



New Technologies In Palm Oil Industry

A Green & High Value Realization Approach

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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



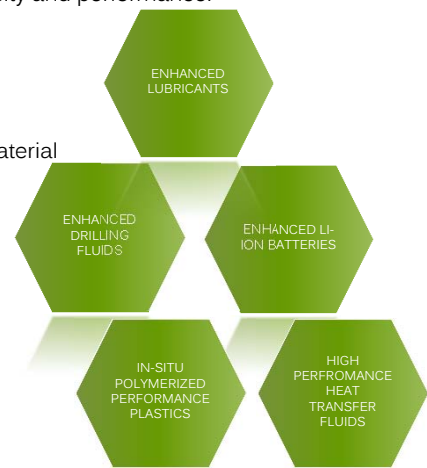
THE ADVANCED MATERIAL: NANO GRAPHENE

Thin ■ Light ■ Super-strong ■ Conductive ■ Flexible

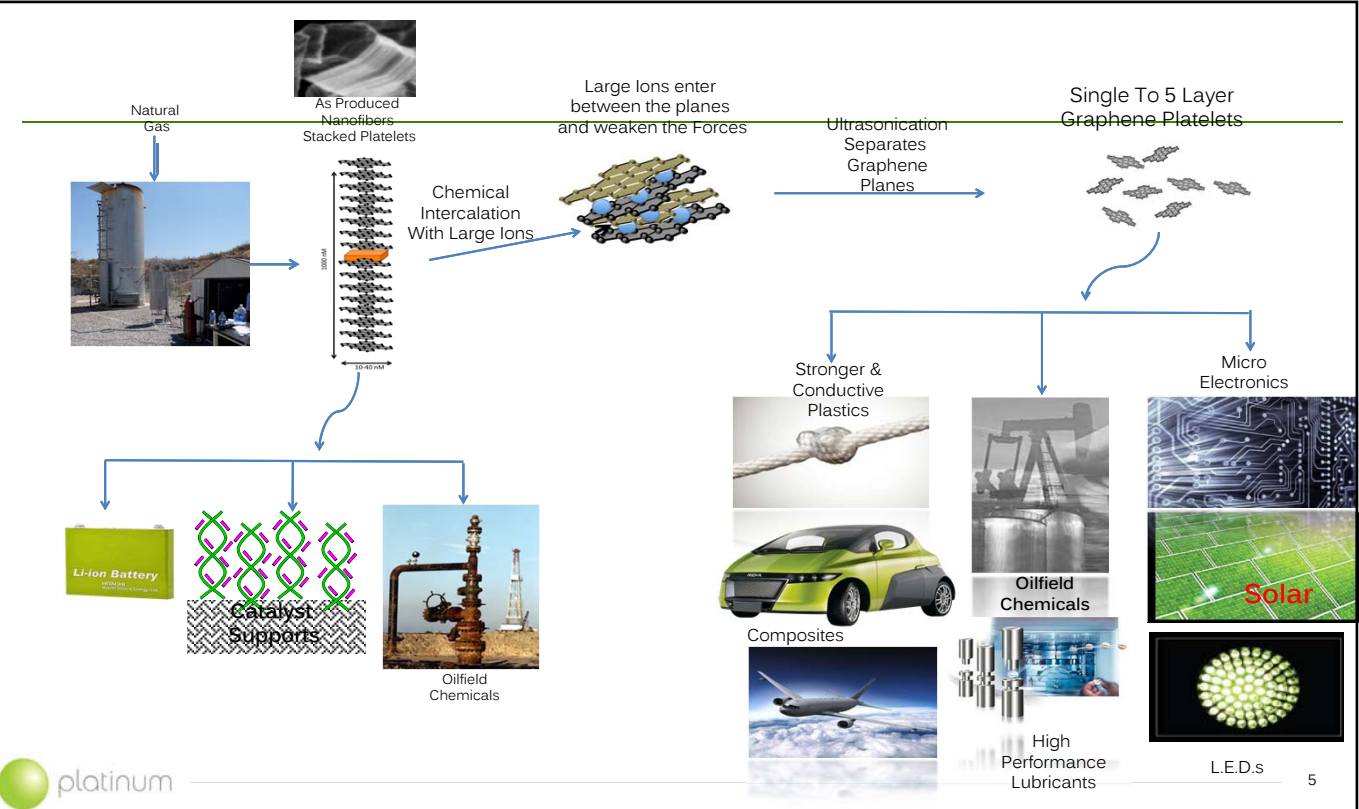
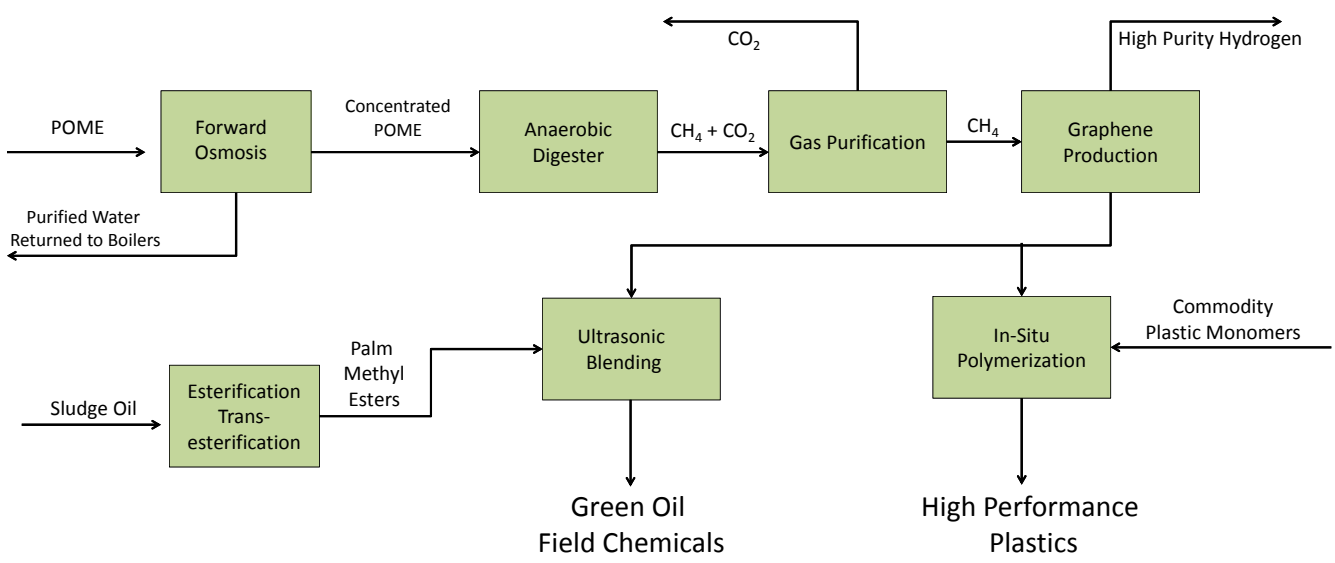
A small quantity of this multi-functional, versatile product can enhance and bring new properties to established materials such as plastics, polymers, lubricants, metals – from enhanced electrical and thermal conductivity to exceptional mechanical load bearing capacity and performance.

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



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



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

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



Body Panels: Reduced weight and cost, better thermal performance

Paint and Finish: Improved paintability, lower application cost

Tires: Improved durability, traction, fuel efficiency and 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