Haydale Graphene Industries plc

("Haydale" or the "Company")

US research body reports Haydale Functionalised GNPs significantly

improve strength in composites

Haydale Graphene Industries plc (AIM:HAYD), the Company focused on enabling technology for the commercialisation of graphene, is pleased to announce that their functionalised GNPs have been demonstrated to improve significantly both strength and toughness in epoxy composites in research carried out by the Materials Science Department of The Aerospace Corporation, an American research organisation.

In August last year, the research department purchased a quantity of Haydale HDPlas™ oxygen functionalised graphene nanoplatelets ("GNPs") for analysis with toughened epoxy composites.

The report, in a paper published in The Journal of Applied Polymer Science states that having purchased and used Haydale GNPs in a composite project the work demonstrated a significant leap in strength improvements in toughened epoxy composites. The reported increases are greater than 2x in tensile strength and modulus of an epoxy composite using a number of HDPlas™ O2-functionalised GNPs. The addition of increasing amounts of GNPs resulted in strength increases of over 125% and toughness improvements of 100% compared with similarly cured, unreinforced material.

Commenting, Haydale Chief Executive, Ray Gibbs said:

"Graphene nanomaterials are gaining enormous interest as a new class of reinforcement for nanocomposites, promising revolutionary electrical, thermal and mechanical properties. The results presented in the new research represent another step forward for the graphene industry in terms of realising graphene's potential in the composites market, and further highlights that functionalisation via plasma is the key process. Following this research, we intend to test our functionalised nanomaterials in further research projects with both raw material producers and end-application manufacturers."

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About Haydale

Haydale has developed a patent pending proprietary scalable plasma process to functionalise graphene and other nanomaterials. This enabling technology can provide Haydale with a rapid and highly cost efficient method of supplying tailored solutions to enhance applications for both raw material suppliers and product manufacturers.

Functionalisation is carried out through a low pressure plasma process that treats both organic mined fine powder and other synthetically produced nanomaterial powders producing high quality few layered graphenes and graphene nano platelets. The process can functionalise with a range of chemical groups, where the amount of chemicals can be tailored to the customer needs. Good dispersion improves the properties and performance of the host material and ensures it delivers as specified.

The Haydale plasma process does not use wet chemistry, neither does it damage the material being processed, rather it can clean up impurities inherent in the raw material. The technology is a low energy user and most importantly environmentally friendly. The Haydale method is an enabling technology where working with a raw material producer can add value to the base product and tailor the outputs to meet the target applications of the end user.

Haydale, based in South Wales, housed in a purpose built facility for processing and handling nanomaterials with a laboratory facility, is facilitating the application of graphenes and other nanomaterials in fields such as inks, sensors, energy storage, photovoltaics, composites, paints and coatings.

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