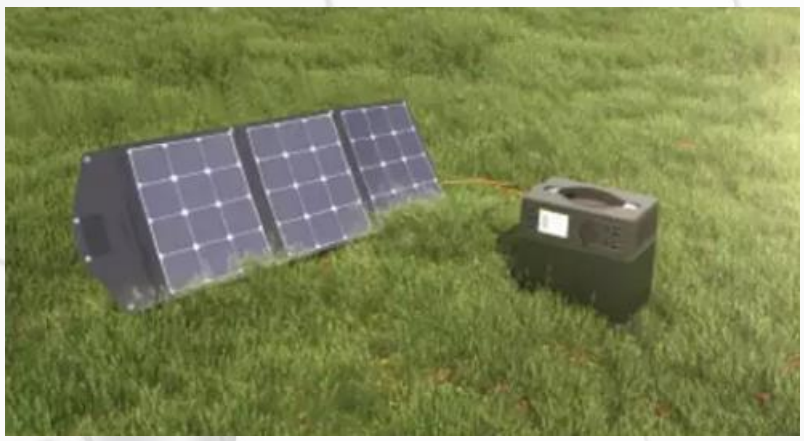
NANOMALAYSIA®

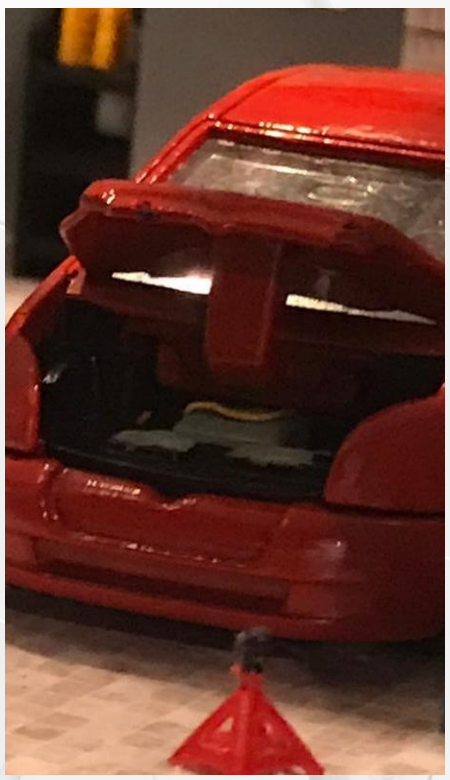
ENERGISING INDUSTRIES THROUGH
NANOTECHNOLOGY COMMERCIALISATION

NANOMALAYSIA'S SMART COMMUNITY

SMART RESIDENCE

Graphene-enhanced Quantum Cell Backup





A revolutionary energy storage device designed with lithium-ion battery paired with Graphene Ultracapacitor. The Graphene Ultracapacitor is capable of storing and discharging energy very quickly and effectively, thus making it a powerful, quiet, durable and high-performance energy storage device for off-grid or emergency power supply.

✓Designed for charging efficiency and long-life cycles

✓Stable current output

✓Compact, lightweight and user-friendly design interface for easy handling

✓Convenient: can be charged from plug socket, car or solar panel.

✓Environmentally friendly with zero noise production

Nano Light Energy Panel (NLEP)







NLEP is a glass based solar panel, which is suitable to be retrofitted into interior design such as window. This is another milestone in new green technology and renewable energy industry sector through its latest nano-based third generation solar cell technology. Unlike conventional solar panel, this new technology is utilizing natural light sources for the generation of electricity.

✓Relatively inexpensive to produce
✓Use environmentally friendly substance
✓Thin and flexible & lightweight
✓Durable and require less maintenance
✓More efficient compared to conventional solar panel
✓Energy generation and thermal insulation
✓Innovative design and reduce CO2 Emissions
✓UV & IR Filter and natural illumination

Nano-enabled Textile Properties and Functionality/Application

Nanotextile is nanotechnology engineered in textile with small particles that give ordinary materials properties such extreme water resistance, odour and moisture elimination, increased elasticity and strength, and bacterial resistance. Applications of nanofabrics have the potential to revolutionise textile manufacturing.

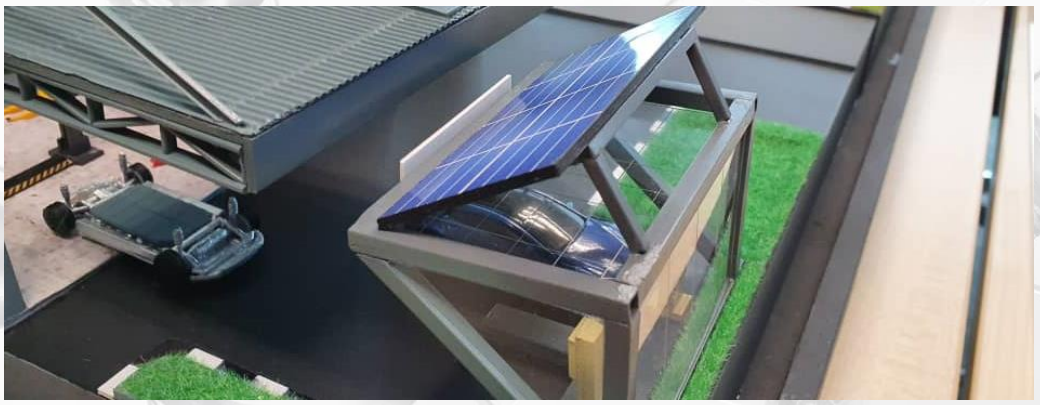
✓Self-cleaning Dirt and water repellent
Tack guard, stain resistant and fabric protection; protective work clothing, repelling water and spills from beverages with excellent quick-dry

✓Antibacterial Eliminate infections & odour
Nano-Anti-microbial technology, nano-silver coating with UV protection

✓ Flame retardancy
Infused ion and enhanced nanofiber fabric will give you excellent dry touch with breath and cool effect and good ventilation

✓ Insect repellent
Nanotechnology enhanced fabric to paralyze insects and bugs by damaging their nervous systems when they come in direct contact

Nano Photovoltaic (NPV) Solar



Nano Photovoltaic (NPV) Solar is a conventional silicon-based solar panel for rooftop, has been enhanced with nanotechnology for superior sunlight absorption and maintenance reduction

Its advantages:

✓Better visibility and dirt repellent

✓ It has anti germs characteristic (anti bacteria, antivirus, antifungals and mold)

✓ NPV is scratch resistance and suitable for all weather

✓ It has a self-cleaning mechanism during wet/rain, which will leave no watermark, reduce condensation or fogging and also anti corrosion.

SMART FARMING

Graphene-Enhanced Backpack Spray Fertiliser with Internet of Nano Things (IoNT) Configuration

To assist farmer to apply fertiliser, pesticide, or plant supplements with the correct amount to a specific tree / plant. The backpack will correspond to the application map that was produced by the drone.
System integration with COTS backpack fertiliser powered by graphene ultracapacitor and electronic solenoid disperser module automates dispersion of fertiliser and organic nanotech enhancer infused with graphene and carbon nanotubes for better plant nutrient and mineral intake

✓Data pairing with GPS between drone and backpack (Internet of Nano Things)
✓Graphene ultracapacitor and electronic solenoid dispenser
✓Organic nanotech enhancer infused with carbon nanotubes (Nanotech Fertiliser

SMART COMMUNITY
NANOMALAYSIA BERHAD

Onboard Generated Hydrogen Fuel Cell Pack Powered Drone & Graphene-based Plastic Airframe for UAVs

NanoMalaysia brings significant enhancements for the application of graphene for the structure of the UAV, providing greater tensile strength yet extremely lightweight and flexible at the same time. A light UAV allows longer flight time, hence more data could be obtained by a UAV per flight. In addition, features such as exceptional thermal arrangement, lighting stroke protection, and EMI shielding also could be achieved with graphene-based composite materials in UAVs.

✓ Light UAV body frame

✓ Thermal insulating and fire retardant

✓ EMI shielding feature for electronics system protection

✓ Increased mechanical strength

Powered by on board Generated Hydrogen Fuel Cell and Graphene Ultracapacitor and multiple sensors for precise aerial mapping through IoNT.

✓High resolution of visual mapping
✓Fast response of data transmission
✓Accurate data on monitoring

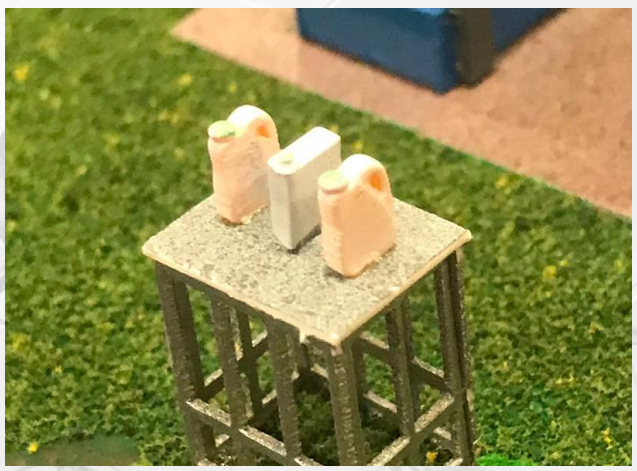
✓Longer endurance in flight mode
✓Lighter weight compare to other UAV

Nanofertiliser

Used with normal fertilisers, Spinox8 plant enhancer can significantly increase the production yield in agriculture and aquaculture. With the help of nanotechnology (CNT), it can boost the plant nutrients uptake and immune system, increasing the plants' ability to increase productivity with improvements in overall quality of the plants. It is compatible with backpacks and can be applied through foliar application

SMART COMMUNITY
NANOMALAYSIA BERHAD

Smart Urban Farming



Smart Urban Farming is a Smart agriculture system using nanotechnology. This Smart farm technologies is enhanced with Internet of Nano Things (IoNT) for agricultural productivity; from renewable power, Nanofertiliser to Information and Communications Technology (Nanosensors)

Technology under NanoMalaysia's Smart Urban Farming:

✓Nano Light Energy Panel

Sustainable light energy panel with battery storage for agriculture related operation

✓Nanofilters

Nanofilters made of nanoparticles for particles removal or microorganism

✓Nanomaterials

Silica used as fillers for pond build material to improve water retention and reduce heat transfer. Zeolites could be used as waste material absorbent.

✓Urban Farming kit

An urban farming kit developed targeting small space areas and to cater for general public

✓Nanocoating

Nanotechnology enables anti-bacterial and anti-fungus properties in forms of coatings at surfaces preventing bio fouling of marine organisms

✓Nanofertiliser

Nanofertiliser to stimulate plant growth through efficient nutrient absorption via slow release active ingredient release

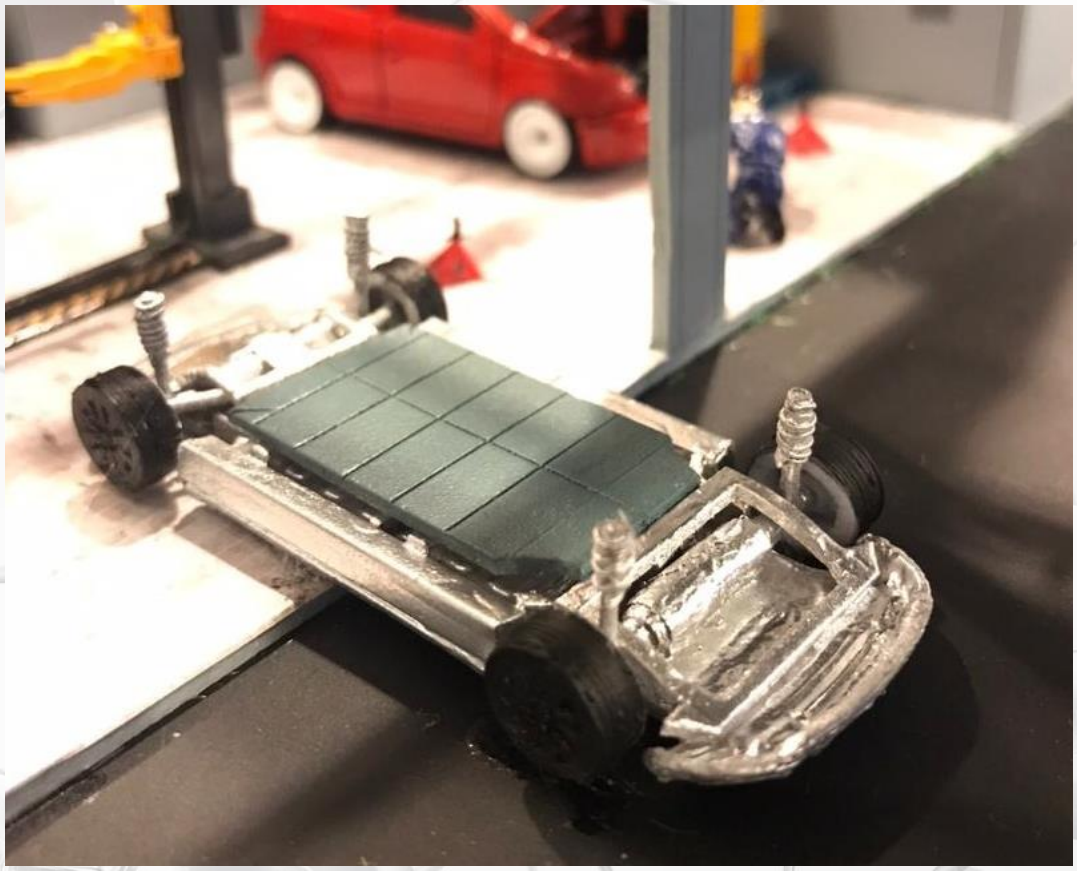
✓Nanosensors

Parameters such as temperature, pH, chemical oxygen demand, acidity & basicity, water flow rate

MOBILITY

CASE: Connected Autonomous Shared Electric

Hydrogen EV Car



HyPER is the green solution that will replace current fossil fuel-based energy systems and solve the distribution problem of hydrogen Fuel Cells. HyPER technology can be used not only to power those vehicles but also stationary buildings, rendering them autonomous from the grid and virtually pollution-free.

✓On-board Hydrogen generation

✓Graphene-based ultracapacitor paired with Li-Ion battery

✓Fast charging capability (<30mins)

The benefits of hydrogen fuel cells are:

✓Reduced greenhouse gas emissions

✓Reduced demand for foreign oil

✓High Reliability

✓Improved environmental quality

✓Flexibility in installation and operation

Graphene-enhanced Tires

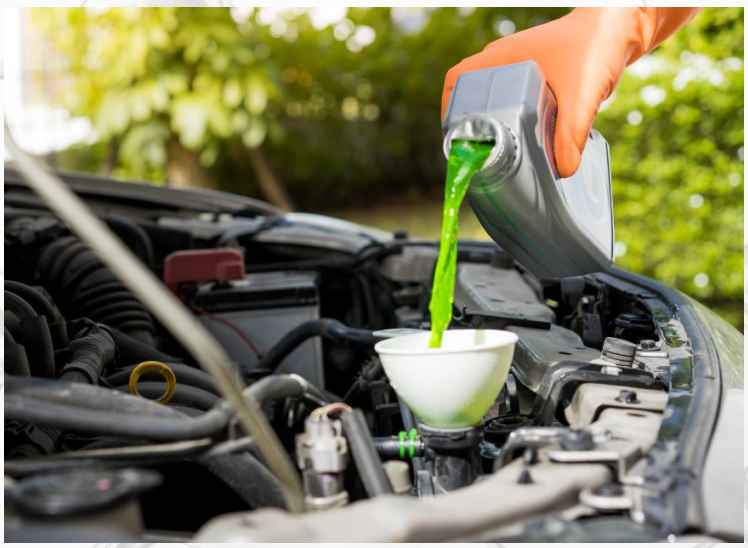
Graphene-based rubber for rethreading materials, technical rubber compound and tyre compound. With the enhanced rubber waste tire compound using graphene, it is expected to perform, 1.5 times better than the virgin tires, yet last longer, less abrasion and compression and will be 30% cheaper than the conventional one.

Advantages:

✓Graphene-infused tires (GIT) is expected to perform 1.5 times better than the virgin tires, yet last longer with higher abrasion rate

✓Producing tires that achieve 15-19% in compression set and higher tensile strength while being 30% cheaper than conventional tires

Graphene-enhanced Lubricant



A lubricant additive for automotive application with high performance graphene-enhanced lubricant additive. This Graphene-based oil additive created for an improved performance and low friction of automotive engines

Application:

✓Automotive application – gasoline and diesel engines

Advantages:

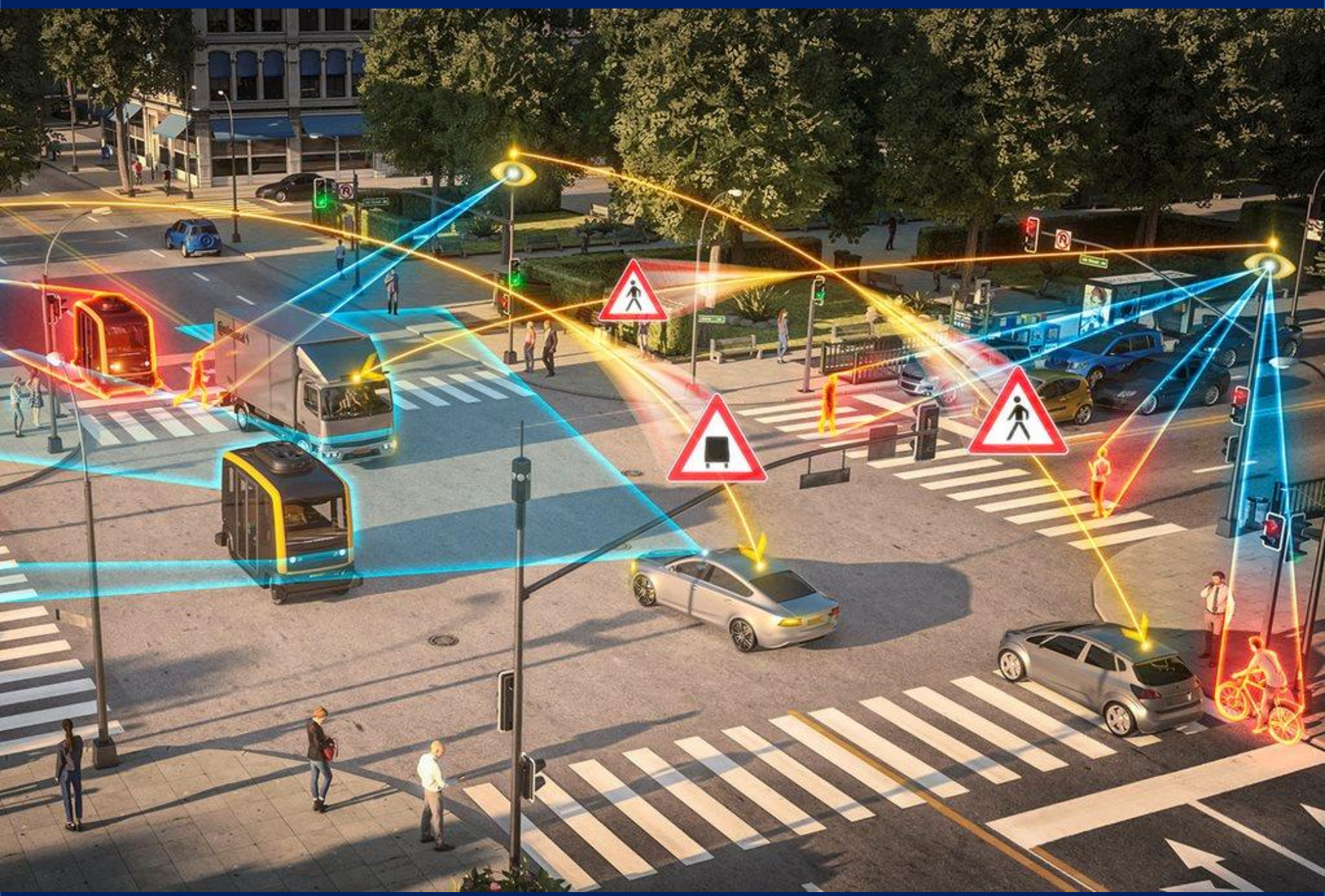
✓Reduces friction and wear

✓Protects against corrosion and rust

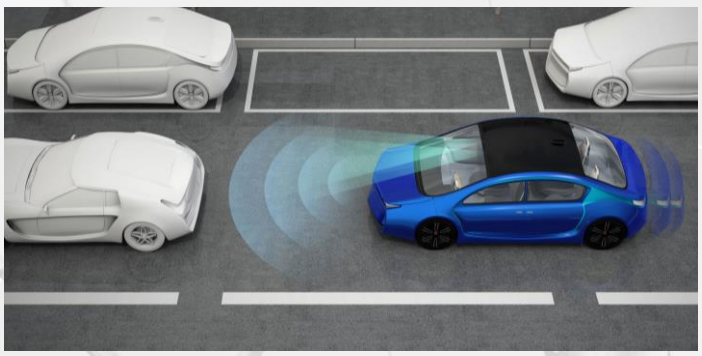
✓Extend engines lifetime

✓Reduces fuel consumption

SMART STREET



Autonomous Visual-Based Driverless Car System With Graphene Based Li-Ion Battery Storage And Ultracapacitors



NAVi is a locally developed level 4 Autonomous Vehicle. NAVi has the potential to increase overall efficiency of travel by automating the process. NAVi's envision to create more technology that can be used to pilot any vehicle, whether it is on land, sea or in the air. NAVi combining the best of Li-Ion battery storage and ultracapacitors:

✓Li-ion batteries can operate for longer durations, optimally at steady energy output

✓Graphene-based ultracapacitors are used for high power/torque conditions, such as motor starting or moving up an incline.

Graphene-Based Wireless Radio Frequency (Rf) Mobile Phone Charger

The goal of the Internet of Things (IoT) is to enable “things” to be connected anytime, anyplace, with anything and anyone ideally using any network and any service. One of the essential challenges in IoT is how to interconnect “things” in an interoperable way while considering the energy constraints. Hence, wireless power transfer system is a tremendously important feature to realize and deploy for self-power-sustaining mobility in smart cities. In this project, the graphene-based wireless mobile phone charger is designed and developed by using novel 3D printing techniques

Advantages:

✓Non-inductive charging i.e. contactless if compared to existing inductive 'wireless' chargers in the market

✓Charging distance up to 1m

The on-going scale-up project will focus on improving some parameters for the product marketability e.g. faster charging rate, longer charging distance, compact receiver size, omnidirectional antenna, certification/compliance verifications, and product design.

SMART COMMUNITY
NANOMALAYSIA BERHAD

Smart Monitoring And Graphene-based Ultracapacitor For Electric Scooter

Electric motorcycles and scooters are plug-in electric which runs with electricity and is stored on board in a rechargeable battery. NanoMalaysia's technology offers an Integration of graphene-based ultracapacitor – Li-ion battery module as an alternative energy storage with a long lasting batteries, that can deliver prime speed and premium performance, minus the emissions.

✓IoNT Tag sensor via Wireless Sensor system

Internet of Nano Things integration which the sensors enable to monitor the electric scooter's performance for battery, tyre pressure, coach management, and temperature.

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