

PEDOT-coated fiber electrode for electrochemical supercapacitor with mechanical flexibility and high capacitance

김여울, 이준영[†]

성균관대학교

(jylee7@skku.edu[†])

Supercapacitor is the essential element to operate the electric circuit stably in the repeated charging/discharging environment. The most important issue of the capacitor is to increase the capacitance by increase of specific surface area of the electrode since the capacitance is proportional to the surface area of the electrode. Mechanical flexibility of the electrode is also required for the flexible electronics and devices. However, the carbon or other metal oxide electrodes have limitation on mechanical flexibility and capacitance. Electrically conducting flexible PEDOT thin film has the high and stable electrochemical activity and resistance for heat and oxidation environment. In this experiment, we used metallized micro- or nanofiber and PEDOT coated on the fiber as the current collector and as a capacitive medium for the electrode, respectively. We fabricated a symmetric electrochemical capacitor using the electrode and investigated its electrochemical properties including cyclic voltammetry and charge/discharge behavior.