Propositions

Accompanying the dissertation

Hydrometallurgical and Electrochemical Recycling of Mixed Li-ion Battery Waste

by

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1. The performance of reductive acid leaching of a lithium-ion battery waste depends strongly on the oxidation state of Ni, Co, and Mn, as well as the presence of impurities such as Fe, Cu, Al and graphite. (Chapter 3, 4, 5 and 6)
2. In lithium-ion battery recycling, the presence of impurities such as Cu and Al can be both a curse and a blessing. They can assist in leaching but hamper downstream purification. (Chapter 4, 5 and 6)
3. Electrochemical purification offers a flexible and effective way to remove Cu and Fe impurities from lithium ion battery waste without the need for additional reagents. (Chapter 5 and 6)
4. In recycling research, manually acquired samples yield drastically different results compared to industrially acquired samples, which makes their comparison so interesting. (Chapter 3 and 4)
5. Cucumbers are crunchy water
6. The vacuum pump is a highly underrated asset in hydrometallurgical research, since materials sections of publications often only mention filter types.
7. Scientific integrity goes further than transparency and honesty about your own research. Why you conduct it, who you give credit for it, where you publish it, and how you pay for it are all contributing factors.
8. Greenwashing is an inevitable result of what happens when marketing meets a humanitarian crisis.
9. When you focus on what is not done, it becomes easy to forget what is already achieved.
10. Recycling seems to suffer from the Jevons paradox, since recyclability is an incentive for consumption, eventually leading to more resource depletion in contrast to its aim.

These propositions are regarded as opposable and defendable, and have been approved as such by the promotor Dr. Y. Yang and copromotor Dr. Ir. S. T. Abrahami