



22 April 2022

IONICRE COMPLETES ACQUISITION OF SEREN TECHNOLOGIES

Ionic Rare Earths Limited (**IonicRE** or the **Company**) (ASX: IXR) is pleased to advise that it has received formal advice from the UK Government Investment Security Unit (ISU) that it has approved the acquisition of Seren Technology Limited (**SerenTech**) under the National Security and Investment (NSI) Act 2021 (the Act).

Following this formal approval, all conditions to the acquisition of SerenTech have been completed.

SerenTech is commercialising technology using ionic liquids for separation and refining of rare earth elements (REE), which includes the full cohort of the proposed basket from Makuutu, consisting of the lanthanides series, Lanthanum (La), to Lutetium (Lu), plus Scandium (Sc) and Yttrium (Y).

The acquisition of SerenTech, based in Belfast, UK, greatly complements IonicRE's strategy of becoming a vertically integrated participant in the formation of new magnet and heavy rare earth supply chains emerging across Europe and North America.

IonicRE will integrate SerenTech into IonicRE with initial activities focusing on the following key activities over the next 12 months;

1. Consolidating operations in Belfast initially located at Queens University Belfast (QUB) as part of the Queens University Ionic Liquid Laboratories (QUILL);
2. Progressing test work and flowsheet development evaluation and modelling for IonicRE's standalone REE separation and refinery;
3. Installation of a pilot plant for demonstration of the full magnet recycling pilot plant to validate process improvements identified in collaboration with IonicRE;
4. Planning for the development of a standalone facility in Belfast suitable to house hydrometallurgical laboratories and a purpose-built magnet recycling demonstration plant to process 30 tonnes per annum of spent magnets and swarf to produce 10 tonnes per annum of refined and separated magnet rare earths oxides (REOs) (Nd, Pr, Dy and Tb) with purity exceeding 99.9%; and
5. Progressing commercial relationships on sourcing and recycling spent magnets and swarf.

About Seren Technologies Limited

Seren Technologies Limited (SerenTech) is a UK company with unique and leading-edge rare earth separation and refining technology. Since its founding in 2015, SerenTech has developed processes for the separation and recovery of REEs from mining ore concentrates and spent permanent magnets with the potential to provide a step change in efficient, non-hazardous, and economically viable processing with minimal environmental footprint compared to existing technologies. SerenTech has

developed a toolkit of separation techniques and solvent systems incorporating both conventional organophosphorus extractants and ionic liquids (ILs) that can be combined to and applied to different mixed rare earth feeds.

SerenTech's process uses an alternative and more environmentally benign extractant, an optimised ligand, for rare earth metal extraction, separation, and processing.

The technology developed by SerenTech has several advantages compared to existing or alternative options with respect to the industrial processing of rare earths:

- The ionic liquid is fully recyclable to the extent the ligand can be considered a capital rather than operational cost.
- Greatly reduced acid consumption, with optimal pH levels between 2 and 4 throughout the whole process.
- High separation factors for individual REE separation and refining capability.
- There are no toxic waste products, and
- Potential to tune the ligands to focus on pairings or groupings of rare earths, giving greater flexibility in approaching the separation of rare earths from mining feed sources.

Impressively, work to date has demonstrated capability for REEs to achieve near complete extraction from lower quality spent magnets and waste (swarf) to near complete recovery to high value rare earth oxide (REO) product quality exceeding 99.9% REO.

This presents a potential opportunity to provide a first mover advantage post acquisition to IonicRE in the industrial elemental extraction of REEs from spent magnets and waste, enabling near term magnet REO production capability to satisfy growing demand and lagging new supply chains.

The technology developed by SerenTech provides considerable benefits over alternative magnet recycling technology presently being marketed and operated, including hydrogen decrepitation, which simply breaks down spent magnets and swarf to be recast as magnets of the similar or lesser quality. The advantage of the technology developed by SerenTech is to provide potential for magnets REEs to be extracted from lower quality and variable grade magnets, to then be recycled into newer higher content REE containing permanent magnets, used in higher value applications.

Authorised for release by the Board.

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