Lithium Universe LIMITED
Building a Lithium Future

ASX ANNOUNCEMENT AND MEDIA RELEASE

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SILVER EXTRACTION PV RECYCLING - DELAMINATION TESTWORK

Highlights

- Advancing solar panel recycling through microwave delamination technology
- Combining MJHT and JESE for silver recovery
- Uniform microwave heating eliminates localised panel overheating
- Optimised temperature profiles for efficient EVA softening
- Developed scalable microwave energy distribution system
- COMSOL modelling confirms highly uniform electric fields
- Preserves silicon cells and silver-bearing contacts
- Supports future pilot-scale SEPR commercial development

Lithium Universe Limited (ASX: LU7) ("Lithium Universe" or "the Company") is pleased to provide an update on technical development activities associated with its Silver Extraction PV Recycling (SEPR) project, with current work focused on understanding the delamination mechanisms that enable efficient separation of photovoltaic solar panel components. The latest work has focused on achieving more efficient and uniform distribution of microwave energy within the oven and across the solar panel, thereby preventing localised overheating. Temperature profiles were also measured and analysed to determine the optimal heating conditions required for effective panel delamination.

The Company's recycling strategy combines Microwave Joule Heating Technology (MJHT), developed at Macquarie University, with the Company's Jet Electrochemical Silver Extraction (JESE) technology. The objective is to recover valuable silver and other materials from end-of-life solar panels using a low-energy, environmentally sustainable process.

Current testwork is examining the fundamental mechanisms responsible for delamination of solar panels. Conventional recycling methods typically rely on mechanical crushing, thermal furnaces, or aggressive chemical treatments to separate panel layers. These approaches often damage valuable materials, increase energy consumption, and generate significant waste streams. In contrast, the MJHT process selectively heats the

photovoltaic cell structure using microwave energy. This targeted heating softens and weakens the ethylene vinyl acetate (EVA) encapsulant that bonds together the glass, silicon wafer, and metallic conductors within the panel. As the adhesive bond strength decreases, the individual layers can be separated with minimal damage to the underlying materials.

A scalable microwave oven distribution system was developed to achieve uniform electric field intensity and consistent heat distribution across the entire solar panel surface during the delamination process. The design incorporates a specially engineered microwave distributor (mode stirrer/waveguide distributor) that evenly disperses microwave energy throughout the cavity, minimising the formation of hot spots and areas of insufficient heating. Numerous electromagnetic simulations were completed using COMSOL Multiphysics to optimise the distributor geometry and validate field performance. The simulation results demonstrated a highly uniform electric field distribution, providing improved temperature control and more consistent heating of the panel. This uniformity is critical for achieving efficient EVA softening and reliable panel delamination while reducing energy consumption and processing time.

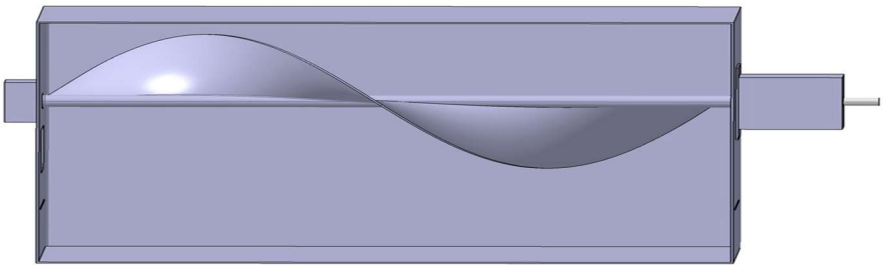

Figure 1 – Internal design microwave distributer system to provide uniform heating of panels

Temperature Profile Research

The current research program is focused on developing a detailed understanding of the relationship between microwave energy input, temperature distribution within photovoltaic (PV) panels, EVA encapsulant softening behaviour, and overall panel separation efficiency. Through a combination of laboratory testing, thermal analysis, and electromagnetic modelling, the research aims to identify the optimal operating conditions that maximise delamination performance while minimising energy consumption and processing time.

A key objective of the program is to ensure that the microwave-assisted delamination process preserves the integrity of the valuable materials contained within the solar panels. Particular emphasis is being placed on maintaining the structural integrity of the silicon solar cells and the silver-bearing conductive contacts, as these components represent the primary sources of value for downstream metal recovery and recycling. Minimising physical damage during separation is expected to improve recovery rates, reduce processing losses, and enhance the overall economics of the recycling process. Some of the results is shown in Table 1.

Table 1 – EVA and Back sheet Behaviour at various Microwave temperatures

Temperature (°C)	EVA Behavior	Backsheet Behavior
<100 °C	Solid	Solid
100–130 °C	Slightly soft	Slightly flexible
140–160 °C	Rubber-like, softest	Flexible
180–250 °C	Starts degrading, releases acetic acid	Delaminates internally
>400 °C	Burns off (pyrolysis)	Chars

The Company intends to utilise the findings from these studies to refine process parameters, optimise equipment design, and improve material recovery efficiencies across the entire recycling flowsheet. The results will also provide critical engineering data for the design and operation of future pilot-scale facilities and support the commercial development of the Silver Extraction PV Recycling (SEPR) project technology platform.

Chief Executive Officer, Iggy Tan, Comment:

"Understanding the delamination mechanism is a critical step in developing a commercially viable solar panel recycling process. By selectively weakening the EVA bonds and preserving the integrity of valuable components, we can create a highly efficient pathway for recovering silver and other critical materials. This work complements our Jet Electrochemical Silver Extraction technology and strengthens our vision of building a sustainable, low-carbon recycling platform for the rapidly growing volume of end-of-life solar panels worldwide."

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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 revolutionise 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, 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 intends 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 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 potential 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 future Bécancour refinery, the Texas project can be rapidly deployed to serve nearby gigafactories, aligning with U.S. policy incentives under the Inflation Reduction Act.