

ECT Signs R&D and Engineering Support Services Agreement with Metallium to Fast-Track MXenes Production

Highlights:

- ECT secures access to Metallium Ltd's (ASX:MTM) commercial Flash Joule Heating reactor facility in Texas to accelerate development of its MXenes production technology.
- ECT has today announced that it has entered into a binding agreement to acquire Xenica Materials Pty Ltd, which holds an exclusive licence from Rice University to use Rice's proprietary Flash Joule Heating (**FJH**) technology for the synthesis of Mxenes and 2D amorphous carbon.
- The engineering agreement with Metallium will give ECT access to critical production infrastructure, eliminating the substantial time and capital investment otherwise required to develop this technology independently.
- ECT and Metallium to negotiate in good faith a long-term commercial-licence agreement for ECT to use MTM's technology and reactor system.

Environmental Clean Technologies Limited (ASX: **ECT**) ("**ECT**" or "**Company**") has entered into a 12-month research & development and engineering agreement with Metallium Ltd (ASX: MTM) and its wholly owned subsidiary Flash Metals USA Inc. (**Engineering Agreement**), under which Metallium will assist ECT to progress the development of its Mxene production technology at Metallium's 'Gator Point' Facility in Chambers County, Texas. Gator Point is Metallium's first commercial FJH Technology Campus, where reactor operations have been successfully commissioned, validated and are supporting the deployment of Metallium's proprietary FJH platform for critical metal recovery.

The proposed acquisition of Xenica Materials Pty Ltd ("**Xenica**"), holder of an exclusive licence from Rice University to use Flash Joule Heating (**FJH**) for the production of Mxenes and two-dimensional amorphous carbon (refer to the ASX announcement dated 4 August 2026), together with the Engineering Agreement will provide ECT with both the exclusive commercial rights and the operating platform required to accelerate commercial development of its FJH MXenes technology.

In May 2024, Metallium obtained an exclusive licence from Rice University in Houston to use Rice's proprietary FJH method for the purposes of extracting valuable metals from waste and mineral feedstocks. Since then, Metallium has invested heavily in engineering and technology development, successfully transforming the laboratory-scale Flash Joule Heating method into a proprietary, significantly scaled-up reactor platform suitable for multiple commercial applications, supported by extensive engineering know-how and process innovations.

The Engineering Agreement recognises Metallium's significant investment in developing its proprietary reactor systems, engineering capability and Gator Point Technology Campus and will provide ECT with access to established industrial infrastructure without the time and cost required to develop an equivalent platform independently.

Under the Engineering Agreement:

- ECT will establish a working space at Metallium's Gator Point Facility and Metallium will provide research, development and engineering services together with controlled access to its proprietary reactor technology for the purposes of the agreed research and development programme to develop ECT's FJH MXenes production and PFAS remediation technologies;
- ECT will pay Metallium an upfront fee of US\$500,000, pay a quarterly operational service and facility access fee of US\$225,000 for the duration of the Term and, subject to shareholder approval, issue Metallium 20 million ECT options, each with an exercise price of \$0.18 expiring in 12 months; and
- any MXenes produced by Metallium's reactor system will be owned by ECT, and any improvements to Metallium technology and reactor system will be owned by Metallium.

The Engineering Agreement is for a term of 12 months ("**Term**"). During the Term, the parties will negotiate in good faith with a view to entering into a potential long-term collaboration and licence agreement with Metallium to (amongst other matters) utilise Metallium's technology and reactor systems.

Speaking on this update, Executive Chairman Faldi Ismail said: *"This agreement with Metallium allows us to fast-track our MXenes strategy on established operating infrastructure. Partnering with an operator that has successfully developed and scaled a proprietary Flash Joule Heating reactor platform, allows us to materially de-risk the validation of FJH for MXenes production, while staying true to ECT's capital-light model. This gives us immediate access to Metallium's established FJH reactor infrastructure and engineering capability and bypasses the time, capital and execution risk that designing, building and commissioning our own reactor would otherwise demand."*

Metallium Managing Director & CEO Michael Walshe commented: *"We are pleased to support ECT in advancing the commercial development of its MXene technology using Metallium's proprietary Flash Joule Heating platform. Since licensing the technology from Rice University, Metallium has invested significantly in engineering and commercialisation, transforming the original laboratory-scale process into a proprietary, significantly scaled-up reactor platform capable of supporting multiple commercial applications."*

"MXenes represent one of the most exciting emerging advanced materials, with potential applications across defence, advanced electronics, next-generation batteries, sensors and water treatment. Conventional production methods remain slow, hazardous and difficult to scale, and we believe our proprietary Flash Joule Heating platform has the potential to provide a step-change in manufacturing efficiency and scalability. We look forward to working closely with ECT as it progresses its programme."



Image 1: Metallium Flash Joule Heating Reactor (test unit)

MXenes

ECT recently announced a binding agreement to acquire 100% of Xenica, which, through its wholly owned subsidiary, holds an exclusive licence from William Marsh Rice University to commercialise FJH technology for the production of MXenes and two-dimensional amorphous carbon. Together with the Engineering Agreement, ECT will have both the exclusive commercial rights and direct access to Metallium's established FJH reactor platform and engineering capability, accelerating its path to MXenes production.

MXenes are a distinct, high-performance class of advanced material with potential uses across electromagnetic shielding such as radar and infrared-absorbing materials, advanced sensing, high-performance batteries, water treatment and next-generation electronics. For over a decade, that potential has gone largely unrealised with the industry's reliance on hazardous, slow, and costly hydrofluoric acid-based etching confining production to small-scales. FJH replaces that chemical etching with a rapid, lower-waste electrical process, with the potential to materially reduce the cost and time of production and has the potential to unlock economically scalable production, a capability ECT can now begin to prove utilising Metallium's facility.

Encouragingly, initial test work on the reactor has shown promise, with 250g of MXenes produced in 30-90 minutes (versus <100g over 2-3 days for conventional methods). ECT believes the existing reactor design provides a pathway for larger-scale production, subject to ongoing development and validation.

About Metallium Ltd

Metallium is pioneering a low-carbon, high-efficiency approach to recovering critical and precious metals from mineral concentrates and high-grade waste streams. The company's Flash Joule Heating (FJH) technology, acquired from Rice University, enables the extraction of high-value materials, including gallium, germanium, antimony, rare earth elements, and gold, from feedstocks such as refinery scrap, e-waste, and monazite.

Metallium's first commercial facility, the Gator Point Technology Campus, is located in Chambers County, Texas, and is operated through its wholly owned subsidiary, Flash Metals USA, Inc. The company has advanced steadily toward commercial scale, having completed a 12-hour continuous single-reactor campaign in May 2026 and subsequently successfully operated three Flash Joule Heating units concurrently, achieving 83% availability and approximately 100% utilization during active operation.

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