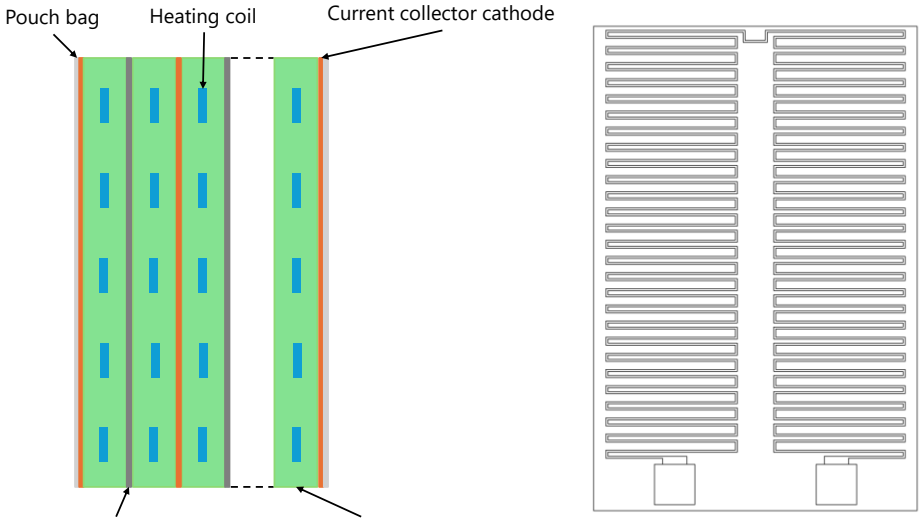
Master Thesis/Research Module

Construction and Validation of a thermal battery demonstrator module

As part of the BALU project, the performance of the novel Aluminum-Graphite Dual-Ion Batteries (AGDIB) is to be demonstrated. Since only a small number of cells are currently available, an initial demonstrator is to be developed to further investigate the thermal behavior.

The aim of this work is initially to adapt the design of a thermal replacement cell to the specifications of the AGDIBs. Subsequently, the cells are to be built in the BayBatt Keylab and assembled into a module. The final part of the work involves the characterization of the cell respectively the module. The scope of the work can be adjusted to fit a research module.



Pictured left is an example for the layered structure of a thermal replacement cell consisting of the current collector foils and a thermal substitute material with an embedded heating coil. The layered stack is encapsulated by a pouch bag. On the right is a potential geometry for the heating coil.
Additional literature: Nöller 2024, doi: 10.5445/IR/1000174383

Qualifications:

- Basic knowledge of heat transfer
- Interest in new battery technologies
- Independent and diligent way of working
- Optional: Experience in COMSOL/CAD-software

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