

**BIOPLASTIC DERIVED FROM LOCAL BANANA  
PEEL WASTE (STARCH) FOR FOOD PACKAGING  
APPLICATION**

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(STARCH) FOR FOOD PACKAGING APPLICATION**

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This Final Year Project Report entitled “**Bioplastic Derived from Local Banana Peel Waste (Starch) for Food Packaging Application**” was submitted by Nadhirah binti Mohammad Razali in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Science and was approved by

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## **ABSTRACT**

### **BIOPLASTIC DERIVED FROM LOCAL BANANA PEEL WASTE (STARCH) FOR FOOD PACKAGING APPLICATION**

The massive manufacturing of conventional plastics and the long degradation process. Research into biodegradable plastics is essential to save environment from plastic waste. Biodegradable plastics are made up of starch, cellulose, chitosan, and proteins generated from renewable biomass. Plants, particularly bananas, can supply starch for the manufacturing of biodegradable polymers. Banana peel waste (BPW) is a waste high in starch and cellulose. In this study, glycerol is utilised as a plasticizer and acetic acid as a crosslinker to explore their physicochemical features such as solubility, moisture uptake, and soil burial degradation using ATR-FTIR analysis and an optical microscope. The results reveal that using a low molecular weight plasticizer (glycerol) reduces the BS of the films while increasing their elongation and flexibility. It was also discovered that the addition of modified acetic acid could improve the functional properties of starch bioplastics during chemical reactions. This conclusion is supported by FTIR results, which indicate the link of glycerol, starch, and acid from film with varying starch ratios in film plastic. In conclusion, it may benefit or contribute to the creation of new compositions in the production of bioplastic from BPW that can be used for food packaging applications.

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