

Identification of Material Parameters in Batteries

- Goal:** To measure and identify important electrochemical material properties for commercial battery materials and verify them by implementing a physical model of a battery and performing sensitivity analysis on the measured parameters.
- Background:** Li-ion batteries are becoming more and more important for enabling the electrification of the transport sector as well as the development of stationary energy storages. Detailed models of their operation however require identifying and measuring a large amount of complex internal electrode and electrolyte parameters. This involves numerous experimental and analysis techniques ranging from electrochemical analysis techniques to spectroscopy and microscopy, focusing on identifying important parameters for physical battery models.
- Plan:** Build battery half cells and three electrode cells to perform basic characterization tests on electrode materials and electrolyte. The exact experimental methods will be decided during the project, and the validity of the obtained parameters will be verified by comparing output of physical model with experimental values.
- Number of Students:** 1-2
- Start time:** January 2021
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