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Proton Batteries

Developing materials with the energy density of batteries and the power density of supercapacitors is an exciting target for energy storage. New-concept proton batteries, which use the fastest-transferred hydrogen ion as carriers, can potentially revolutionise energy storage in the near future.

More Information

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Competitive advantage

- Interdisciplinary experiences in battery research
- Expertise in materials research and developments in synthesis, modification and characterisation
- Leaders in comprehensive electrochemical methods in probing the fundamentals of electrode-materials for batteries
- Development of new materials accessible for storage of protons

Impact

- Pioneering works on understanding the fundamentals of battery materials for proton batteries
- A novel concept that combines high capacity with high-rate capability

Successful applications

- Development of a prototype proton full battery, reaching both high capacity and high voltage in aqueous media.

Capabilities and facilities

- In-operando techniques to monitor mass changes and structure evolutions during battery charge and discharge processes
- Laboratory materials synthesis setup
- Scaled synthesis of battery materials.
- Battery fabrication and analysis equipment
- Access to comprehensive analytical techniques such as diffractions, surface analysis, and electron microscopy

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