

## ABSTRACT

Supercapacitor is an energy storage device which has high specific capacitances, specific energy density also long life cycle. Supercapacitor has mechanism load storage which work a long, pseudocapacitif and double layer. Both of them give contribution to the total of the supercapacitor specific capacitance. Mangan is form which mostly used and has researched to make supercapacitor electrode. Mangan can be found from chemical ingredients such as mangan sulfat. Supercapacitor electrode form of mangan sulfat powder is made by mixing  $\text{MnSO}_4$  with natural ingredients extract that function as reducing agent and TETA as complainant agent. The natural ingredients use for supercapacitor electrode fabrication, are coriander seeds (*coriandrum sativum*), papaya leaf (*carica papaya*), and banana peel (*musa paradisiaca*). The thin layer of the electrode is tested the electrochemistry performance using cyclic voltammetry and obtain the maximum of specific capacitance in the mixture  $\text{MnSO}_4$  with banana peel extract mass 1 mg, at 43.1 F/g. Morphological characterization using SEM at magnification 10000 – 50000 times obtained the size of each particle is about 10 – 50  $\mu\text{m}$ . Then crystallinity characterization using XRD obtained the highest peak of mangan in position  $2\theta = 44.62^\circ$  for banana peel extract and  $2\theta = 44.73^\circ$  for coriander seeds extract.

**Kata kunci** : supercapacitor, mangan, natural ingredients, specific capacitance