

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, K₂SO₄, electrochemical method, supercapacitors*