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ASX Symbol

FGR, FGROB

Agreement to Commercialise Supercapacitor Technology

First Graphite Limited (ASX:FGR) is pleased to advise of its next step in pursuit of the graphene technology initiative. FGR has entered into a binding Heads of Agreement with Kremford Pty Ltd relating to a graphene oxide based thin film supercapacitor technology for high performance and low cost energy storage; the Bolt Electric Storage Technology Battery (BEST Battery).

Highlights

- Patent-pending technology developed by a leading Melbourne based University overcomes the energy density limitations with supercapacitors, achieving the following potential advantages;
 - 10x better energy density than competing devices
 - 10,000x faster charge/discharge rates
 - 10,000 charge/discharge cycles
 - ultra thin and ultra light in weight
 - highly flexible and integratable
 - environmentally friendly due to the absence of chemicals
- Efficiencies offered through the use of laser printing technology and graphene oxide to create an ultra-efficient energy storage medium in a greatly simplified process.
- Innovative inter-digital design provides for a much shorter ionic path to maximise energy and power density.
- FGR is to underwrite the spending of \$2m over a two year period to earn a 60% interest in the company that holds the international licence.

The Business Opportunity – the BEST Battery.

FGR has been presented with the opportunity to earn a controlling interest in the private company that has been working with a leading Melbourne based University to advance a radically new energy storage device – the graphene-oxide based supercapacitor (“the BEST Battery”) - by guaranteeing the availability of funding for \$2m worth of expenditure over the next 18-24 months.

The current proof-of-concept device has performed slightly higher than current batteries but with all of the advantages that come with physical storage of energy as opposed to chemical storage. The University believes that with additional product development and up-scaling the BEST Battery can be taken from a laboratory success to a commercial prototype within the period of the Agreement.

At the end of the Project the parties aim to have developed the prototype for a high performance and manufacturable graphene oxide thin-film energy storage device that can be integrated into a wide range of products, providing faster charging speed and a stable, clean energy source. It would be especially suitable for small electronic devices, such as those that currently use AA style batteries, but could also eventually provide reliable energy storage for a wide range of applications.

FGR is aware that many research organisations are working on obtaining the improvements the University has demonstrated, but the unique differences that relate to the simplified production process and the technique to facilitate the greatly improved energy density capacity are distinguishing features with the BEST Battery. The University has applied for patents covering these technological advances.

Elements of the Transaction

Following a period for due diligence, which is limited to 60 days, and the completion of the Research and Licence Agreements. The Project will involve two stages of commitment.

Stage One – Commitment to Spend the First \$700,000.

FGR can earn the first 30% equity in Kremford by committing \$700,000. If it is not satisfied with the results achieved it can exit the Project without any further liability.

Stage Two – Commitment to Spend an Additional \$1,300,000

FGR can increase its equity to 60% of Kremford by funding an additional \$1.3m, with this to be made available within the two years of signing the Research and Licence Agreements.

In addition to the commitments to the funding, FGR will be required to pay Kremford;

- A \$10,000 non-refundable signing fee within seven days of signing the Heads of Agreement (“the HoA”)
- Issue five million options (10¢ strike May 2017 expiry), unlisted, on signing of the HoA
- Issue another five million options (10¢ strike May 2017 expiry) upon the satisfactory completion of due diligence (Note – both tranches of options become tradeable upon the successful completion of due diligence.
- Issue two million shares upon the successful completion of due diligence, with 50% of these being escrowed for six months and 50% for 12 months.

It is within the contemplation of the parties that FGR should be able to increase its interest in Kremford to 100% at a suitable juncture in the future.

Advantages Offered by the BEST Battery

The table below provides a simple comparison of what the parties believe the BEST Battery could achieve compared to the standard lithium-ion battery, based on laboratory test work undertaken to date.

Parameters	Supercapacitor (BEST Battery)	AA Rechargeable battery
Storage mechanism	Physical	Chemical
Charge time	1-10 seconds	1 – 4 hours
Cycle life	Minimum 10,000 cycles	300 – 1,000 cycles
Cell voltage	1.5 to 2.3 V	1.25 – 1.5 V
Energy density (Wh/L)	5 (current state) 50- 60 (target for this project)	100 to 200
Power density (W/L)	Up to 10,000	35 to 300
Cost per Wh	\$20 (current state) \$0.30 (target for this project)	\$0.50 - \$1.00 (large system)
Service life	10 to 15 years	1 to 2 years
Disposal	No special requirement, environmentally friendly	Land fill, harmful to environment

Table 1: Overall comparison of existing supercapacitor with Lithium-ion battery

Managing Director, Mr Craig McGuckin said *"We are very enthusiastic about being invited to participate in the commercialisation of this exciting new, potentially game changing technology, which has come about due to our commitment to the graphene revolution. While there is still work required to prove the commerciality, and thus some risk, the potential rewards could be stunning. Who wouldn't want an energy storage device that weighs only 10% of the current batteries, that is chemical free and that can recharge in a fraction of the time, for 10 times as many cycles? This is another step in taking our business from being a conventional miner to being a technology driven growth stock based on the revolutionary new material, graphene"*

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About First Graphite Ltd (ASX: FGR)

First Graphite produces high quality graphene from high grade Sri Lankan vein graphite.

First Graphite seeks to develop graphene production methods and acquire graphene related intellectual property which can provide further revenue related opportunities.

About Graphene

Graphene, the well-publicised and now famous two-dimensional carbon allotrope, is as versatile a material as any discovered on Earth. Its amazing properties as the lightest and strongest material, compared with its ability to conduct heat and electricity better than anything else, mean it can be integrated into a huge number of applications. Initially this will mean graphene is used to help improve the performance and efficiency of current materials and substances, but in the future it will also be developed in conjunction with other two-dimensional (2D) crystals to create some even more amazing compounds to suit an even wider range of applications.

One area of research which is being very highly studied is energy storage. Currently, scientists are working on enhancing the capabilities of lithium ion batteries (by incorporating graphene as an anode) to offer much higher storage capacities with much better longevity and charge rate. Also, graphene is being studied and developed to be used in the manufacture of supercapacitors which are able to be charged very quickly, yet also be able to store a large amount of electricity.

Nature of vein graphite

Sri Lankan graphite deposition model is best described from the 'bottom up': tension fractures formed in the metamorphic sediments, caused by the folding of the sediments, creating 'conduits' for the hydrothermal deposition of high quality vein graphite. Historically, mining of these veins has found the veins generally increase in thickness and grade quality with increasing depth.

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