



FIRST GRAPHENE ANNOUNCES COLLABORATION IN ENERGY STORAGE MATERIALS

HIGHLIGHTS

- Exclusive licence signed with The University of Manchester for new graphene-hybrid materials.
- The unique know-how enables the manufacture of high capacitance materials that directly address the needs of the growing supercapacitor market.
- Initial research programme directly supported by UK Government funding.
- Pilot scale process is in development at the Company's laboratories at the Graphene Engineering Innovation Centre (GEIC) based at The University of Manchester.

Advanced materials company, First Graphene Limited ("FGR" or "the Company") (ASX: FGR) is pleased to announce the signing of a worldwide licensing agreement with The University of Manchester.

The licence grants exclusive rights to patented technology for the manufacture of metal oxide decorated graphene materials using a proprietary electrochemical process. These new graphene-hybrid materials offer the makers of supercapacitors a new class of high-performance capacitor materials.

Supercapacitors offer high power-density energy storage, with the possibility of multiple charge/discharge cycles and short charging times. The market for supercapacitor devices is forecast to grow at 20% per year reaching a revenue value of ca. AUD\$3.1 billion by 2022. As with batteries, growth of the supercapacitor market is challenged by the supply of the right, high-performing materials which is dominated today by the use of microporous carbon nanomaterials with typical gravimetric capacitance of 50 to 150 Farads/g.

Earlier research by The University of Manchester shows that very high capacitance materials of up to 500 Farads/g are now possible which outperform existing materials. The manufacturing process to be employed builds on the Company's existing electrochemical processing expertise which is scaled to 100 tonne/year capacity at FGR's manufacturing site at Henderson, WA.

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FGROC

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FSE:M11

Published research¹ by Prof. Robert Dryfe and Prof. Ian Kinloch of The University of Manchester reveals how high capacity, microporous materials can be manufactured by the electrochemical processing of graphite raw materials with transition metal ions leading to metal oxide decorated graphene materials which have very high gravimetric capacitance of up to 500 Farads/g.

These materials can be manufactured at scale using FGR's established expertise in electrochemical materials processing. As the materials are grown in-situ through electrochemical processing they have significant advantages over previous solutions that employed simple mixing of graphene and metal oxide materials.

Prof. Dryfe has secured funding from the UK EPSRC (Engineering and Physical Sciences Council) for the further optimisation of the metal oxide /graphene materials. On successful completion of this study FGR intends to build a kilogram pilot scale capability in its laboratories within the GEIC to enable the introduction of these materials to supercapacitor device manufacturers.

Craig McGuckin, Managing Director of First Graphene Ltd., says: *"This is another successful step along our strategic roadmap for growth. While we have rightly focused on delivering short term revenue for our shareholders, we are also delivering long term growth opportunities through investment in emerging markets, in this case energy storage materials".*

Andy Goodwin, Chief Technology Officer of First Graphene Ltd. says: *"This investment is a direct result of our presence at the Graphene Engineering and Innovation Centre and emphasises the importance of effective external relationships with university research partners. The programme is also well aligned with UK government grand challenges and we will pursue further support for the development of this business within the UK."*

James Baker, Chief Executive of Graphene@Manchester, added: *"We are really pleased with this further development of our partnership with First Graphene. The University's Graphene Engineering Innovation Centre is playing a key role in supporting the acceleration of graphene products and applications through the development of a critical supply chain of material supply and in the development of applications for industry. This latest announcement marks a significant step in our Graphene City developments, which looks to create a unique innovation ecosystem here in the Manchester city-region – the home of graphene."*

About First Graphene Ltd (ASX: FGR)

First Graphene Ltd. is the leading supplier of high-performing, graphene products. The company has a robust manufacturing platform based upon captive supply of high-purity raw materials and an established 100 tonne/year graphene production capacity. Commercial applications are now being progressed in composites, elastomers, fire retardancy, construction and energy storage.

First Graphene Ltd. is publicly listed in Australia (ASX:FGR) and has a primary manufacturing base in Henderson, near Perth, WA. The company was recently incorporated in the UK as First Graphene (UK) Ltd. and is a Tier 1 partner at the Graphene Engineering and Innovation Centre (GEIC), Manchester, UK.

About The University of Manchester

The University of Manchester is the home of graphene – it is where the one-atom thick material was first isolated. Today we have an unrivalled breadth of academic expertise and work in collaboration with dozens of partners. By leveraging the research power along with the vast infrastructure we have put in place we can leverage the investment in fundamental science and facilities to collaboratively generate value, IP and skills needed for the development of products and applications.

PureGRAPH® Range of Products

PureGRAPH® graphene powders are available in tonnage volumes with lateral platelet sizes of 20µm, 10µm and 5µm. The products are high performing additives, characterised by their high quality and ease of use.

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¹ Andinet Ejigu,* Kazunori Fujisawa, Ben F. Spencer, Bin Wang, Mauricio Terrones, Ian A. Kinloch, and Robert A. W. Dryfe*Adv. Funct. Mater. 2018, 28, 1804357