ABSTRACT

In this research, graphite from pencil 2B has been synthesized into exfoliated graphite with K2SO4 inorganic salt solution using electrochemical method. The concentration variations of the salt solution used were 0.05 M, 0.1 M, 0.2 M, 0.35 M and 0.5 M then the voltage used in the exfoliation process in the electrochemical method was 15 V for 3 minutes. The concentration of 0.2 M is considered optimal because it gets the highest yield value of 27,3 %. The maximum conductivity is 10.5 S/ m, based on the results of cyclic voltammetry the highest capacitance value is 21.2 F/g and the galvanostatic charge discharge characterization shows that the charging and discharging time is 2 s. Meanwhile, as a comparison, for the graphite electrode without exfoliation, the conductivity value was 0.7 S/m and for the capacitance 1.2 F/g. The comparison electrode takes a longer time to charge and discharge by 4 s because it does not go through the activation stage through the electrochemical method.

Keywords**:** *Graphite, exfoliated graphite, K_2SO_4, electrochemical method, supercapacitors*