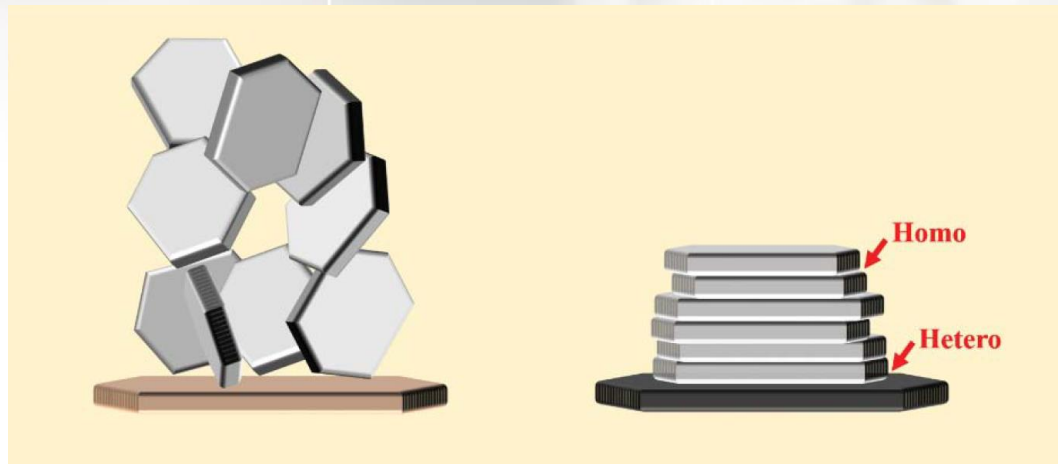


Growing a Stable, Rechargeable Zinc Anode



The illustration shows a comparison between a conventional anode (left) and an epitaxially grown anode (right).

Scientific Achievement

By using a layered deposition approach, scientists grew a rechargeable zinc (Zn) anode battery that was 10 times more stable than regular lithium-ion batteries.

Significance and Impact

Zn-anode batteries are a low-cost way to handle the intermittent supply of electricity generated from solar or wind; this study addresses their promising applications.

Research Details

- Demonstrated a layered deposition – epitaxial mechanism – to grow precise layers of Zn.
- Resulting anode offers high-density energy storage while remaining stable over multiple cycles.
- Morphology, structure, and reversibility were tested using multiple research techniques including measurements at the SST-1 beamline at NSLS-II.
- The discovered epitaxy regulation concept can be extended to other rechargeable batteries that use metals as the anode.

J. Zheng, Q. Zhao, T. Tang, J. Yin, C. D. Quilty, G. D. Renderos, X. Liu, Y. Deng, L. Wang, D. C. Bock, C. Jaye, D. Zhang, E. S. Takeuchi, K. J. Takeuchi, A. C. Marschilok, L. A. Archer, *Science* **366**: 645-648 (2019).

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