

Hierarchical Core–Shell nanoarrays as Advanced Negative Electrode Material for High Performance Supercapacitor

THANGAVEL SIVAGURUNATHAN AMARNATH,

김도형[†], 노기혁

전남대학교

(kdhh@chonnam.ac.kr[†])

The emerging supercapacitors (SCs) have great promises in future energy storage applications. Further development is delayed mainly by the absence of high-performance battery-type anodes. Therefore, it is essential to develop new anodes with high capacitance to adapt to that of cathodes. Herein, we demonstrate a simple strategy for designing surface modified hierarchical core-shell architecture decorated on nickel foam for high-performance SCs. The hierarchical core/shell anode achieves a high specific capacitance as well as long lifespan, which is superior to that of previously reported anode materials. The enhanced electrochemical properties of heteronanostructure electrode could be attributed to the incorporation of atomic layer deposition onto the material, which leads to a decrease of internal resistance and ion diffusion length. These features suggest that potential importance of surface engineering of electrode materials for promising applications in high-performance energy storage devices.