Lithium Universe LIMITED
Building a Lithium Future

ASX ANNOUNCEMENT AND MEDIA RELEASE

27 August 2026

LU7 SUCCESSFULLY RECOVERS CRITICAL METALS GALLIUM AND PLATINUM FROM E-WASTE

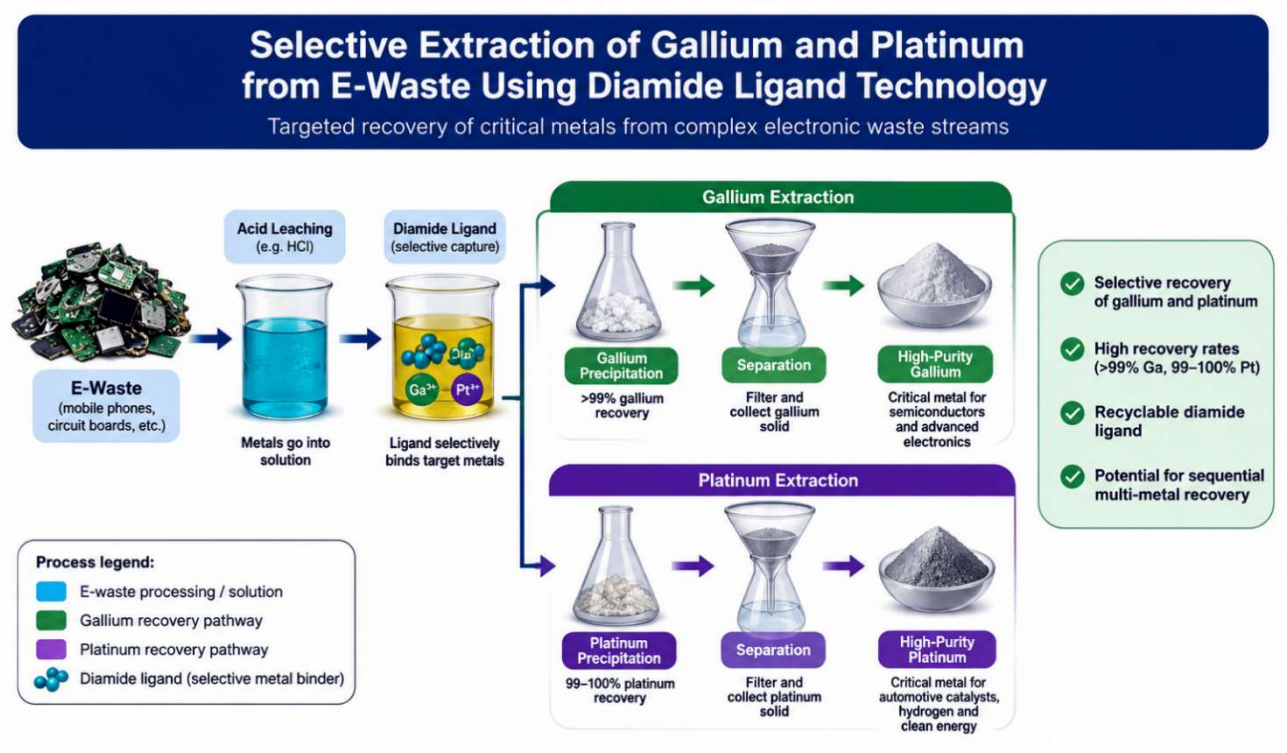
Highlights

- Edinburgh University test work successfully targets gallium and platinum recovery
- Diamide ligand successfully extracts and precipitates gallium
- Gallium recovery exceeds 99% under laboratory conditions
- Diamide ligand successfully precipitates platinum
- Process conditions can target different critical metals
- Recyclable ligand offers potential for sequential metal recovery
- Gallium is critical to semiconductors and advanced electronics
- Gallium global market of US$1 billion annually
- Electronic chips contain approximately 0.9–1.3 mg of gallium
- E-waste fractions can contain up to 35% gallium and valued at approximately US$237/kg
- Platinum recovery reaches approximately 99-100% under laboratory conditions
- Platinum is a high-value critical metal with a global market worth US$9 billion annually
- Mobile-phone circuit boards contain approximately 14 g/t of platinum
- Some circuit boards contain up to 40 g/t platinum and are valued at approximately US$1,780/oz

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is pleased to announce encouraging laboratory results demonstrating that the Company's licensed tertiary diamide ligand technology can successfully extract and precipitate the critical metals gallium and platinum. LU7's partner, University of Edinburgh's test work has demonstrated **greater than 99% gallium recovery** and **near-complete platinum recovery under specific laboratory conditions**, significantly expanding the potential application of the technology beyond its original focus on gold and copper recovery.

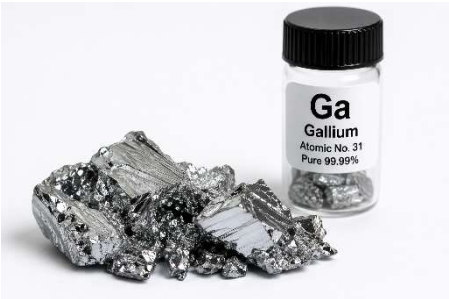
The Company has completed further laboratory test work investigating how process conditions can be tuned to selectively recover gallium, platinum and potentially other high-value metals from e-waste. The results provide

an encouraging foundation for expanding the diamide technology into a broader **critical-metals recovery platform**, although further laboratory development, scale-up and commercial evaluation will be required.



GALLIUM

Gallium is a **critical metal essential to advanced semiconductors and modern electronics**, with applications across integrated circuits, LEDs, telecommunications, power electronics, aerospace and defence. The global gallium market is estimated at approximately **US$1 billion annually**, with gallium currently valued at around **US$237/kg**. Although individual electronic chips may contain only approximately **0.9–1.3 mg of gallium**, research has demonstrated that concentrated e-waste fractions can contain **up to 35% gallium**, highlighting the potential value of selectively recovering this critical metal from discarded electronics.



Gallium compounds such as gallium arsenide and gallium nitride are used in semiconductors, integrated circuits, LEDs, laser diodes, power electronics, radio-frequency electronics, telecommunications equipment, satellites, advanced computers and defence applications. Gallium is also used in some photovoltaic technologies. The United States includes gallium on its 2025 Critical Minerals List, reflecting its economic and strategic importance and the vulnerability of its supply chain.

PLATINUM

Platinum is a **high-value critical metal** used in catalysts, electronics, chemical and petroleum processing, medical applications and emerging hydrogen technologies, with the global platinum market valued at approximately **US$9 billion annually**. Platinum is currently valued at around **US$1,780/oz** and can occur at commercially interesting concentrations in selected e-waste streams. Published studies report approximately **14 g/t platinum in discarded mobile-phone circuit boards**, with some circuit boards reported to contain **up to 40 g/t**. Importantly, laboratory testing of the diamide technology has demonstrated **approximately 99–100% recovery of platinum under specific conditions**, supporting further investigation of platinum as a potential additional product from e-waste.

Platinum is a high-value critical metal with important applications across automotive catalysts, chemical and petroleum refining, aerospace, electronics, medical devices and advanced manufacturing. It is also becoming increasingly important to the hydrogen economy, where platinum is used as a catalyst in fuel cells and electrolyser technologies. Recognising its strategic importance, platinum is included on the United States 2025 Critical Minerals List. Global supply is highly concentrated, with South Africa dominating world platinum mine capacity, creating potential supply-chain vulnerabilities. This combination of high value, growing strategic applications and concentrated primary supply increases the importance of developing alternative sources of platinum through recycling and recovery from secondary materials such as e-waste.

BACKGROUND – UNIVERSITY OF EDINBURGH TECHNOLOGY GCDE LICENCE

Lithium Universe acquired an exclusive worldwide licence from the University of Edinburgh to commercialise its innovative Gold and Copper Diamide Extraction (GCDE) technology, developed by researchers led by Professor Jason Love and Professor Carole Morrison. The technology uses a simple, recyclable tertiary diamide ligand to selectively recover valuable metals from complex acidic solutions, including those generated from electronic waste. The original research focused primarily on gold recovery, demonstrating that the diamide could selectively precipitate gold from solutions containing numerous competing metals. Laboratory testing achieved greater than 99% gold recovery, while subsequent processing produced metallic gold with 97.04% purity. Importantly, the ligand can be recovered and reused, potentially reducing reagent consumption and simplifying the recovery process. The broader **GCDE process also incorporates copper recovery following the gold separation stage**, providing a pathway to recover another major source of value from e-waste. The process is designed so that gold is selectively removed first, followed by a separate copper recovery stage, creating the basis for sequential recovery of metals rather than treating the remaining solution as waste.

CHEMISTRY AND TEST WORK

University of Edinburgh research demonstrated that the underlying diamide chemistry is **tuneable**. By altering conditions such as hydrochloric acid concentration, ligand dosage and the chemical form of the metals, the diamide can also precipitate other valuable metals, including **gallium and platinum**. This provides LU7 with the

opportunity to expand GCDE beyond **gold and copper recovery** into a broader **multi-metal recovery platform targeting gold, gallium, platinum and copper from e-waste**.

GALLIUM AND PLATINUM TEST WORK PROCEDURE

The University of Edinburgh laboratory test work investigated whether the tertiary diamide ligand could capture and separate gallium and platinum from acidic metal solutions. The research builds on earlier work demonstrating that the same ligand can selectively recover gold from complex solutions containing many competing metals.

The process begins by dissolving metals from e-waste into a hydrochloric acid solution. In this acidic environment, the metals combine with chloride to form different metal-chloride complexes. Each of these complexes has a different shape, size and chemical character. This is important because the diamide does not simply capture every metal in the solution. Instead, it has a stronger attraction to particular metal-chloride structures. An easy way to picture this is to imagine a box containing different-shaped keys. The diamide is not simply grabbing anything made of metal; it is recognising the shape and chemical characteristics of a particular "key". Figure 1 and 2, illustrates the platinum complex captured within the diamide structure.

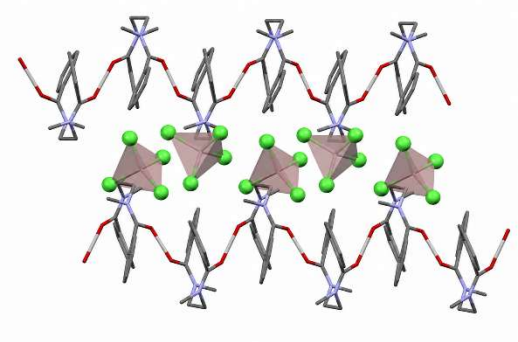


Figure 1 – Gallium Diamide Ligand Complex

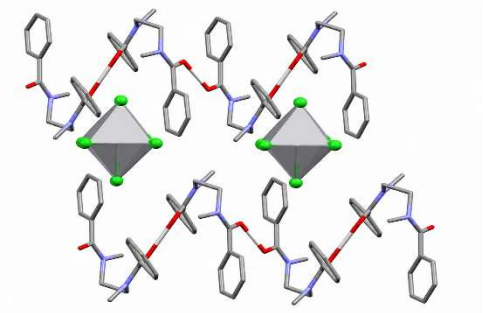


Figure 2 – Platinum Diamide Ligand Complex

The diamide ligand is added to the metal-containing solution under carefully controlled laboratory conditions. Researchers found that changing variables such as hydrochloric acid concentration, temperature and the amount of ligand can change which metals are preferentially captured. This ability to alter the chemistry is particularly important. University of Edinburgh research found that at around 2 M hydrochloric acid, the diamide strongly favours gold. When the acid concentration was increased to around 6 M hydrochloric acid, together with excess ligand, the range of metals capable of precipitating broadened.

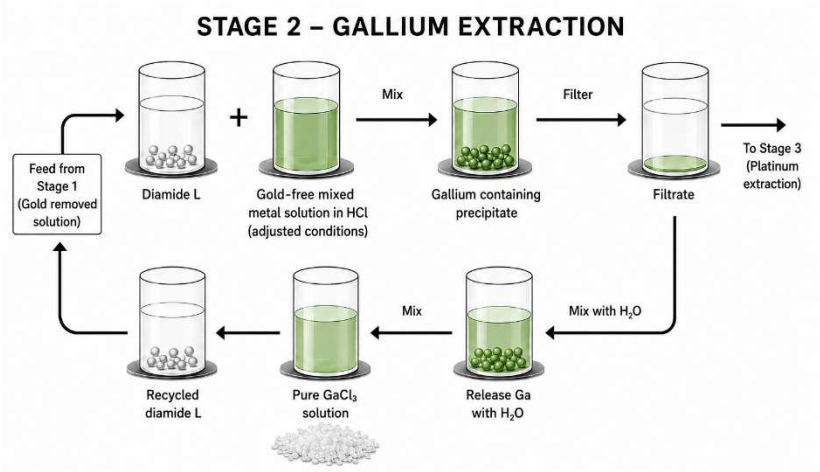


Figure 3 – Process steps fior Gallium extraction and recovery

Under these stronger acidic conditions, the diamide achieved greater than 99% precipitation of gallium. Platinum behaves somewhat differently because its chemical form, known as its oxidation state, is important. When platinum was present as Pt(IV), the diamide successfully captured it, with complete Pt(IV) uptake achieved under selected laboratory conditions. Platinum present as Pt(II) behaved differently, further demonstrating how changing the chemistry can alter which metals are captured.

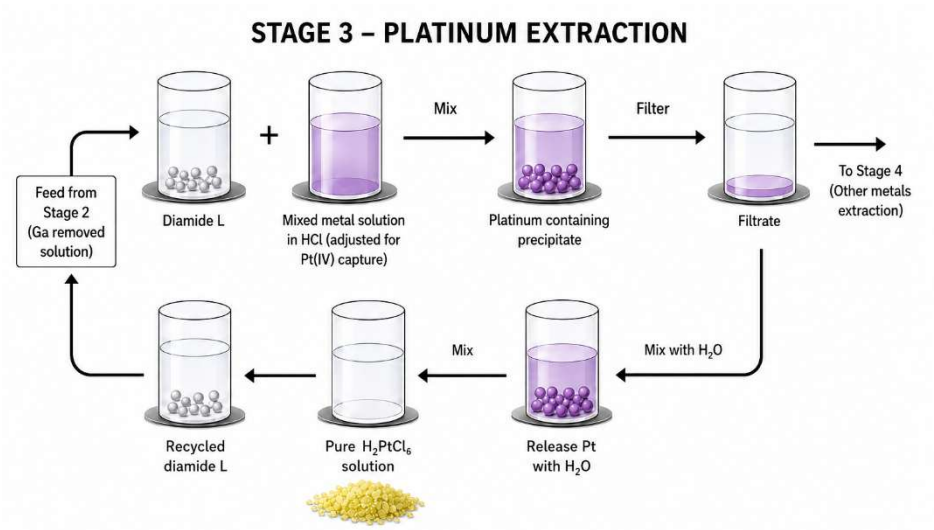


Figure 4 – Process steps fior Platinum extraction and recovery

Once the target metal is captured, the diamide and metal form a solid precipitate, which drops out of the liquid and can then be separated by filtration. Detailed X-ray crystallography was used to examine the resulting solids and confirm that the target metals had been incorporated into the diamide structures.

RECOVERIES

University of Edinburgh laboratory test work has demonstrated outstanding recovery performance using the diamide technology, achieving greater than 99% gold recovery, greater than 99% gallium precipitation and near-complete to complete Pt(IV) uptake under selected laboratory conditions. These results demonstrate the potential versatility of the diamide chemistry to selectively target multiple high-value metals by adjusting process conditions.

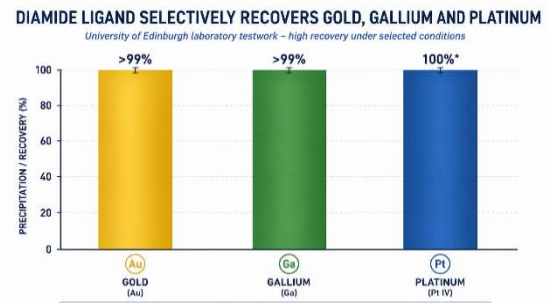


Figure 5 – Laboratory Recoveries achieved for Gold, Gallium, and Platinum

Importantly, this demonstrates that the diamide chemistry is tuneable and creates the potential for a staged multi-metal recovery process. Gold could potentially be recovered first under gold-selective conditions. The remaining solution could then be adjusted to different conditions to target gallium, platinum and potentially other valuable metals.

The work remains at the laboratory stage, and further test work, process development and scale-up would be required to determine whether this chemistry can ultimately form part of a commercially viable e-waste recovery process.

CHIEF EXECUTIVE OFFICER COMMENT

Lithium Universe Chief Executive Officer, Iggy Tan, said: "*The original attraction of this technology was its ability to selectively pull gold out of a very complicated mixture of metals. What is becoming increasingly interesting is that the same ligand may be capable of doing much more. In simple terms, we can potentially change the chemistry and change what the ligand catches. Under one set of conditions, it strongly prefers gold. Under stronger acidic conditions, our research shows it can also precipitate gallium and platinum. With platinum, even the chemical form of the metal makes a difference, which gives us another variable that may be used to improve selectivity.*

Gallium is particularly exciting because it sits at the heart of modern electronics. It is used in semiconductors, LEDs, high-frequency communications, power electronics and defence applications, yet it is difficult to recover because only small quantities are spread through individual electronic components. Platinum is also a highly valuable critical metal with important uses across catalysts, refining, electronics and the emerging hydrogen industry.

The opportunity we are now investigating is whether the diamide can become a broader critical-metals recovery

platform. Rather than recovering gold and leaving the remaining value behind, could we recover the gold first, adjust the solution, then selectively recover gallium, platinum or potentially other valuable metals from the same feed? The significance of the latest work for Lithium Universe is that the chemistry is tuneable. The reagent does not necessarily have to remain a gold-only reagent. By changing the conditions around it, researchers may be able to change which metal the ligand prefers to capture."

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

TECHNICAL AND MARKET REFERENCES

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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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For Information:

Iggy Tan
CEO
Lithium Universe Limited
Email: info@lithiumuniverse.com

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.