

ASX Announcement

GREENWING CHARACTERISE GRAPHENE TO ISO STANDARDS

22 June 2022

Greenwing Resources Ltd (**Greenwing** or the **Company**) (**ASX:GW1**) is pleased to provide an update on its research and development activities in collaboration with Swinburne University of Technology ("**Swinburne**").

HIGHLIGHTS

- ◆ **Successful production and characterisation of graphene to ISO Technical Standard (TS) 21356-1:2021.**
- ◆ **First ASX listed company to have reported Scanning Electron Microscopy (SEM) measurements in an ISO 9001 facility to TS 21356-1:2021.**
- ◆ **Key step in the Company's plans to create an environmentally friendly process to produce advanced materials.**
- ◆ **Further research and development activities to be undertaken in the coming months.**

"This is a scalable, high quality, environmentally friendly production method for graphene, not linked to petroleum production or other toxic methodologies. The board is highly encouraged as to the opportunities this presents the Company and its shareholders and looks forward to further innovative and market leading results from our collaboration with Swinburne. Developing environmentally friendly, fire-resistant advanced materials and products from expandable graphite and graphene is the goal we are working towards."

CEO, CRAIG LENNON

KEY RESEARCH AND DEVELOPMENT MILESTONE ACHIEVED

The Company's collaboration with Swinburne has achieved the characterisation of graphene as defined by International Organization for Standardization ("**ISO standards**"). Greenwing is the only ASX listed company to report that its graphene has been produced to this high standard in an ISO 9001 facility.

This milestone, the second milestone reached as part of the collaboration, is a key step in the Company's plans to create a patentable and environmentally friendly process to produce advanced materials such as expandable graphite and graphene. The Company aims to utilise these advanced materials in the manufacture of next generation fireproof products, with a focus on mechanical strength and high-quality fire resistance.

EXCELLENT RESULTS

The graphene demonstrated monolayered and few layered graphene sheets and laterally, large graphene sheets, which are highly sought after in high performance applications. Graphene was produced via an environmentally friendly process using an organic solvent with Liquid Phase Exfoliation ("LFE"), a promising method due to scalability.

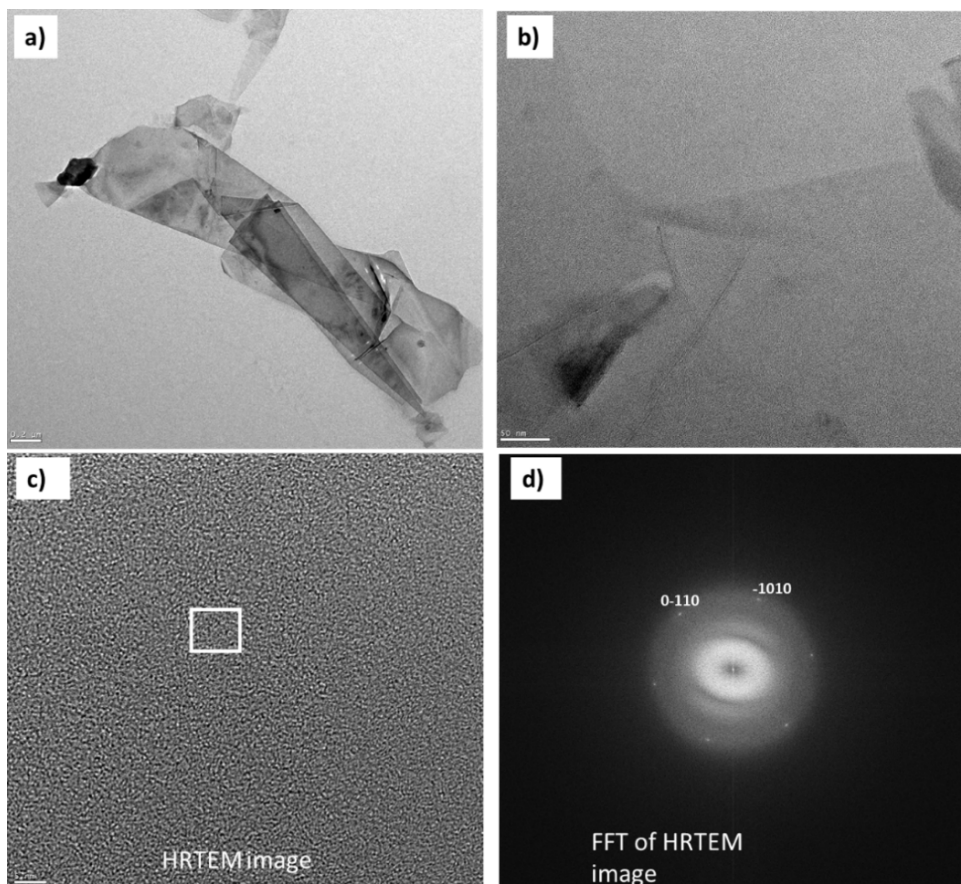
GRAPHENE CHARACTERISATION

Greenwing's graphene was characterised in accordance with ISO / Technical Standard 21356-1:2021, which ensures graphene is quantified with the correct measurement techniques to the highest standard. Previously completed graphene characterisation results were reported for Raman spectroscopy and X-Ray Diffraction spectroscopy, which form part of ISO / Technical Report 19733. This announcement details the final steps of graphene characterisation involving High Resolution Transmission Electron Microscopy ("HR-TEM") and Scanning Electron Microscopy ("SEM").

HIGH RESOLUTION TRANSMISSION ELECTRON MICROSCOPY

The HR-TEM images¹ identified the number of graphene layers and thickness of graphene flakes, with the results and observation shown below with each image:

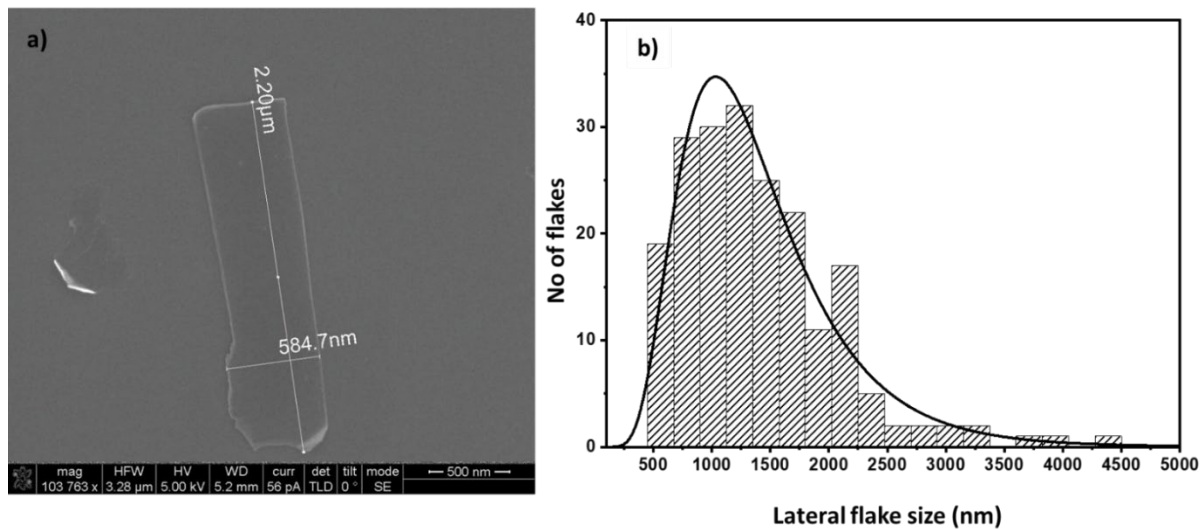
- a) Highly transparent graphene sheets
- b) No defects observed
- c) HR-TEM image for Selected Area Electron Diffraction (SAED), shown in d); and
- d) Less intense outer spots evidence of high-quality single layer graphene.



¹ HR-TEM measurements and analysis was performed at The University of Melbourne.

SCANNING ELECTRON MICROSCOPY

The SEM identified the lateral dimensions of the graphene flakes according to the procedure defined in ISO / TS 21356-1:2021 and was measured in an ISO 9001 certified facility². The SEM identified over 200 imaged flakes (Figure a below) and these results are calculated to determine lateral flake sizes (shown as a histogram in Figure b, below). From this histogram, the average flake size was determined to be 1,300 nm, which is typical for liquid phase exfoliation.



ADVANCED MATERIALS NEXT STEPS

The Company and Swinburne will further their research and development activities in the coming months by:

- ◆ Optimising the graphene percentage for strength and fire-resistant properties for use in advanced materials and products;
- ◆ Commence the manufacturing of next generation prototypes; and
- ◆ Undertaking further analysis of fire resistant and mechanical properties.

For further information visit greenwingresources.com or contact info@greenwingresources.com

Rick Anthon, Chairman

Craig Lennon, CEO

This announcement has been approved by the Company's Board of Directors for release.

² SEM measurements and analysis was performed at the Melbourne Centre for Fabrication in the Victorian Node of the Australian National Fabrication Facility (ANFF).

ABOUT GREENWING RESOURCES

Greenwing Resources Limited (ASX:GW1) is an Australian-based critical minerals exploration and development company committed to sourcing metals and minerals required for a cleaner future. With lithium and graphite projects across Madagascar and Argentina, Greenwing plans to supply electrification markets, while researching and developing advanced materials and products.

ABOUT GRAPHENE

Graphene is a single layer of carbon atoms with each atom bound to three neighbours in a two-dimensional honeycomb structure. This gives graphene unique superlative properties: excellent mechanical, thermal and electronic properties that are attractive for vast areas of advanced applications such as electronics, energy storage, smart composites etc. A top-down approach to graphene production is liquid phase exfoliation of graphite, which is a promising method due to scalability, quality, and potential low cost.

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