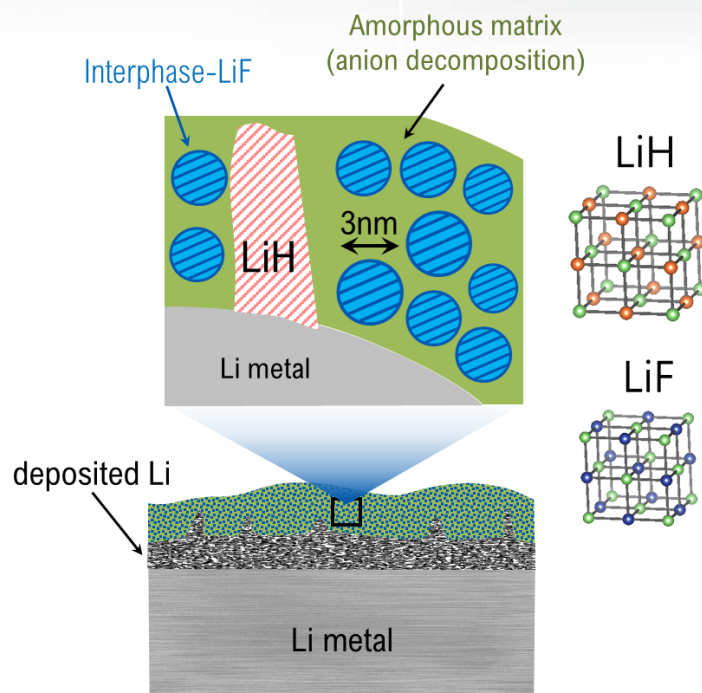


Chemists Prove the Existence of LiH in Battery



The schematic depicts where within the solid-electrolyte interphase (SEI) that LiH and LiF can be found as well as the different crystalline structures of both.

Scientific Achievement

Scientists identified the existence of lithium hydride (LiH) in the solid-electrolyte interphase (SEI) on lithium metal anodes, showing ways to differentiate between LiH and lithium fluoride (LiF).

Significance and Impact

Batteries with lithium metal anodes offer higher energy density but they are currently not rechargeable. This study identified key components of the SEI and resolved a controversial issue regarding the existence of LiH in the interphase, which influences the reaction mechanism.

Research Details

- Investigated the SEI on a lithium metal anode for lithium batteries using the XPD beamline at NSLS-II.
- Quantified crystalline phases and identified amorphous phases in the SEI.
- Identified the existence of LiH through x-ray measurements and air exposure experiments.
- Identified the structural differences between LiF in bulk and in the SEI.

Z. Shadike, H. Lee, O. Borodin, X. Cao, X. Fan, X. Wang, R. Lin, S.-M. Bak, S. Ghose, K. Xu, C. Wang, J. Liu, J. Xiao, X.-Q. Yang, E. Hu. *Nat. Nanotechnol.* (2021).

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