



UNJu
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**Right next to lithium rich brines in
northern Argentina
From recovery technologies to high
capacity batteries**

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Primary resources

Exploration
ores, construction &
industrial minerals

Extraction



Processing



Raw materials



Residues

Historical dumps
and tailings

Secondary Resources

Foster circular economy

Residual waste landfill

Recycling

Use, re-use
and repair

Increase resource efficiency

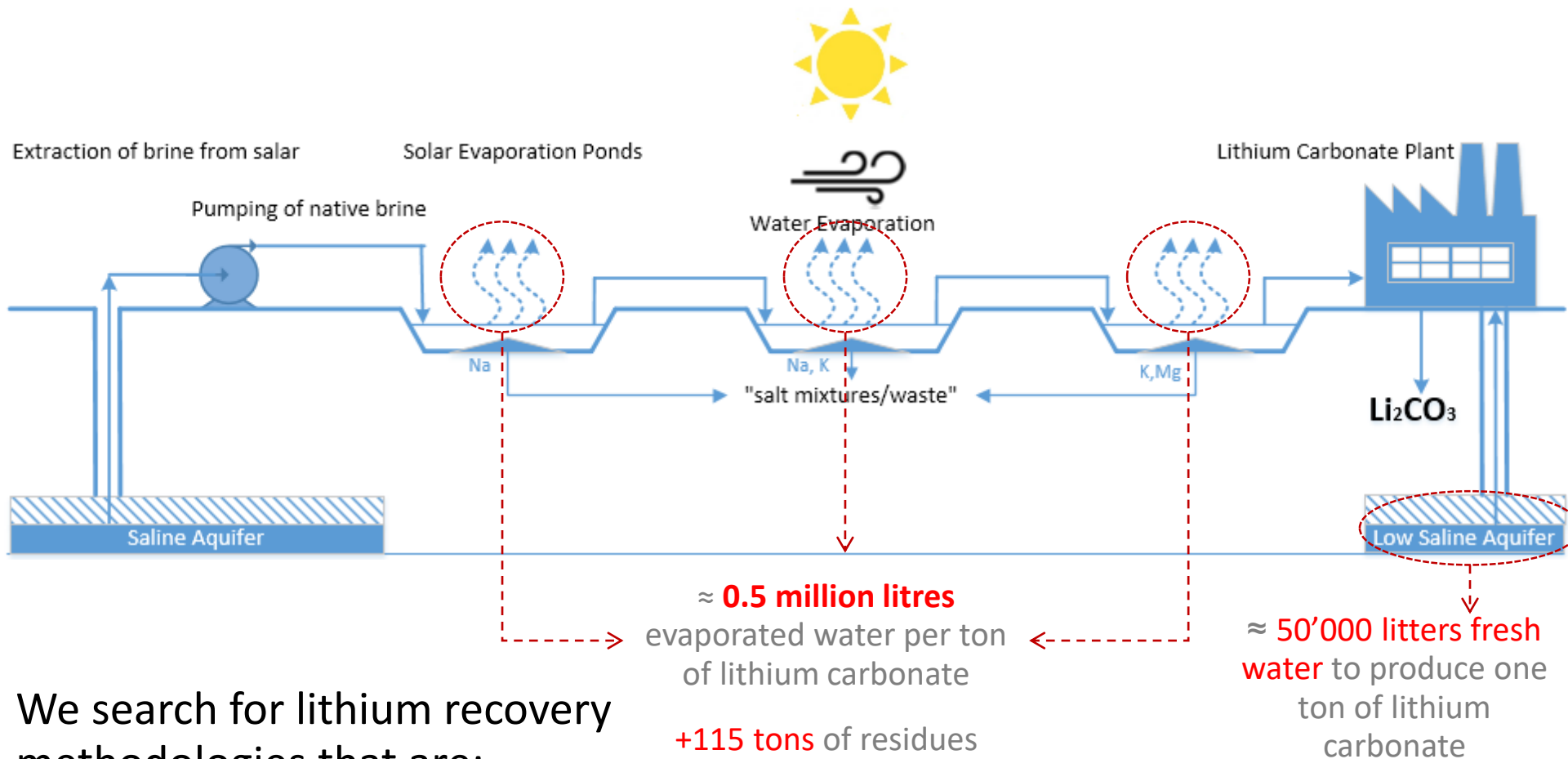
Design

Production and remanufacturing

Substitution of Raw materials



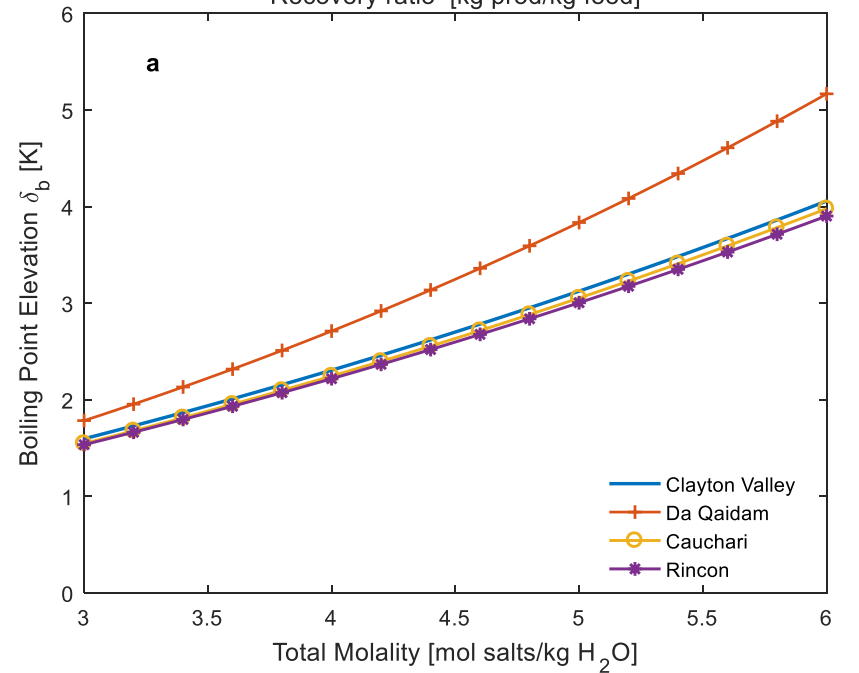
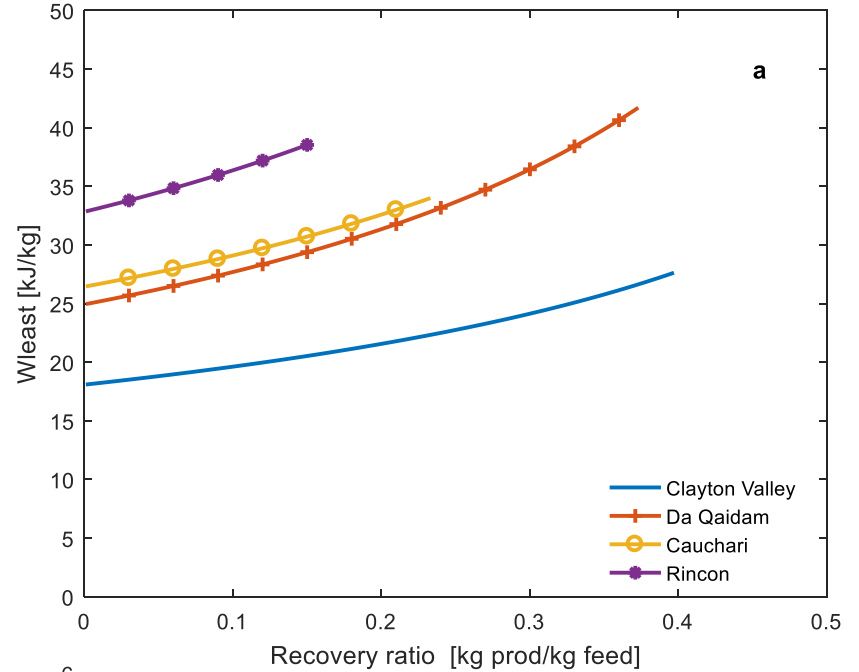
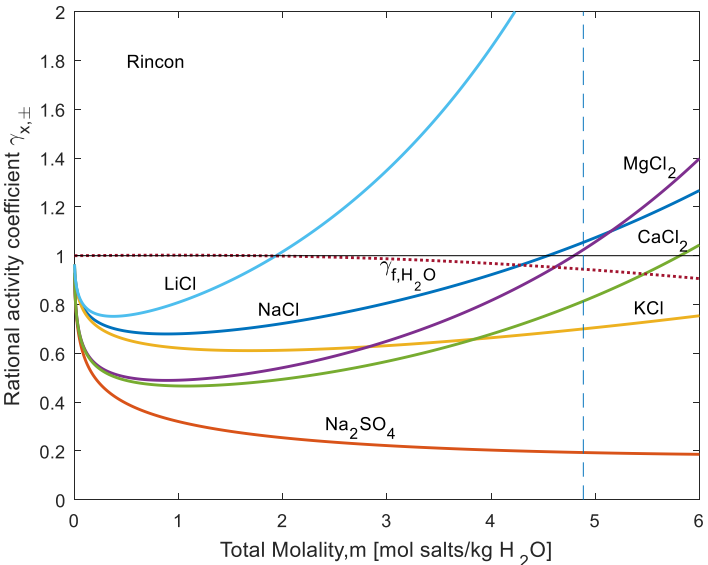
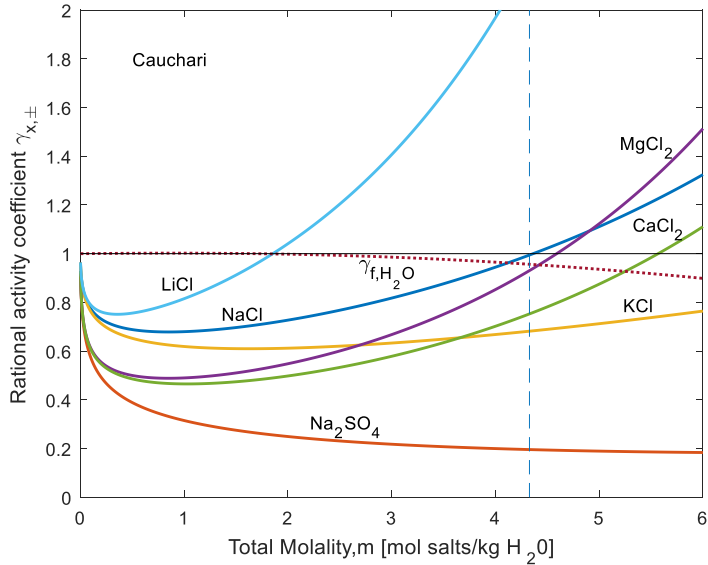




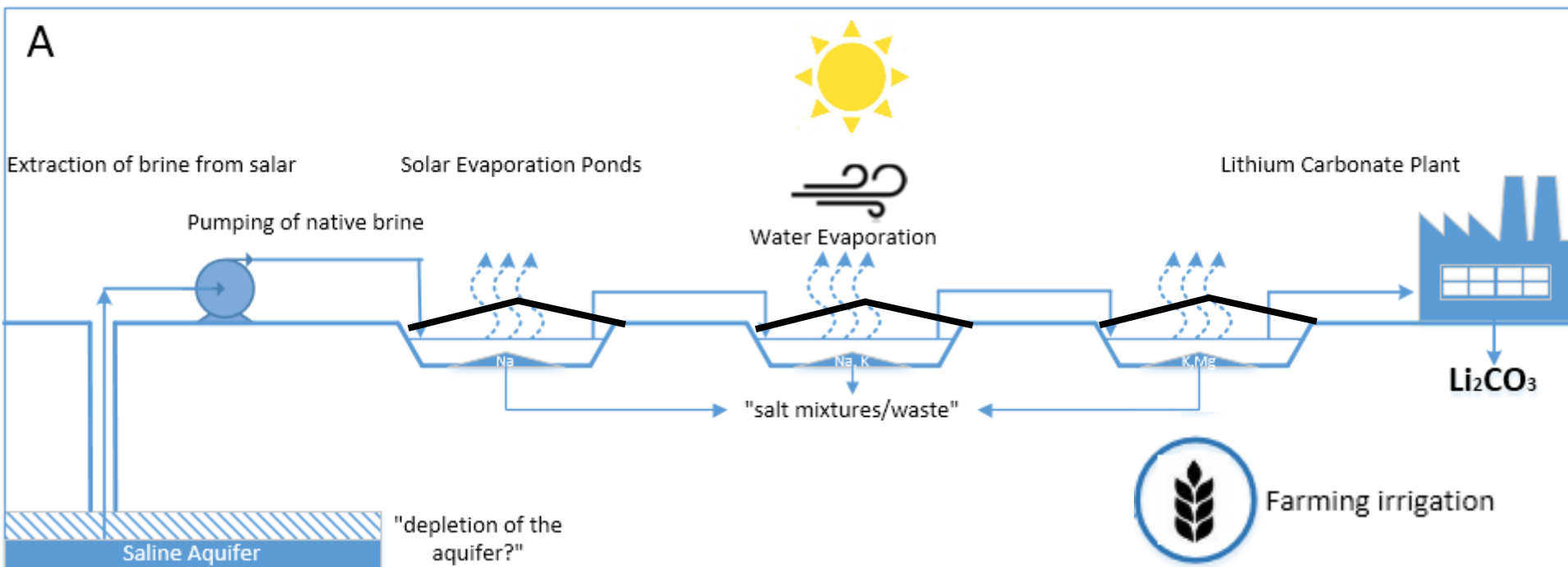
We search for lithium recovery methodologies that are:

- ✓ Environmentally friendlier
- ✓ Technologically more efficient

Modelling of complex brines



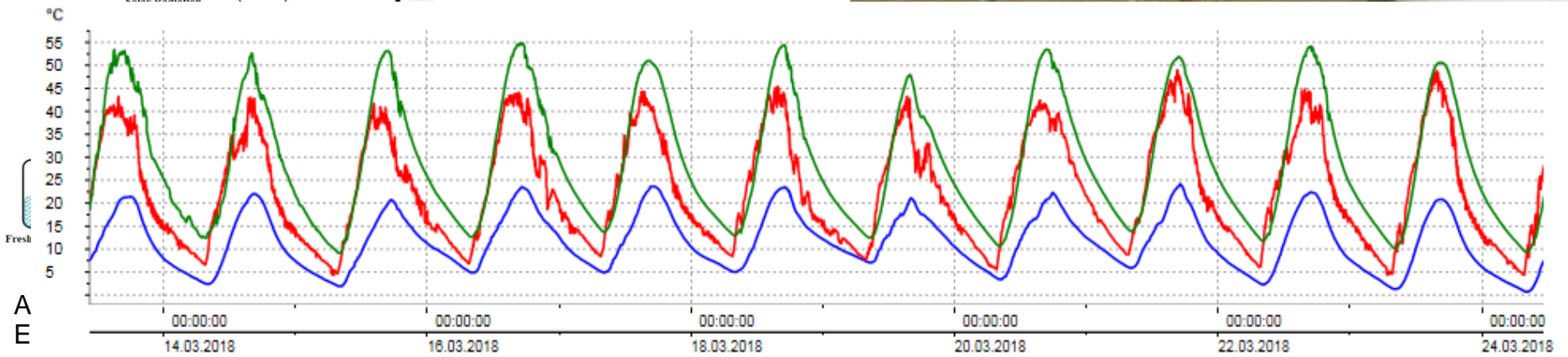
Upgrades to current *evaporitic* technology



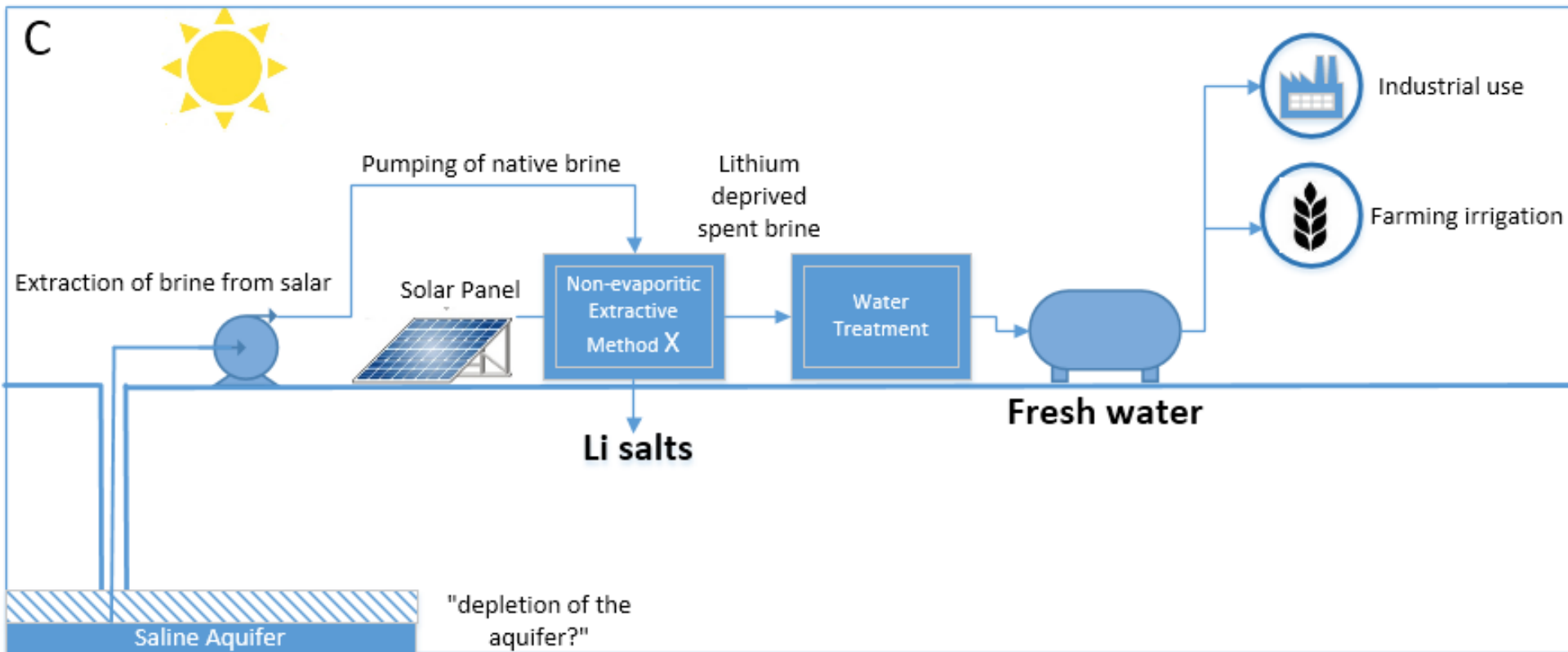
Upgrades to current *evaporitic* technology

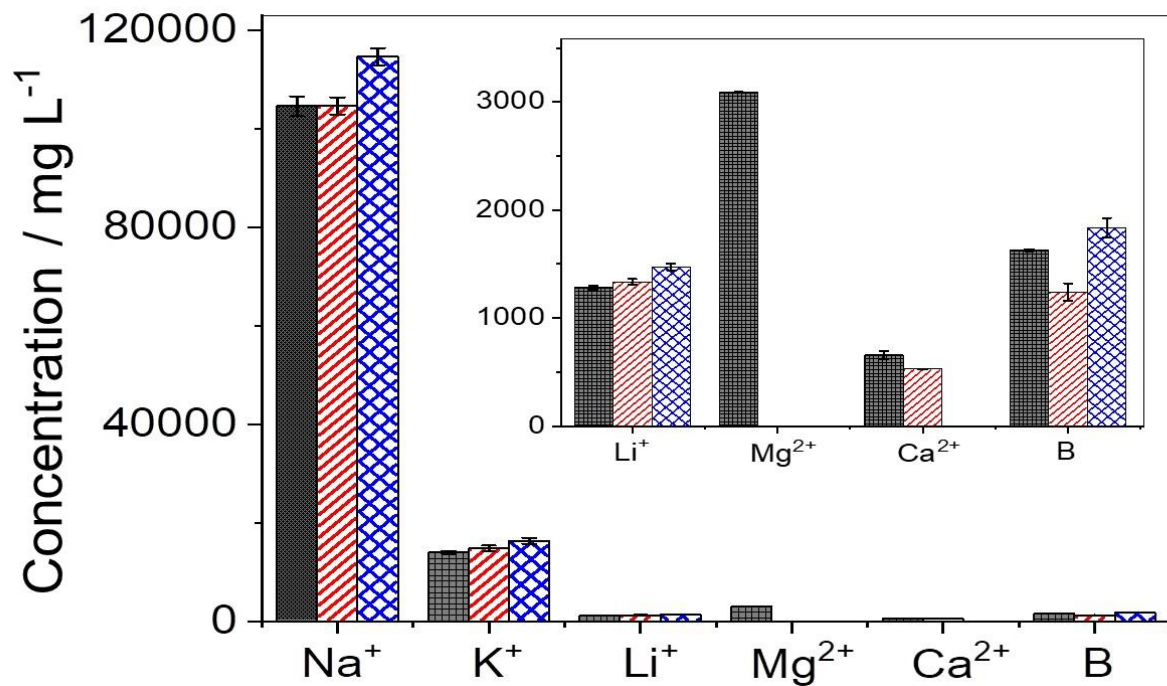
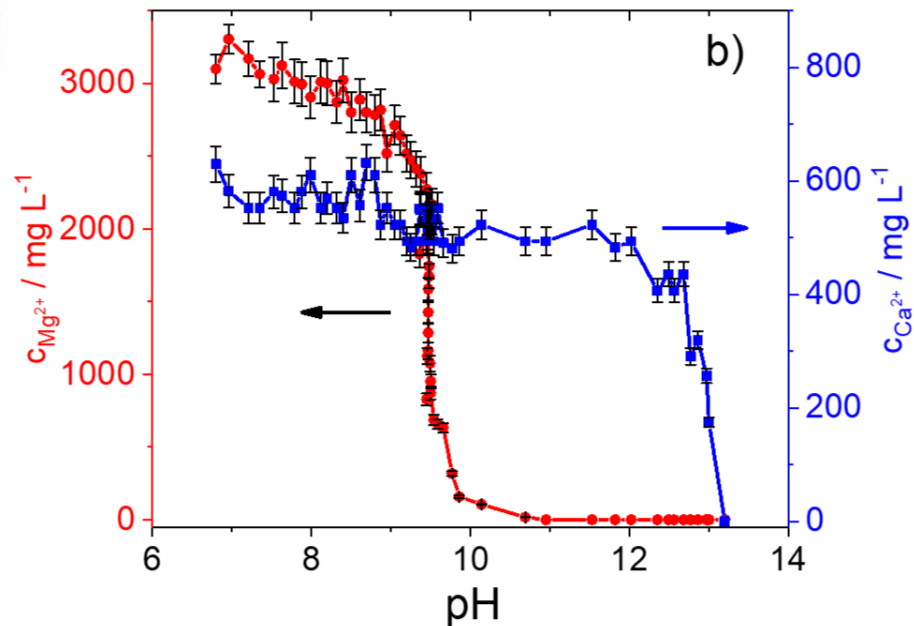
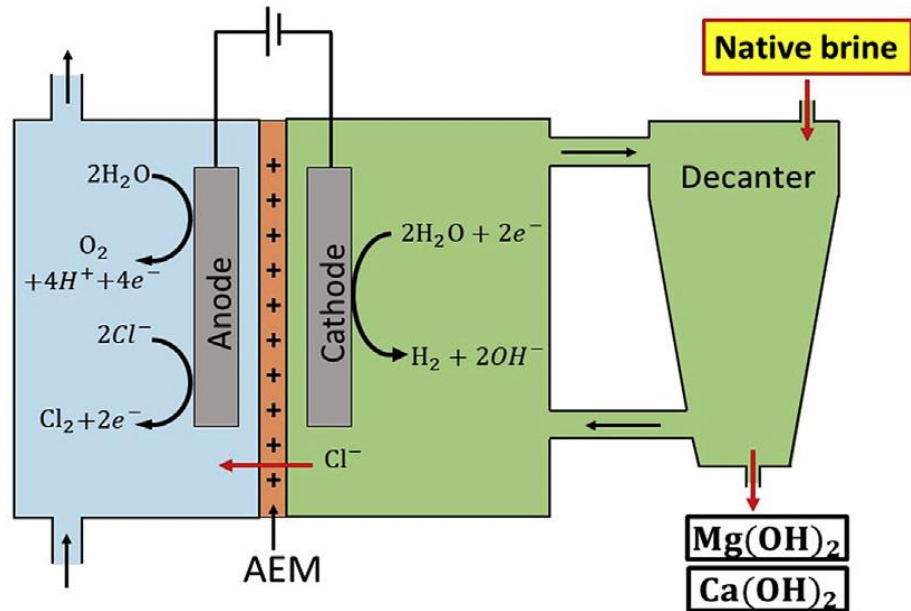


Color Radiation Glass



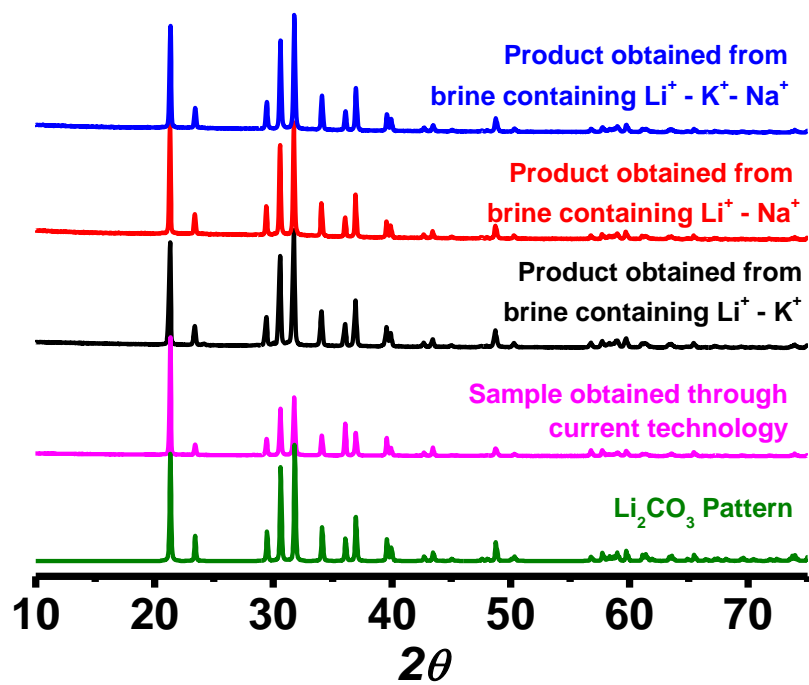
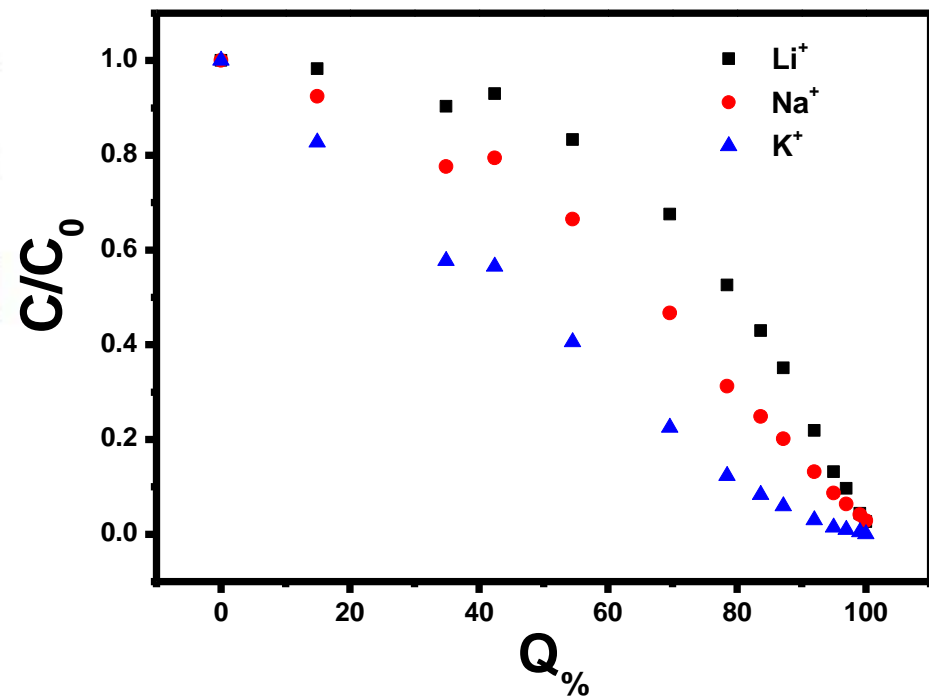
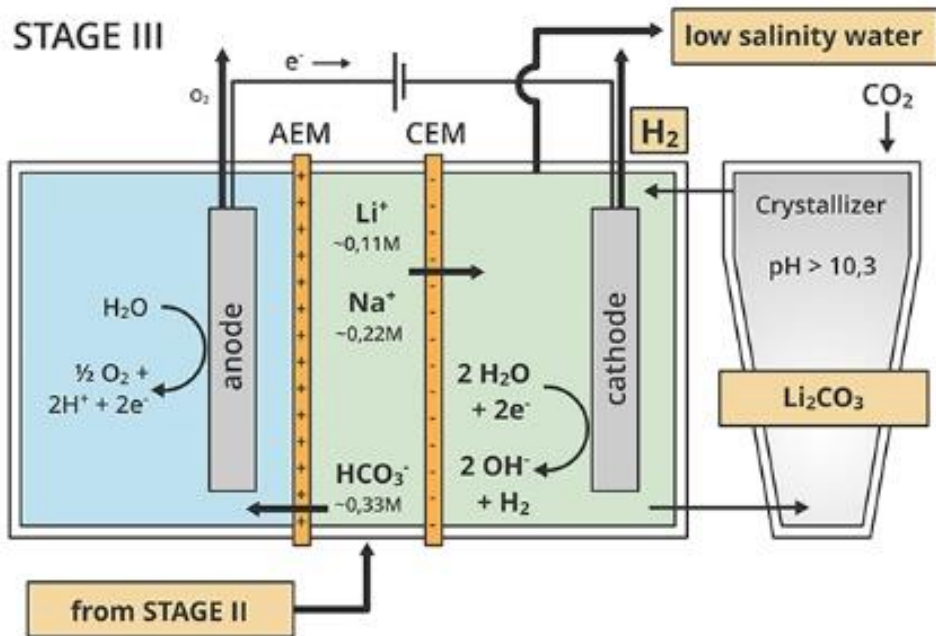
Disruptive technologies





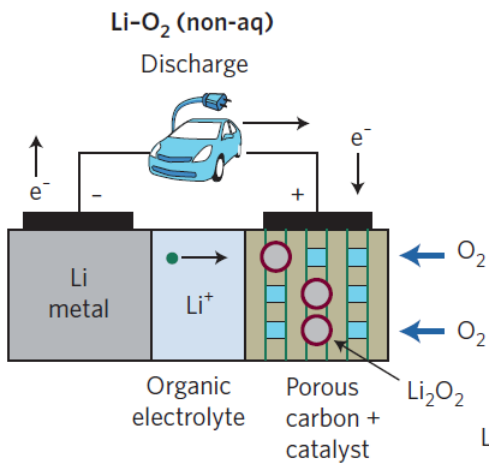
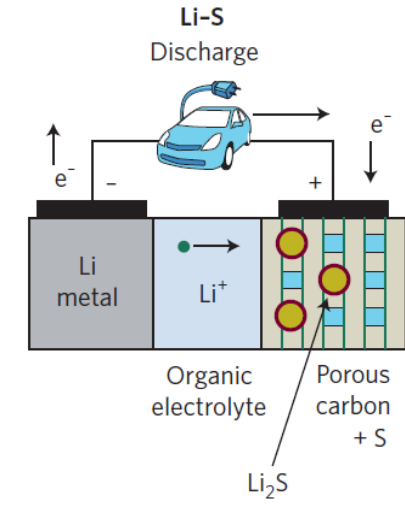
Diaz Nieto *et al.*, US provisional patent application 62781452

Diaz Nieto *et al.* Water Research, 2019, 154, 117



Adding value to raw materials

- ✓ Study of electrochemical processes in Li-metal batteries



resorcinol + **formaldehyde** → **melamine**

polymerization

Na_2CO_3 0.1 M
100 °C,
24 hs.

air

carbonization

temperature vs. time

600 °C, 7hs or
700-900 °C, 1h

1 °C min⁻¹
N₂

