Lithium Universe LIMITED
Building a Lithium Future

ASX ANNOUNCEMENT AND MEDIA RELEASE

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LU7 ACHIEVES EXCEPTIONAL GOLD & COPPER RECOVERIES FROM GCDE TECHNOLOGY

Highlights

- Series of optimisation test work completed
- Achieved 99.5% gold recovery
- Achieved 98.5% copper recovery
- Low-temperature hydrometallurgical process
- Selective mixed-metal recovery technology
- Reusable reagents reduce waste
- Supports circular economy recycling

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is pleased to announce that it has successfully achieved exceptional gold and copper recovery rates using the licensed selective metal extraction Gold Copper Diamide Extraction (GCDE) technology developed by the University of Edinburgh.

A series of optimisation tests were conducted at the University of Edinburgh, Chemistry department by Prof. Love to optimise the recovery rates of gold and copper utilising the GCDE technology. Commercially available E-waste was procured, and the entire process was simulated in the laboratory. Under controlled laboratory conditions using real electronic waste feedstock, the Company has achieved 99.5% recovery of gold and 98.5% recovery of copper from mixed-metal acidic leach solutions derived from printed circuit board connector pins.

Table 1 – Recovery Rates of Gold and Copper

Metal	Recovery %
Gold (Au)	99.5%
Copper (Cu)	98.5%

These results represent a significant technical milestone for LU7 as it advances its strategy to commercialise environmentally sustainable precious and base metal recovery technologies.

Test Procedure

The process comprises three integrated stages. Electronic waste material was first leached under controlled chloride conditions to produce a mixed-metal solution containing gold, copper, iron, zinc and other base metals typical of e-waste streams. Importantly, the dissolution stage avoids the use of cyanide, aqua regia and high-temperature smelting. The process operates at room temperature and under controlled chemical conditions, reducing environmental risk compared to conventional pyrometallurgical and cyanide-based hydrometallurgical approaches. Gold was then selectively precipitated from the mixed-metal acidic solution using a proprietary tertiary diamide ligand. The ligand forms a highly selective supramolecular complex with the tetrachloroaurate anion ($AuCl_4^-$), enabling direct precipitation of gold from solution without solvent extraction. The precipitation achieved 99.5% gold recovery with no significant co-precipitation of copper and minimal uptake of iron or zinc under optimised acid conditions. The gold-containing precipitate was subsequently treated to recover metallic gold and regenerate the organic ligand for reuse.

Photos: Test work program conducted by LU7's partner Edinburgh University

Following removal of gold, copper was selectively recovered from the remaining acidic solution using 2,3-pyrazinedicarboxylic acid (2,3-PDCA), forming a polymeric copper complex that precipitates from solution. This second-stage recovery achieved 98.5% copper recovery with high selectivity over competing base metals. The copper can then be stripped and refined into saleable copper products, with the precipitation reagent capable of regeneration.

These **recovery rates are considered exceptional** in the context of electronic waste recycling, particularly given the mixed-metal complexity of PCB-derived leach streams, the avoidance of solvent extraction organic phases, and the absence of highly toxic reagents. The ability to sequentially and selectively recover gold and copper from the same feedstock demonstrates the robustness and industrial relevance of the chemistry platform.

The process aligns strongly with global sustainability objectives and circular economy principles. It eliminates cyanide-based gold leaching, avoids **high-energy smelting processes**, reduces organic solvent usage compared to traditional solvent extraction systems, enables reagent recycling, and operates under low-temperature conditions. Electronic waste is increasingly recognised as a high-grade "urban ore," with gold concentrations in PCBs significantly exceeding those of many mined gold ores and copper concentrations materially higher than primary copper ore grades.

The successful achievement of these recovery levels provides a **strong technical foundation** for the next phase of development. The Company is progressing engineering review of scale-up parameters, pilot plant design assessment, feedstock supply engagement with e-waste recyclers, and process integration studies. These results validate the core chemistry and confirm its potential industrial applicability.

GCDE Technology Background

Developed by the University of Edinburgh's School of Chemistry with support from Edinburgh Innovations, the Gold Copper Diamide Extraction (GCDE) process is an innovative hydrometallurgical technology designed to recover gold and copper from electronic waste using selective, reusable organic reagents. The process uses a diamide compound to selectively precipitate gold from acidic leach solutions, followed by copper recovery using pyrazine-2,3-dicarboxylic acid (PDCA). Unlike conventional smelting and pyrolysis, the technology avoids high-temperature, energy-intensive processing, offering potential environmental and cost advantages. The process is suited to smaller-scale applications with lower capital intensity and supports growing demand for sustainable e-waste recycling as global e-waste generation continues increasing rapidly.

CHIEF EXECUTIVE OFFICER COMMENT

"These recovery figures confirm that the Edinburgh technology is not only academically robust but industrially viable. Achieving 99.5% gold recovery and 98.5% copper recovery from real electronic waste feedstock demonstrates the power of selective chemistry under mild operating conditions. Importantly, this is achieved without cyanide, without aqua regia and without smelting. That represents a fundamental shift in how precious and base metals can be responsibly recovered. Electronic waste is one of the richest urban ore bodies globally, and our objective is to unlock that value using scalable, environmentally responsible chemical technology."

Watch the GCDE Explainer
https://youtu.be/O__fW8jLzLU

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About Lithium Universe Limited (LU7)

Lithium Universe (ASX: LU7) is an emerging lithium development company focused on building a fully integrated lithium supply chain in North America. The company's flagship asset is the Bécancour Lithium Refinery project in Québec, which aims to produce battery-grade lithium carbonate. LU7 is led by a world-class team with extensive experience in lithium refining, project delivery, and global supply chain integration.

Authorised by the Chairman of Lithium Universe Limited

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Forward-looking Statements

This announcement contains forward-looking statements which are identified by words such as 'anticipates', 'forecasts', 'may', 'will', 'could', 'believes', 'estimates', 'targets', 'expects', 'plan' or 'intends' and other similar words that involve risks and uncertainties. Indications of, and guidelines or outlook on, future earnings, distributions or financial position or performance and targets, estimates and assumptions in respect of production, prices, operating costs, results, capital expenditures, reserves and are also forward-looking statements. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions and estimates regarding future events and actions that, while considered reasonable as of the date of this announcement and are expected to take place, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of our Company, the Directors, and management. We cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this announcement will occur and readers are cautioned not to place undue reliance on these forward-looking statements. These forward-looking statements are subject to various risk factors that could cause actual events or results to differ materially from the events or results estimated, expressed, or anticipated in these statements.

ABOUT LITHIUM UNIVERSE LIMITED

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is a forward-thinking company on a mission to close the "Lithium Conversion Gap" in North America and revolutionize the photovoltaic (PV) solar panel recycling sector.

SILVER EXTRACTION - PV SOLAR PANEL RECYCLING STRATEGY

As the global demand for solar energy expands, solar panel waste is projected to reach 60–78 million tonnes by 2050, making efficient recycling solutions critical. Silver is essential for solar panels, electronics, and electric vehicles due to its unmatched electrical conductivity. Industrial demand has surged, especially from photovoltaics and AI technologies, creating a global supply deficit. With production lagging, silver prices have soared, reinforcing the economic importance of efficient recycling.

Lithium Universe has responded by acquiring Macquarie University's Microwave Joule Heating Technology (MJHT) and Jet Electrochemical Silver Extraction (JESE) method, a breakthrough in recovering valuable metals from end-of-life PV panels. The first stage, developed by Macquarie University, is Microwave Joule Heating Technology (MJHT), a process that uses microwave energy to selectively heat silicon cells softening the ethylene vinyl acetate (EVA) encapsulant that binds a solar panel's layers. This enables room-temperature delamination of glass, silicon, and metal layers without crushing, furnaces, or toxic chemicals. The result is a clean separation of materials, drastically reducing energy use, emissions, and chemical waste while preserving the integrity of high-value silicon and silver components. Following delamination, Lithium Universe applies its Jet Electrochemical Silver Extraction (JESE) process, a micro-jet electrochemical system that directs a fine stream of dilute nitric electrolyte onto the silver pads of solar cells. This method achieves over 95% silver recovery at 96% purity, while using 83% less acid and no chemical additives. The process operates at just 5 volts, recycles its electrolyte, and produces zero heavy-metal waste, establishing a true closed-loop recycling system. Together, MJHT and JESE form a sustainable, scalable recycling platform that converts discarded solar panels into a renewable source of silver, silicon, and other critical materials, a vital step toward circularity in the global clean-energy supply chain.

LITHIUM DIVISION

Lithium Strategy: Closing the Lithium Conversion Gap

Lithium Universe is at the forefront of efforts to meet the growing demand for lithium in North America. As electric vehicle (EV) battery manufacturers prepare to deploy an estimated 1,000 GW of battery capacity by 2028, the need for lithium is expected to rise dramatically. However, with only a fraction of the required lithium conversion capacity in North America, LU7 is determined to play a pivotal role in reducing dependence on foreign supply chains. The company is planning to build a green, battery-grade lithium carbonate refinery in Bécancour, Québec, leveraging the proven technology developed at the Jiangsu Lithium Carbonate Plant. This refinery will produce up to 18,270 tonnes per year of lithium carbonate, focusing initially on the production of lithium carbonate for lithium iron phosphate (LFP) batteries. The refinery's smaller, off-the-shelf plant model ensures efficient operations and timely implementation, positioning LU7 as a key player in the emerging North American lithium market. With a strong leadership team, including industry pioneers like Chairman Iggy Tan, LU7 is well-positioned to deliver this transformative project. The company's strategy is counter-cyclical, designed to build through the market downturn and benefit from the inevitable recovery, ensuring sustained exposure to the growing lithium demand.

Second Refinery Strategy

Lithium Universe Limited has launched a second lithium refinery strategy in the Port of Brownsville, Texas, complementing its planned flagship Bécancour project in Québec. The initiative creates a binational refining platform to address North America's lithium conversion shortage and strengthen supply chain resilience. Strategically located near the Port of Brownsville, the site offers deep-water access, low labour costs, and streamlined permitting within one of the U.S.'s most business-friendly regions. Leveraging a "copy and paste" design from the proven Bécancour refinery, the Texas project can be rapidly deployed to serve nearby gigafactories, aligning with U.S. policy incentives under the Inflation Reduction Act.