

17 September 2018

BENCH SCALE GRAPHENE PLANT COMMISSIONED

Highlights

-  **Comet commissions bench scale graphene recovery plant**
-  **Bench scale plant utilises a refined exfoliation technique to maximise graphene recovery**
-  **Results show that a very high percentage (up to 85%) of recovered particles are in fact Graphene Nano-Platelets (GNP)**
-  **Test work currently being scaled up to produce graphene samples suitable for end user testing**

SPRINGDALE PROJECT, WESTERN AUSTRALIA (100% CRL)

Comet Resources Ltd (**Comet**) (**CRL**) is pleased to announce that the Company's metallurgical consultants, Independent Metallurgical Operations (**IMO**) have commenced bench scale graphene test work at Metallurgy Pty Ltd laboratory in Western Australia.

The bench scale test work follows significant improvements in the exfoliation process which has seen a dramatic increase in the recovery of graphene from Springdale diamond core.

This bench scale operation will produce product that can be supplied to end users for testing to assess its suitability for use in the latest graphene technologies.



Figure 1. Bench scale plant treating graphite core

Graphene Identification Testwork

A series of tests were conducted prior to the bench scale unit design and construction. The first step was to trial conductive solution to select the solution that yielded the greatest number of Graphene Nano Platelet (**GNP**) particles and the best GNP product. When the conductive solution was selected, the Company conducted a series of tests to confirm the original work. Samples were scanned with an Atomic force microscope and confocal Raman microscopy.

This new solution has allowed Comet to reach graphene yield rates (particles of graphene in an observed area) of 85% with an average yield rate of 58%. **Results confirm that large thin graphene nano platelets are present.**

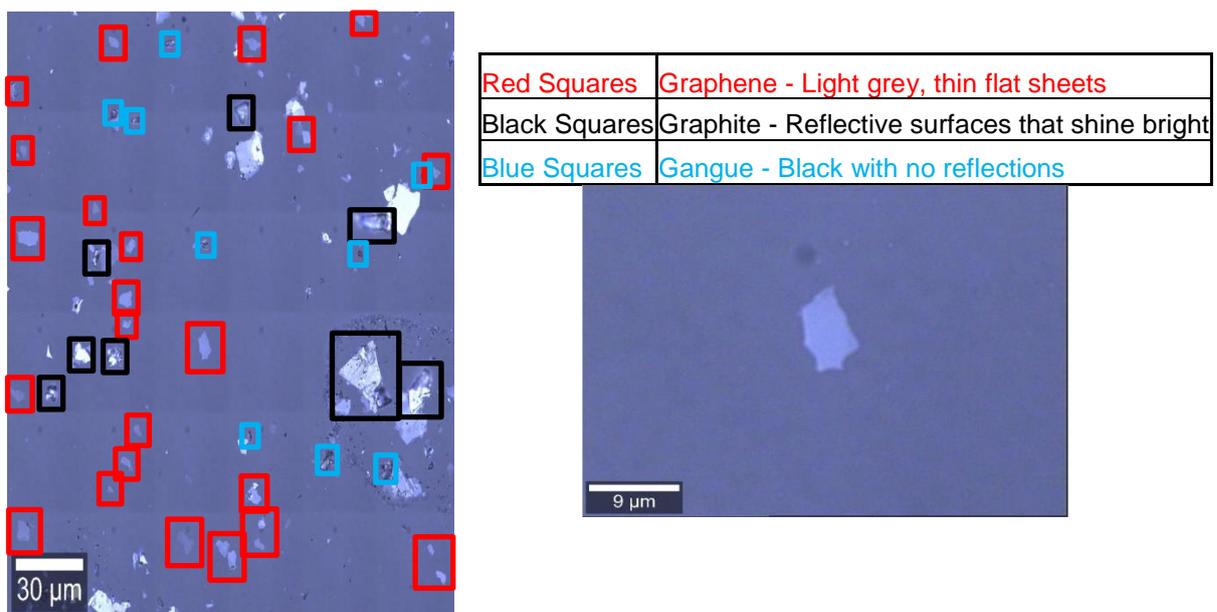


Figure 2. Graphene nano platelets and selected platelet

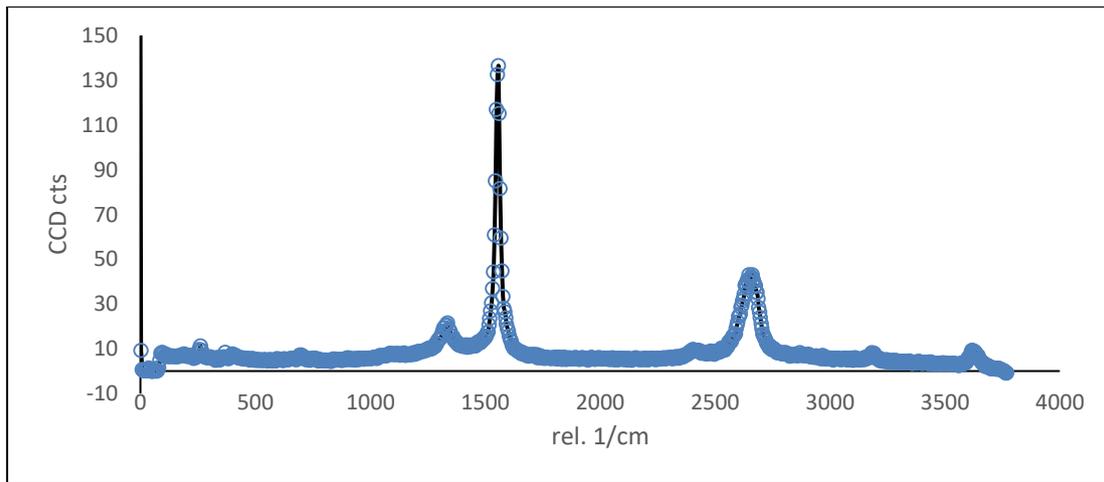


Figure 3. Raman plot for selected platelet

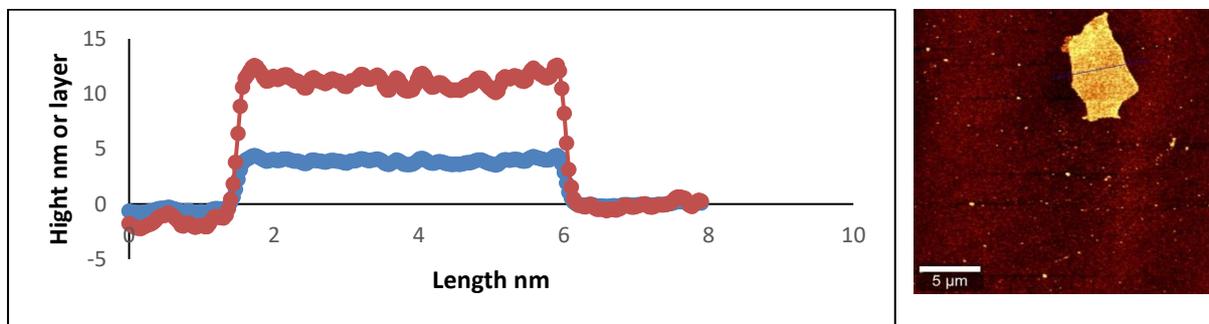


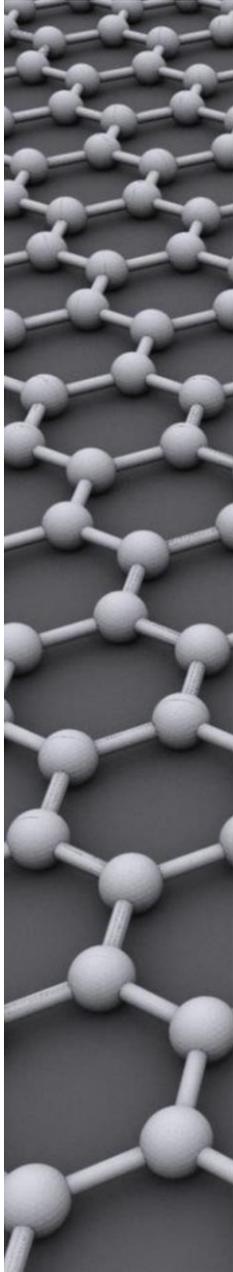
Figure 4. Cross section plot (line on selected platelet) average height 3.9 nm, average graphene layers 11.2

Samples were analysed at Curtin University, located in Perth Western Australia. Atomic-Force Microscopy (**AFM**) and confocal Raman analysis were used to identify the presence of few layered graphene using a WITec Alpha 300SAR with 2w NdYAG laser ($\lambda = 532\text{nm}$) instrument. This method is used to identify the number of layers of Graphene within a particle and to confirm the particle being analysed conforms to the structure of few layered graphene.

These results demonstrate that Comet's consultants have been highly successful in improving the process and producing graphene products from the graphite material at Comet's Springdale Project.

Further results from the bench scale tests are expected in the coming quarter.

It is very rare for a graphite deposit to be able to produce graphene using the exfoliation method. Graphene production is normally expensive to scale up, however the exfoliation method is believed to be a lower cost and scalable process.



What is Graphene

Graphene is a natural material. Researchers theorised the existence of graphene in the 1940s; it was only in 2004 that a graphene sheet was isolated. In 2010 this achievement was awarded a Nobel Prize.

Graphite is stacked graphene sheets (a 1mm thick piece of graphite would be made from approximately 3 million sheets of graphene). Consider graphene as being a 2 dimensional (2D) material or sheet and graphite as 3 dimensional material, the challenge is to separate the 2D sheets from the 3 dimensional material.

Why Graphene

- It is the thinnest and toughest 2D material. 200 times stronger than steel.
- Graphene is flexible and transparent, has the largest surface area of all materials, and is the most stretchable crystal. The material is also extremely impermeable, even helium atoms cannot go through it. Graphene is currently the best electricity conductor known to man and is the perfect thermal conductor.
- Graphene is light - it weighs just 0.77 milligrams per square meter. Because it is a single 2D sheet, it has the highest surface area of all materials.

Graphene Production

There are two approaches to produce graphene and graphene-related materials. The first one is top-down, which means you begin with graphite and produce graphene. The second one is bottom-up: start with carbon in some form and synthesize graphene sheets or flakes. These production methods to date have been expensive.

Graphene Uses

Graphene's properties make it a wonder material that can be incorporated into a huge number of applications such as Coatings and paints, Composite materials, Conductive inks, Displays, Graphene thermal applications Energy containers, Membranes, 3D Printings, Sensors, Electronics, Energy generation, Photonics / Optics, Medicine and biology, Lubricants, Spintronics to list a few.

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Forward-Looking Statements

This document includes forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning Comet Resources Limited's planned exploration programs, corporate activities and any, and all, statements that are not historical facts. When used in this document, words such as "could," "plan," "estimate," "expect," "intend," "may", "potential," "should" and similar expressions are forward-looking statements. Comet Resources Limited believes that its forward-looking statements are reasonable; however, forward looking statements involve risks and uncertainties and no assurance can be given that actual future results will be consistent with these forward-looking statements. All figures presented in this document are unaudited and this document does not contain any forecasts of profitability or loss

Competent Persons Statement

The information in this release that relates to metallurgical test work is based on, and fairly represents, information and supporting documentation prepared by Mr Peter Adamini BSc Mineral Science and Chemistry, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Adamini is a full-time employee of Independent Metallurgical Operations Pty Ltd, who has been engaged by Comet Resources Limited to provide metallurgical consulting services. Mr Adamini has approved and consented to the inclusion in this document of the matters related to metallurgical testwork based on his information in the form and context in which it appears.

The information in the report to which this statement is attached relates to Exploration Results, Mineral Resources or Ore Reserves compiled by Mr. A Cooper, who is a Consultant and director to Comet is also a Member of The Australian Institute of Mining and Metallurgy, with over 30 years' experience in the mining industry. Mr. Cooper has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity, which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Cooper consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.