



# Bioplastics and Circular Economy

End-of-life options for **BIOPLASTICS**  
– Closing the loop –



## ■ OUR TEAM

We are called the **Bright Green Graduates (BGG)**

## ■ INTRODUCTION

The members of this team are; Izzah Durrati (MSc in Applied Chemistry), Nina Taufik (MSc in Chemistry), He ManJie (PhD in Applied Chemistry), Anis Nadiah (MSc in Biology) and Yuki Saeki (MSc in Economics)

## ■ OUR GOAL

We aim to promote a circular economy through the expansion of bioplastics in various applications. Bioplastics serve as an alternative to plastic materials as they can easily be broken down, thus providing a potential significant impact towards our global environment, where several factors such as pollution and climate change can be targeted.

## ■ PROBLEM AWARENESS - Brunei context

In [February 2022](#) it was reported that among the total solid waste generated in Brunei Darussalam, 18% of the waste is composed of plastics. Additionally [in 2015](#), an approximate total of 30240 tonnes of plastic were produced, where 1.5 kg of plastic was indicated to have been generated by Bruneians every week. Waste generation is a major global concern, especially due to the developing industrialization, population growth and modernised way of life. Therefore, control measures are needed to minimise the environmental impact and allow improvements for a better future outcome.

## ■ CIRCULAR ECONOMY

Bioplastics, which are plastics manufactured from bio-based polymers, can contribute to a circular economy. The materials can allow a drastic reduction in plastic waste through the design of products that can be continuously reused and recycled in their markets.

## ■ OUR INITIATIVE

As a solution to plastic pollution, bioplastics present a viable and attractive alternative to the conventional plastics currently used world-wide. Samples in laboratory scale should first be synthesised, optimised for industrial manufacturing and undergo several tests to show its durability, flexibility, and degradability depending on its intended use. From this trial & error and optimisation, the samples can then be introduced to major companies to mass produce and be widely used around the world. To expand the use of bio-based plastics, in addition to its environmental qualities that include being plant-based and biodegradable, we also need to firmly demonstrate the benefits of introducing bio-based plastics to customers and society.

## ■ EXPECTATIONS

Through this initiative, we hope to let bioplastics be more available to manufacturers and consumers globally at an affordable cost. This will allow its applications to be more known and broaden into commercial products, food packaging and medical equipment. Additionally we hope bioplastics can contribute to the realisation of a resource circulation society.