SYNTHESIS OF GRAPHITE/COBALT SUBSTITUTE FERRITE ELECTRODES FOR HIGH CATALYTIC ACTIVITY IN SUPERCAPACITOR PERFORMANCE

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AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

I, hereby acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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We declared that we read this thesis and in our point of view this thesis is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.

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ABSTRACT

The rise in market growth of mobile electronic devices and electrical vehicles need high performance energy devices. Batteries, fuel cells and supercapacitors are electrochemical storage devices that are capable of storing charges through different mechanisms. Supercapacitors are of particular interest due to their high power density and cycle life, compared to batteries. In developing supercapacitor that has high capacitance the development of high specific surface area electrode is required. In this study, the study the effect of addition of Cobalt Substitute Ferrite toward capacitance of graphite/cobalt substitute ferrite composite and study on the effect of Cobalt Substitute Ferrite toward the voltage discharge rate of the supercapacitor were being conducted. The coprecipitation of cobalt substitute ferrite catalyst has been synthesized. The resulting suspension is subjected to form composite electrode with graphite. The existing capacitance of the graphite electrode is 0.0079 F/g and the energy can be stored inside the supercapacitor is 0.1422 J/g. As the conclusion, the study on the effect of increasing the ratio of Cobalt Substitute Ferrite towards the capacitance show a tremendous increment as much as 600% when the ratio of Cobalt Substitute Ferrite inside the composite increased to 40%. Meanwhile for study the effect of Cobalt Substitute Ferrite toward the voltage discharge rate show that as the ratio of Cobalt Substitute Ferrite the voltage discharge rate for supercapacitor also slower by 4.6 times as the ratio increase to 40%.

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