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The Development of Lithium Extraction Processes and Technologies

ABSTRACT

The demand for lightweight, rechargeable lithium batteries has increased greatly as markets grow for mobile devices, battery powered vehicles, and renewable power storage. Recent studies have shown that the demand for lithium is projected to increase by 73 percent by 2025. The challenge of keeping up with fast-rising market demand has led to an interest in the development of more efficient lithium extraction technologies and processes.

The Saskatchewan Research Council (SRC) has been working with mining companies and engineering companies from Canada, USA, Australia, Argentina, and Chile to develop lithium processes from various sources to produce battery-grade lithium products. Each deposit is different with its unique mineralogical characteristics. Lithium recovery processes are also different. SRC has developed efficient processes to handle petalite, spodumene, lepidolite, smectite, illite, pegmatite, and brines. SRC has also initiated research on a new selective recovery technology which would be a potential processing solution for low concentration brines if successful.

This presentation will discuss the various lithium extraction technologies for mineral deposits and brines, as well as newer research areas for the new selective lithium recovery technologies, such as nanofiltration, selective ion sieving, and co-precipitation.

BIOGRAPHY

Jack Zhang is the Business Unit Manager, Mineral Processing and Hydrometallurgy, at the Saskatchewan Research Council (SRC). He has over 20 years of extensive industrial, engineering, and research experience. His major areas of focus include the processing of lithium, uranium, potash and phosphate, rare earth and rare metals. He has led and supervised hundreds of mineral processing, metallurgical testing, optimization, and R&D projects for clients from Algeria, Argentina, Australia, Belarus, Brazil, Canada, Chile, Congo, Ethiopia, Eritrea, Germany, Indonesia, Israel, Jordan, Mexico, Russia, Spain, South Africa, UK, and USA. He has previously served as the Principal Engineer at SRC Mineral Processing, Plant Metallurgist of Cameco Corporation, and a Process Engineer of SINOPEC.



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