Lehrstuhl für Elektrische Energiespeichertechnik
School of Engineering and Design
Technische Universität München

– Masterthesis –

Investigation on the impact of interrupts on continuous–loaded Si/Gr cells

Background

To investigate the aging of Li-ion batteries (LIBs), batteries are cycled (charged/discharged) for a high number of cycles under continuous load. The interruption of such cycling experiments (wanted or unwanted) may have an impact on the cell's behavior and characteristics, especially for Si/Gr based cell systems. The impact of such pauses of the cycling procedure shall further be investigated.

Task of this thesis

In this work several experiments shall be conducted to investigate the impact of pauses on a contiuous-loaded roundcell. To do so different test-scenarios have to be designed and implemented. The test-matrix and shall be designed to reveal the underlying mechanism. Therefor parameters like duration of pause, State of Charge (SoC) during the pause as well as previous continuous load conditions has to be selected and varied and testplans adapted accordingly. The acquired data is further used to depict the impact of the pause on the cell and how this relation can be integrated into a model. An exemplary structure of working package might look like this:

WP 1. Analysis of literature handling pauses of LIBs
WP 2. Setup and conduction of tests
WP 3. Analysis of experiments' data
WP 4. (Optional) Implementation of a model + verification on data
WP 5. Documentation and thesis writing

Prerequisites

- Reliability
- Independent working mentality
- Basic knowledge of LIBs (especially security aspects)
- Fundamental MATLAB experiences
- Battery testing experience are welcome

Emphasis

☒ Cell-characterisation
☒ Test-conduction
☐ Hardware-development
☒ Software-design
☒ Modeling
☐ Simulation
☒ Literatur-research

Course of Studies

☒ Elektro-/Informationstechnik
☐ Informatik
☒ Maschinenbau
☒ Physik
☐ Mathematik
☐ Chemieingenieurwesen
☐ Wirtschaftsingenieurwesen

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