UK steps up the chase to tap wonder-stuff graphene

Summary: *The UK may have had a head start on graphene research, but it lags other countries in terms of the number of patents held. Can new funding help it tap the benefits of the so-called 'wonder material'?*

By Sam Shead | January 15, 2013 -- 16:54 GMT

Researchers are racing to develop new uses for wonder material graphene (http://www.zdnet.com/what-is-graphene-3040092971/) , from electronics to medicine. But while the UK continues to fund innovative research — building on the success of researchers at the University of Manchester, who won a Nobel prize (http://www.zdnet.com/news/graphene-research-wins-nobel-prize/472120) for their work — other countries and big corporations are making big strides too.

Worldwide there were a total of 7,351 graphene patents filed by the end of last year.

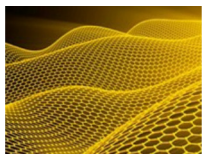
Of these, UK businesses and universities hold only 54, compared to 2,204 in China and 1,754 in the US. Tech giants Samsung and IBM hold 407 and 134 respectively, according to the figures published by a UK copyright consultancy, CambridgeIP.

Graphene consists of a single layer of carbon atoms arranged in a honeycomb structure. It is one of the thinnest, lightest, strongest and most conductive materials known and its versatility means it has the potential to be commercialised (http://www.zdnet.com/the-future-of-graphene-3040093102/) in a range of industries, from computer chips to the wings of an aeroplane.

"It is a material that could have a variety of different uses, ranging from medicine to electronics to anything else," the head of Cambridge University's nanomaterials group, Prof Andrea Ferrari, told ZDNet.

"This is due to graphene's unique properties (http://www.zdnet.com/bendy-stretchy-graphene-transistors-yes-please-4010024674/) , which make the material ideal for a variety of applications. It can be flexible, stretchable and bendable."

Read this



What is graphene?

Read more

But while the UK had an early lead, the race to commercialise the material is far from over.

"The race for value from graphene is far from over. UK inventors have a well-deserved reputation for being particularly innovative and the UK has enormous potential to secure future value in the graphene patent landscape," said CambridgeIP chairman Quentin Tannock in a statement.

"Additional funding for graphene R&D in the UK, and a growing awareness of the importance of patents to business models in many of the end-use sectors for graphene, will doubtless help UK-based players secure most value from their graphene innovations."

The National Graphene Institute will open at Manchester University in 2015

In October 2011, the UK government announced £50m in funding for graphene research (http://www.zdnet.com/osborne-puts-50m-into-uk-graphene-research-4010024478/) . "This significant investment in graphene will drive growth and innovation, create high-tech jobs and keep the UK at the very forefront of this rapidly evolving area of science," said David Willetts (http://www.epsrc.ac.uk/newsevents/news/2012/Pages/graphenehub.aspx) , minister for universities and science, in February 2012. The investments are being made in an effort to commercialise graphene and take it from the "British laboratory to the British factory floor", according to Chancellor George Osborne.

£38m of that £50m has gone towards the £61m National Graphene Institute (http://www.manchester.ac.uk/aboutus/news/display/?id=9349) (NGI) at the University of Manchester, which is due to open in 2015.

The remaining £12m of that £50m fund has been allocated to research projects around the UK, the government announced (http://www.bbc.co.uk/news/science-environment-20846282) in December. In addition, the Engineering and Physical Sciences Research Council (EPSRC) will supply close to £10m, bringing the total pot to £21.5m.

UK graphene projects

The EPSRC has now identified the most promising graphene-related research projects to receive the £21.5m.

Cambridge University will receive a total of £12m, and this will be used to create a new graphene research facility that will explore how the material can be used to create flexible electronics and optoelectronics, which could be used in touchscreens and other displays.

Ferrari added that his group will also be developing everything from graphene-based inks for printing electronic components, to creating more efficient solar panels able to absorb light of all wavelengths.

Imperial College London will receive £4.5m for three graphene projects that focus on aerospace, graphene coatings, and high-quality graphene films.

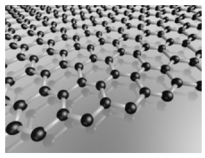
Durham University received £1.6m to advance its high-volume graphene manufacturing technique and plans to trial the graphene it produces in new consumer products.

Elsewhere, researchers at Bath University and Exeter University have been awarded £1.1m from the pot to look at new ways to manufacture and use graphene at their joint Centre for Graphene Science.

Royal Holloway, University of London will use the £109,000 it has been awarded to develop graphene-based equipment that can operate at high frequencies. The university claims such devices could be used to remotely detect the presence of explosives and drugs, and in health screening to produce detailed images of blood vessels.

It remains to be seen whether these various projects can help close the patent gap between the UK and its rivals — and bring graphene closer to everyday use.

Read this



The 10 strangest facts about graphene

Read more

Topics: Graphene, Emerging Tech, Government UK, United Kingdom

About Sam Shead

Sam is generally at his happiest with a new piece of technology in his hands or nailing down an exclusive story. In the past he's written for The Engineer and the Daily Mail. These days, Sam is particularly interested in web start-ups, social media and security.

Related Stories

Windows Phone 8 Wallet hub beats Apple's iOS 6 Passbook
ZDNet

IEDM preview: Intel's 22nm mobile technology and more
ZDNet

Is Technology Making Us Less Human?
Qualcomm

JPMorgan: Has the Powerhouse Stock Hit Bottom?
Investment Contrarians

Talkback