



European team receive €1bn to develop graphene applications

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European researchers are hoping to take on the US and the Far East in developing applications for graphene thanks to a €1bn (£860m) grant.

A consortium of 126 research groups from 17 countries has been awarded the money to turn the highly conductive, strong and flexible material from a lab-based product to one that makes a big impact in sectors, including electronics, aerospace and energy.

The funds, awarded under the first of the EU's 'Future Emerging Technology' flagship programmes, will give the researchers 10 years in which to develop a range of applications for graphene and to potentially generate commercial benefit — attempts at which are already well under way in the US, China and South Korea.

'The overall aim of the project is take graphene to a situation where it can change multiple industries,' said Prof Andrea Ferrari, director of Cambridge University's recently opened Graphene Centre, one of the primary partners in the consortium.

'It has been described by the European Commission as the largest research award in history,' he told *The Engineer*. 'This is the first time material science has got such a large amount of money anywhere in the world.'

Recent reports have warned that the UK and Europe are falling behind in the race to commercialise graphene, with other countries registering far more patents, despite government funds such as the £50m allocated for a graphene research hub in Manchester, where the material was first isolated in 2004.

Ferrari said the EU funding would change this perception. 'There's no question in terms of science that Europe was always at the forefront,' he said.

'There was a question — "can Europe make the science into technology and patents and so on?" — so while before the funding the answer was no, now I think this answer can become a yes.'

He added that the funds would in turn spur other groups to join the race. 'I also believe that this announcement will trigger further funding worldwide and really make other countries think the material has potential, and also companies, especially European companies, will know there is great support.'

The project is broken into 11 work groups focusing on a number of areas, including fundamental research, production and application in areas including electronics, new materials and energy storage.

'I believe the initial application will be in composites and flexible, transparent electronics, where we can take advantage of the fact that graphene is very conductive but bendable and flexible,' said Ferrari.

'Of course, graphene will not replace silicon in the near term — this is an extremely long-term perspective — but graphene will work together with silicon for this sort of application.'

The first 30-month 'ramp-up' phase of the project will use €54m of the EU money, complemented by investment from several member states, to focus on the computing, physical transport, sensors and energy technology sectors, after which participant numbers will increase by around 20 per cent as additional research groups are brought in to look at other areas.

Other UK primary partners include the universities of Lancaster and Manchester, while the UK's National Physical Laboratory will use some of the money to continue its work on graphene measurement methods and more accurate quantum standards based on the material.

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