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## Graphene Production Unit Nearing Completion

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ASX Symbol

FGR, FGROA, FGROB

### Highlights

- Full size – 250 litre – production cell nearing completion.
- Capable of producing 5 tonnes p.a. of high quality graphene.
- Agreement reached with Nagrom to house and operate the cell.

First Graphite Limited (ASX: FGR) advises it has made further progress with its strategy to become a bulk scale producer of high quality graphene.

Following on from extensive bench scale test work undertaken by the University of Adelaide, FGR has constructed a prototype commercial scale production unit for graphene. This unit will be ready for installation by the end of July.

The Company has finalised an agreement with *Nagrom the Mineral Processor* to house the cell at their premises in Perth and for Nagrom to operate the cell under strict confidential guidelines. Test work will be undertaken to confirm the scalability of the production process. As an integral part of this proving the Company expects that there will be a period of optimisation prior to finalising the process for commercial application.

First Graphite believes that the 250 litre production unit will give it a significant commercial advantage over any alternative method of producing bulk graphene. Rather than relying on a central processing facility from which graphene supplies would be transported, the technology will enable the location of production units in the facilities of the consuming industry for just-in-time production and delivery of pristine graphene, tailored to meet the specific requirements of each customer. Each unit could produce up to 5 tonnes p.a. of graphene at very low capital cost.

Industry has not yet had access to bulk quantities of low cost graphene but that will change with the commissioning of this production unit. The Company will be able to supply graphene for research and development for large-scale applications, thereby accelerating market development.

Having established the ability to produce graphene at very low cost, First Graphite is continuing its work at the University of Adelaide to identify commercial applications of graphene, thereby opening up new markets.

Mr McGuckin, Managing Director, said *"The pending completion of the production graphene cell and it being housed and operated at Nagrom is a significant step in the Company's journey to become a quantity producer of high-grade graphene. Up until now the high cost of graphene through CVD and other production facilities has been an impediment to full-scale commercialisation of graphene in many areas. However, First Graphite's process is a game changer in both capital and operating costs. There is no reason why it cannot be the lowest cost supplier of graphene to industry"*.

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Figure 1: 250 litre production cell under construction



Figure 2: Cell capable of producing 5 tonnes p.a. of high quality graphene

#### *About First Graphite Ltd (ASX: FGR)*

*First Graphite is aiming to develop an underground mining operation to extract high-grade, crystalline vein graphite, which is unique to Sri Lanka. The Company holds exclusive rights to exploration licenses covering approximately 39,500 hectares in area, with historical workings located within nearly all license grids.*

#### *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. Graphite veins generally dip steeply at  $-70^\circ$  to near vertical, enabling 'narrow vein' extraction mining techniques similar to those used on narrow vein, high-grade gold deposits. The method commonly used is an overhead retreat stoping technique where the high-grade vein graphite is mined and hauled to surface without contamination. The graphite selvages, in contact with the surrounding waste, is hauled to surface and stockpiled for upgrading. The balance of the waste is used to fill the floor of the stope.*

*Due to the nature of the vein graphite, it is anticipated vein widths of  $\sim 25\text{cm}$ , using narrow vein mining techniques can be economically extracted from underground operations.*

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