PREPARATION AND CHARACTERIZATION OF MESOPOROUS ACTIVATED CARBON FROM CORN COB FOR EDLC SUPERCAPACITOR

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This Final Year Project Report entitled **"Preparation And Characterization Of Mesoporous Activated Carbon From Corn Cob For EDLC Supercapacitor "** was submitted by Wan Nur Nabila Binti Wan Razali in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by

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AUTHOR'S DECLARATION

I declare that the work in this proposal was carried out in accordance with the regulations of University Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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

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ABSTRACT

PREPARATION AND CHARACTERIZATION OF MESOPOROUS ACTIVATED CARBON FROM CORN COB FOR EDLC SUPERCAPACITOR

Agricultural waste biomass is cheap and widely available. Its usage as a raw material for the production of activated carbons has increased over the last decades. As a result, activated carbon derived from agricultural biomass resources has been utilized in a wide range of environmental and industrial applications. The goal of this study is to create an activated carbon (AC) from corn cob waste, using carbonization and chemical activation. This study is focused on chemical activation, with potassium hydroxide (KOH) serving as the active catalyst. The corn cob is first ground and sieved into a powder with a meshes of 500 micrometers powder is then chemically activated with potassium hydroxide (KOH) at impregnation ratios of 1:1, 1:2, 1:3 and 1:4 (Corncob: KOH) at predetermined temperatures and times. On the basis of chemical analyses of the resultant carbon, it has been determined that impregnation ratios affect the percentage of carbon yield and ash content differently. Due to the KOH activation, which caused more potential sites to penetrate and occupy the activating agent, corn cob-activated carbon was capable of producing a high yield percentage. Thus, as the impregnation ratios of KOH increase, the ash content decrease while the surface area increase. The chemical properties of the final corncob-activated carbon were found to be significantly influenced by both the preparation parameters and the production method.

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