

Haydale Graphene Industries plc  
("Haydale", the "Group" or the "Company")

## **Haydale wins major research grant awards totalling over £450,000**

### **And Notice of Audited Results**

Haydale (AIM: HAYD), the group focused on the commercialisation of graphene and other nano particle products using its proprietary plasma process is pleased to announce that the Group has recently been awarded a number of research grants, totalling over £450,000. Receipt of grant monies in full is subject to, *inter alia*, completion of final grant documentation and various project milestones being achieved. The projects relating to each grant are expected to have a variety of start dates (depending on timing of the final grant documentation) and run for a period of between 18 to 24 months. These new projects include:

- The development of low cost, self-cleaning graphene enhanced coatings for industrial membranes used in the cleaning and filtering of waste water, swimming pools, desalination and offshore drilling fluids, amongst others as part of the project recently announced by G20 Water. The project's target sectors of nanofiltration from reverse osmosis (RO) and ultrafiltration accounted for \$1.7 billion of sales in 2014.
- The development of resins and coatings, incorporating HDPlas® functionalised microencapsulants, which emit UV fluorescent dyes under impact. The use of such systems in safety critical composite applications such as aircraft primary structures, pressure vessels, yachts, boats, sign posts, pressure pipes and car chassis structures would enable engineers to readily and easily detect damage in the form of a "bruise".
- The feasibility of developing type V liner-less thermoplastic composite hydrogen pressure vessels for hydrogen powered fuel cell vehicles. If it can be demonstrated that it is feasible to manufacture liner-less functionalised graphene enhanced thermoplastic composite pressure vessels with improved permeation resistance, this could lead to lighter, cheaper and safer hydrogen pressure vessels on vehicles. Research by UK H2 Mobility predicts that 10,000 Hydrogen vehicles will be sold by 2020, with an estimated annual market for storage vessels of £21 million.

Ray Gibbs, Haydale Chief executive said:

"The support of government is vital in accelerating the commercialisation of graphene based composite products and through our unique plasma treatment functionalisation process we will be at the forefront of developing and commercialising a whole new range of graphene enhanced composite materials. The awards also enable us to engage directly with prime OEM's in the significant aerospace, automotive, rail and marine markets as well as enabling us to expand our technical team and capabilities in this area."

Gerry Boyce, Managing Director of Haydale Composite Solutions added:

“The company have a well-defined product development strategy and are committed to developing graphene enhanced polymer and polymer composite products in targeted markets including Aerospace, automotive, rail and marine and the successful awarding of these research contracts under pin this strategy. The ability to radically improve the mechanical, electrical and thermal characteristics of polymers, resins, coatings and adhesives through the incorporation of functionalised graphene is probably one of the most step changing and exciting enabling technologies for a generation and could lead to a whole new range of materials.”

### Notice of Results

The Company also announces that its audited results for the year ended 30 June 2015 are expected to be released in October.

- Ends -

For further information:

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### **About Haydale ([www.haydale.com](http://www.haydale.com))**

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.

#### About Haydale Composite Solutions (HCS)

Haydale Composite Solutions is a recognised composite R&D and testing house, based in Loughborough. HCS customers include significant corporations such as National Grid, SSE, Eirgrid, Chevron, Anglian Water, Severn Trent Water, Yorkshire Water and 3M.

HCS has developed a reputation for delivering innovative solutions in the commercial applications of advanced polymer composite materials working with global companies over more than 20 years. HCS is focused on a range of market sectors including pipe lining for the oil, gas and water industries, infrastructure for electricity and energy sectors plus the marine and transportation markets.

HCS competence spans the entire development cycle from applied research, product design, process development, product testing and certification, to setting up manufacturing plants. HCS also works with OEMs and end-users to develop and provide composite solutions with demonstrable clear technical, economic and environmental benefits over existing structures currently manufactured in traditional materials such as steel, aluminium, wood or concrete.