Lithium Universe LIMITED
Building a Lithium Future

ASX ANNOUNCEMENT AND MEDIA RELEASE

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HIGHEST PURITY OF SILVER (99.88%) ACHIEVED WITH BREAKTHROUGH CRYSTALLINE STRUCTURE

Highlights

- Achieved approaching commercial 3N silver purity (99.88%)
- Single-step electrochemical silver recovery demonstrated
- Advanced crystalline structure control achieved in recycling
- Nanostructured silver with uniform ~75 nm grain size
- Preferential (111) crystal growth confirmed by XRD
- Superior conductivity at lower material loadings
- Engineered silver suited to premium electronics applications
- High recovery efficiency with low energy consumption
- Eliminates acid leaching and thermal processing
- Positions JESE as a scalable, low-impact recycling technology

Lithium Universe Limited ("Lithium Universe" or "the Company") is pleased to report a significant scientific and technological milestone achieved through its collaborative development of Jet Electrochemical Silver Extraction (JESE) technology. The Company has successfully demonstrated the recovery of exceptionally **high-purity silver**, approaching **commercial 3N grade (99.88%),** using a dynamically controlled electrochemical process. Beyond purity, the work has delivered an unprecedented level of control over silver crystal formation in a recycling environment. This structural control enhances material performance and materially increases the commercial value of the recovered silver, marking an important step forward for photovoltaic (PV) recycling and critical-metal recovery.

Under the JESE process, silver dissolved from end-of-life silicon solar cells is recovered through a reverse-electrodeposition mechanism in which the reaction interface is continuously renewed by high-velocity electrolyte flow. This constantly refreshed electrochemical environment maintains a steady supply of Ag^+ ions, limits competing side reactions, and removes deposition by-products as they form. The result is a far more efficient

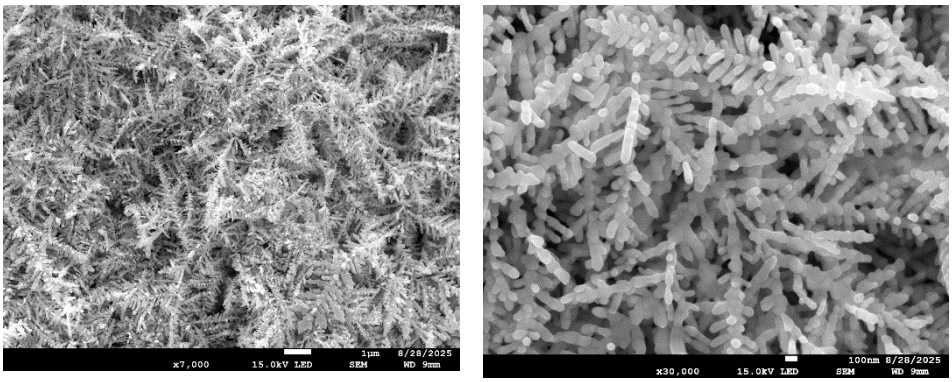
operating regime than conventional static jet or electrolytic bath systems, enabling fast, stable, and mass-transport-optimised formation of high-purity, nanostructured silver.

Test work has shown that silver recovered using JESE consistently achieves **measured purities of 99.88%,** exceeding the results obtained from both static jet and traditional bath-based processes. This level of purity approaches that of commercially traded 3N silver used in electronics, optical coatings, and catalytic applications. Importantly, JESE achieves near-commercial-grade metal in a single electrochemical step, avoiding the multiple downstream refining stages typical of conventional hydrometallurgical routes. This materially reduces process complexity, operating cost, and environmental impact while enhancing the overall economics of silver recycling.

CRYSTALLINE STRUCTURE

Beyond purity, JESE has demonstrated a high level of control over the crystalline structure of the recovered silver, a key factor in determining performance across industrial and electronic applications. X-ray diffraction (XRD) analysis shows that the process promotes preferential growth along the close-packed (111) crystallographic plane. This behaviour differs markedly from static jet systems, which tend to produce mixed and inconsistent morphologies, and from conventional electrolytic bath processes, where diffusion-limited conditions favour the growth of large, isotropic single crystals.

Silver produced using JESE forms a **dense, uniform nanodendritic structure** with an average grain size of approximately 75 nm. These fine, high-aspect-ratio dendrites create a **well-connected conductive network, supporting high electrical conductivity and lower percolation thresholds** when used in polymer composites, conductive inks, or flexible electronic components. By contrast, static jet processes generate coarser and less uniform structures, while bath-based systems produce much larger single crystals (averaging around 240 nm) that, despite their crystallinity, form poorer conductive networks and require significantly higher material loadings to achieve comparable performance.



Photos: Scanning Electron Microscope (SEM) showing dense, uniform nanodendritic structure of deposited Silver

This structural advantage is particularly relevant for emerging applications such as flexible and transparent electrodes, soft robotics, advanced sensors, and thermal or optical coatings. Nanostructured silver produced by JESE shows improved adhesion, more uniform dispersion, and the ability to deliver conductivity at substantially lower loadings. As a result, JESE-derived silver can be positioned as **a higher-value engineered material** rather than a simple recovered metal.

Differences in crystal structure also translate into distinct optical properties. The nanoscale, dendritic geometry of JESE silver exhibits selective absorption in the blue-green region of the spectrum and supports strong plasmonic effects, making it well suited to **photocatalysts, plasmonic sensors, and specialised high-absorption coatings**. In contrast, the larger single crystals produced by conventional bath processes behave more like bulk silver, with broad reflectivity better suited to mirror and reflective-surface applications. The JESE process therefore allows recovered silver to be tailored for specific end uses, opening access to multiple premium markets.

ENERGY EFFICIENCY

Energy efficiency is another clear point of difference for JESE. Test results show **current efficiency reaching 79.6% within the first three minutes** of deposition, with overall silver recovery of 92.6% achieved over the same period. In comparison, static jet systems show a strong initial response but quickly lose efficiency as reaction by-products build up and hydrogen evolution becomes dominant. Conventional electrolytic bath processes operate at much lower current densities due to mass-transport constraints, leading to slower reaction rates, lower purity outcomes, and higher overall energy consumption.

JESE also avoids many of the drawbacks associated with traditional hydrometallurgical leaching routes, which typically rely on concentrated nitric acid, extended residence times, and multiple downstream refining steps. The JESE platform operates under mild conditions, requires no thermal input, and eliminates the need for chemical purification stages. These characteristics make the process well suited to industrial scale-up while significantly reducing both operating costs and environmental impact.

Lithium Universe Chairman, Iggy Tan, said: "*This result goes well beyond simply producing high-purity silver. It shows that recycling can deliver materials with controlled structure and performance, not just recovered metal. Achieving near-commercial purity while controlling crystal growth represents a genuine step forward in both the technical and economic value of secondary metals. JESE allows us to convert waste streams into engineered, high-value materials suitable for modern electronics and advanced manufacturing, positioning Lithium Universe at the forefront of sustainable materials development.*"

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 resources 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 to record highs above US $50 per ounce, 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 building 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 Brownsville, Texas, complementing its 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.