MnCoP hollow nanocubes as novel electrode material for asymmetric supercapacitors

Amiri Maryam, Moosavifar Seyyed Ebrahim, HosseinyDavarani Saied Saeed, Kaverlavani Saeid Kamari, Shamsipur Mojtaba,

Fabrication of novel and efficient electrodes for green and renewable hybrid energy storage systems is an effective approach to deal with energy crisis. In this work, hierarchical nanosheet-based MnCoP hollow nanocubes electrode with the battery type feature has been successfully synthesized by a simple hard and soft acid-base (HSAB) approach followed by a heat treatment. By taking advantage of the remarkable merits including uniform morphology, electrical conductivity, structural stability, large surface area as well as the battery type feature, the nanosheet-based MnCoP hollow nanocubes electrode exhibits enhanced electrochemical performance with high specific capacity of 879C g−1 at 2 A g−1 excellent cycling stability of 94.4% capacity retention after 6,000 cycles, and maximum energy and power density of 66.98 Wh Kg−1 and 16446 W Kg−1, respectively.

Keywords: Metal phosphides, Nanosheet, Hollow nanocubes, Asymmetric supercapacitor