Scalable Manufacturing of Multifunctional Fibre Reinforced Polymer Composites

A technology is been developed at Ulster University, which is based on the modification of carbon fiber’s surface for reinforced fibre polymer composites with multifunctional properties such as increased interlaminar fracture toughness, electrical and thermal conductivity.

The technology introduces multifunctional graphene surfaces on carbon and other fibers, through a cost-effective and scalable process.

The modified fiber surface enables the introduction of multiple attributes, including high electrical and thermal conductivity, improved mechanical performance and the integration of various functions such as in-situ sensing for monitoring of damage in fiber reinforced composites.

Key advantages

There are key advantages over conventional approaches, such as different fibre coatings, which suffer from several limitations including poor mechanical performance, high-cost and not easily scalable process. Ulster’s simple and scalable process benefits from valuable properties of the graphene modified fibres.

Solution

World-wide, increasingly strict environmental regulations call for steadily increasing gas mileage and emissions requirements. Ulter’s technology of lightweight carbon fiber polymer composites nanoengineered with graphene offer significant benefits for load bearing components of vehicles, where more demanding high strength structural and functional components are needed.

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