Ucore Upscales its REE Demo Plant Capabilities and Streamlines the RapidSX Commercial Deployment Plan

written by Raj Shah | July 12, 2022

- **Ucore's enhanced Demo Plant will be able to process:**
  - **Tens of tonnes of mixed rare earth concentrates on a per annum basis.**
  - **Many feedstock sources, including planned light and heavy rare earth element feedstocks for the Strategic Metals Complexes (SMC).**
  - **All RapidSX™ splits required to produce individual praseodymium, neodymium, terbium, and dysprosium.**
- **Planned product qualification trials in Q4-2022 for prospective North American metal/alloy makers and original equipment manufacturers (OEMs).**
- **Full-scale SMC techno-economic assessment and engineering data transfer.**

July 12, 2022 (Source) – **Ucore Rare Metals Inc. (TSXV: UCU) (OTCQX: UURAF) ("Ucore"** or the **"Company")** is pleased to provide an update on the Innovation Metals Corp.[i] ("**IMC**") RapidSX™ rare earth element ("**REE**") separation technology platform and the Company's commercial Strategic Metals Complex ("**SMC**") technology deployment process (the "**Program**"). The work is taking place at the companies' laboratory partner's (**Kingston Process Metallurgy Inc.** ("**KPM**")) facility in Kingston, Ontario, Canada.

Since the Company's December 29, 2021, technology update, the Ucore, IMC, and KPM commercialization team (the "**Team**") has

continued to assess and develop the RapidSX™ technology platform at the Commercialization and Development Facility ("**CDF**"). The critical component in this process is the design and construction of the RapidSX™ REE demonstration-scale plant ("**Demo Plant**") that will reside within the 5000-square-foot CDF.

"*IMC's solvent extraction process, RapidSX™, has different components that allow us to Westernize this standard chemical process so that 'technology risk' is eliminated while in compliance with North American environmental and worker safety standards. The cellular design is scalable and allows for rapid production capacity expansion in a safe and responsible manner*," said **Dr. Boyd Davis,** a Principal of KPM.

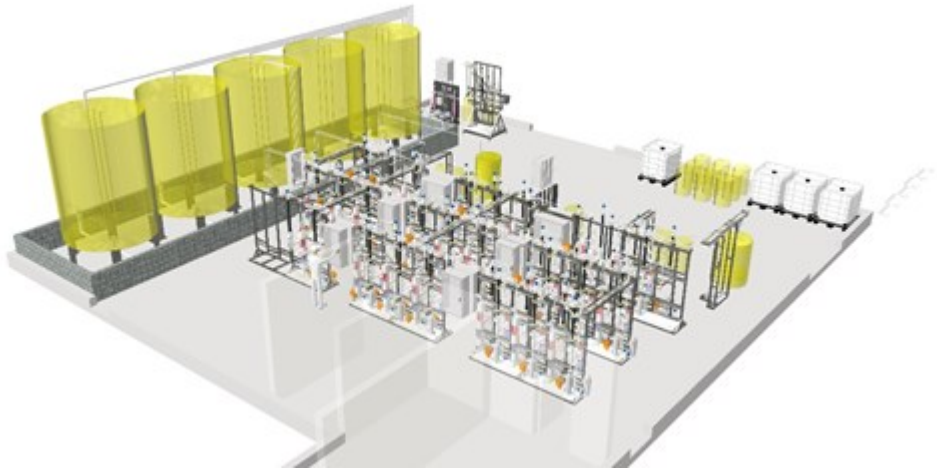

Figure 1 – Engineered Design of the Currently Under Construction 51-Stage RapidSX™ REE Demo Plant

To view an enhanced version of Figure 1, please visit: https://images.newsfilecorp.com/files/1119/130641_976b1681f419aaca_001full.jpg

Up through Q1-2022, the Team had planned, designed and ordered equipment to construct an 18-stage RapidSX™ REE Demo Plant with subsequently planned incremental expansions to meet the broader commercial objectives of the Program throughout 2022 and 2023. However, in early 2022 Ucore received very positive results from

the independent RapidSX technology evaluation, **including the conclusion that a RapidSX production plant can potentially have 2/3 a smaller footprint than a conventional solvent extraction ("SX") with the same throughput**. The Team then met with and received the buy-in from all Program stakeholders to expand the design and construction of the Demo Plant to 51-stages (as shown in Fig. 1) for the noted benefits described below. This enhanced capability allows Ucore the opportunity to achieve its broader objectives in 2022, thus, readying the Company for commercial RapidSX technology deployment on a faster track.

"Ucore is in the unique position of having access to ***one of the world's most advanced and efficient solvent extraction-based REE separation technologies****,"* stated **Mike Schrider**, P.E., Ucore's VP and COO. *"RapidSX will be at a TRL[ii] 6/7 once the Demo Plant is commissioned this fall. The logical pathway was to expand the facility now so that we are ready to make the leap to commercialization within the Strategic Metals Complexes by early next year, along with the benefit of starting product qualification trials with our growing list of potential North American customers."*

With the increase in RapidSX processing stages, the Demo Plant will be able to process:

- Many feedstock sources, including planned light and heavy REE feedstocks for the SMCs.
- Tens of tonnes of mixed rare earth concentrate on a per annum basis:
    - Including products for prospective metal/alloy makers and OEM qualifications.
- All RapidSX[iii] splits required to produce individual praseodymium (Pr), neodymium (Nd), terbium (Tb), and dysprosium (Dy).

The Team is working with Ucore's upstream SMC feedstock suppliers and is planning Demo Plant product qualification trials to commence in Q4-2022 with prospective/evolving North American metal/alloy makers and original equipment manufacturers ("**OEMs**"). **The enhanced Demo Plant will also be able to produce limited amounts of saleable Pr, Nd, Tb, and Dy oxides – a noteworthy milestone for critical materials independence in North America.** Additionally, the companies are simultaneously conducting a techno-economic assessment and engineering data transfer of all CDF activities in support of Ucore's planned RapidSX deployment in the SMCs.

As such, Ucore continues its ongoing engagement with **Mech-Chem Associates, Inc.** to develop the specific engineering requirements for all process phases of the planned SMCs in conjunction with IMC's engineering personnel. This work will continue throughout 2022 and into 2023 and is scheduled to conclude with developing a contract design package suitable to execute a design/build construction contract for SMC No. 1 with rare earth oxide production commencing in 2024.

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About Ucore Rare Metals Inc.

Ucore is focused on rare- and critical-metals resources, extraction, beneficiation, and separation technologies with the potential for production, growth, and scalability. Ucore has an effective 100% ownership stake in the Bokan-Dotson Ridge Rare Earth Element Project in Southeast Alaska, USA. Ucore's vision and plan is to become a leading advanced technology company, providing best-in-class metal separation products and services to the mining and mineral extraction industry.

Through strategic partnerships, Ucore's vision includes disrupting the People's Republic of China's control of the US

REE supply chain through the near-term development of heavy and light rare-earth processing facilities – including the Alaska Strategic Metals Complex in Southeast Alaska and the long-term development of Ucore's heavy-rare-earth-element mineral-resource property located at Bokan Mountain on Prince of Wales Island, Alaska.

Ucore is listed on the TSXV under the trading symbol "UCU" and in the United States on the OTC Markets' OTCQX® Best Market under the ticker symbol "UURAF."

For further information, please visit www.ucore.com.

About the RapidSX™ Technology

IMC developed the RapidSX separation technology with early-stage assistance from the United States Department of Defense ("**US DoD**"), later resulting in the production of commercial-grade, separated rare-earth oxides at the pilot scale. RapidSX combines the time-proven chemistry of conventional solvent extraction ("**SX**") with a new column-based platform, which significantly reduces time to completion and plant footprint, as well as potentially lowering capital and operating costs. SX is the international rare-earth-element ("**REE**") industry's standard commercial separation technology and is currently used by 100% of all REE producers worldwide for bulk commercial separation of both heavy and light REEs. Utilizing similar chemistry to conventional SX, RapidSX is not a "new" technology but represents a significant improvement on the well-established, well-understood, proven conventional SX separation technology preferred by REE producers.

Forward-Looking Statements

This press release includes certain statements that may be deemed "forward-looking statements." All statements in this

release (other than statements of historical facts) that address future business development, technological development and/or acquisition activities (including any related required financings), timelines, events, or developments that the Company is pursuing, are forward-looking statements. Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance or results, and actual results or developments may differ materially from those in forward-looking statements.

In regard to the disclosure in the "About Ucore Rare Metals Inc." section above, the Company has assumed that it will be able to procure or retain additional partners and/or suppliers, in addition to Innovation Metals Corp. ("IMC"), as suppliers for Ucore's expected future Strategic Metals Complex ("SMC"). Ucore has also assumed that sufficient external funding will be found to prepare a new National Instrument 43-101 ("NI 43-101") technical report that demonstrates that the Bokan Mountain Rare Earth Elements project ("Bokan") is feasible and economically viable for the production of both REE and co-product metals and the then prevailing market prices based upon assumed customer offtake agreements. Ucore has also assumed that sufficient external funding will be secured to continue the development of the specific engineering plans for the SMC and its construction. Factors that could cause actual results to differ materially from those in forward-looking statements include, without limitation: IMC failing to protect its intellectual property rights in RapidSX™; RapidSX™ failing to demonstrate commercial viability in large commercial-scale applications; Ucore not being able to procure additional key partners or suppliers for the SMC; Ucore not being able to raise sufficient funds to fund the specific design and construction of the SMC and/or the continued development of RapidSX; adverse capital-market

conditions; unexpected due-diligence findings; the emergence of alternative superior metallurgy and metal-separation technologies; the inability of Ucore and/or IMC to retain its key staff members; a change in the legislation in Alaska and/or in the support expressed by the Alaska Industrial Development and Export Authority ("AIDEA") regarding the development of Bokan and/or the SMC; the availability and procurement of any required interim and/or long-term financing that may be required; and general economic, market or business conditions.

Neither the TSXV nor its Regulation Services Provider (as that term is defined by the TSXV) accept responsibility for the adequacy or accuracy of this release.

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[i] Innovation Metals Corp. is a private Canadian corporation and a wholly owned Ucore subsidiary.

[ii] Originally developed by NASA, TRL stands for Technology Readiness Level and is a means to measure the maturity level of a technology throughout its research, development and deployment phase progression.

[iii] RapidSX utilizes the exact same chemistry as solvent extraction, therefore, the partition splits are the same.