

HAZER'S SYNTHETIC GRAPHITE CONTINUES TO DELIVER EXCELLENT PERFORMANCE IN LITHIUM-ION BATTERIES

- **Hazer synthetic graphite shows excellent performance in lithium-ion battery tests over longer term cycles**
- **Results illustrate equivalent performance to commercial synthetic graphite used in lithium-ion battery applications after 50 cycles (0.2C rate) and 100 cycles (0.8C rate)**
- **Performance indicators and characteristics will now be used to advance ongoing battery test work and graphite optimisation**

PERTH, WEDNESDAY 1ST March 2017: Hazer Group Ltd ("Hazer" or "the Company") (ASX:HZR, HZRO) is pleased to announce that ongoing laboratory test work using Hazer's synthetic graphite continues to deliver excellent performance in half-cell lithium-ion batteries.

Further to the Company's announcement on 13th December 2016, in which the Company reported the initial battery testing (first discharge and 10 cycle performance) of Hazer's non-optimised (purified to 99%) synthetic graphite, the Company has now undertaken additional longer term testing at different charge and discharge rates.

Hazer's non-optimised graphite exhibited excellent performance over 50 to 100 cycles and across the different charge / discharge rates, with virtually no loss in capacity.

- 50 cycles with reversible capacity of about 280 mAh/g and 96% capacity retention at the rate of 0.2 C (5 hours charge, 5 hours discharge)
- 100 cycles with reversible capacity of about 200 mAh/g and 98% capacity retention at the rate of 0.8 C (1:h – 15:m charge, 1:h 15:m discharge rate)

The longer-term cycle data below also illustrate batteries using Hazer's graphite continue to show equivalent performance to benchmark commercial synthetic graphite, which is used in lithium-ion battery applications. These results demonstrate the performance characteristics of Hazer's graphite, and indicate its potential to become a suitable alternative to traditional mined or synthetic graphite in lithium-ion batteries.

Hazer Non-Optimised Synthetic Graphite (99%)

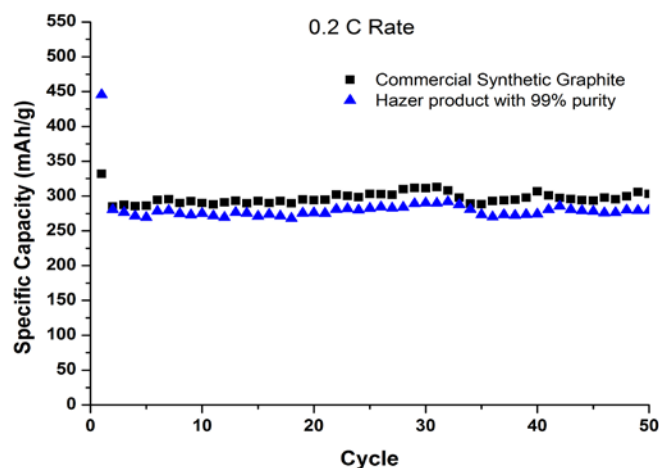


Figure 1. Specific discharge capacity of Hazer's synthetic graphite in comparison to readily available commercial synthetic graphite for lithium-ion battery applications at rate of 0.2 C after 50 cycles.

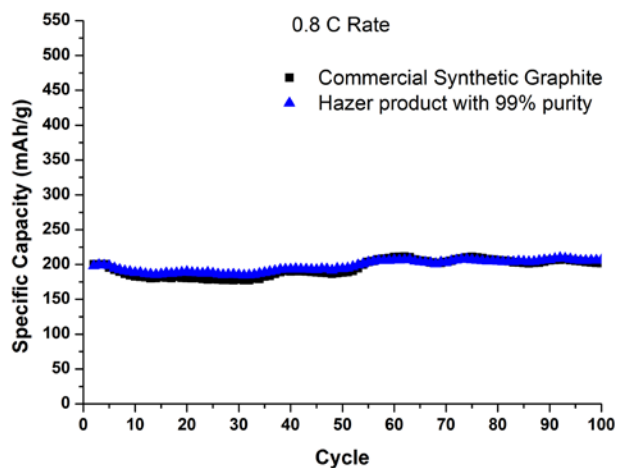


Figure 2. Specific discharge capacity of Hazer's synthetic graphite in comparison to readily available commercial synthetic graphite for lithium-ion battery applications at rate of 0.8 C after 100 cycles.

Long term cycling is critical to the performance of lithium-ion batteries for all applications, and these preliminary findings suggest that the excellent stability achieved in half-cell batteries could result in superior battery performance when tested as full cells.

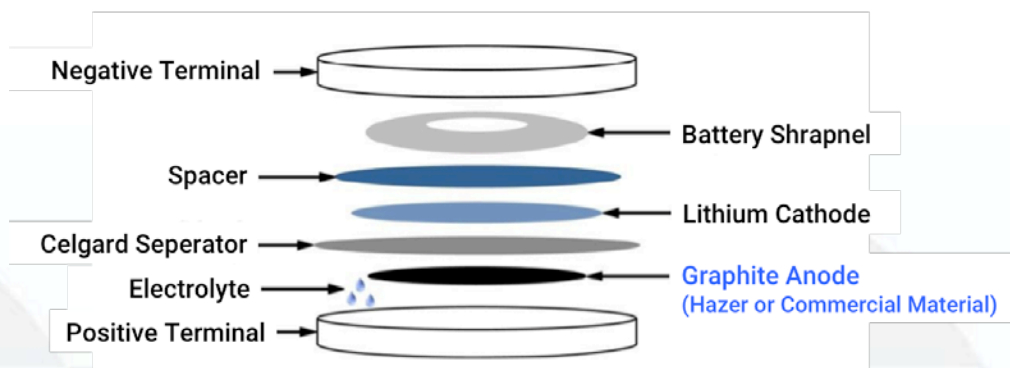
Testing at various charge / discharge rates also simulates real world conditions, where different applications require different charge and discharge regimes. For instance, in the high-end phone and EV sectors, fast charging regimes are considered normal, and a high rate capability battery is required.

Importantly, these results provide key battery performance indicators and characteristics critical to advancing the ongoing test work underway in collaboration with the University of Sydney. Using this cycle data from Hazer's non-optimised graphite, the company plans to undertake the following:

- Longer term stability testing and full cell battery testing
- Further optimisation for increased graphite purity to improve the efficacy in battery applications
- Additional cycle rate capability analysis comparing Hazers synthetic graphite performance against various commercial types of graphite (natural flake) for lithium-ion battery application

ADDITIONAL INFORMATION

In order to characterise the stability of long-term battery performance, half-cell coin batteries were fabricated by using Hazer's synthetic graphite as the active material in the anode. As a reference standard, batteries were also fabricated using the same process with commercial synthetic graphite (supplied for lithium-ion battery applications) used as an anode.



Currently, graphite for battery applications is sourced from both natural flake graphite and synthetic graphite sources. However, mass areas of land are being excavated for natural graphite extraction, and the further purification of mined material to battery grade specification involves significant downstream processing and harsh chemical treatments, many of which have significant environmental impacts. There are also significant environmental concerns regarding synthetic graphite production, as well as high costs partly driven by the significant energy load necessary for the process.

As a potential alternative process, Hazer takes two readily available feedstocks (natural gas and iron ore), and converts them into two high demand products (hydrogen and synthetic graphite). During the process, the carbon content of the natural gas feedstock is captured and converted into graphite, rather than being converted to CO₂ as occurs in other hydrocarbon-based hydrogen production processes.

This allows Hazer to potentially provide a cost-effective solution that is both cleaner and more energy efficient than traditional synthetic graphite production. These unique attributes combined with excellent results from initial battery testing put Hazer a step closer to offering battery manufacturers with a cleaner, low cost, high quality alternative to traditional mined or synthetic graphite for use in lithium-ion batteries.

The company is also reviewing other markets where demand for graphite currently exists. The Company is currently evaluating options to assist it to validate the commercial viability for Hazer's graphite in multiple markets including the steel industry, lubricants and automotive applications.

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ABOUT HAZER GROUP LTD

Hazer Group Limited (“Hazer” or “The Company”) is an ASX-listed technology development company undertaking the commercialisation of the Hazer Process, a low-emission hydrogen and graphite production process. The Hazer Process enables the effective conversion of natural gas and similar feedstocks, into hydrogen and high quality graphite, using iron ore as a process catalyst.

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