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Near term commercial applications for graphene, composites and conductive pastes

The potential for graphene and other nanoparticles to significantly enhance material properties has been well documented. However, as carbon is inert and does not mix well with other materials it needs to be homogeneously dispersed and bonded into the host material in order to realize its potential. There are hundreds of graphenes in the market today and all display different characteristics, from flake size, to thickness and chemical groups on the surface and ends to the supply chain issue in delivery of volume at a commercial cost. Some supply may well require scale up and the likelihood is that the volume output will be different from the pilot plant. Knowing which one material works best and applying a sympathetic surface treatment for a specific application is the Haydale expertise. This functionalization treatment plus the years of processing know how sets Haydale apart in the ability to commercialize nanomaterials. For industry to adopt these new materials we need to demonstrate a repeatable and cost effective supply chain that delivers a masterbatch to the customer. One of the challenges industry faces is that there is currently no standard definition of graphene which means that R&D and general procurement departments may not know exactly what it is they are not buying nor be able to replicate test results with a subsequent batch of material. Industry requires a standardization of materials to remove this uncertainty. The recent ISO paper has helped but there is a way to go. Recent work at Haydale has now confirmed significant improvements in electrical, thermal and mechanical performance of Carbon Fibre pre preg, opening up many applications now. Haydale has significant expertise in GRP and thermoplastic pipes for water, sewerage, and the oil and gas industry. With latter suffering for significant repair issues, leak detection and a desire to replace pipes with non-metallics, the Haydale team has unique solutions for these needs. These breakthroughs plus new pastes for bio medical sensors offers real short term commercial opportunities for grapheme and nanoparticles. The industrial and financial world has been waiting for these commercial applications to bear fruit. Further, in order to persuade industry to adopt the new materials we need to be able to incorporate the functionalized materials into existing production facilities thus avoiding the need for replacement of existing capital equipment. The author will examine these challenges and explain how Haydale has established a consistent supply chain of the nanomaterials and are addressing the commercial adoption challenges through the establishment of Centres of Excellence in strategic locations across the globe in the three dominant continents of The Far East, USA and Europe.

Biography

Ray Gibbs is a Chartered Accountant and former Deloitte Audit and Corporate Finance Partner for 9 years. He has over 20 year's experience in high technology and fast moving consumer goods businesses and is a former CFO of Chemring Group Plc. He was part of Haydale Graphene Industrie's management team that acquired Haydale Limited in 2010, became CEO in 2013 and successfully took the business through to IPO in April 2014, defined the strategy and driven for globalization and now sales. He has been immersed into the graphene and nano world for 7 years.

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