

ASX ANNOUNCEMENT

22 August 2019



Lithium Australia's LieNA[®] technology opens up lithium chemical conversion opportunities

HIGHLIGHTS

- **Lithium Australia's 100% owned LieNA[®] technology provides a range of high-purity lithium battery chemicals from spodumene feeds without the need for roasting.**
- **Potential lithium chemical suite includes high-purity phosphate, hydroxide sulphate or chloride.**
- **Preliminary feasibility study programme commenced.**

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Lithium Australia NL (ASX: LIT, 'the Company') aims to deliver sustainable processing and production options for the lithium-ion battery ('LIB') industry while reducing the environmental footprint of that industry. The Company's LieNA[®] technology, derived from several years of research and development ('R&D') undertaken in collaboration with the Australian Nuclear Science and Technology Organisation ('ANSTO'), has recently transitioned from a scoping study to preliminary feasibility study assessment.

The Company's LieNA[®] technology avoids conventional high-temperature treatment (calcination) of spodumene concentrates and, unlike conventional conversion processes, is not constrained by particle feed size. Rather, it uses an alkaline source, such as caustic soda, at the temperature and pressure required to convert the mineral spodumene to a lithium-bearing sodalite phase. The sodalite is then recovered and selectively leached to produce a lithium-bearing solution that is further treated to produce a high-purity, refined tri-lithium phosphate ('LP') product.

LieNA[®] offers a number of advantages in terms of spodumene processing, including the following.

- The ability to process fine spodumene feed stocks, which are currently problematic for conventional converters and mineral concentrate producers.
- Production of high-purity battery chemicals without the need to produce sodium sulphate as a by-product, as is the case for conventional thermal spodumene converters. (It is expected that, longer-term, conventional converters will encounter issues in relation the sale or disposal of sodium sulphate as a by-product of lithium hydroxide production.)
- The option to produce a suite of lithium chemicals, including lithium phosphate, hydroxide, sulphate or chloride, from a single refinery.
- Direct production of lithium-ferro-phosphate ('LFP') cathode materials from LP by way of Lithium Australia's 100% owned and patented VSPC Ltd cathode powder synthesis methods.

During a recent visit to China, the Company received enquiries for the potential supply of both LP and LFP.

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In summary

Lithium Australia, through its R&D at ANSTO, has also developed a method of refining intermediate LP that results in an order of magnitude reduction in potassium, sodium, sulphur and other contaminants (as reported on [5 March 2019](#)), with the refined product greater than 99.9 wt% LP.

Both provisional patent and Patent Cooperation Treaty applications have been lodged for LieNA[®] as a part of the Company's intellectual property protection strategies.

Comment from Lithium Australia MD Adrian Griffin

"The production of lithium concentrates from spodumene results in the generation of a large amount of fine spodumene that cannot be used as feed for conventional lithium 'converters' (factories that produce lithium chemicals from spodumene). In fact, the fine material discharged as waste during the concentration process may contain up to 50% of the lithium value. Lithium Australia's LieNA[®] technology is a sustainable processing solution capable of recovering much of the lithium from fine spodumene waste."

"Not only does the LieNA[®] technology provide greater sustainability but it can also supply direct feed for the production of LFP cathode materials, a chemistry ideally suited to energy storage applications."

Barry Woodhouse

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About Lithium Australia NL

Lithium Australia aspires to 'close the loop' on the energy-metal cycle in an ethical and sustainable manner. To that end, it has amassed a portfolio of projects and alliances and developed innovative extraction processes to convert *all* lithium silicates (including mine waste) to lithium chemicals. From these chemicals, the Company plans to produce advanced components for the lithium-ion battery industry. The final step for Lithium Australia involves the recycling of spent batteries and e-waste. By uniting resources and the best available technology, the Company aims to establish a vertically integrated lithium processing business.

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