Lithium Universe LIMITED
Building a Lithium Future

ASX ANNOUNCEMENT AND MEDIA RELEASE

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LU7 ACHIEVES EXTRACTED GOLD PURITY OF 97% FROM GCDE TECHNOLOGY

Highlights

- Gold recovery exceeds 99%, with metallic gold purity of 97.04%
- Outstanding gold selectivity demonstrated, with tuneable control across leach conditions
- Recyclable reagent supports lower operating costs across multiple use cycles
- Zero organic solvents required, simplifying the flowsheet compared with conventional solvent extraction
- 98% gold recovery achieved from dissolved e-waste, confirming dual mining and recycling applicability
- Positions GCDE within the US$11.8 billion global precious metals e-waste recovery market
- Marks a further validation step toward pilot-scale demonstration and commercialisation

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is pleased to announce further positive laboratory results from testing of its licensed Gold Copper Diamide Extraction (GCDE) technology, developed by the University of Edinburgh. The latest test program evaluated the technology's ability to selectively recover gold from complex multi-metal chloride solutions, control metal selectivity through solution chemistry, and produce a high-quality metallic gold product. The program achieved gold recoveries exceeding 99% and produced metallic gold with a **purity of 97.04%** following reduction of the recovered precipitate. These results further validate the GCDE technology and mark another significant step towards its commercial development as a more environmentally sustainable alternative to conventional solvent extraction technologies. The global precious metals recovery market from e-waste is valued at approximately US$11.8 billion (2025)[1], with gold representing the largest and highest-value component.

[1] Precious Metals E-Waste Recovery Market Size & Forecast [Latest]

LABORATORY PROGRAM

Following the successful demonstration of the Gold Copper Diamide Extraction (GCDE) process for the selective recovery of gold from chloride solutions, Lithium Universe commissioned a further series of laboratory investigations to better understand the operating characteristics and commercial potential of the technology. The objective of the program was to optimise process performance by evaluating the influence of leach chemistry on metal selectivity, gold recovery and the quality of the final metallic gold product.

The test work focused on determining the ability of the proprietary diamide reagent to selectively precipitate gold from complex multi-metal chloride solutions containing a range of dissolved base and precious metals commonly encountered in mineral processing and recycling applications. Laboratory testing also investigated the effect of varying hydrochloric acid concentrations on metal selectivity, enabling assessment of the process's ability to selectively recover gold while leaving other dissolved metals in solution or recovering them in a controlled sequence.

In addition, the program evaluated the conversion of the recovered gold precipitate into metallic gold using a conventional reduction process, allowing assessment of the purity and quality of the final gold product. Further testing examined the recyclability of the diamide reagent over multiple loading and stripping cycles, together with its application to the recovery of gold from dissolved electronic waste, providing an indication of the technology's broader commercial applicability across both primary mining and secondary resource recycling.

LABORATORY RESULTS

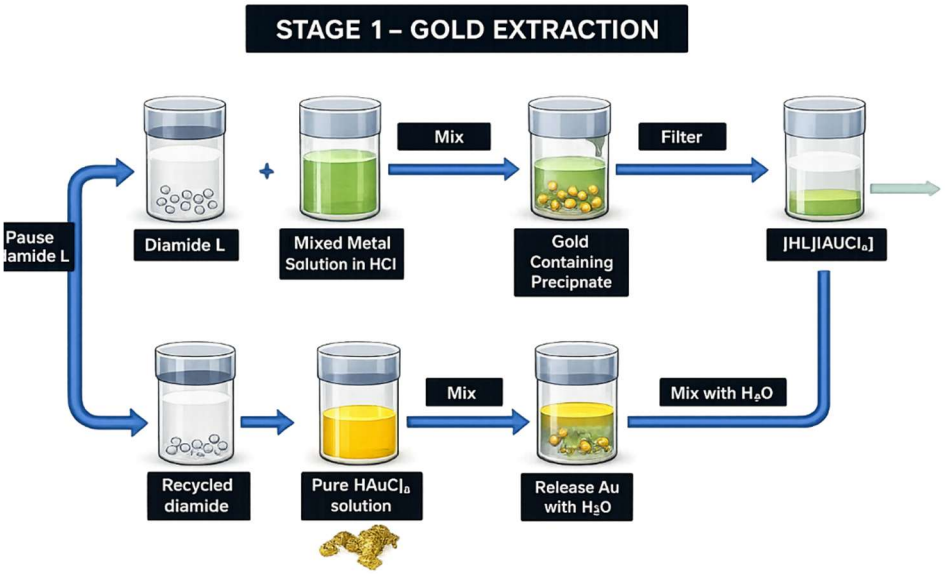
Testing has demonstrated consistently high gold recovery across several solution chemistries relevant to modern hydrometallurgical processing.

Table 1 – Test Results

Test Parameter	Result
Gold precipitation from chloride solution	>99%
Residual dissolved gold	2–6 ppm
Metallic gold purity	**97.04%**
Gold recovery from dissolved e-waste	98%
Organic solvents required	None
Ligand recyclable	Yes

Gold precipitation was observed in hydrochloric acid, aqua regia systems, highlighting the broad applicability of the chemistry across a variety of leach conditions. Following precipitation and reduction using sodium metabisulphite, metallic gold produced from the process assayed 97.04% purity, demonstrating successful conversion from dissolved gold to metallic form.

Figure 1 – Test work program at partner Edinburgh University



EXCEPTIONAL METAL SELECTIVITY

One of the most important outcomes from the testing program was the outstanding selectivity exhibited by the diamide reagent. Under 2 M hydrochloric acid conditions, gold was recovered almost quantitatively while aluminium, copper, nickel, zinc, palladium, iron, tin and platinum remained largely in solution. This allows gold to be recovered ahead of lower-value metals, reducing downstream purification requirements.

Table 2 – Metal Selectivity

Metal	Recovery at 2M HCl	Recovery at 6M HCl
Gold	>99%	>99%
Iron	Minimal	High
Tin	Minimal	High
Platinum	Minimal	High
Copper	Negligible	Negligible
Nickel	Negligible	Negligible
Zinc	Negligible	Negligible
Palladium	Negligible	Negligible

The ability to manipulate selectivity simply by changing solution acidity offers opportunities to sequentially recover multiple valuable metals from a single processing circuit, reducing reagent requirements and improving overall process economics.

IMPLICATIONS OF TEST WORK

The process utilises a proprietary diamide reagent that selectively binds dissolved gold species under acidic chloride conditions to form an insoluble precipitate. Once separated from solution, the gold is readily released by washing with deionised water, allowing both recovery of dissolved gold and regeneration of the reagent for repeated use. The precipitation mechanism differs fundamentally from traditional solvent extraction because the reagent directly captures gold within the aqueous phase. This substantially simplifies process flowsheets while reducing chemical consumption and eliminating solvent handling. The technology also demonstrates tuneable selectivity. By adjusting hydrochloric acid concentration, operators can preferentially recover gold before selectively recovering iron, tin and platinum from the same solution. Such flexibility may provide considerable commercial advantages when processing complex ores, concentrates or recycled materials.

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 IGGY TAN COMMENTED

"These outstanding results further validate the commercial potential of our GCDE technology. Achieving over 99% gold recovery and producing metallic gold at 97% purity demonstrates the effectiveness of our selective extraction process. Combined with reagent recyclability and the elimination of organic solvents, GCDE has the potential to provide a more sustainable and cost-effective alternative for recovering gold from both mining and electronic waste. We look forward to advancing the technology towards pilot-scale development and commercialisation."

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

Lithium Universe Interactive Investor Hub

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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 CEO 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.