

ABSTRACT

Electrochemical capacitors or supercapacitors are a promising tool for storing electrical energy with high capacitance and power density of 5 kF. The most important thing causes a supercapacitor able to store charge is the electrode surface area and the material that form the electrode. Porous electrodes that have large specific surface are in serious concern on research nowadays. In addition, the material elements of those electrode constituents are also an aspect that affects the capacitance. Manganese Oxide is the most widely used and studied to form supercapacitor electrodes because it has high capacitance of 265-320 F/g. Plants such as *elettaria cardamomum* are sources of manganese which can be used to make supercapacitor electrodes. Simple processes has been done such as mashing on the natural materials that is used and produces thin layer of electrodes in micrometers thicknesses. Then, the performance of those thin layer of electrodes is evaluated using Cyclic Voltammetry and obtained maximum capacitance is 0.33 F/g. Characterization of thin electrode layers using SEM and EDS showed that the surface structure of the morphology was not uniform, there was a smooth one and rough one, the content of Mn was only 0.05 wt% and the highest content was dominated by C with 45.76 wt%.

Keywords: Supercapacitor, manganese, electrode, capacitance.