

SULPHURIC ACID BAKING AND LEACHING RARE EARTHS FROM MARY KATHLEEN TAILINGS

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ABSTRACT

Rare earth elements are in increasing demand due to the movement towards renewable energy and automobile electrification. The Mary Kathleen Uranium Process Tailings in Queensland are a large rare earth element resource exhibiting high grades.

In this paper, rare earth element processing is briefly reviewed. New experimental results are presented for the extraction of rare earths from Mary Kathleen Tailings using sulphuric acid leaching and combination acid baking / water leaching. The process residues are characterised to provide insight into the reaction mechanisms.

Keywords: Sulphuric Acid Baking, Uranium Tailings, Mary Kathleen, Reaction Kinetics and Mechanisms;