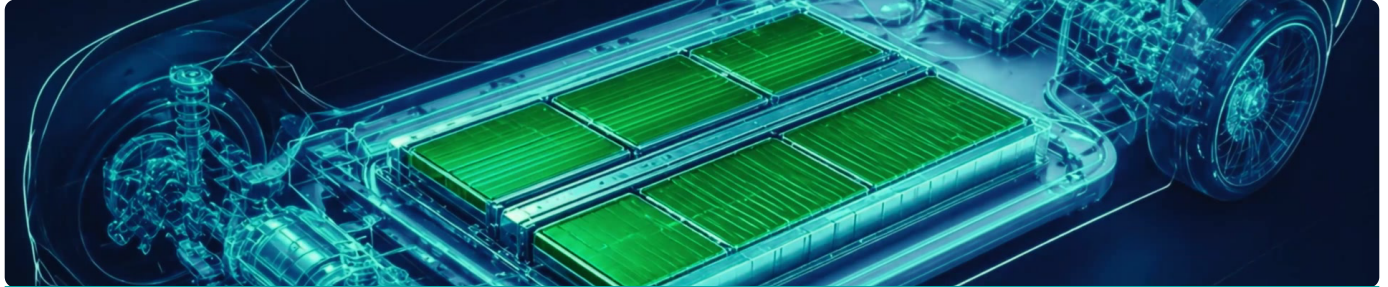


Reinventing the battery materials supply chain.

Developed by CirCoLi · Battery Materials · Circular Economy



THE PROBLEM

Battery materials demand is growing while supply stays constrained

Demand for the metals inside lithium-ion batteries keeps rising, but those battery metals are becoming more expensive and less available. The Kingdom and the wider region need an economical, efficient and sustainable way to recover them rather than depending on volatile imports of virgin material.

THE SOLUTION

A recycling process that fixes the economics, not just the chemistry

Conventional battery recycling is held back by high capital and operating costs, low recovery value, complex chemistries, hazardous waste and difficult scale-up. CirCoLi addresses each of these pain points at once, with a modular process that can be tuned by battery chemistry and converts spent batteries directly into high-value products.

TECHNOLOGY · KEY SPECIFICATIONS

Metal recovery yield	Greater than 90% across various metals
Output purity	Greater than 99%, battery-grade standard
Pilot scale	50 tonnes per year, operative at KAUST
Cost reduction	~40% lower CapEx/tonne, ~50% lower OpEx/tonne
Core IP	Ultrasonically-enhanced leaching reactor (20–40x faster), direct pCAM synthesis, anti-solvent lithium carbonate recovery

IMPACT

01**Securing critical metals**

Recovering battery-grade metals locally to reduce dependence on imported virgin material.

02**Lowering the cost barrier**

Cutting CapEx and OpEx per tonne so recycling competes with cheaper virgin sources.

03**Cleaner by design**

Reducing hazardous waste and chemical handling versus conventional recycling routes.

04**Modular and scalable**

Tuning the process by chemistry and modularizing by stream for flexible deployment.