Graphene partnership could deliver lighter planes

July 25 2016

A major Chinese investment in graphene research plans to deliver lighter, better performing aircraft and high-speed trains.

Beijing Institute of Aeronautical Materials (BIAM) and the National Graphene Institute (NGI) at The University of Manchester will carry out a five-year collaborative research project.

Research will focus on composites with enhanced performance in the field of mechanical, electric conductive and thermal conductive behaviour, as well as the compatibility of graphene and the matrix materials. In aerospace this might lead to applications of graphene in different materials and components, with weight saving accompanied by better performance.

As well as aircraft, the research could have an impact on high-speed trains and industrial equipment to replace traditional materials.

The deal was announced today on the opening morning of the European Science Open Forum in Manchester by Prof Robert Young, who leads the research project at The University of Manchester.

Speaking at a session called 'Science and Aviation', organised in partnership with Manchester Airport and Hainan Airlines, Professor Young outlined how graphene could revolutionise the planes and trains of the future.

The announcement is being delivered in parallel to a senior delegation from Manchester – including one of the Nobel-prize winning scientists who isolated graphene – being in Beijing to promote the city and as world-leading destination for inward investment and tourism.

Graphene has been included in the latest Chinese five-year plan and the country is starting to develop their domestic civil aerospace industry and expect to improve their expertise on materials.

The project, which will run until 2020, will involve joint research on graphene projects, strengthening of the ties in graphene technology and the exchange of personnel between Beijing and Manchester.

The partnership is an extension of a project started last year, which is looking at creating graphene composites with metals such as aluminium. The success of the partnership led to this much wider, extended project.

It is also expected that other UK companies, particularly in aerospace, may become directly involved as the projects progress.

Dr Shaojiu Yan, the principal investigator of graphene projects from BIAM, said: "The relationship between BIAM and The University of Manchester warms up quickly.

"We had a very good communication on the first collaborative project. Now a long term partnership would benefit us to broaden the research area on graphene materials, to enhance the collaborative research, as well as to exchange experience and expertise on graphene."

Professor Young said: "BIAM have a rapidly developing research programme on graphene composites and we are looking forward to pooling our expertise with them to facilitate the use of these materials in aerospace applications".

Sir Richard Leese, leader of Manchester City Council, said: "It is firmly established that Manchester has many distinctive strengths which make the city - and help make the North of England as a whole - competitive on the international stage.

"This partnership with the Beijing Institute of Aeronautical Materials will not only go a long way towards finding hugely significant commercial applications for graphene research, it will further strengthen ties between Manchester and China - ties which are ever more important as China emerges as a key player in the global economy. It is another vote of confidence in Manchester."

Provided by University of Manchester