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**ASX Symbol**

FGR, FGROA, FGROB

## **Graphene Cell Commences Production**

### *Company designed 250 litre commercial cell commences production of graphene*

First Graphite (ASX: FGR) is pleased to report on the initial commissioning of its 250 litre commercial production graphene cell at Nagrom.

#### **Highlights**

- Full-size production cell commissioned and undergoing optimisation
- First results demonstrate high quality graphene being produced
- High conversion rate and large platelet sizes
- Further research work continuing at the University of Adelaide

#### **Graphene production cell**

The 250 litre production cell built by the Company was assembled and initial commissioning undertaken during the week commencing 15 August.

The cell is installed at Nagrom the Mineral Processor and operated by an FGR consultant and Nagrom under strict confidentiality guidelines. As an integral part of this testing the Company has embarked on a period of optimisation following on from initial test work undertaken at the University of Adelaide prior to finalising the process for commercial application.

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 produced graphene supplies would be transported, thus incurring significant transport costs, the technology may enable the location of production units in the facilities of the consuming industry for “just-in-time” production and delivery of graphene, tailored to meet the specific requirements of each customer. Each unit may produce up to 5 tonnes p.a. at very low capital cost.

The commissioning of this production unit has the potential to change the dynamic for industry access to bulk quantities of low cost graphene. 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.



Figure 1: Installed graphene cell



Figure 2: Production graphene cell running at Nagrom the Mineral processor

Initial test results are demonstrating the achievement of up to 83% graphene conversion and large platelet sizes of between 45µm and 78µm.

While these initial results are very encouraging there is further characterisation to be completed as the Company continues to commission the cell. The attention now turns to the characterisation and purification of the produced product.

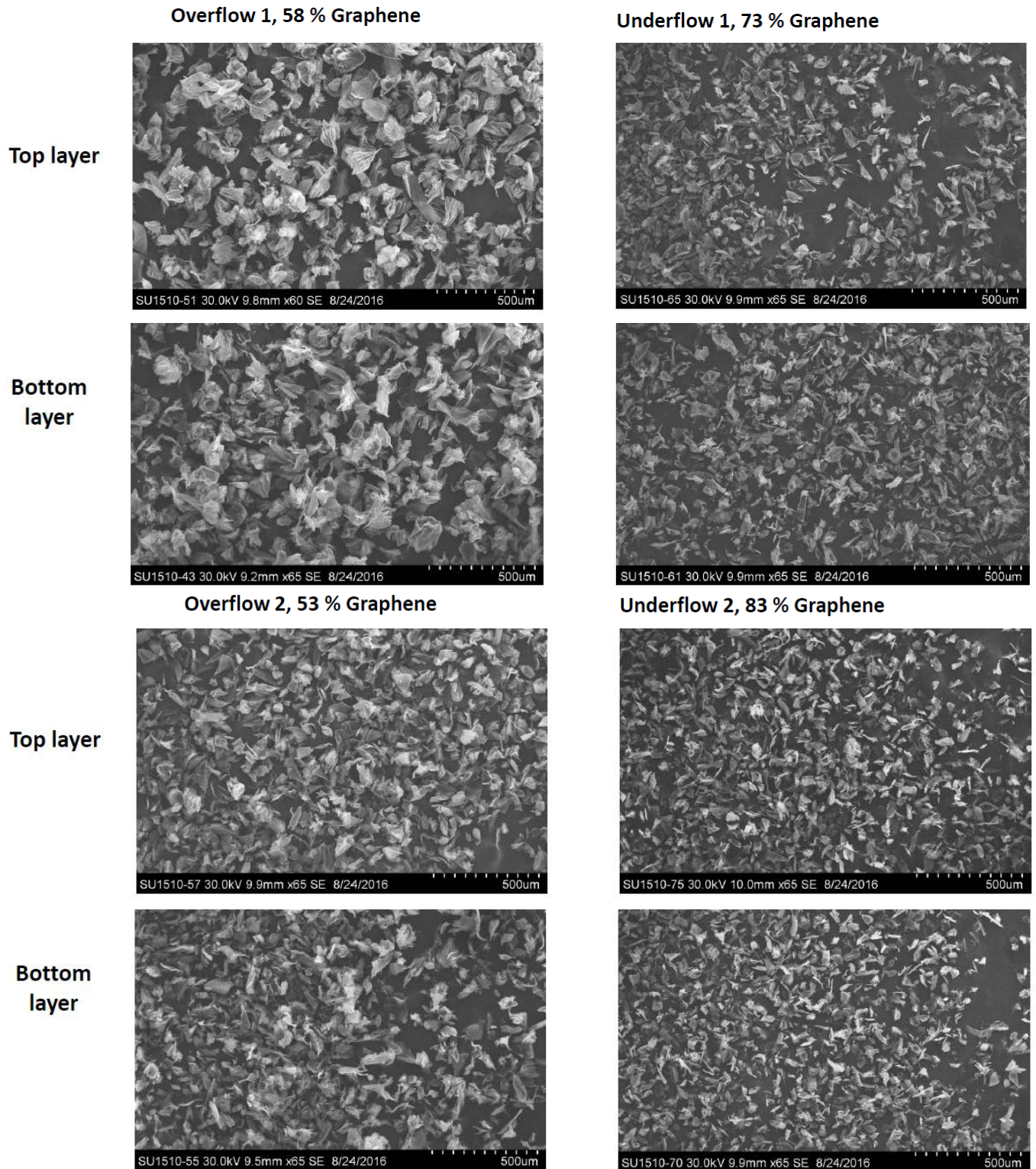
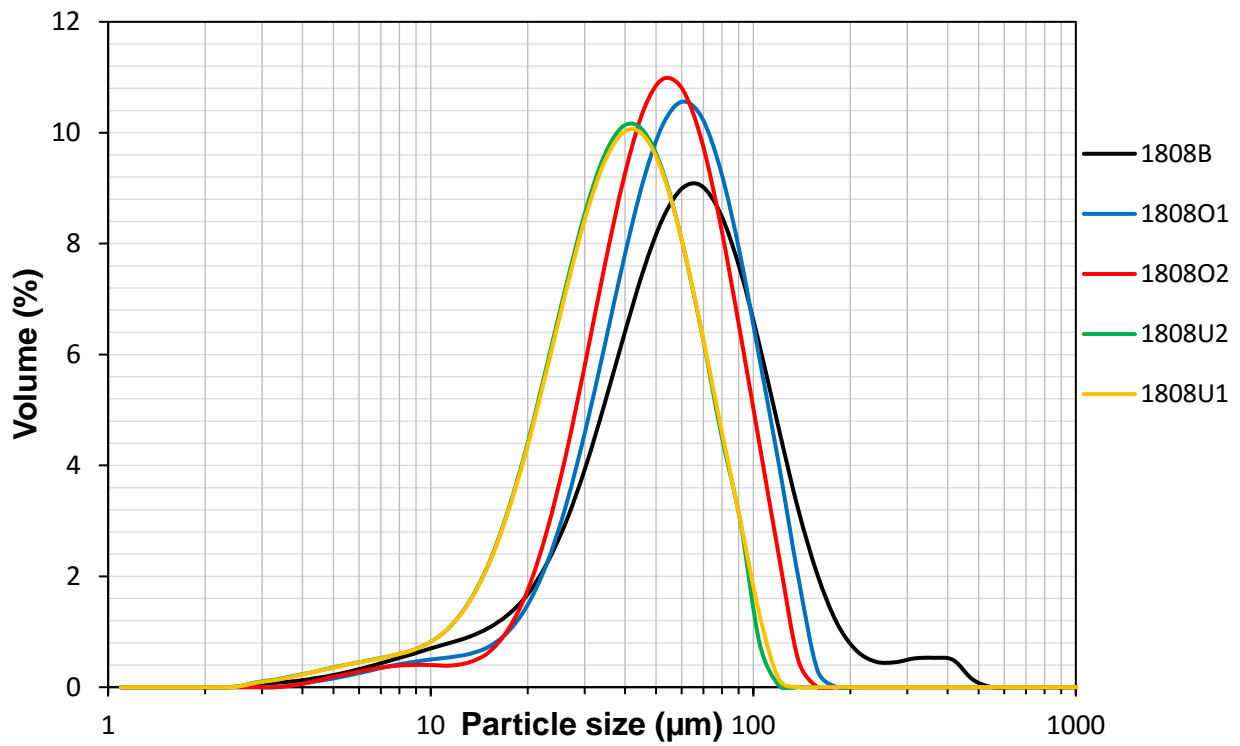


Figure 3: SEM images of initial graphene produced



**Unsorted Product Sizing**

	<b>Average Particle size (µm)</b>	<b>% Graphene</b>
1808_B	78	22
1808_O1	65	58
1808_O2	59	53
1808_U1	45	75
1808_U2	55	83

### 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 ~25cm, using narrow vein mining techniques can be economically extracted from underground operations.

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