

**PREPARATION AND CHARACTERIZATION OF BACTERIAL  
CELLULOSE (BC) INCORPORATED WITH POLYETHYLENE  
GLYCOL (PEG) FILM**

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## **ABSTRACT**

### **PREPARATION AND CHARACTERIZATION OF BACTERIAL CELLULOSE (BC) INCORPORATED WITH POLYETHYLENE GLYCOL (PEG) FILM**

Bacterial cellulose (BC) has been prepared in this project by using bacteria which is *Acetobacter Xylinum*. Matured coconut water was used as a medium and was mixed with the others components which are glucose, ammonium sulphate, glacial acetic acid. Polyethylene glycol (PEG) was used as a plasticizer to improve flexibility of the plastics film produced. The effect of plasticization and alkaline treatment on thermal properties and chemical structure of Bacterial Cellulose films were determined. It shown that as increase in the plasticization effect of PEG was decrease the thermal properties ( $T_g$  and  $T_m$ ) of the BC film. Meanwhile, the thermal properties of the BC films also were differ when treated with different types of alkaline bases which is the BC films treated with KOH has high thermal properties than the BC films treated with NaOH.

## **CHAPTER 1:**

### **INTRODUCTION**

#### **1.1 Background of plastics**

Plastic is an important tool in agriculture. It is improving productivity, shortening the growing season and facilitating crop cultivation in non-traditional growing areas. It is also providing new storage systems for forages and grain crops. The uses of the plastic film or plastic mulch give many benefits to farmers which are easier for the planting process, increase the productivity of the yield with high quality, earlier maturity and also water saving. Besides that, the main purposes of agricultural film are to prevent weeds from growing, thereby reducing the need for herbicides and any negative impact on the environment and also attaining a more uniform production. Over the year, millions of plants have been grown and being grown in the bags or in the surface of bag. The plastic bag or film system of growing is proven and is being used by a great number of progressive nurserymen around the world.

However, in spite give some advantages, the use of the plastic bag or films also has disadvantage or cause a problem in environment system. The plastics used for the agriculture should be disposed after the harvesting process. Besides that,