

ABSTRACT

This research is a development of previous research that has made an electrolyte gel with mass variations of HydroxyEthyl Cellulose (HEC) against Na₂SO₄ electrolyte solution. The results of the study showed good electrochemical stability and good resistance to window potential as indicated by the consistency of the cyclic voltammetry measurement data for 3 measurements. However, the stability of the solubility of the electrolyte gel is still not good because of the presence of salt deposits after the gel has been left for several minutes. This is influenced by the weak physical bond that occurs between HEC and Na₂SO₄. For this reason, in this study, the addition of plasticizer in the form of glycerol with a mass variation of 0.2 g; 0.4 g; 0.6 g; 0.8 g and 1 g. Based on the cyclic voltammetry (CV) characterization, the addition of 0.4 g of glycerol resulted in a maximum capacitance of 10.79 F/g with a cell voltage of 1.8 V. This result was linear with a measured ionic conductivity of 3.47×10^{-5} mS/cm.

Keywords: *supercapacitor, gel electrolyte, HEC, Na₂SO₄, plasticizer, glycerol, ionic conductivity, capacitance*