Recycling Strategies for Sulfide-Based All-Solid-State Lithium-Ion Batteries

greenBatt S²taR

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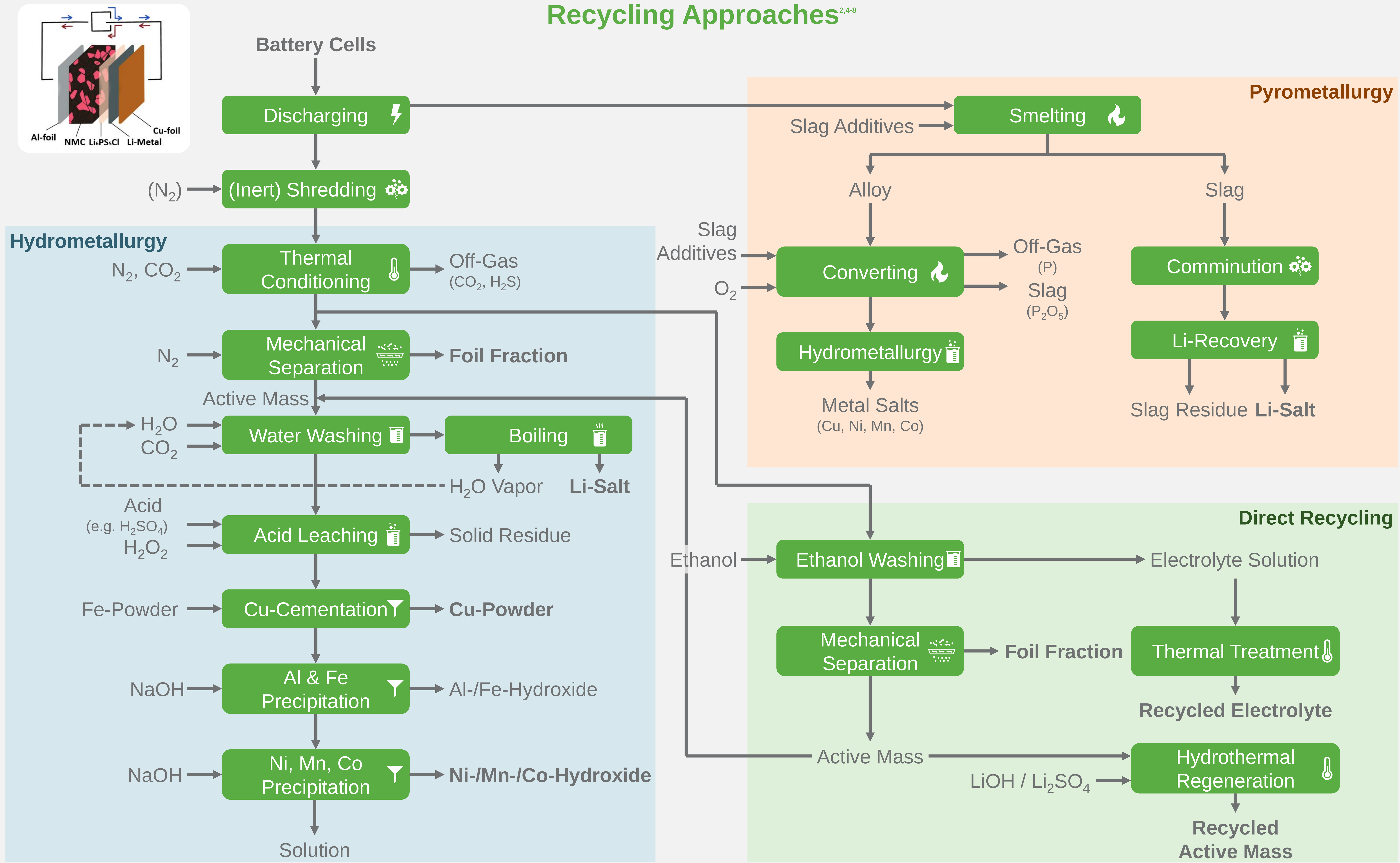
Motivation

- the development of sulfide-based all-solid-state battery cells holds significant potential to be a promising alternative to liquid electrolyte batteries due to better overall safety, fast-charging capability, and battery capacity
- Containing a high variety of critical and strategic raw materials (Al, Co, Li, Mn, P, (Cu), (Ni))[1], a comprehensive recycling design is needed to ensure compliance with EU regulations[3] and high recycling efficiencies for all those elements

State of Research

- Recycling approaches for solid-state sulfide batteries have barely been investigated
- For batteries with liquid electrolytes, there are already industrially established recycling processes that can potentially be transferred to solid-state batteries.
- metallic lithium electrode and the solid sulfide-electrolyte require special demands on the recycling process due to fire/explosion risk and toxic gas release in contact with air or humidity

Recycling Approaches[2,4-8]



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