

A π -Conjugated Porphyrin Complex as Cathode Material Allows Fast and Stable Energy Storage in Calcium Batteries



The Group of Prof. Dr. Maximilian Fichtner during a symposium at the Monastery in Schöntal.

Invited for this month's cover is the group of Maximilian Fichtner. The cover picture shows the speed and long lasting cycle life of porphyrin-calcium batteries. Read the full text of the Research Article at 10.1002/batt.202300308.

What is the most significant result of this study?

Clearly when looking into the electrochemical performance of this study, one can observe that the materials achieve quite high capacities even when charged with high currents. That this is achieved over several thousand cycles not only shows the cyclic stability of the tested porphyrins but is also an indicator that these materials, when further developed, could act as active materials in sustainable batteries.

What prompted you to investigate this topic/problem?

First of all, our research activity concentrates on battery materials for post-lithium batteries. After we achieved good cyclability of calcium batteries with alloy anodes, we started looking for proper cathodes. Due to our long experience with porphyrin cathodes like for example CuDEPP, we thought that this might be a worthy candidate to be studied in more detail.

Is your current research mainly curiosity driven (fundamental) or rather applied?

We aim at combining both fields together in our research. Although we see that our research is rather practical as we always consider the goal of application in batteries, we still try to understand the underlying processes and mechanism to improve our electrochemistry accordingly.