

# Recycling of Li-Ion HEV Batteries

## Motivation and Target:

- spent batteries contain high valuable secondary raw materials
- recycling is prescribed by EU Battery Directive
- recovery of all valuable materials including lithium necessary



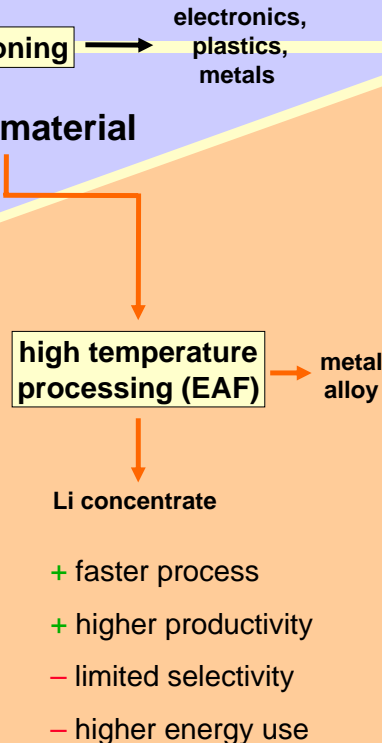
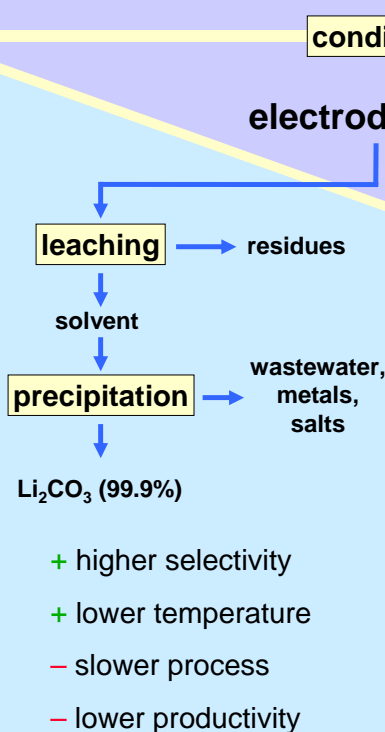
## Challenges for Recycling of Li-Ion HEV Batteries:

- substitution of cobalt by less valuable metals compromises economic efficiency of recycling processes
- adjustment of existing recycling processes to future electrode materials
- backflow of spent batteries will increase drastically, i.e. current recycling capacities have to be increased

## spent Li-ion batteries



### Hydrometallurgical Route



### Pyrometallurgical Route



## Long-time Experience in Battery Recycling at IME:

- development of battery recycling processes for ZnC, Alkaline, NiCd, NiMH and Li-Ion
- proven pyrometallurgical processing for concept of portable consumer-type Li-Ion batteries

In March 2008 the IME received the „Kaiserpfalz-Award of Metallurgy 2008“<sup>44</sup> for its research works in battery recycling!

<sup>44</sup>www.ime-aachen.de

