CHAPTER 1

INTRODUCTION

1.1 General

The depletion of petroleum resources together with increasing environmental concern around the world are acting synergistically to provide the impetus for new products and materials that are compatible with the environment and dependent on fossil fuel (A.K Mohanty, 2005). Composites material, especially “green composite” fit well in replacing the petroleum resources. Green composites are known for their bio degradable properties, easily recycled and strength properties. Economy also plays a major roles in reviving the application of natural fiber which are cheaper, readily available, environmental friendly and easy to process. It is the major task for scientist and engineer to develop new biobased product to fulfill the world demand. Biopolymers are now starting to migrate into the mainstream and biobased polymers may soon be competing with commodity plastic (A.K Mohanty, 2005).

Most plastic themselves are not suitable for load bearing application as they have low strength, stiffness and dimensional stability. Thermoplastic for example Polypropylene,
Polyethylene and Polystyrene have limited strength and resistance to weather, flame and ozonation. With the industrial used of plastic, combinations of plastic with natural fiber or wood flour were introduced years ago (A.K Bledzki, 2002). The introduction of natural fiber helps to adjust the mechanical properties and modify composition of the polymeric material.

1.2 Objectives

The objectives of this study are:

1. To study the effect of different build orientation to the composite.
2. To determine the mechanical strength of the epoxy resin reinforced coconut fiber composite.

1.3 Project Scope:

In this project, epoxy and coconut fiber will be used as the material to build a composite. Since the composite is to be built, the parameter in this project is build orientation of the composite. Then analysis is done based on the result from the composite by tensile test. The tensile properties will be obtained based on the tensile test conducted. Ten specimens are prepared for each case but only five of the best result is carried out for further analysis.
1.4 Problem Statement

The term composite could mean almost anything if taken at face value, since all materials are composed of dissimilar subunits if examined at close enough detail. But in modern materials engineering, the term usually refers to a “matrix” material that is reinforced with fibers.

Many composites used today are at the leading edge of materials technology, with performance and costs appropriate to ultra demanding applications such as spacecraft. Metal and glass are available as matrix materials, but these are currently very expensive and largely restricted to Research & Development laboratories.

Coconut plant is the common plant in all around the world. There are many useful parts of coconut tree. Usually, many parts of coconut will be wasted by industry especially in handicraft industry. So, by manipulate the waste from coconut tree for example coconut husk, it can contribute in engineering field which is used as composite. By eliminate or recycle the waste of coconut husk, cost of production can be reduced. Besides that, a good performance of the application can also be achieved.