

## ABSTRACT

### The Using of Carbon Paper as Electrode in Supercapacitor

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Carbon paper with variation size and method of supercapacitors were prepared as electrode of supercapacitor with polymer hydrogel electrolyte, polyvinyl alcohol, as separator and phosphoric acid ( $H_3PO_4$ ) as electrolyte. Supercapacitor was assembled by rolling method and plate/sandwich method with variation of surface area. If surface area was high, so capacitance value was high too. Optimum capacitance was gotten in rolling method, was  $1.266 \mu F$  with surface area  $3 \times 20$  cm, charge time 60 minutes and concentration of electrolyte  $H_3PO_4$  0,1 N. Beside that, optimum capacitance of plate/sandwich method was  $0,012 \mu F$  with surface area  $6 \times 5$  cm, charge time 60 minutes and concentration of electrolyte 0,1 N. Carbon from palm kernel shells were added to paper carbon sheets with particular size was  $90 \mu m$  and temperature calcined  $400^\circ C$  can increase the capacitance became  $1331,8 \mu F$  for rolling method and  $0,099 \mu F$  for plate/sandwich method.

Keywords : Supercapacitor, ECLC, Capacitance, Polymer hydrogel electrolyte, Palm kernel shell

