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# ASX RELEASE

13 August 2024

# ADDITION OF CHOLORINATION ENHANCEMENT TO FLASH JOULE HEATING LICENCE.

## Highlights:

- **Chlorination enhancement to FJH Technology:** MTM secures an addition to its exclusive worldwide licence to include Flash Joule Heating (FJH) in a chlorinated or carbon-chlorinated atmosphere, representing the cutting edge of metal recovery technology.
- **Ease of processing:** The addition of chlorination and carbo-chlorination capabilities to the FJH process significantly enhances the efficiency, selectivity, and sustainability of metal recovery
- **Sustainability Focus**: The chlorination process reduces the need for extensive hydrometallurgical treatment and lowers reagent consumption, leading to fewer environmental impacts.
- **Large Market Potential:** With the growing markets for lithium-ion battery recycling and e-waste processing, MTM is well-positioned to tap into these high-growth sectors. The projected market sizes and growth rates highlight the immense commercial potential for the FJH technology

**MTM Critical Metals Limited (ASX:MTM) (MTM or the Company) has secured an additional technology to its global licence agreement with Rice University, now including FJH in a chlorinated or carbon-chlorinated atmosphere. This marks a significant milestone in the development and potential of this innovative extraction process.**

The addition of chlorination and carbo-chlorination capabilities to the FJH process significantly enhances the efficiency, selectivity, and sustainability of metal recovery from industrial residues, e-waste and ores. This technological advancement not only positions MTM at the forefront of the critical metals sector but also taps into high-growth markets, potentially enabling substantial cost savings and environmental benefits, and setting the stage for MTM to become a market leader in sustainable resource management. Details of the acquisition are provided at Appendix 1.

**MTM Chairman, John Hannaford, stated,** "*This amendment to include chlorination and carbo-chlorination in our FJH technology is a game-changer. It not only enhances the efficiency and selectivity of our metal recovery processes but also positions us at the forefront of sustainable and economic critical metal extraction. As the world looks to decarbonise and secure critical mineral supply chains, this technology offers a transformative solution.*"

**MTM CEO, Michael Walshe added** *"This development enables MTM to potentially extract critical metals at significantly lower temperatures and also extract metals under different chemical compositions, which will open up many new opportunities, particularly in relation to lithium. As we progress with testing the scalability and*

*effectiveness of the chlorination-enhanced FJH technology, we are actively engaging with industry partners, academia, and government agencies to support its development and commercial deployment."*

FJH technology, now enhanced with chlorination, has the potential to disrupt the traditional methods of metal recovery and processing by:

1. **Revolutionising Metal Recovery:** FJH technology, particularly with the new chlorination amendment, can significantly improve the efficiency and cost-effectiveness of extracting metals from complex waste streams. This capability is crucial as industries and governments worldwide push for more sustainable and responsible resource management.
2. **Sustainability Focus**: The chlorination process reduces the need for extensive hydrometallurgical treatment and lowers reagent consumption, leading to fewer environmental impacts. It also enables lower energy consumption through the FJH process.
3. **Economic Viability:** The enhanced FJH technology can potentially reduce operational costs by simplifying the extraction process and improving metal recovery rates.
4. **Strategic Partnerships and Support:** MTM's ongoing collaborations with Rice University and KnightHawk Engineering provide robust technical support and validation. These partnerships ensure that the technology development is backed by cutting-edge research and engineering expertise.
5. **Market Leadership Potential:** By adopting and commercialising this disruptive technology, MTM has the opportunity to become a market leader in the critical metals extraction industry. This can attract additional investment, strategic partnerships, and market recognition.
6. **Scalability and Flexibility:** The FJH technology's ability to process various feedstocks, including industrial residues, e-waste, and ores, makes it a versatile solution. Its scalability potential further enhances its attractiveness for large-scale industrial applications.
7. **Positive Environmental Impact:** The technology not only reduces the carbon footprint of metal extraction processes but also helps in mitigating the environmental hazards associated with waste disposal. This dual benefit of economic gain and environmental stewardship makes MTM a compelling choice for investors focused on sustainable investments.

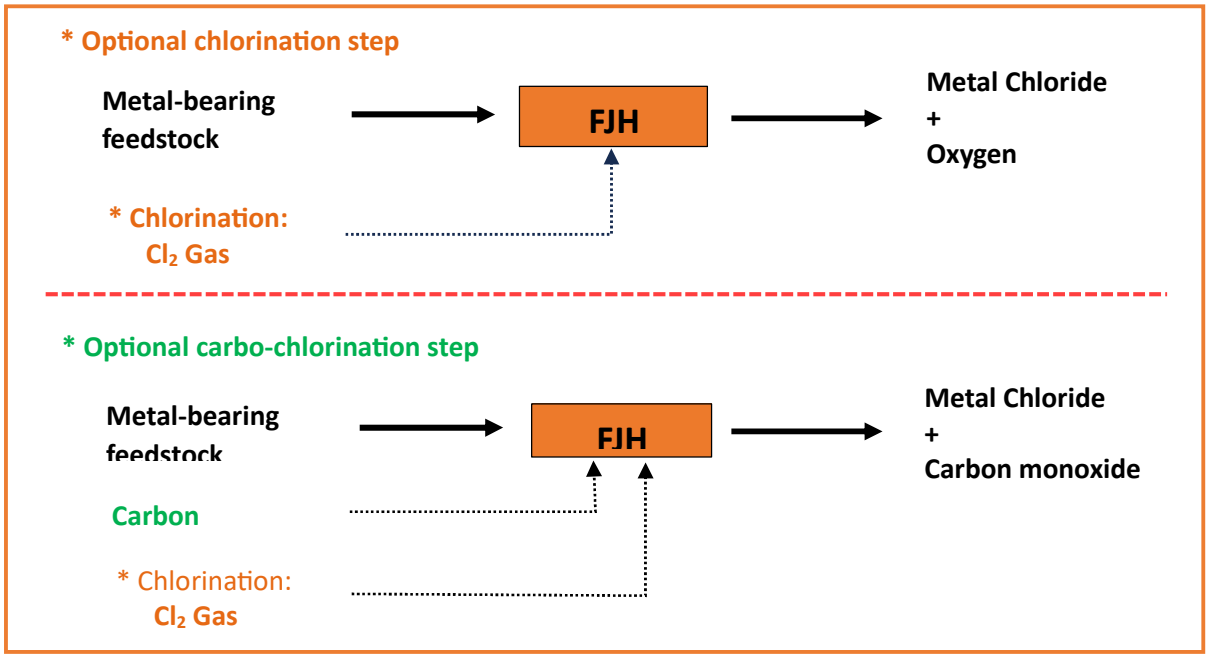


**Figure 1: Schematic summary of the chlorination & carbo-chlorination FJH processes**

**Case Studies and Applications from Rice University:**

- **Transparent Conductive Films (TCFs)**: Successful chlorination & evaporation of indium oxide from TCFs;
- **LED Production Waste**: Selective recovery of gallium chloride ($GaCl_3$) from simulated waste;
- **Tantalum Capacitor Waste (TCW)**: Selective recovery of tantalum (Ta) through carbo-chlorination.

**Commercial and Environmental Impact:** The enhanced FJH technology has the potential to significantly lower operational costs, reduce environmental impact, and enable the recovery of valuable metals from waste streams and ores. This aligns with MTM's commitment to sustainability and economic viability in the critical metals sector.

**Next Steps:** The Company will continue its test work to demonstrate the scalability and effectiveness of the chlorination-enhanced FJH technology. Discussions with industry partners, academia and government agencies are ongoing to support the development and commercial deployment of this revolutionary technology.

**This announcement has been authorised for release by the Board of Directors.**

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## About MTM Critical Metals Limited

MTM Critical Metals Limited is an exploration company which is focused on searching for niobium (Nb) and rare earth elements (REE) in Western Australia and Québec. Additionally, the Company has acquired the licencing rights to an early-stage processing technology for REE and precious metals known as Flash Joule Heating, which has been developed by researchers at Rice University, USA. MTM's West Arunta Nb-REE licences lie within one of Australia's critical metal exploration hotspots where over $60m in exploration expenditure has been collectively invested in the district by a number of ASX companies including WA1 Resources Limited (ASX:WA1), Encounter Resources Limited (ASX:ENR), Rio Tinto Limited (JV with Tali Resources Pty Ltd) (ASX:RIO), CGN Resources Limited (ASX:CGR), and IGO Limited (ASX:IGO). The Company also holds tenements in other prolific and highly prospective mineral regions in Western Australia. The Mukinbudin Nb-REE Project comprises two exploration licences located 250km northeast of Perth in the South West Mineral Field of Western Australia. The East Laverton Projects is made up of a regionally extensive package of underexplored tenements prospective for REE, gold and base metals. The Mt Monger Gold Project comprises an area containing known gold deposits and occurrences in the Mt Monger area, located ~70km SE of Kalgoorlie and immediately adjacent to the Randalls gold mill operated by Silver Lake Resources Limited. In Québec, the Pomme Project is a known carbonatite intrusion that is enriched in REE and niobium and is considered to be an extremely prospective exploration target adjacent to a world class REE resource (Montviel deposit). The Company has an experienced Board and management team which is focused on discovery to increase value for shareholders.

## About KnightHawk Engineering

KnightHawk was founded in 1991 and specializes in identifying high technology solutions in a short timeframe. They have executed projects throughout the United States, Europe, and Asia. Their clients range from individual entrepreneurs to the large industrial organisations such as Shell, Exxon Mobil, Chevron and NASA. They have a depth of experience and expertise and are leaders in design, failure analysis and troubleshooting across a range of engineering disciplines. KnightHawk was selected for its expertise across a wide range of disciplines and their focus on ensuring outcomes in a timely manner.

## Previous Disclosure

The information in this announcement is based on the following MTM Critical Metals Limited ASX announcements, which are all available from the MTM Critical Metals Limited website and the ASX website.

| Date | Description |
|---|---|
| 13/03/2024 | MTM formally exercises its option for global licence agreement over Flash Joule Heating |
| 31/05/2024 | Global license agreement secured for Flas Joule Heating technology with Rice University |

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original ASX announcements and that all material assumptions and technical parameters underpinning the relevant ASX announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are represented have not been materially modified from the original ASX announcements.

## Cautionary Statement Regarding Values & Forward-Looking Information

The figures, valuations, forecasts, estimates, opinions and projections contained herein involve elements of subjective judgment and analysis and assumption. MTM Critical Metals does not accept any liability in relation to any such matters, or to inform the Recipient of any matter arising or coming to the company's notice after the date of this document which may affect any matter referred to herein. Any opinions expressed in this material are subject to change without notice, including as a result of using different assumptions and criteria. This document may contain forward-looking statements. Forward-looking statements are often, but not always, identified by the use of words such as "seek", "anticipate", "believe", "plan", "expect", and "intend" and statements than an event or result "may", "will", "should", "could", or "might" occur or be achieved and other similar expressions. Forward-looking information is subject to business, legal and economic risks and uncertainties and other factors that could cause actual results to differ materially from those contained in forward-looking statements. Such factors include, among other things, risks relating to property interests, the global economic climate, commodity prices, sovereign and legal risks, and environmental risks. Forward-looking statements are based upon estimates and opinions at the date the statements are made. MTM Critical Metals undertakes no obligation to update these forward-looking statements for events or circumstances that occur subsequent to such dates or to update or keep current any of the information contained herein. The Recipient should not place undue reliance upon forward-looking statements. Any estimates or projections as to events that may occur in the future (including projections of revenue, expense, net income and performance) are based upon the best judgment of MTM Critical Metals from information available as of the date of this document. There is no guarantee that any of these estimates or projections will be achieved. Actual results will vary from the projections and such variations may be material. Nothing contained herein is, or shall be relied upon as, a promise or representation as to the past or future. MTM Critical Metals, its affiliates, directors, employees and/or agents expressly disclaim any and all liability relating or resulting from the use of all or any part of this document or any of the information contained herein.

**APPENDIX 1: TERMS OF LICENCE AMENDMENT (CHLORINATION AND CARBO-CHLORINATION)**

**Consideration:**
MTM to issue Rice University -

1. 625,000 MTM shares; and
2. 250,000 additional options (Exercise price A$0.20, Expiry date 7 August 2029).

MTM will be responsible for patent expense reimbursement and an extension of the other commercial terms of the current license.