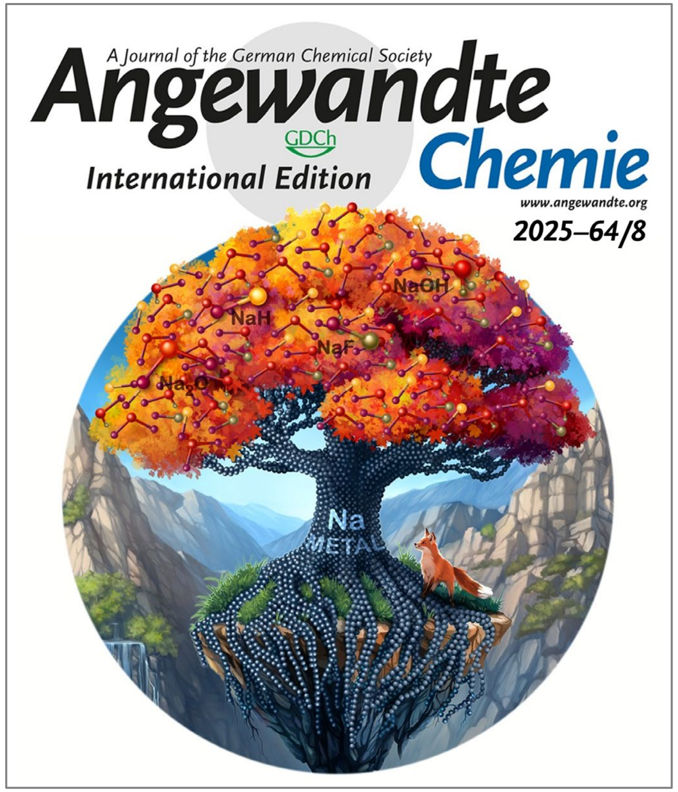
Studying the Chemistry of Sodium Metal Systems for Batteries



The journal cover, featuring this research.

C. Lo, Y. Wang, V. R. Kankanallu, A. Singla, D. Yen, X. Zheng, K. G. Naik, B. S. Vishnugopi, C. Campbell, V. Raj, C. Zhao, L. Ma, J. Bai, F. Yang, R. Li, M. Ge, J. Watt, P. P. Mukherjee, D. Mitlin, Y. K. Chen-Wiegart. *Angewandte Chemie* e202412550. DOI: 10.1002/anie.202412550

Work was performed in part at NSLS-II

Scientific Achievement

Scientists reveal how current collector chemistry and electrodeposition rate influence the microstructure of sodium (Na) electrodes and their solid electrolyte interphase (SEI).

Significance and Impact

Understanding the behavior of Na – which is cheaper, more abundant, and safer than other battery materials – is key to developing next-generation energy storage.

Research Details

- At the NSLS-II FXI, CMS, and QAS beamlines, synchrotron X-ray nanotomography, grazing-incidence wide-angle X-ray scattering, and cryogenic focused ion beam microscopy revealed differences in the film morphology, internal porosity, and crystallographic orientation.
- Mesoscale modeling delineated the role of the SEI on electrodeposit growth and the onset of electrochemical instability.