Special Issue

Advanced Studies on High-Performance Metal-Ion Capacitors: Technologies, Systems and Applications

Message from the Guest Editors

Metal-ion capacitors as newly developed hybrid electrochemical energy storage (EES) systems are composed of a battery-type electrode and supercapacitor-type electrode, coupled with the redox reaction and electric double layer behavior, which could achieve the desired peculiarities of a high energy density, large power density and long lifespan. However, due to the incompatibleness of two different energy storage mechanisms, the electrochemical performances are unsatisfactory. Moreover, the construction of advanced metal-ion capacitors is mainly limited by key bottlenecks such as the kinetics mismatching between electrodes, unclear storage mechanism of electrodes and uncontrollable pre-metalation technology. To address these concerns, this edition discusses the technologies, systems and applications of metal-ion capacitors. Topics of interest include but are not limited to:

- Energy storage mechanism of metal-ion capacitors;
- Key technologies of metal-ion capacitors;
- Pre-metalation methods;
- Electrolytes;
- Advanced characterizations for metal-ion capacitors;
- Cell structure designs.

, and

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