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Batteries: A new ore body for critical materials.

CHI VINH LY[1] AND JONATHAN KNAPP[2]

[1]Bruker BNA
[2]Hitachi High-Tech America Inc

The list of critical materials grows with new technologies and tools used daily. The current 2023 list includes 50 elements of vital importance. Many of the elements on the updated list are linked to the energy transition economy as we migrate from a hydrocarbon-powered to an electric-powered economy. However, with the increased complexity of available ore bodies and the difficulties in finding new ores, it is becoming critically important to consider less traditional sources of critical materials.

Used batteries are a potential source of critical materials for new batteries, but many questions remain about how to economically recycle these batteries (Srinivasan, S. et. al., 2025). One of the significant questions is understanding how recycled batteries behave during reprocessing. In this paper, we explore the use of an automated SEM characterization tool, i.e. Automated Mineralogy, which has been used for decades to improve mineral processing. The work completed to date has shown that by considering used batteries as a traditional ore body, characterization using Automated Mineralogy provides an effective means to optimize reprocessing workflows to maximize recovery and minimize costs.

Srinivasan, S. Shanthakumar, B. Ashok, Sustainable lithium-ion battery recycling: A review on technologies, regulatory approaches and future trends, Energy Reports, v13,2025, pp789-812, ISSN 2352-4847