

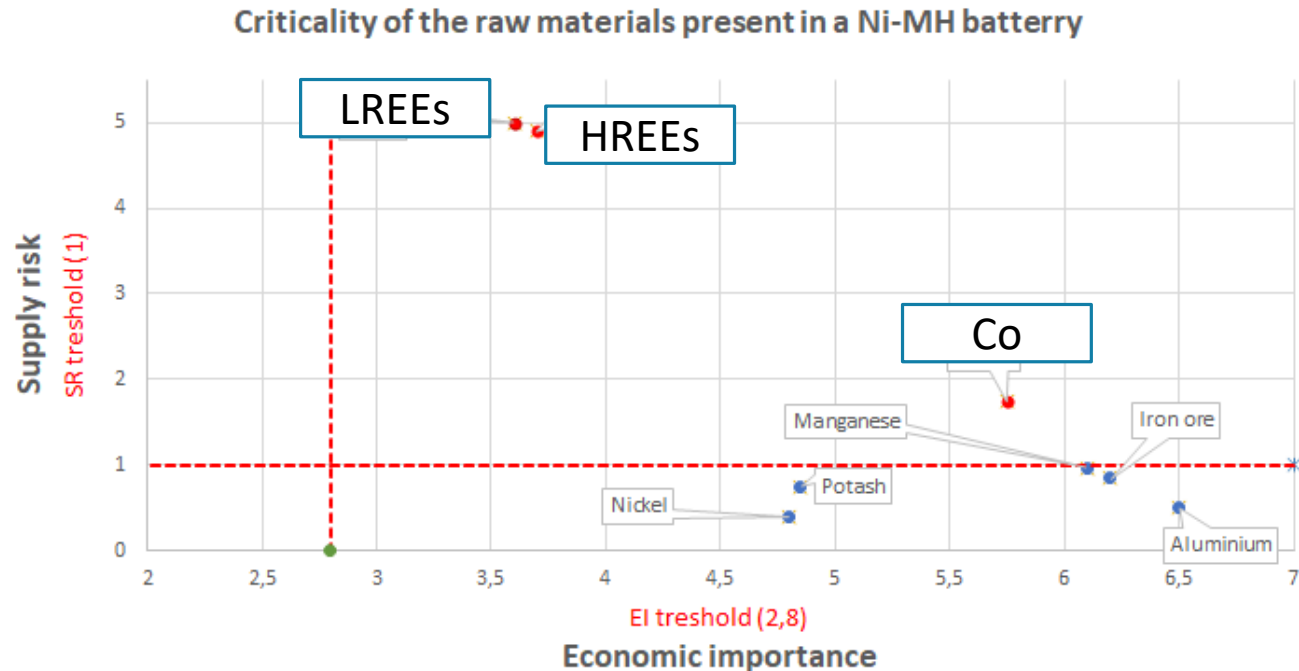
Recycling of Ni-MH batteries from hybrid vehicles

MASTER THESIS IN MATERIAL ENGINEERING

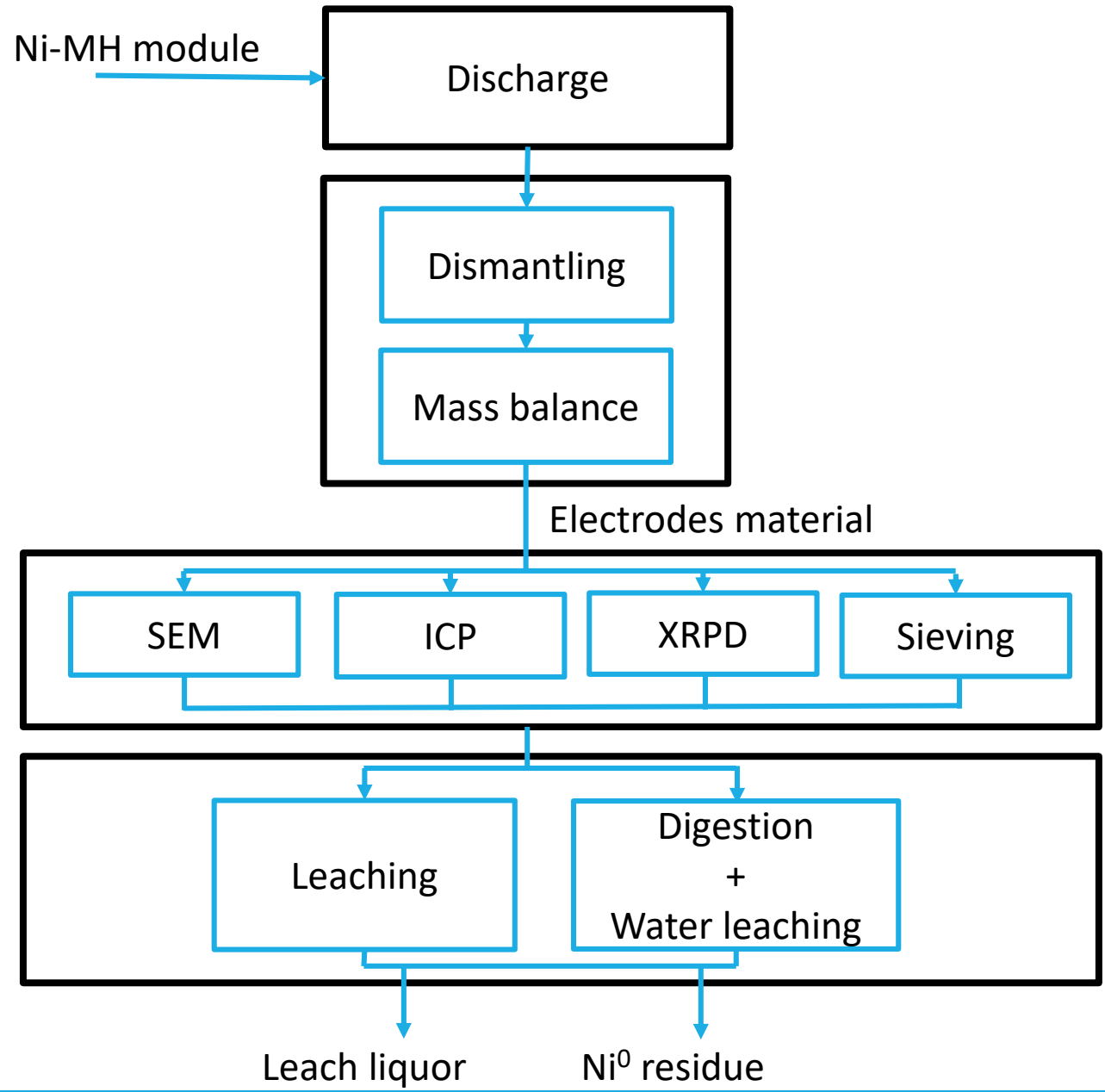
SOLÈNE CHABANET

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Reasons to recycle HEVs batteries



- Electric mobility → ↑ EoL HEVs
- 90% of HEVs use a Ni-MH model
- ↓ HEVs environmental impact
- ↓ Materials criticality



Pre-processing

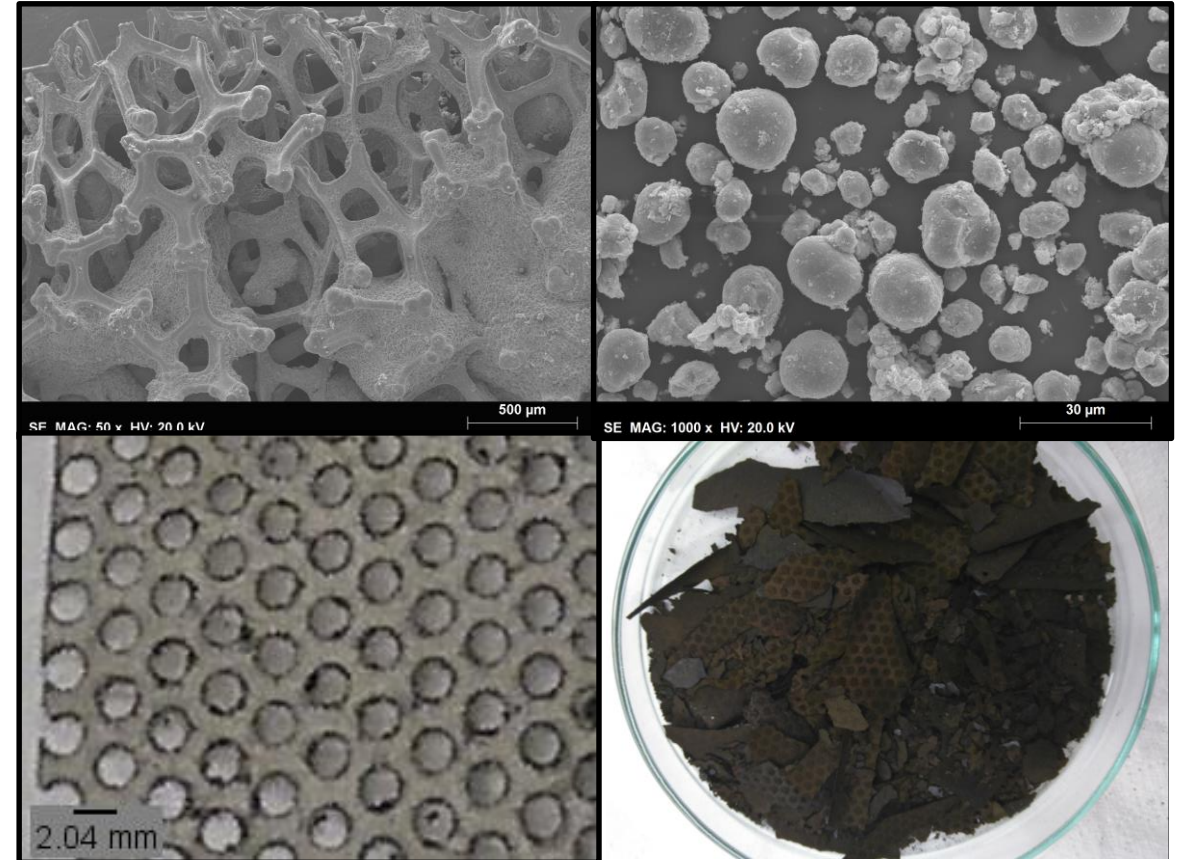
Physical treatment

Characterization

Hydrometallurgical treatment

Results

- **Valuable metals in the electrodes:**
 - Cathode 31,8% : Ni, Co
 - Anode 31,4%: Ni, Co, REE
- **Pack recovery potential 9kg Ni, 1kg Co, 2kg REE**
- **Leaching at 25°C, 1M H₂SO₄, t=3hours, L/S=20L/kg**
 - Anode: complete dissolution
 - Cathode: dissolution of Ni(OH)₂ powder and direct recovery of Ni⁰



Thank you for
your attention!