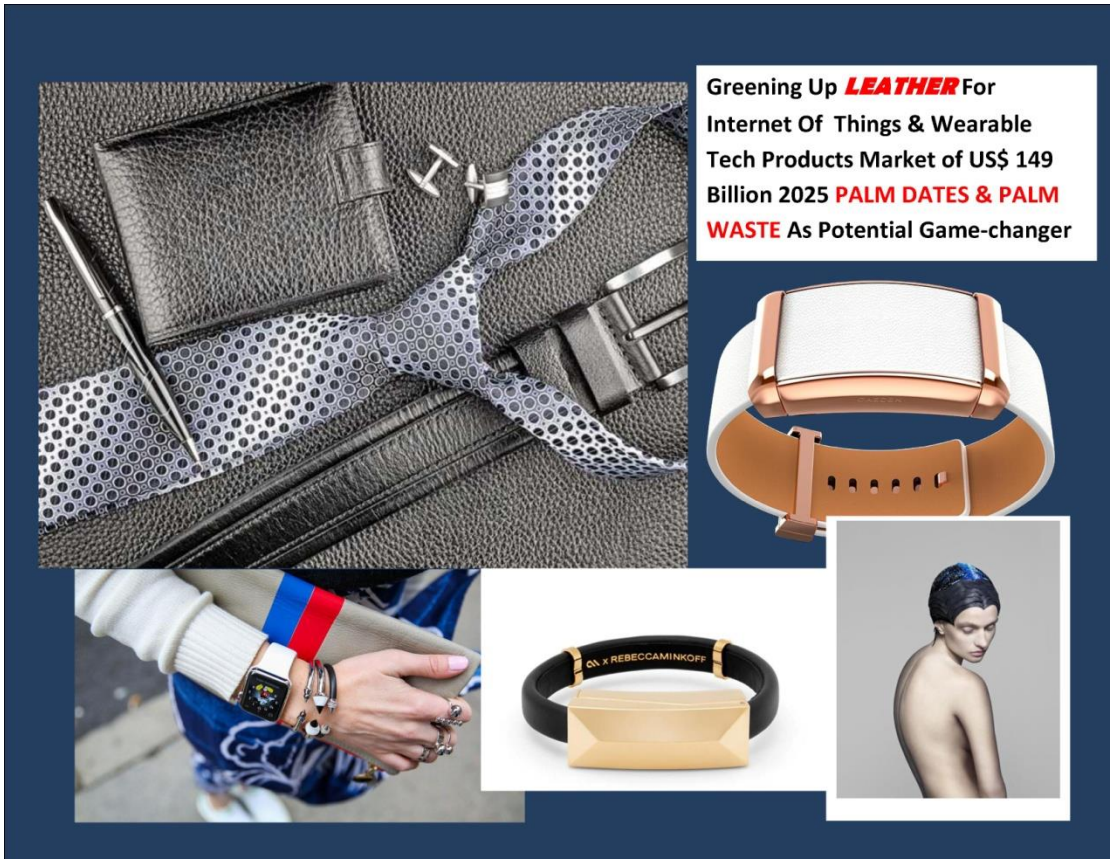
http://nilest.academia.edu

OUR GREEN PRODUCT SUCCESSFULLY ENGINNEERED IN TO FINISHED Commercial Leather



Leather HERTAGE , Kano Nigeria

Bio-based Green Processed Leather Applications In Body Wears, Household , Automotive & Aviation





Creating Wood Substitutes



Corrugated - Flat Boards, Rigid Automotive & Infrastructure - Applicable Plastic composites made from recycled plastics, bioplastics and agric waste materials. COLD MOLD

Market Size – YET TO BE QUANTIFIED



PROTOTYPES IN PIX

See more http://goo.gl/pnCEaQ



ARTIFICIAL WOOD SPECIMEN Based on Bioresin –fossil Plastics– Biomass COMPOSITE –COLD MOLD with 3-D PRINTING APPLICATIONS







VERSATILE EMULSION BIOPOLYMER FROM AGRO-WASTE & POTENTIALS IN ADDITIVE MANUFACTURING Via 3D MOLTEN POLYMER PRINTING

- Liquefied cellulose via Non pyrolytic hydrolysis
- **Hydrolysate makes Emulsion polymerization with Plant oils for Multipurpose Bi-polar resin**
- Resin application in rigid plastic-cellulose composites for COLD MOLD Viscosity index Improver & 3D Printing Potentials





Liquefied Dates & Wastes As Fertilizer On Demo Farm









Current success story : After application of Liquefied WASTES via
SPOT APPLICATION as LIQUID FERTILIZER from 5cm radius round the maize plants , 12 Days after Planting, (Land preparation, Planting and Spraying - 22nd June 2011 -2016 – More Works to be done.

stage 1



Liquefied Dates & Wastes As Fertilizer On Demo Farm - Harvest









See the Patent Owner – Taslim Owonikoko

stage 2





National Newspaper Publication on Our Patented Liquefied Biomass Success & Collaboration With Federal Leather Research Institute In Nigeria

Novel dual active antifungal & biocide extract

•dehairs leather efficiently

By EBELE ORAKPO

THE Federal Government's dream of making Nigeria world's hub for leather processing is being realised as a wholly indigenous start-up company, Berekotry Detergent Ltd. based in Iseyin, Oyo State, has discovered, through its cellulose fusion technology, a dual active antifungal and biocide extract with fast efficiency in leather dehairing, allegedly the fastest in the world now.

Speaking with *Vanguard Learning*, the Chief Executive Officer/Head of Research & Development of the company, Engr. Taslim Owonikoko, said the product is "a fast dehairing agent in leather processing with an incubation period of just 30 minutes, an ample improvement on the over seven days current practice in the leather processing industry globally."

De-hairing:

De-hairing as the name implies, is removal of hair from skins as one of the important operations in leather processing. Usually, this process involves the use of chemicals applied in huge amounts. Unfortunately, these chemicals often cause a lot of environmental pollution hence the need for an alternative.



*Taslim Owonikoko

Search for alternatives:

They found the alternative in enzymes which apart from doing the job within a shorter period, is more eco-friendly. "When the nod came from the Nigerian Patent Office on a novel process route for the synthesis of antifungal and antimicrobial agent from cellulose to valuable industrial products in 2008, it was like a starter's euphoria on the part of the Berekotry Ltd's Research & Development leadership. The patent granted in 2008 has been reinforced by the latest award of a second patent by the Nigerian Patent office in March, 2014," said an elated Owonikoko.

Antimicrobial agent:



*A piece of leather treated with de-hairing agent



*Aspergillus flavus-infected maize



*Aspergillus niger-infected onion



*Aspergillus flavus-infected tomatoes

and patented route for the production of new antifungal agent from cellulose via non-pyrolysis liquefaction. The extract was phytochemically screened and found to be inhibitors for three fungi species (*Aspergillus flavus, Aspergillus niger* and *Rhizopus species*) plus one bacteria species *Bacillus cereus*.

Aspergillus niger, a common food contaminant, causes a disease called black mold on certain fruits and vegetables such as grapes, onions and peanuts while *Aspergillus flavus* is a pathogenic fungus best known for its colonisation of cereal grains and legumes.

He expressed his appreciation and readiness to partner more with the National Office for Technology Acquisition and Promotion (NOTAP), who collaborated with his company to acquire the crucial patent captioned: *Antifungal agent from ligno-cellulose and lignin-free cellulose-based agro biomass materials via alkali fusion and oxidation of acid liquefied biomass cellulose materials* after a three-year global search and due dilligence.

He said some researchers at the National Institute of Leather Research, Zaria, conducted phytochemical screening of the synthesised extract with excellent results, noting that this achievement came at a time when bio-based materials are being applied for sustainability.

"There is a market of US$6 billion worldwide for the de-hairing agent which Owonikoko believes will benefit Nigeria immensely.

Although a relatively small company, Berekotry is doing Nigeria proud especially as the raw materials are basically agro biomass, things ordinarily seen as waste, thus adding steam to the Minister of Agriculture, Dr. Akinwumi Adesina's constant call for Nigeria to enhance its agricultural value chain.

Said Owonikoko: "The local raw materials we are using are from agricultural waste; we are talking of those things we burn down on the farms after harvest – corn cobs, groundnut shells, rice husks etc. Fortunately, these things are well distributed all over Nigeria."

The company also has patents in HSE Oil & Gas, lubricants, biochemicals, semiconductors, biocides, biosurfactants, inks & coatings, composites, etc.



See Demo Visuals On the Green Projects @

http://youtube.com/bkotry



FINANCIALS

Not yet making sales but we may need to work out the financing with the prospective partners and stages to start from

MAIN RISKS IDENTIFIED

Value Addition & Proposition

The process is scalable to industrial scale and the raw materials are waste being converted cheaply, safely and with good ROI due to its waste- to-wealth process.

We may need some cryogenic facilities to enhance safety and easy handling at the scale-up exothermic liquefaction stage which we don't have facility to install here (notwithstanding the fact that we confined our choice of chemical raw materials to cheap, safe and popular chemical raw materials) but a cold water bath did a good job at our table scale production process we still use till date.



BEREKOTRY





Global Recent Innovation EXPLOITS & AWARDS : Rome- South Africa- Abu Dhabi-UAE-NIGERIA







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Websites : www.berekotry.com

&
http://wp.me/p2l0sp-2m
&
http://www.flickr.com/photos/bkotry

Mobile +2348034222448

About us

•*Innocentive-MIT-CBS Gift Certificate Award , USA,*

• *National Gold Innovation Award, Nigeria ,*

• *Global Top 100 Best Innovators by General Electric Ecomagination Challenge, USA*
•*Best Award Winner on National Science & Innovation awarded by the Federal Ministry Of Science & Technology in Conjunction with United Nations Development Program in Nigeria 2013*
• *Global Innovation Award at The Maker Faire Rome –Italy 2015.*

Nominated on industrial/Innovation tours to Italy , South Korea, India ,Ethiopia, UAE, South Africa e.t.c.
•*The company emerged the best Federal Government & UNDP-Award sponsored Innovative company in Ngeria 2007 & 2014 back to back.*

•*Berekotry Limited and its passionate President and Chemical Engineer of more than 20years innovation experience* ***Mr Taslim Owonikoko*** *are soul mates and it is difficult to separate him from his company or his numerous landmark inventions and Agro-based industrial innovations.*



Thank You!
Shukran!