

N-doped activated carbon-sulfur based pseudocapacitive asymmetric supercapacitor in aqueous bisalt gel electrolyte

박재민, Milan Jana, 박호석[†]
성균관대학교
(phs0727@skku.edu[†])

Organic sulfur battery has become next generation secondary battery, because it has high theoretical capacity(1675mAh g⁻¹) and cheap 'sulfur' in its system. However, the conventional organic sulfur battery has some problems; low kinetics, polysulfide shuttling, flammable, explosive, toxic, expensive. The unique redox electrochemistry of sulfur in aqueous system, completely different from that in organic sulfur battery, provides a rational strategy to resolve the above problems by designing new materials and cell fabrication. In this research, an aqueous sulfur system was briefly tried and checked the possibility of change to easier system. Sulfur impregnated N doped activated carbon(NAC-S) was used as cathode active material and the electrochemical performance was tested with three electrode configuration and aqueous electrolyte. The NAC-S showed the specific capacitance as high as 150F g⁻¹(5mV s⁻¹). Also, to check feasibility, asymmetric cell performance was tested with commercial LMO//bisalt gel//NAC-S system. Based on this research, the enhanced host material and aqueous system could be implemented in near future.