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ASX ANNOUNCEMENT

LITHIUM AUSTRALIA SILEACH™ DEVELOPMENT PROGRAMME

Sileach™ - a universal process for the recovery of metals from silicates - has been developed by Lithium Australia (ASX:LIT) with the assistance of Australian federal government grants, a Western Australian government grant, and the technical assistance of ANSTO Minerals ("ANSTO" a Division of the Australian Nuclear Science and Technology Organisation).

Lithium Australia is in a very strong position to develop Sileach™ on a global basis, with recent progress including:

- Successful testing of spodumene concentrates from Pilbara Minerals (ASX:PLS)
- Production of battery-grade lithium carbonate, and
- Resolution of process ownership issues in favour of Lithium Australia.

PROGRESS

During the development of the Sileach™ process, Lithium Australia has tested a range of lithium bearing ores, concentrates, and waste materials, from around the world. Sileach™ is a hydrometallurgical process; that is, it does not require an energy intensive roasting step.

Sileach™ is differentiated from other processes by its unique chemistry. Essential to the operation of the Sileach™ process is the addition of halogens, a group of reactive elements which attack the chemical bonds in the silicate mineral, causing all metals to go into solution. It is the very reactive nature of the halogens that drives the process, at the reaction rates required, to accomplish metal extraction into solution.

Major milestones achieved by Lithium Australia in the development of the Sileach™ process to date are outlined below.

- **Jan 2016** - First successful Sileach™ tests on spodumene carried out in a commercial laboratory in Perth, Western Australia
- **Feb 2016** - Sileach™ tests extended to other lithium and potassium bearing silicates including lepidolite from Lepidolite Hill, Western Australia
- **Feb 2016** - Australian patent application lodged for the Sileach™ process
- **Mar 2016** - Sileach™ breakthrough gains federal research grant funding and partnership agreement with ANSTO Minerals (a division of the Australian Nuclear Science and Technology Organisation)
- **Jun 2016** - Pilbara Minerals (ASX:PLS) agree terms of a commercialisation agreement to develop Sileach™ for Pilgangoora spodumene concentrates
- **Jun 2016** - Bench scale tests lead to ANSTO Minerals pilot plant design
- **Aug 2016** - State government grant through Minerals Research Institute of WA (MRIWA) awarded to research impurity deportment and by-product evaluation
- **Aug 2016** - Further federal funding awarded
- **Sep 2016** - Pilot testing of Lepidolite Hill ore commenced at ANSTO Minerals
- **Sep 2016** - Continuous lithium carbonate production achieved at ANSTO Minerals
- **Dec 2016** - Engineering design contract awarded for large-scale pilot plant
- **Dec 2016** - Sileach™ pilot tests on Pilgangoora spodumene commenced
- **Jan 2017** - Refined lithium carbonate achieves battery grade
- **Feb 2017** - Pilot testing of Pilgangoora spodumene concentrate completed at ANSTO Minerals
- **Feb 2017** - International patent application lodged for Sileach™
- **Feb 2017 - Litigation with Lepidico resolved, in LIT's favour.**

SILEACH ™ PERFORMANCE OPTIMISATION

Lithium Australia with co-operation from ANSTO Minerals and Murdoch University (the latter through a MRIWA research grant) have an active and coordinated optimisation programme focused on processing performance improvements and maximising the value of by-product credits. The programme is also evaluating impurity deportment and reagent recycling.

The performance enhancement programme studies are being conducted on a bench scale and improvements will be incorporated into ANSTO Minerals pilot plant work and into design specifications for the large-scale pilot plant currently being designed by CPC Project Design PTY LTD.

Further pilot testing is planned on a range of materials including lepidolite, zinnwaldite and spodumene.

FURTHER INFORMATION

For commercial reasons, and in accordance with intellectual property laws and protocols, much of the information relating to the Sileach™ process remains confidential, however the following information is provided to the extent commercial confidentiality and availability of results permit.

LEPIDOLITE PILOT TESTING

- **Lepidolite Hill** – Material processed at ANSTO Minerals was whole ore from Lepidolite Hill (Western Australia). No flotation was undertaken as the ore was high-grade (about 2.95% Li_2O) suggesting over 70% of the material was lepidolite with the balance comprising mainly quartz and feldspar. LIT has previously undertaken flotation test work on similar materials, achieving very high yields and good recovery (lithium recovered to concentrate regularly exceeding 90%).

  LIT is currently preparing for pilot testing of lithium bearing waste material, the location of which is subject to confidentiality. The waste material contains 27-30% lepidolite and has a head grade of 1.62% Li_2O. Previous bench scale tests on this material have produced concentrates with grades exceeding 4% Li_2O.

- **Process recovery on ore from Lepidolite Hill** – (whole ore): The average lithium leach extraction was 95% with approximately 18% Li losses reporting to solids during subsequent impurity removal stages. Funding under the terms of a grant provided through MRIWA is dedicated to improving the performance of that section of the circuit. Furthermore, vendor tests are being conducted to improve solid/liquid separation during that phase of the operation.

- **Major reagent suite** – Initial digestion stages are accomplished in an acid medium with the addition of halogens to disintegrate the silicate lattice. Impurity removal is accomplished by increasing pH by the addition of various alkalis including limestone. Sodium carbonate is used in the high pH refining stage of the circuit and also for lithium carbonate precipitation.

- **By-products produced and associated recoveries** – this remains work in progress at Murdoch University, under the auspices of the MRIWA grant.

SPODUMENE PILOT TESTING

Pilot testing of spodumene concentrates from Pilbara Minerals' (ASX:PLS) was recently completed at ANSTO Minerals. The test run produced the following outcomes:

- Pilot Sileach™ operations successfully recover lithium from Pilgangoora spodumene concentrates without the requirement for roasting
- Despite operations suffering mechanical disruptions, lithium extractions into pregnant liquor solution of up to 73% were achieved
- Sufficient pregnant liquor was recovered to continue with lithium carbonate refining tests
- Valuable data was generated to improve plant availability

Processing commenced in the Lucas Heights facility (Fig. 1) on 30 January 2017, utilising spodumene concentrates supplied by Pilbara Minerals as part of the Sileach™ commercialisation agreement between LIT and PLS.

Figure 1 Spodumene pilot processing facilities at ANSTO Minerals, Lucas Heights, and Australia.

The pilot run commenced on schedule and initial operations ran smoothly with the trial reaching steady state operations after 12 hours. During operations some mechanical and material handling issues were experienced. Having generated sufficient pregnant liquor for lithium carbonate refining test work, operations were terminated on 2 February 2017.

The pilot run provided valuable insights into operation of the spodumene leach circuit and operational data on mechanical and materials handling considerations needed to improve the performance of future pilot runs.

Lithium was successfully recovered from refractory alpha-spodumene (that is, un-roasted spodumene) throughout the pilot run. This resulted in extractions, based on pregnant liquor solution analyses, ranging from 62% up to 73%. Elimination of mechanical and material handling interruptions to plant throughput is expected to have a significant impact on future lithium recoveries. LIT and ANSTO Minerals will now review pilot plant designs ahead of follow-up pilot studies of Sileach™ on spodumene later in 2017.

Managing director, Adrian Griffin said:

"The success of Sileach™ development to date has been outstanding, and further process modifications being contemplated place us in a very good position with respect to delivering the right outcome for development of the large-scale pilot plant.

While recoveries were lower than expected for the spodumene run, identifying the weakest links, and removing them from the processing chain is the very reason you do pilot testing. The valuable data collected will provide critical input to future plant design."

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About Lithium Australia
Lithium Australia NL is a dedicated developer of disruptive lithium extraction technologies, and 100% owner of the Sileach™ process for the recovery of lithium from silicates. LIT has strategic alliances with a number of companies, potentially providing access to a diversified lithium mineral inventory. LIT aspires to create the union between resources and the best available technology and to establish a global lithium processing business.

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