

Technical Electrochemistry Hubert A. Gasteiger

Batteries, Electrolyzers & Fuel Cells

We focus on the development of active materials as well as on the design of electrodes for electrochemical cells.

For **lithium-ion batteries**, commercially available as well as novel active materials are synthesized and evaluated regarding typical degradation processes such as gas evolution, volume change, particle cracking, and resistance build-up. Furthermore, fundamental investigations towards the development of all-solid-state batteries are performed.

In the field of polymer electrolyte membrane (PEM) **fuel cells** and PEM **electrolyzers**, we work on catalyst development, stability testing under harsh degradation protocols, and the optimization of cell components (membrane electrode assemblies, diffusion media, and bipolar plates).

Via the development and application of ex-situ, in-situ, and operando diagnostics, we aim to gain new insights into performance limitations and the aging mechanisms of electrochemical cells for energy storage & conversion applications.

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