



New Technologies In Palm Oil Industry

A Green & High Value Realization Approach

Oct 30th, 2012
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WHAT WE DO

Using our patented nanotechnology platform, we produce renewable green chemicals and advanced performance materials from wastes



NANOTECHNOLOGY PARK

9 Hectare Production Site In Senawang,
Negeri Sembilan, Malaysia



FACILITIES

- > 100,000 Tonne/Annum Pre-Treatment Facility
- > 120,000 Tonne/Annum Green Chemicals Facility
- > 3 Kg/Day Nanographene Facility



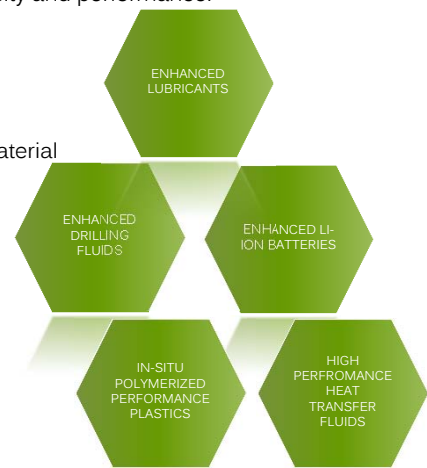
THE ADVANCED MATERIAL: NANO GRAPHENE

Thin ■ Light ■ Super-strong ■ Conductive ■ Flexible

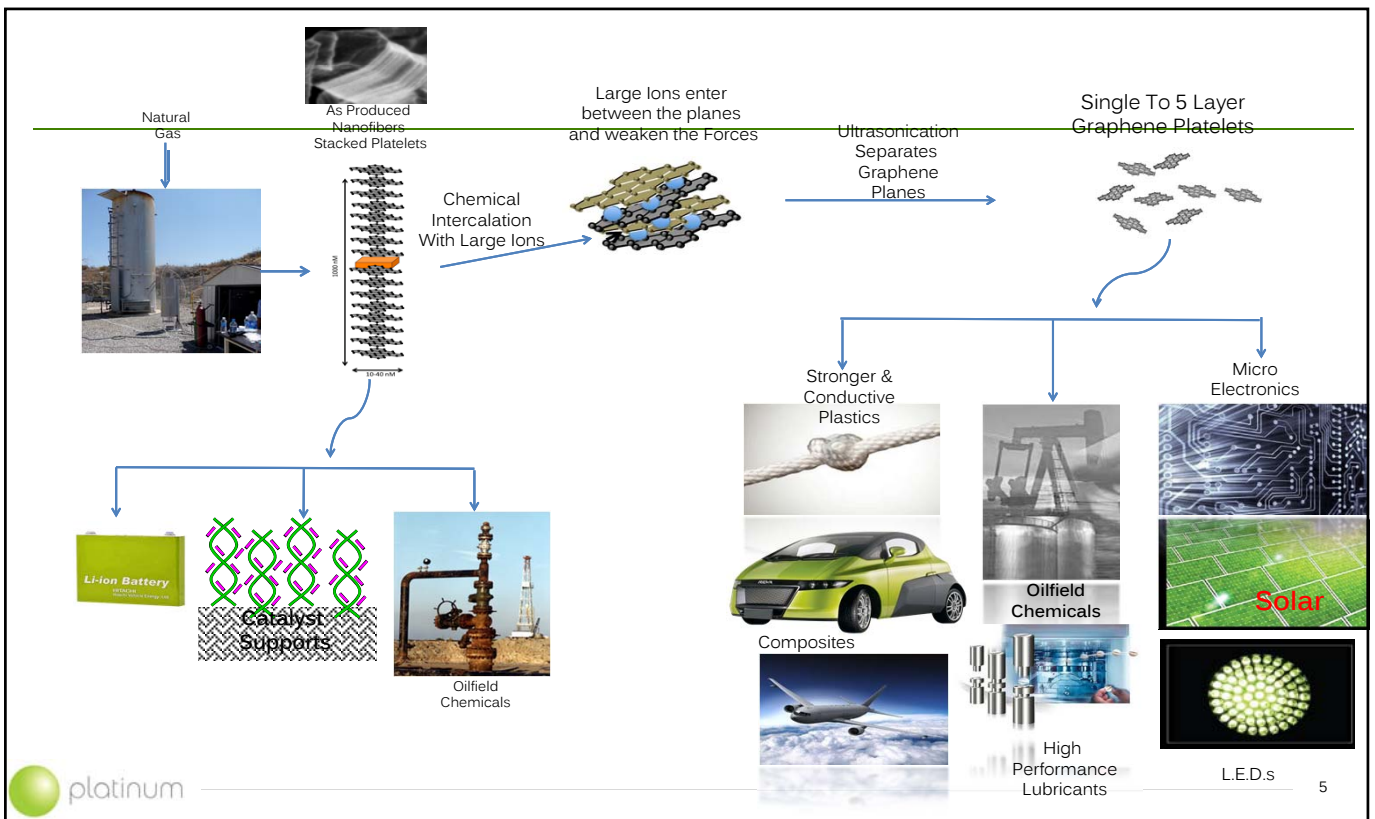
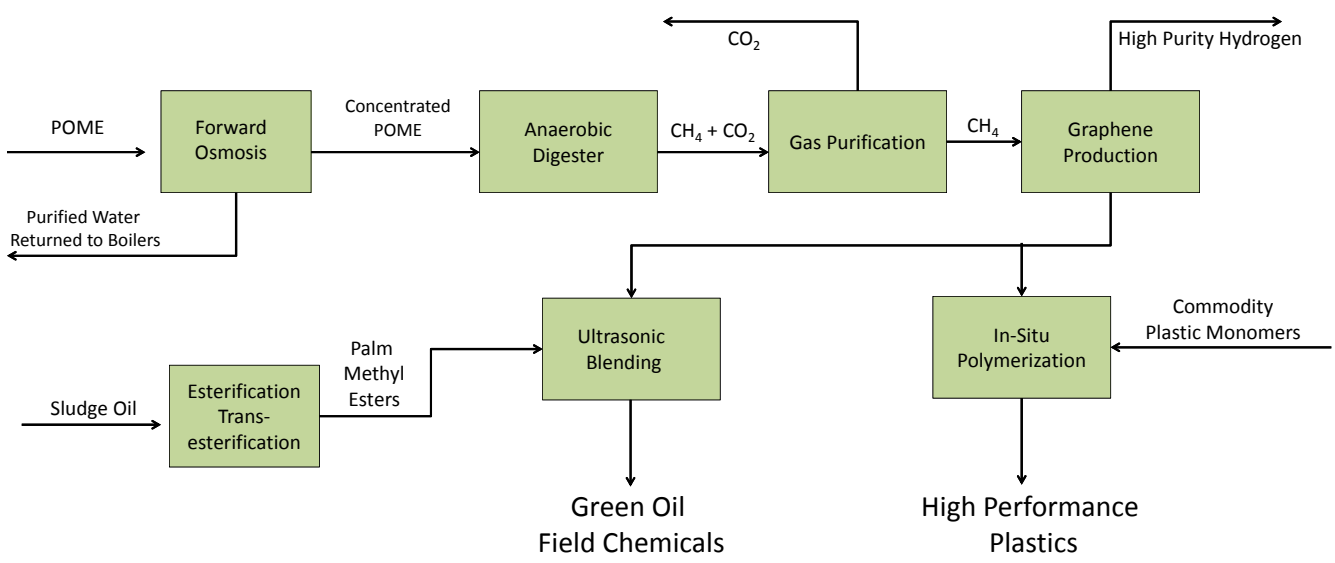
A small quantity of this multi-functional, versatile product can enhance and bring new properties to established materials such as plastics, polymers, lubricants, metals – from enhanced electrical and thermal conductivity to exceptional mechanical load bearing capacity and performance.

Product Features

- > 50,000 times smaller than the diameter of human hair – thinnest material known to science
- > 5 times the thermal conductivity of copper
- > 300 times stronger than steel
- > More flexible than plastic (can be bent, crumpled and wrinkled)
- > Surface area as high as 2,600 m²/g



Closing The Loop



ENHANCED GREEN BASE OILS

TYPICALLY USED WHEN
Lubricants are lost to the environment

Where biodegradability or low toxicity is specified.

Food grade lubricants



Generates 1000x
increase in surface area
and million times
increase in nano
particles

- VISCOSITY INDEX ✓
- FLASH POINT ✓
- POUR POINT ✓
- SULFATED ASH ✓



Green Machining Oils

IMMEDIATE ENHANCEMENT OF CURRENT PRODUCT
PLAT NANO ADDITION IN LUBRICANTS GIVES BETTER:

- THERMAL CONDUCTIVITY
- FRICTION REDUCING CAPABILITY (80%)
- ANTIWEAR PERFORMANCE (33%)
- VISCOSITY STABILITY
- INCREASED LOAD BEARING CAPABILITY (40%)



Benefits To Plastics By Enhancing Currently Used Oleochemical Additives With Graphene

Functional Application

- ENHANCED THERMAL STABILITY
- BETTER TENSILE STRENGTH
- INCREASED TOUGHNESS
- INCREASED IMPACT STRENGTH
- IMPROVED FR PERFORMANCE
- IMPROVED STIFFNESS
- BETTER BARRIER PROPERTIES
- HIGHLY RESISTANT TO ABRASION
- SUPERIOR ELECTRICAL CONDUCTIVITY
- CHEMICAL STABILITY
- RIGIDITY



Graphene Enhanced Oleochemicals For Automobiles

Hybrid Power System: Lithium Ion Battery, Fuel Cell

Motor Mounts: Reduced vibration

Hoses and belts: lower maintenance

Seals: lower cost, reduced noise



Tires: Improved durability, traction, fuel efficiency and cost

Body Panels: Reduced weight and cost, better thermal performance

Paint and Finish: Improved paintability, lower application cost

Overall: Lower curb weight, better fuel efficiency, reduced cost

Graphene Enhanced Biodegradable Oilfield Chemicals

Base Oils & Lubricants	Drilling Related Fluids
Increased thermal conductance	Better back flow prevention
Reduced friction by 80%	Increased oil flow
Reduced wear & tear 33%	Increased heat transfer
Stable viscosity	Stable viscosity
Higher load bearing	Higher load bearing



Enhanced Value Oleochemicals

- Lower oxidation degradation
- Lower Pour Point
- Lubricating Effect
- Biodegradable corrosion inhibitor



THANK YOU