NURFADHILAH AMIR HAKIM

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SYNTHESIZE AND CHARACTERIZATION OF SAGO STARCH CONDUCTIVE FILMS MODIFIED BY AMMONIUM PERSULFATE

NURFADHILAH BT AMIR HAKIM

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This Final Year Project Report entitled **"Synthesize and Characterisation of Sago Starch Conductive Film Modified with Ammonium Persulfate"** was submitted by Nurfadhilah Binti Amir Hakim 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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Dr Rosyaini Afindi Zaman
Supervisor
B. Sc. (Hons.) Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

_____

Dr. Khuzaimah Nazir
Project Coordinator
B. Sc. (Hons.) Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Date: _____

ABSTRACT

SYNTHESIZE AND CHARACTERISATION OF SAGO STARCH CONDUCTIVE FILMS MODIFIED WITH AMMONIUM PERSULFATE

Due to its attributes of being ecologically friendly, accessible, and abundant in nature, studies in making natural conductive films to substitute synthetic based films increased widely. It has been noted that there is a dearth of study on the combined use of sago starch and ammonium persulfate oxidation to produce conductive films. The goal of this study was to acquire and analyse conductive films made from sago starch powder that had been modified with ammonium persulfate (APS). Due to its biodegradability and low cost, sago starch was selected as the main ingredient in the film. The benefits of APS as an oxidising agent, which provide excellent electric and thermal properties and good flexibility. Sago starch films are made using a solution casting procedure with varying APS concentrations and gelatinization times. The surface structure of both conductive films were characterized using microscope shows that the features almost identical. However, the modified films appear to be smoother but less clear compared to pure sago starch films. Fourier Transform Infrared Spectroscopy (FTIR) was used to determine the chemical interaction and the results shows that the typical absorption peaks for the molecular structures of pure sago starch indicated between 707 cm^{-1} and 3295 cm^{-1} while the modified sago starch with APS is in the 700 cm^{-1} to 3400 cm^{-1} region. Due to the lack of time, the thesis of conductivity cannot proceed but it is believed that the conductivity of sago starch film modified with APS will enhanced since the APS itself act as salt. Physically, the inclusion of APS causes the changed films' visual appearances to alter, producing smooth and flexible films.

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