New funding to research 'super material' graphene

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Scientists at Imperial College London are set to receive over £4.5 million of public funding to investigate how the 'super material' graphene can drive improvements in high-tech industries, such as aerospace design and medical technologies.

The Chancellor of the Exchequer, George Osborne MP, today announced £21.5 million of capital investment to commercialise graphene, one of the thinnest, lightest, strongest and most conductive materials to have been discovered, marked by the 2010 Nobel Prize in Physics as one of the world's most ground breaking scientific achievements.

Three research projects at Imperial will share the Engineering and Physical Sciences Research Council (EPSRC) funding as part of a new programme with a number of industrial partners, including aeroplane manufacturer Airbus. The scientists receiving the grant hope to develop graphene technologies that will contribute to the UK economy and can be applied by industries around the world.

Professor Neil Alford, deputy principal for research in Imperial's Faculty of Engineering, who is playing a key role in one of the new projects, said: "This is a tremendous opportunity for UK science and industry. The new funding will enable us to bring graphene a step closer to useful applications, by helping us explore the physical and mechanical properties of this remarkable material, as well as its behaviour at high frequency."

In one project worth £1.35 million, led by Professor Tony Kinloch from the Department of Mechanical Engineering with colleagues from the Departments of Chemistry and Chemical Engineering, researchers will explore how combining graphene with current materials can improve the properties of aeroplane parts, such as making them resistant to lightning-strikes. They hope the same technology can also be used to develop coatings for wind-turbine blades, to make them scratch resistant and physically tougher in extreme weather conditions.

Professor Eduardo Saiz, from the Department of Materials, will develop new manufacturing processes using liquids that contain tiny suspended particles of graphene, in order to reduce the cost of currently expensive industrial techniques. This project will receive £1.91 million funding and involves scientists from Imperial's Departments of Chemistry and Chemical Engineering, and Queen Mary, University of London.

£1.37 million of funding received by Professor Norbert Klein, also from the Department of Materials and shared with Imperial's Department of Physics, will pay for new equipment to deposit extremely thin sheets of graphene, so scientists can explore its electrical properties. They hope that new medical scanning technology may be developed as a result of how graphene responds to high frequency electromagnetic waves, from microwave to terahertz frequencies and all the way to the wavelengths of visible light.

Professor Alford said: "At Imperial we will use the funding to build on first class research that crosses several College departments to vastly improve current technologies such as catalysis, supercapacitors, membranes, multifunctional polymer and ceramic composites and a whole range of applications at microwave and optical frequencies. We will work on improving the mechanical properties of composite materials, and addressing the electrical properties of devices, to develop exceptionally sensitive sensors for a range of applications in

environmental monitoring and the medical sciences."

Provided by Imperial College London