

## **PHASE 1 UNIVERSITY OF QUEENSLAND RESEARCH COMMENCES ON BAYAN'S EXCLUSIVE YTTRIUM PROCESSING TECHNOLOGY**

### **Highlights**

- **Phase 1 research program commences at the University of Queensland:** A three-month Phase 1 research program has commenced at the University of Queensland ("UQ") to evaluate and optimise Bayan's exclusively licensed Yttrium Upgrade Processing Technology Patent (US10696562B2).
- **Technical validation to optimise patented processing technology:** The Phase 1 research program is designed to evaluate and refine the patented ion exchange process originally developed by the Colorado School of Mines, with the objective of defining operating parameters across representative rare earth process streams (*Refer to ASX announcement 6 July 2026*).
- **Research to assess applicability across multiple rare earth feedstocks:** Synthetic solutions with background rare earth element ("REE") matrix derived from rare-earth-rich Mary Kathleen tailings which are doped with yttrium and select heavy rare earths, will be used to investigate key yttrium-REE ion exchange resin separations, relevant to a range of upstream developers and producers.
- **Research program led by recognised hydrometallurgy experts:** The program will be led by Professor James Vaughan and UQ's Hydrometallurgy Research Group, which has extensive expertise in ion exchange, hydrometallurgy and critical minerals processing.
- **Technical data to support future pilot-scale assessment and development:** The Phase 1 research program is designed to generate the technical data required to assess future pilot-scale test work and further development opportunities for the Yttrium Upgrade Patent.

**Bayan Mining and Minerals Ltd (ASX: BMM; "BMM", "Bayan" or "the Company")** is pleased to announce the commencement of the three-month Phase 1 research program on the Company's Yttrium Upgrade Processing Technology Patent (US10696562B2) (the "Yttrium Upgrade Patent") at The University of Queensland ("UQ") (the "Phase 1 Research Program").

The Yttrium Upgrade Patent, originally developed at the Colorado School of Mines ("Mines") and now exclusively licensed to Bayan, utilises an iminodiacetic acid ("IDA")

functionalised resin in an ion-exchange process to selectively upgrade yttrium from mixed rare earth solution.



*Figure 1: Dr. Vitor Loureiro Gontijo from UQ running baseline testwork of Bayan's yttrium patent.*

**Chief Executive Officer, Nathan Kong commented:**

*"The Phase 1 Research Program marks an important step in Bayan's strategy to build upon the work started by the Colorado School of Mines. By partnering with UQ's Hydrometallurgy Research Group, we are aiming to generate the independent, high-quality technical data required to optimise the Yttrium Upgrade Patent and position the technology for pilot-scale assessment."*

*The ability to selectively upgrade yttrium and heavy rare earths from mixed rare earth streams is increasingly strategic for both commercial and defense supply chains. Through this program, we intend to better define the operating window, resin performance and feedstock compatibility of the process across Australian and international rare earth projects.*

*Success at Phase 1 Research Program equips Bayan with a compelling technology platform to engage with third-party developers and downstream users seeking improved separation solutions for yttrium and HREE.”*

### **Planned Program Progression**

As announced on 1 July 2026, the Phase 1 Research Program comprises:

1. Preparation of representative pregnant leach solution, produced from rare earth hydroxide precipitate derived from suitable rare earth feedstock such as the mine tailings at UQ’s Mary Kathleen uranium project in Queensland, adjusted to reflect yttrium and gadolinium concentrations typical of rare earth process streams from monazite and bastnäsite-sourced feeds;
2. Column loading trials comparing two IDA resin types — Amberlite IRC748I, the resin used in the Colorado School of Mines patent work, and an alternative resin from Lanxess — under conditions informed by the patented process, to evaluate resin loading behaviour and rare earth/yttrium selectivity;
3. Resin elution trials using sequential dilute and concentrated hydrochloric acid washes to assess yttrium recovery and resin regeneration performance; and
4. Analysis and reporting of results, together with planning for the subsequent phase of test work.

### **Current Laboratory Test work at UQ**

Baseline test work has commenced at UQ using Mary Kathleen REE mixed hydroxide as the initial feedstock. The resin test work removes thorium (Th) from the digested Mary Kathleen material, establishing a representative base feedstock for the broader program. These initial tests are anticipated to provide early indications of resin fouling behaviour from deleterious impurities or reduced loading capacity due to accumulation of metals throughout a series of resin loading and stripping experiments.

**Next steps**

The Phase 1 Research Program plans to systematically extend the testwork beyond the baseline feedstock:

- Synthetic test solutions are planned to emulate feedstocks from Australian and international rare earth developers and producers by adding yttrium and key HREE to the Mary Kathleen liquor.
- These solutions are designed to approximate intermediate mixed rare earth liquors expected from leaching HREE concentrates, and yttrium plus HREE solutions arising from typical solvent extraction (SX) circuits treating HREE-bearing clay, xenotime and monazite mineralogies.
- Resin loading trials are planned to be conducted on two IDA resin types to determine whether resin selection delivers a measurable improvement in process performance.
- Operating conditions consistent with the Mines patent (30 or 70 °C, 50–150 mM total rare earths, inlet pH 4, flowrate 2–5 bed volumes per hour) are planned to be tested to verify and refine the patented process parameters.

The data generated from Phase 1 Research Program will inform the design basis, scale and configuration of any subsequent pilot-scale program for the Yttrium Upgrade Patent.

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**Authorised for release by the Board of Bayan Mining and Minerals Limited**

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### About Bayan's Rare Earth Processing Technology Portfolio

Bayan hold the exclusive license to four rare earth processing technologies originally developed by the Colorado School of Mines comprising of:

- Advanced Systems and Methods for Leaching Rare Earths from Ore (bastnaesite single-stage HCI leach) (US12442059);
- Compounds, Methods, and Systems for Beneficiation of Rare Earth Elements by Flotation and Gravity concentration (US20220040707);
- Upgrade of Yttrium in a Mixed Rare Earth Stream Using Iminodiacetic Acid Functionalized Resin (US10696562B2); and
- Beneficiation of Rare Earth Elements Bearing Ancylyte (US10618058).

Bayan intends to systematically develop and commercialise these patents and technologies for Bayan's resource assets, third-party rare-earth resources and downstream applications.

### Forward-looking Statements

Certain statements included in this release constitute forward-looking information. Statements regarding BMM's plans with respect to its mineral properties and programs are forward-looking statements. There can be no assurance that BMM's plans for development of its mineral properties will proceed as currently expected. There can also be no assurance that BMM will be able to confirm the presence of additional mineral resources, that any mineralisation will prove to be economic or that a mine will successfully be developed on any of BMM's mineral properties. The performance of BMM may be influenced by a number of factors which are outside the control of the Company and its Directors, staff, and contractors.

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There is no certainty that the research program will achieve its technical objectives, result in pilot-scale development, or ultimately support a commercially viable processing operation.

The Company confirms that is it not currently aware of any environmental restrictions or requirements that would impede the continuation of planned activities.

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