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New Insights into Self-Discharge and Heat Generation in Magnesium Batteries





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POLiS
Post Lithium Storage
Cluster of Excellence

Invited for this month's cover is the group of Dr. Ijaz Ul Mohsin. For the first time, the total heat generation and self-discharging phenomena of magnesium batteries containing the Chevrel Phase Mo_6S_8 and organic 14PAQ are compared for different electrolyte solvents using sophisticated calorimetry. Noticeable differences are observed and in tetraglyme solvent stable cycling and fewer self-discharge phenomena are detected. However, the activation process needs more cycles to achieve the required capacity in the case of the Chevrel Phase. Read the full text of the Research Article at 10.1002/batt.202300137.

What is the most significant result of this study?

Current investigation shows less heat generation at a low C-rate in the case of G4 and better electrochemical performance. In G4 solvent stable cycling and fewer self-discharge phenomena are observed, however, the activation process needs more cycles to achieve the required capacity.

What other topics are you working on at the moment?

In the POLiS - Excellence Cluster for Battery Research Post Lithium Storage, our group is also responsible for the thermal characterization and safety of sodium and magnesium batteries which include the determination of critical safety parameters, safe upscaling of cells, in-depth understanding of the heat conduction processes, and separation of generated heat into reversible/irreversible parts and fingerprint for (SOH) prediction. Fresh and aged pouch cells with different chemistry studies in Heat-Wait-Seek-Tests (HWS) in the ARC to elucidate the aging influence on cell safety.