

Graphene for Cars

Current research and transformative technologies from the Graphene Flagship are driving disruption within the automotive industry.

ENERGY EFFICIENCY

Increased energy extracted from new-generation solar cells, enhancing vehicle performance and efficiency.

SAFER PIPES AND TANKS

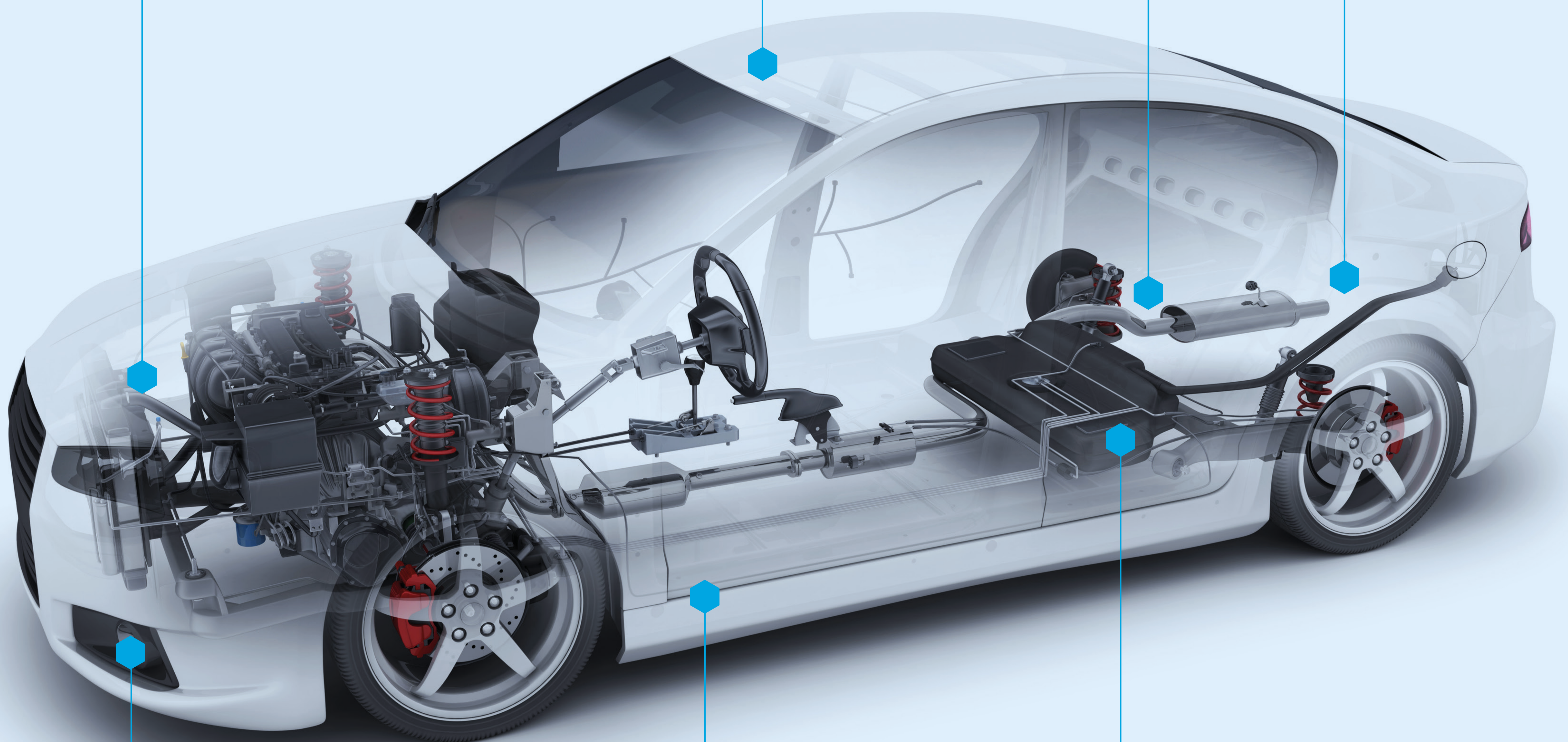
Graphene-based resin used for corrosion-resistant tanks and pipes, for storage and transport of volatile chemicals.

REDUCED POLLUTION

Smog consuming catalysts are enhanced, and increased levels of CO₂ are captured.

HEAT DISTRIBUTION

Loop heat pipes, previously only tested for aerospace applications, dissipate heat in computer electronics or radiators.



ROBUST COMPONENTS

Panels manufactured using graphene carbon fibre composites are lightweight and stronger than traditional panels.

INCREASED MILEAGE

A new generation of lithium ion batteries with increased capacity and potential.

SAFER SENSORS

Graphene-based sensors enable the detection of light from ultraviolet to infrared, improving obstacle detection.

Graphene for Cities

SMOG REDUCING PAINT

Graphene composite coatings can be applied to concrete walls and pavements to remove air pollutants.

GREEN ENERGY

Graphene-enabled perovskite solar cells are cost effective and energy efficient.

WATER FILTRATION

Graphene enables innovative water filtration systems for sustainable and efficient water purification.

POLLUTION SENSORS

Graphene-based gas sensors enable portable and highly sensitive environmental monitoring of nitrogen dioxide.

UV SENSOR SKIN PATCH

Graphene delivers a versatile light detection platform enabling the integration of sensors that monitor our exposure to UV light in real-time.

VISION RESTORATION

Next-generational retinal prostheses use graphene-based electrodes to provide artificial vision to patients blinded by retinal degeneration.

TREATING NEURAL DISEASE

Flexible graphene can be used in neural implants which record and stimulate signals on the surface of the brain improving the understanding, treatment, and detection of neural diseases.

CONDUCTIVE CONCRETE

Graphene makes cement thermally and electrically conductive, providing a myriad of new possibilities from underfloor heating to charging solutions for electric cars.

A history of graphene



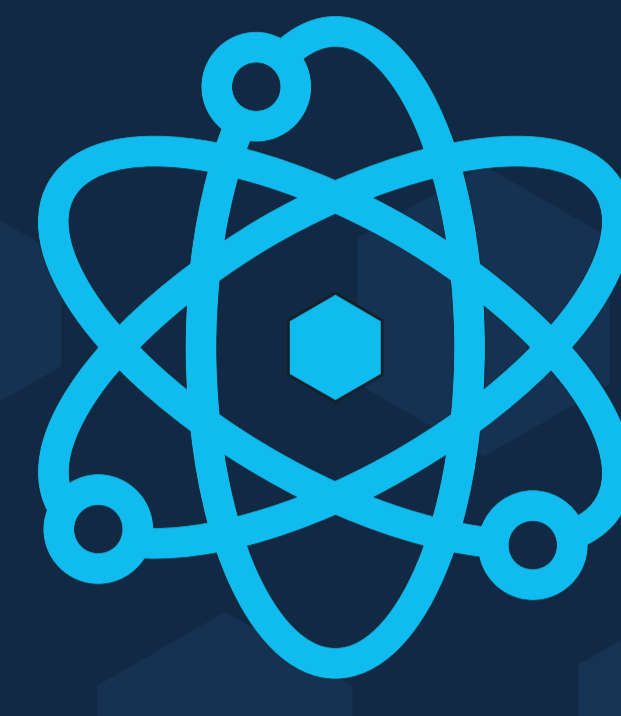
1560s

First pencil developed



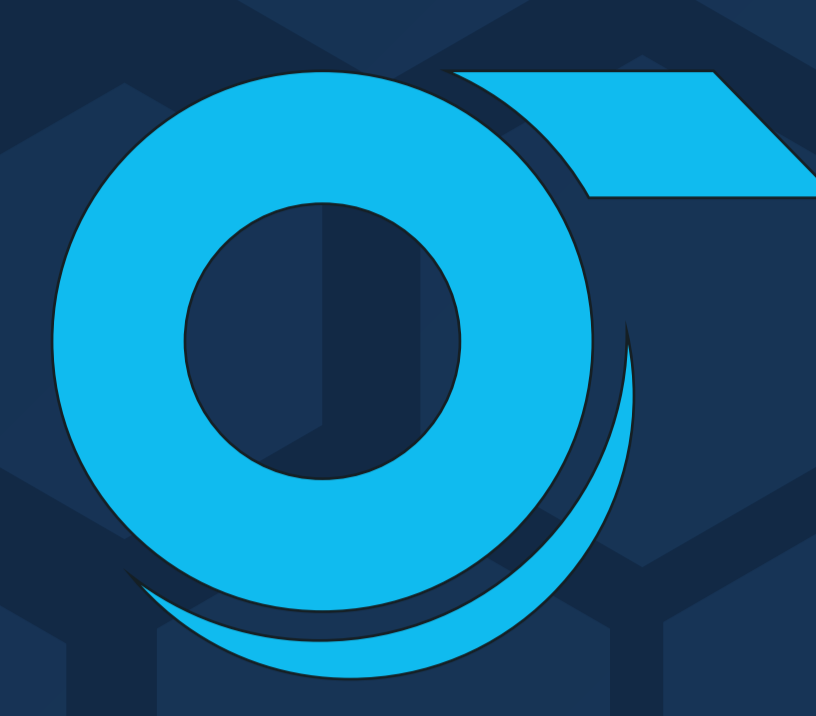
1924

Graphite's layered structure identified



1947

Theoretical study into graphene's electrical properties



2004

Graphene first isolated by Geim and Novoselov



2010

Geim and Novoselov awarded Nobel Prize



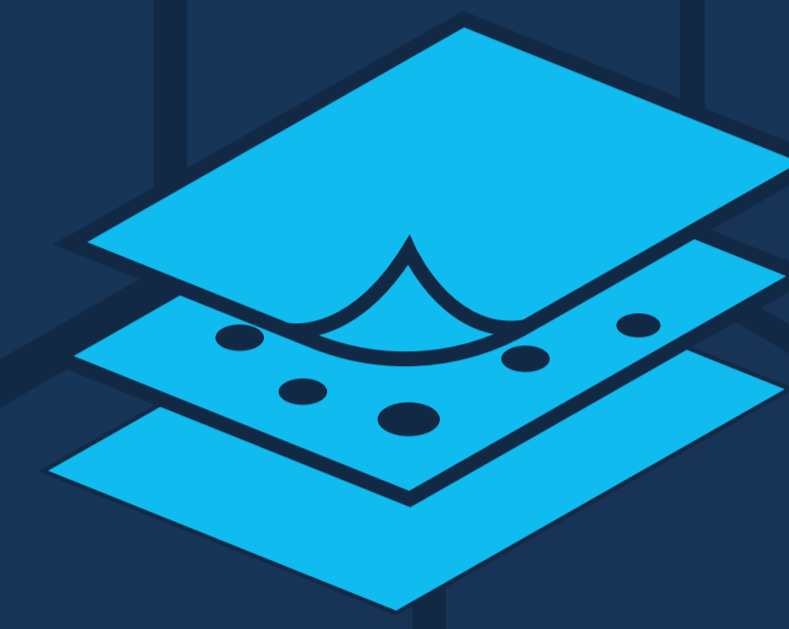
2009

Transparent graphene electrodes for solar cells



2008

Graphene inks from liquid-phase exfoliation



2007

Freestanding graphene nano-membranes isolated



2012

Inkjet-printed graphene electronics



2013

Graphene Flagship launched



2014

Performance enhanced batteries enabled by graphene electrodes



2015

Graphene-based magnetic field sensor with ultra-high sensitivity developed



2019

Graphene-based bio-electronic retinal implants push the boundaries of vision restoration



2018

Ultra-high capacity transmitter and receivers using graphene offer a unique solution to future 5G telecommunications



2017

First zero gravity graphene experiments in collaboration with European Space Agency (ESA)



2016

World's first graphene-enhanced aircraft successfully flown. Graphene enabled mobile phone screen, battery, and cooling system



2020

Creation of the world's first mass produced graphene-enabled solar farm

2D-Experimental Pilot Line (2D-EPL) launched



2021

Graphene Flagship spin-off INBRAIN raises investment to develop graphene-based brain implants to treat patients with brain disorders



2022

The 2D-EPL launches its first wafer run targeting sensor applications



2023

Graphene Flagship celebrates ten year anniversary