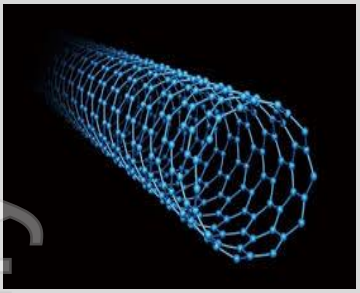

Andromeda Metals Limited
ABN: 75 061 503 375

Corporate details:

ASX Code: ADN

Cash (31 Mar 2021): $6.70 million

Issued Capital:
2,160,727,827 ordinary shares
86,320,000 unlisted options
19,750,000 performance rights

Directors:

Rhod Grivas
Non-Executive Chairman
James Marsh
Managing Director
Nick Harding
Executive Director and Company Secretary
Joe Ranford
Operations Director
Andrew Shearer
Non-Executive Director

Contact details:

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Unley, South Australia 5061

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Andromeda METALS

ASX Announcement

7 July 2021

Patent Lodged for Halloysite-Kaolin Conversion to Nanoporous Carbon Materials

Summary

- **Provisional patent lodged by Natural Nanotech covering the conversion process for halloysite and halloysite-kaolin into advanced, functionalised carbon nanomaterials.**
- **Patent to provide protection for Natural Nanotech's halloysite based high value potential technology.**
- **Applications include carbon capture/conversion, energy storage, hydrogen storage/transport and water purification.**
- **Excellent results already being obtained using halloysite-kaolin from the Great White JORC Resource.**
- **Halloysite purification work is being progressed to further improve performance.**

Discussion

Andromeda Metals Limited (ASX: ADN, Andromeda) is pleased to advise that its jointly owned R&D entity Natural Nanotech Pty Ltd (NNT) has filed a provisional patent application covering the conversion process for halloysite and halloysite-kaolin into advanced, functionalised carbon nanomaterials.

NNT is a research and commercialisation venture owned 50:50 by Andromeda and Minotaur Exploration Limited (ASX: MEP, Minotaur), formed to investigate advanced nanotechnology applications utilising halloysite and halloysite-kaolin sourced nanomaterials. NNT has been working with the University of Newcastle's Global Innovative Center for Advanced Nanomaterials (GICAN) for several years on high-tech applications for halloysite, which are natural clay nanotubes, sourced from the Great White Kaolin Joint Venture's high-grade halloysite-kaolin deposits in South Australia.

ADN and MEP are currently co-funding $1M per annum into NNT to facilitate commercialisation of exciting new, potentially high-value technologies based on halloysite-kaolin from the Great White Project. Excellent results are being obtained from the existing JORC Resource by using refined material, purified to improve performance. Work to incorporate recently identified zones of much higher natural purity is proceeding in parallel. A large-scale industrial kaolin processing centrifuge was recently obtained from Europe and is being

installed at the $1M Pilot Plant at Streaky Bay. Once commissioned this will be used to produce large quantities of high-purity halloysite from specially selected feedstock.

Patent Application

Natural Nanotech has lodged a provisional patent covering the processing pathways for conversion of the natural clay nanotube halloysite and halloysite-kaolinite admixtures of varying proportions, into selectively functionalised and chemically activated carbon nanomaterials. Selective functionalisation refers to intended high technology uses for the nanomaterials, with desirable performances documented in the first instance for selective CO_2 adsorption and for specific capacitance and energy storage. Ongoing optimisation of the process continues for hydrogen storage, water and wastewater treatment and agricultural applications.

The unique properties of Great White Project halloysite-derived nanomaterials that make them so amenable to these applications are their enormous surface area per unit weight, their porous nature and differential charge capabilities between inner and outer surfaces. The process pathways subject of the patent filing documents how run-of-mine halloysite-kaolin nanoclays comprised of a mixture of flaky and tubular morphology can be converted into carbon nanomaterials through a solid state templating, doping and activation process to fabricate activated porous nanocarbon materials for the specific applications. The process pathways subject of the patent filing generates nanomaterials with CO_2 adsorption potential in excess of 25 mmol/g and specific capacitance in excess of 220 F/g at a current density of 0.3 A/g.

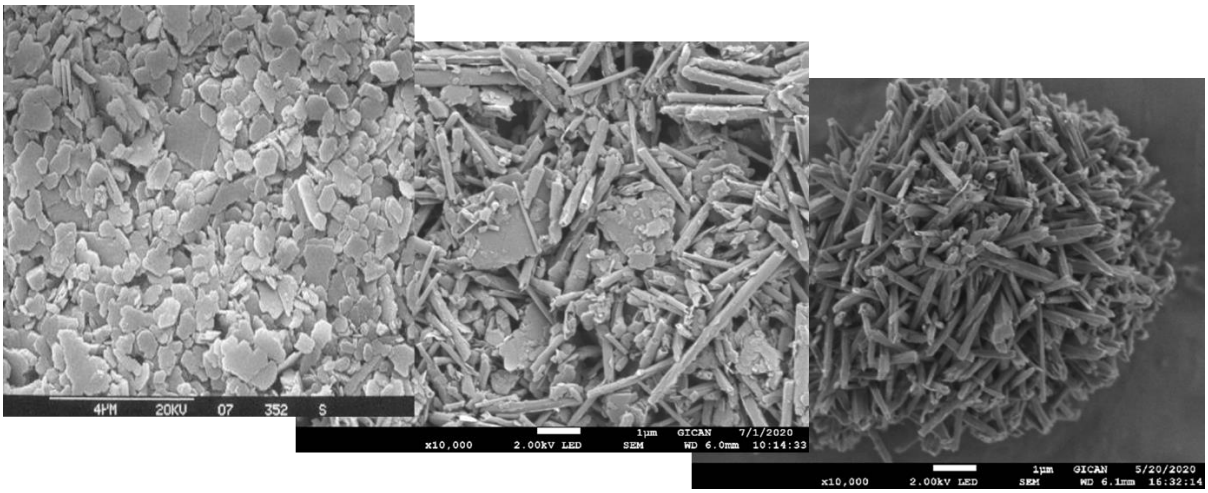

Figure 1 - SEM photographs illustrating varying halloysite:kaolinite content of nanoclay samples from the Great White kaolin-halloysite deposit, western South Australia.

The global push towards net zero carbon by governments and corporations requires innovative approaches to minimising and removing greenhouse gases from industrial processes of all scales. Carbon Capture & Conversion at the industrial process level, as well as Direct Air Capture of carbon from the atmosphere will allow organisations to ameliorate their carbon footprints by removing carbon equivalent to their industrial, organisational or personal inputs. NNT's carbon amelioration research strategy and the innovative processes subject of the filing are focussed on achieving this outcome by utilising Great White halloysite-kaolin derived nanomaterials as a superior adsorbent. Construction of a Carbon Capture & Conversion pilot plant facility is underway at GICAN in Newcastle, NSW. This scalable facility will be able to demonstrate the capture of large amounts of CO_2 and use a proven conversion method to convert it into a clean fuel, effectively closing the circle of emissions.

Next Steps

Filing a provisional patent application is the first step towards establishing Australian and international Intellectual Property protection. It is followed by a standard patent application and/or international filings within 12 months of the provisional application.

Andromeda Managing Director James Marsh commented: “The research with GICAN and the resultant patent filing addresses the need for improved methods for the fabrication of nanoporous carbon materials having high specific surface area, large pore volume and improved surface functionalities. Most importantly, it delivers these major advances utilising a low-cost and naturally available, benign clay material precursor, while protecting the potentially very valuable intellectual property for the benefit of all ADN and MEP company shareholders”.

Minotaur’s director of Research and Development, Dr Tony Belperio added: “It is pleasing to see this critical initial filing of the major research advances made with the GICAN team with a clear focus on potential commercial applications across a range of environmental and technological issues. A carbon capture pilot plant now under construction will rigorously assess the efficacy of the carbon nanomaterials for commercial-scale application in carbon capture and utilisation”.

For further information Contact:

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Managing Director
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