Cambridge University granted £25m for wonder material research

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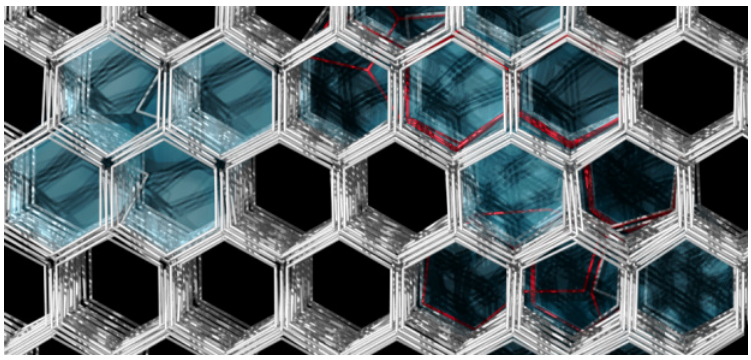

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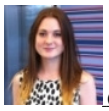
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A research centre for a “wonder material” with the ability to revolutionise several industries will be set up at the University of Cambridge, with funding help from the Government, and numerous technology companies.

Graphene is the material at the centre of more than £25m of joint investment from 20 industry partners, including Nokia, Dyson and BaE Systems, and the UK Government.

The miracle substance, which is being heralded as the next big advancement in materials, is a one-atom thick graphite layer, which Cambridge says has “remarkable properties”.

Graphene is strong, lightweight, flexible, and enables electrons to flow faster than through silicon, and functions as a transparent conductor.

Industry researchers and academics alike have championed the potential for significant improvements in a vast range of industries and sectors as a result of the “wonder material.”

Opportunities for technological changes could be exponential, according to the University, and new devices and applications developed off the back of Cambridge's research could help kick start economic growth.

The Cambridge Graphene Centre will begin its research on 1st February this year, and hopes to “take graphene to the next level”, with a dedicated facility due to open at the end of 2013.

Researchers will start working on ways for graphene to be manufactured, as well as looking at methods to make the most out of graphene films, dispersions and inks.

A series of projects will take place to investigate the miracle substance’s capabilities, and one study, to be led by Dr. Stephan Hofmann, will examine how to effectively manufacture graphene.

Dr. Hofmann, a reader and specialist in nanotechnology, will research how to grow graphene sheets in a controllable manner, as well as how to manipulate and connect it to other materials.

A growth method called “chemical vapour deposition” (CVD) will be Dr. Hofmann’s main focus, which has previously opened up difficult materials like diamond and carbon nanotubes, which is used in lightweight vessels, to large production scales.

Dr. Hofmann said: “The process technology will open up new horizons for nanomaterials, built layer by layer, which means that it could lead to an amazing range of future devices and applications.”

Professor Andrea Ferrari, who will be the Centre’s Director, added: “We are now in the second phase of graphene research, following the award of the Nobel Prize to Geim and Novoselov.

“That means we are targeting applications and manufacturing processes, and broadening research to other two-dimensional materials and hybrid systems.

“The integration of these new materials could bring a new dimension to future technologies, creating faster, thinner, stronger, more flexible broadband devices.”

Cambridge has been awarded more than £12m from the Government and £13m from industry, while a further £11m has been granted to the Graphene Institute in Manchester and Lancaster University by the European Research Council.

The Cambridge Graphene Centre will focus on ways to develop the wonder substance from its raw state to a point where flexible, wearable and transparent electronics can be revolutionised.

Professor Bill Milne, who will be part of the Centre’s management group, also said: “Our first aim is to look at ways of making graphene that ensure it is still useful at the end of the process.

“We have to find modes of production that are consistently effective – and there is still a lot of work to be done in this respect.”

Professor Clare Grey from Cambridge’s Department of Chemistry will head up research into the use of graphene for energy storage in batteries, which could eventually lead to developments for electric vehicles, storage on the national grid and energy storage for devices like mp3 players.

The team will also be joined by Professor Yang Hao, of Queen Mary, University of London, who will look at graphene’s ability to connect and become part of networked devices.

Cambridge’s Vice-Chancellor, Professor Sir Leszek Borysiewicz, commented: “Graphene’s potential is beyond doubt, but much more research is needed if we are to develop it to a point where it proves of benefit to society as a whole.

“The pioneering work of Cambridge engineers and scientists in fields such as carbon nanotechnology and flexible electronics, coupled with our record working with industry and launching spin-out firms based on our research, means that we are in a unique position to take graphene to that next level.”

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