

**BIODEGRADABILITY STUDIES OF BANANA PEEL
BIOPLASTIC USING MODIFIED ASTM G21-70
METHOD**

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This Final Year Project Report entitled **“Biodegradability Studies of Banana Peel Bioplastic using Modified ASTM G21-70 Method”** was submitted by Nadzirah Binti Abdul Samat in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry with Management, in the Faculty of Applied Sciences and was approved by

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ABSTRACT

BIODEGRADABILITY STUDIES OF BANANA PEEL BIOPLASTIC USING MODIFIED ASTM G21-70 METHOD

Plastic pollution has significantly harmed the environment, leading to various adverse impacts on human existence. Bioplastics offer good substitute to traditional plastics because of their high biodegradability and environmentally friendly characteristics. Banana peels are additionally beneficial to make bioplastics that completely biodegrade since their contents include cellulose, starch, pectin, and other polymers. However, it is crucial to conduct biodegradability tests to assess how easily and completely these substances can be broken down by biological organisms. Standard ASTM G21-70 method does have obstacles, including being less effective for testing bioplastic and time-consuming. Therefore, the purpose of this research is to investigate the biodegradability of bioplastics made from banana peels using a modified ASTM G21-70 test method that offer a faster and more reliable approach to evaluate biodegradability behaviour of banana peel bioplastics based on percentage weight loss. Additionally, characterization the functional groups using FTIR analysis was obtained in the range of $3500\text{ cm}^{-1} - 500\text{ cm}^{-1}$. Banana peel bioplastic with 60% BPW starch content degraded much faster with percentage weight loss of 14.45% compared with 10% BPW content degrade with only percentage weight loss of 5.88% within the period of 10 days.