

Recycling of spent Li-ion Batteries/E-waste using Hydrometallurgical Operations

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Generation of Precursor Materials from recycled Li-ion batteries

Selective/combined recovery of metals from recycled electrode materials of spent batteries



Methodology

- **Leaching** – Different lixiviants are used for leaching of battery cathode materials for industrial-scale production
- Organic acids and mineral acids are used for Leaching
- **Solvent Extraction**, Selective extraction of metal, and Good reproducibility, As per requirement selective and combined recovery of metals with specific morphology,
- Physio-chemical, mineralogical and electrochemical characterization of recycled materials.
- **Low-cost precursor** preparation from recycled materials.
- Life cycle assessment of e-waste/ battery waste.

Results

- Recycled precursor obtained from recycling of spent battery, shows significance as like virgin materials
- Cost-benefit analysis of secondary materials is done

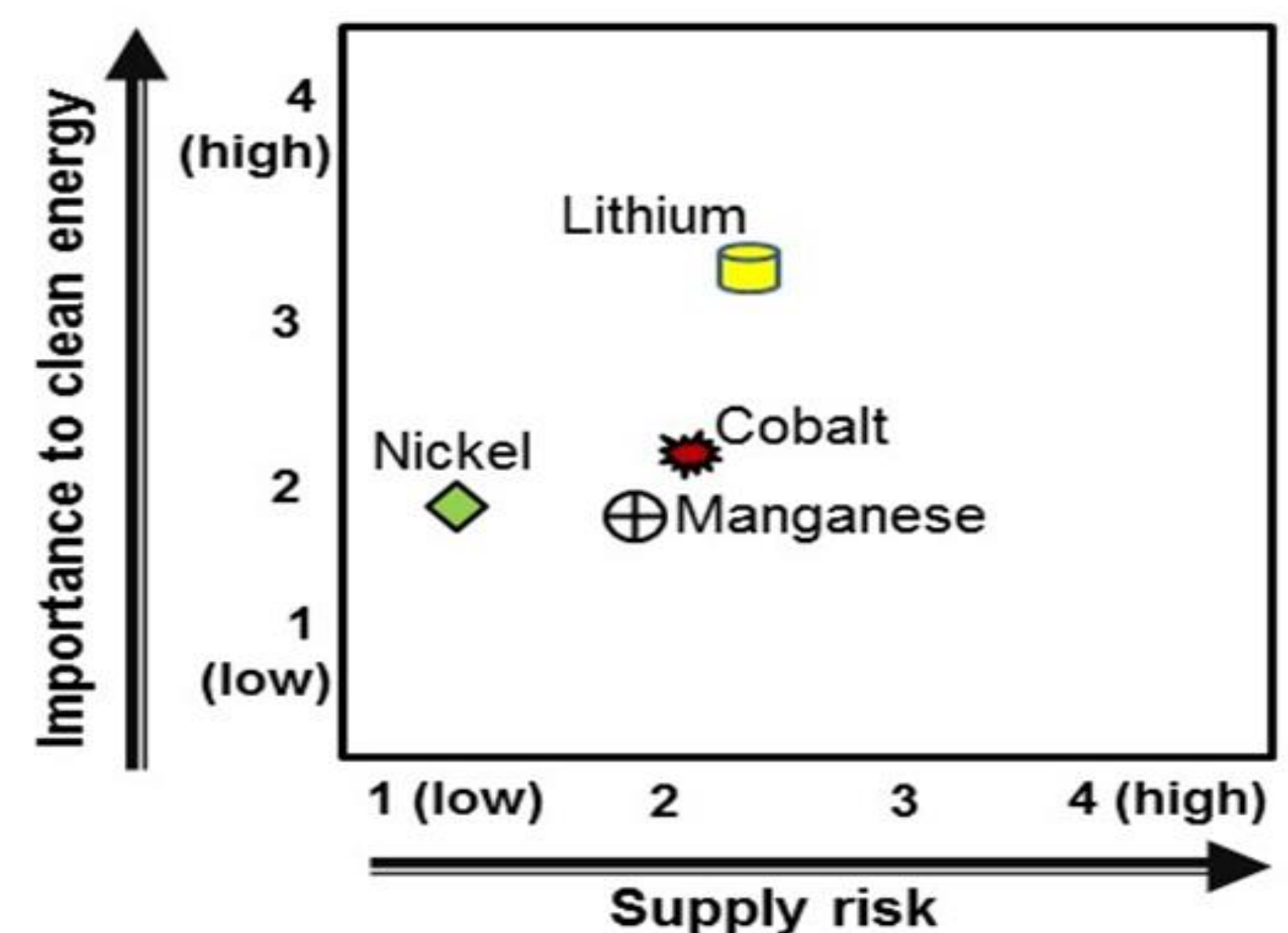
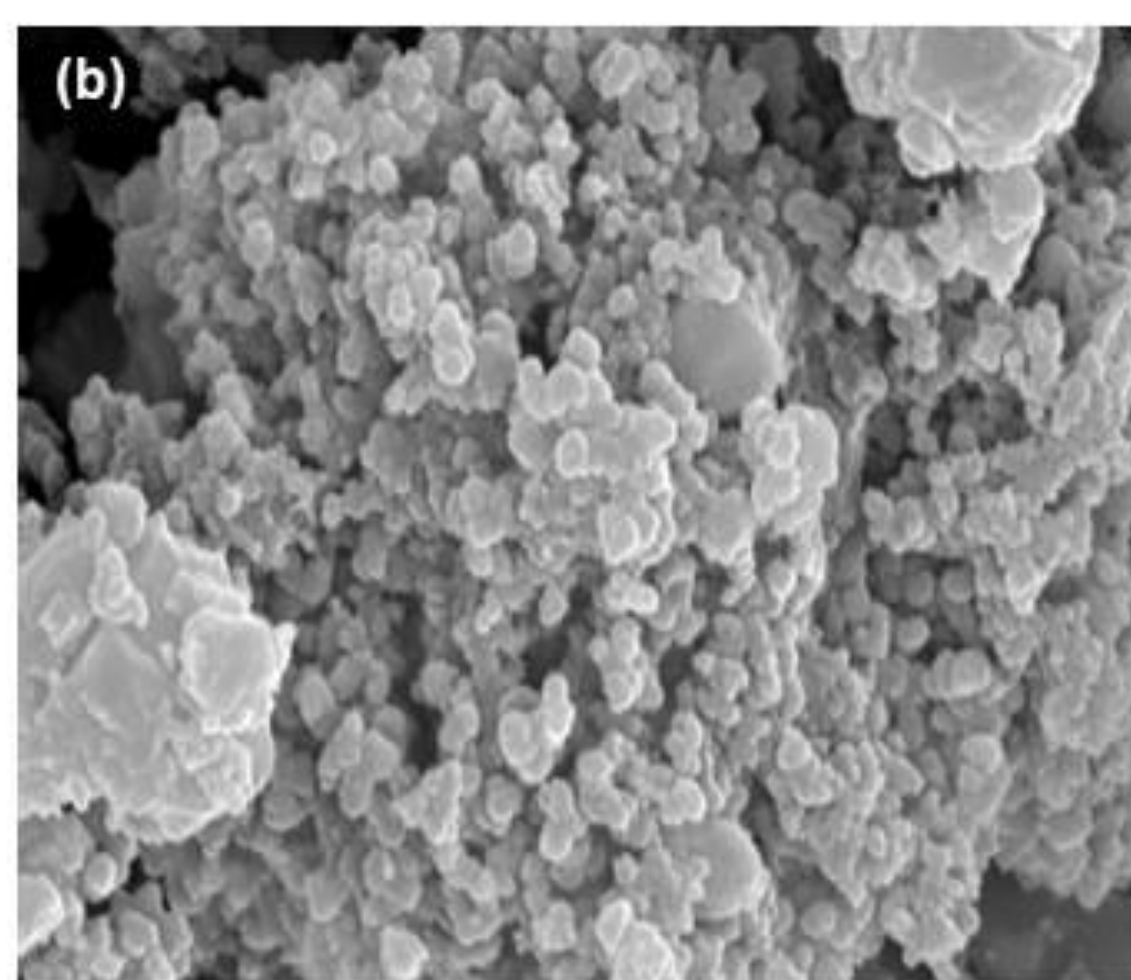
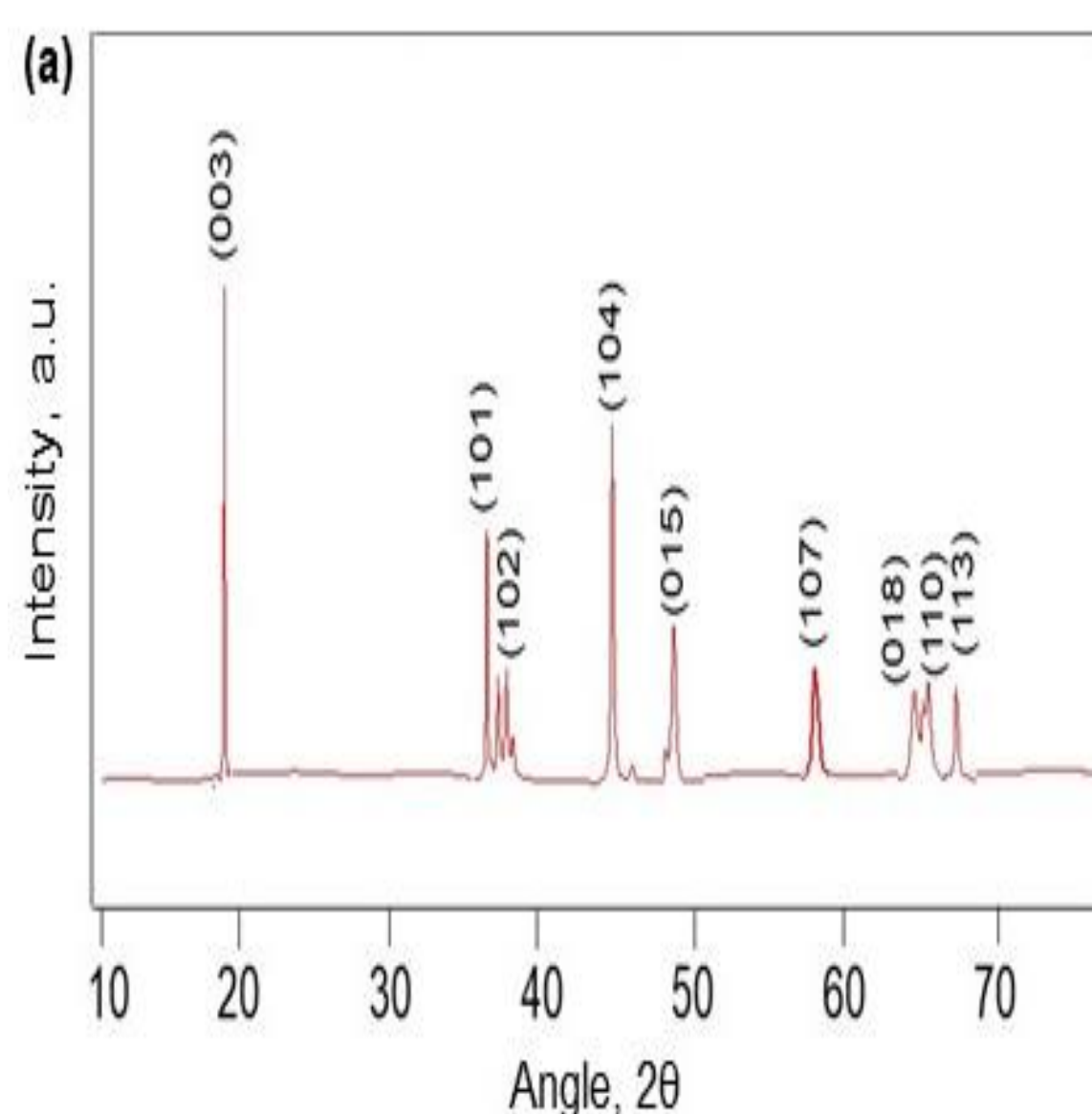


Figure 1: Schematics presentation of critically associated with metals for clean energy



Figure 2: Strategies for developing secondary precursors for LIB

