学 术 报 告

State Key Laboratory of Chemical Resource Engineering

报告名称： **Low Cost Materials for High Energy Sodium-ion Battery**

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Dr. Shulei Chou's research is focusing on energy storage systems su ch as Li-ion batteries, supercapacitors, metal air batteries, and sodiu m ion batteries. I have published more than 130 international journal papers with more than half of papers as first author or corresponding author including Science, Nature Communications, Advanced Material s, Nano Letters, more than 5000 citations and an H-index factor of 3 5. Research awards include Scopus-Young Researcher of the year 2 014, APD fellowship and VC awards. Currently, I am supervising 12 PhD students in addition to 10 graduated PhD and master students.

报告内容：

Abstract

Sodium-ion battery is a low-cost energy storage device, which is similar i n some ways to lithium-ion batteries. In both systems, Na/Li ions are shut tled between the battery's positive and negative electrodes during chargin g and discharging. Taking into account recent concerns about a possible li thium shortage with the spread of electric vehicles, it is urgent to search f or alternative energy storage systems that could complement the existing Li-ion technology. For this purpose, Na-ion technology can be a suitable choice in terms of battery cost, safety, and raw material abundance. Due t o the increased size and heavier weight of the Na atom compared to the L i atom, the volumetric energy density and specific energy density obtaina ble for the sodium-ion battery would be less than those obtainable with th e lithium-ion battery. However, Na-ion batteries would be interesting for very low-cost systems for grid storage, which could make renewable ene rgy a primary source of energy rather than just a supplemental one. Here, we will present our work on both anode and cathode materials for sodium -ion battery. The anode materials include carbon-based materials, Sn-ba sed materials and red phosphorous based composites with high specific ca pacity and excellent capacity retention. Cathode materials will focus on th e low-cost Prussian blue materials.

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