



Graphene-Enhanced Membrane Electrode Assembly for Fuel Cells

BACKGROUND

Fuel Cells (FCs) are a promising alternative to traditional batteries. Traditional battery limitations are a key restricting factor in the design and improvement of consumer electronics and other electronic products. All electronics, from laptops and smartphones to electric cars, are affected by the energy density, recharge rates and required access to mains power of current battery technologies. These limitations are predicted to become a bigger hindrance as next-generation consumer electronics devices demand even more power and longevity.

FCs are seen as a breakthrough technology in portable energy. With extended run times and quick recharges they can significantly improve the performance and capabilities of portable electronics.

Hydrogen FCs are environmentally benign and have attracted significant attention in recent years.

Direct Methanol FCs utilize cheap, stable, high energy-density methanol as their fuel. DMFCs on the market today almost exclusively use a proton exchange membrane (PEM) based around a conventional Nafion® system which decays at temperatures above 80°C.

THE TECHNOLOGY

The University of Manchester has developed a breakthrough graphene based PEM technology which allows FCs to operate at significantly higher efficiency. This graphene-based technology has been shown to improve DMFC performance significantly and provisional results have demonstrated similar efficacy in hydrogen systems. This material can be modified with other substances to tailor the performance to various applications.

KEY BENEFITS

- Improved fuel cell performance
- Improved efficiency
- Cheaper production of fuel cell components than with existing technologies
- Higher energy densities

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APPLICATIONS

- Use in consumer electronics such as smartphones, laptops and tablets
- Use in electric cars
- Use in other electric transport
- Stationary power generators to replace fossil fuel methods
- Isolated power generation for camping, boats and other off-grid requirements
- Use as a power source on aeroplanes
- Use in military equipment with unique energy requirements
- Other non-fuel cell electrochemical systems

INTELLECTUAL PROPERTY

Patent filed

OPPORTUNITY

The IP is offered for royalty bearing assignment under our standard terms

CONTACT

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