

ABSTRACT

Nanoporous carbon (NPC), a candidate for supercapacitor electrode, has some interesting properties such as high surface area, relatively low cost material, and relatively simple synthesis process. In this study, nanoporous carbon made from coconut shell is synthesized via a carbonization process at 500 °C for 60 minutes. Subsequently, an activation process is performed by adding KOH as the activating agent at 700 °C for 30 min. The produced nanoporous carbon is further modified by inserting Mn^{7+} . The I-V and Cyclic Voltammetry measurement are performed to characterize the electrical and electrochemical properties. We obtain an electrical conductivity of 0.0204 S/m for pure nanoporous carbon. The value increases to be maximum of 0.7398 S/m for Mn^{7+} modified nanoporous carbon with ratio of nanoporous carbon/ Mn^{7+} of about 99:1. From the Cyclic Voltammetry measurement, we calculate the capacitance of 27.2 F/g for pure nanoporous carbon. When the ratio of nanoporous carbon / Mn^{7+} is about 93:7, the capacitance reaches its maximum of 35.77 F/g.

Keywords: nanoporous carbon, coconut shell, insertion Mn^{7+} , supercapacitor