

## ABSTRACT

*Supercapacitor is one of a charging storage device which is the development of conventional capacitors. Supercapacitor has several advantages such as specific capacitance accomplish to 500 F/g and its power density is 10 times greater than that of batteries.. Charging and discharging of the supercapacitor occurs very quickly in the order of seconds and has a long lifetime until 20 years. The purpose of this study was to determine the effect of variations in the concentration of the gelatin agent in the gel electrolyte on the capacitance produced by the supercapacitor. Gel electrolyte is made by mixing gelatin agent (HEC) with weight variations of 0.1 g, 0.2 g, 0.4 g, 0.6 g, 0.8 g, 1 g. The mixture is then added with 1M  $\text{Na}_2\text{SO}_4$  of electrolyte. This electrolyte gel will be used as a charge source on the electrodes. The electrodes are made from a mixture of activated carbon, carbon black and CMC (binder). The gel electrolyte then characterized a potentiostat with a cyclic voltammetry analysis technique. Through the I-V measurement results on the potentiostat, the specific capacitance is then calculated. Based on results, we subsequently analyzed the effect of variations in the concentration of gelatin agent on the capacitance, electrochemical stability and potential window of the supercapacitor.*

**Keyword:** *Supercapacitor, gel electrolyte, gelatin agent, HEC, cyclic votametry, specific capacitance, electrochemical stability, potential window.*