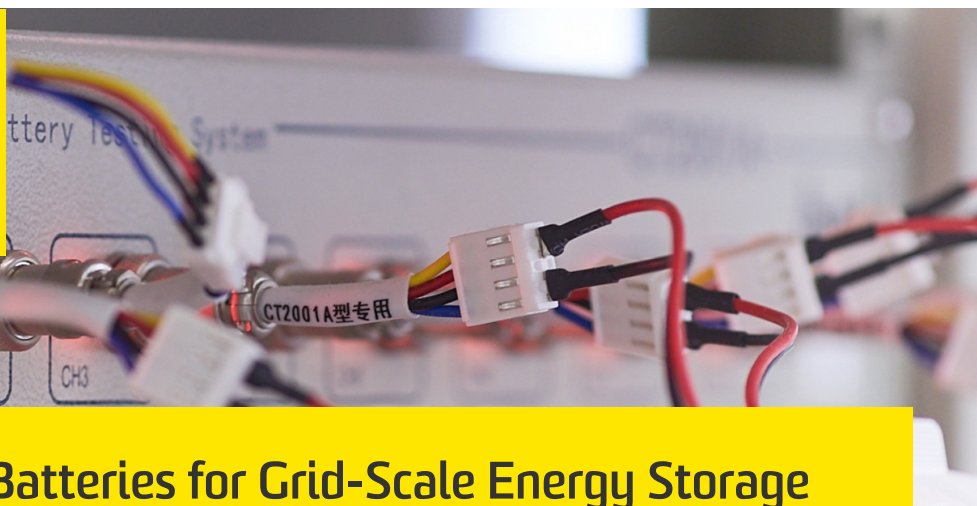




UNSW
SYDNEY



Aqueous Na, K-Ion Batteries for Grid-Scale Energy Storage

Sodium- and potassium-ion batteries are promising candidates for next-generation grid-scale energy storage, due to the elements' abundance and their encouraging battery performance. Their commercialisation requires the development of new electrode materials and a fundamental understanding of their structure-performance relationships.

Competitive advantage

- Development of low-cost, scalable electrode materials with high power density and prolonged cycle life
- Utilisation of a range of in situ and ex situ techniques, such as synchrotron X-ray diffraction, to uncover the structure-performance relationship
- Development of prototype full cells to demonstrate the capability for commercial application
- Expertise in device scale modeling of electrodes

Impact

- The development of sodium- and potassium-ion full cells could lead to low-cost and sustainable solutions for intermittent grid-scale energy storage.

Successful applications

- Mesoporous Prussian blue and its analogue's cathode with unprecedented cycle life
- An ultrafast aqueous potassium-ion battery with a charge or discharge time of less than 5 seconds
- A K⁺/Na⁺ hybrid aqueous full cell with high-rate capability

Capabilities and facilities

- Materials and electrochemical processes
- Extensive state-of-the-art electrochemical laboratories
- Access to comprehensive analytical techniques such as diffractions, surface analysis, and electron microscopy

More Information

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