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Livium Signs Term Sheet to Secure Exclusive Global Rights to Microwave Technology for Rare Earth Elements Extraction

HIGHLIGHTS

- Livium has signed a Term Sheet with the University of Melbourne (UoM) to secure exclusive global rights to the use of innovative Microwave technology in REE extraction
- Livium's existing exposure to REE end-of-life supply chain and existing infrastructure provides a direct commercial opportunity to expand its recycling service offering
- Recovery rates include >95% Neodymium (Nd) and >80% Praseodymium (Pr) (potential to achieve >90%), with an estimated 85% energy reduction relative to "Hot Block" technology
- UoM's selective leaching approach obtains higher concentrates compared to traditional pathway, whilst reducing the usage of acids and reagents, and reducing wastewater
- The collaboration will enable the design and build of an Australian-first prototype, with Livium providing feedstock and technical input to the UoM research team
- Global REE market expected to grow to US\$7.3 Billion by 2026¹ with recycling largely untapped
- Livium and UoM are now working towards execution of a binding IP licensing agreement

Livium Ltd (ASX: LIT) ("**Livium**" or the "**Company**") is pleased to announce it has signed a non-binding term sheet (**Term Sheet**) with the University of Melbourne ("**UoM**") to explore the use of the UoM's microwave technology for the extraction of Rare Earth Elements (**REE**) to complement its core recycling business. Livium and UoM are now working towards execution of a binding IP licensing agreement which will give Livium exclusive worldwide rights to commercialise the technology for the next 20 years.

University of Melbourne's Microwave Technology

Microwave heating is a promising solution for replacing traditional methods of REE extraction due to its efficient, rapid, and sustainable heating transmission. Where traditional methods extract REE by acid leaching, solvent extraction, and ion-exchange processes, microwave technology can enhance chemical reactions and alter the morphology of minerals, which is key to selectively recovering rare earth elements, as well as other valuable metals such as copper, gold, vanadium and platinum group metals (PGMs) from metallurgical wastes.

Studies at UoM to date have found that microwave technology can deliver high recovery rates at low energy consumption levels, with an estimated 85% reduction of energy consumption relative to "Hot Block" digestion technologies.

Recovery rates of >95% Neodymium (Nd), >80% Praseodymium (Pr) have been achieved in laboratory testwork, with potential to achieve >90% Pr with an oxidant.

Selective leaching also has the following advantages over complete leaching:

- ✓ Obtain higher target metal concentrates
- ✓ Reduce the usage of acids and reagents in the process
- ✓ Separation of solid and liquid is much easier
- ✓ Reduce the amount of wastewater

¹ Source: Business Wire: Global Rare Earth Elements Market Report to 2026 - Growth Trends and Market Forecast (May 22);

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In addition, the recoveries of PGMs using MW heating technology can achieve, 91±13% Pt, 97±13% Pd and 68±13% Rh. With further development of selective leaching solutions, the leaching recovery of Rh can be >80%.

Strategic Expansion into Rare Earth Elements

Livium's has a strategic focus on expanding its recycling capabilities into adjacent circular economy opportunities, [a plan initially announced in June](#). The Company's priority is to apply its core competencies into strategic adjacencies such as REE and solar recycling, as well as black mass processing.

REE have been identified as a medium-term commercial opportunity for Livium due to growing demand and a global shift toward more diversified supply chains. Livium is already well connected to the REE end-of-life supply chain via its clean energy generation and e-mobility clients and already performs similar extraction processes such as shredding, grinding, and separation.

The UoM partnership provides exclusive, low-cost access to the microwave technology whilst leveraging our core competencies and customer base. In addition to its partnership, Livium is actively assessing other REE extraction technologies both in Australia and internationally.

Key Material Terms

The research into REE extraction using microwave technology at UoM will be funded by Livium with an initial investment of ~A\$65k and increase up to ~A\$250k contingent on the achievement of two project milestones by UoM: Firstly, securing grant support for the Prototype Scale Microwave Reactor and secondly, delivery of REE product test results from this reactor (Collectively the "**Research Project**"). A grant application has been submitted to Australia's Economic Accelerator (AEA) Ignite program to support the Research Project.

The completion of this Research Project is conditional on several key matters including agreement on specific performance criteria, a budget estimate, and confirmation of grant funding. The parties are now working towards execution of a binding IP licensing agreement.

Rare Earth Elements

A collection of 16 metallic elements found together on the periodic table are known as rare earths. This group comprises the 15 lanthanides in addition to yttrium. The recovery and repurposing of these sought-after elements from discarded items, including permanent magnets, electric motors, and electronic refuse, is called REE extraction. Magnets containing these materials are crucial to the shift toward clean energy, as they are integral components in electric vehicle propulsion motors and wind turbine generators.

Worldwide demand for REE magnets has almost doubled, climbing to 93 kilotons between 2015 and 2023². REE recycling is still a largely untapped market, given currently only about 1% of REE are being recycled³. This presents a huge adjacent commercial opportunity for Livium with the global addressable market for REE expected to reach US\$7.3 billion by 2026.

Comment from Livium CEO and Managing Director, Simon Linge

"We are excited to partner with the University of Melbourne and leverage their innovative microwave technology to explore how we can extract rare earth elements. This is a significant step in our strategy to broaden our recycling capabilities and meet the growing global demand for REEs."

"Our core competencies are the safe collection and pre-processing of e-waste and many of our current and emerging lithium-ion battery customers are exposed to REE waste. Initially, this allows us to secure the waste stream either directly to customers or for processing through technology."

"Securing exclusive access to this REE technology will allow us to expand our commercial offering, further cementing our leadership in resource recovery and process innovation."

² Source: International Energy Agency (IEA) Global Critical Minerals Outlook 2025 (May 25)

³ Source: Discovery Alert: Rare Earth Elements in Trade and Tariffs: Geopolitical Implications 2025 (April 25)

ASX ANNOUNCEMENT



Authorised for release by the Livium Board.

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Forward-looking statements

This announcement contains forward-looking statements. Forward-looking statements are subject to a variety of risks and uncertainties that it is beyond the Company's ability to control or predict and which could cause actual events or results to differ materially from those anticipated in such forward-looking statements. Investors should be aware that past performance should not be relied upon as being indicative of future performance.

About Livium

Livium (previously Lithium Australia) is aiming to lead and enable the global transition to sustainable lithium production. The Company operates Australia's market leading battery recycler, Envirostream, a revenue and profit generating business which is well-placed to capitalise on growing lithium-ion battery demand. Additionally, the Company aims to commercialise patented lithium extraction technology (LieNA®), through a 50:50 joint venture with Mineral Resources Ltd (ASX: MIN), and critical battery material lithium ferro phosphate (LFP), through wholly owned subsidiary VSPC.

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