PREPARATION AND CHARACTERIZATION OF CHITOSAN/CELLULOSE LAMINATED MEMBRANE

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This Final Year Proposal Project Report entitle **"Preparation and Characterization of Chitosan/Cellulose Triacetate Laminated Membrane"** was submitted by Nurul Ashikin Binti Afandi, in partial fulfillment of the requirement for the Degree of Bachelor of Science (Hons.) Polymer Technology, in the Faculty of Applied Sciences, and was approved by

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ABSTRAC

CHITOSAN/CELLULOSE LAMINATED MEMBRANE FOR WATER FILTER

This study is to develop a novel method for fabrication of the chitosan/cellulose triacetate (CTA) laminated membrane as to improve antifouling and biocompatibility of membrane for water filter by used phase inversion technique. 1% w/v of Chitosan was dissolved in 1% acetic acid aqueous solution. 7.5% Cellulose Triacetate (CTA) was dissolved in Dichlorometahe and tert-butanol. Both solutions then added with PG1 to form bonding between them. By using the film applicator, the laminated membrane was fabricated by casting the CTA film on top of the chitosan film and the membrane was produced by immersed the laminated film into diethyl ether to from the pores. The thickness of the film membrane was control using filler gauge before the casting process. Flux, Fourier Transform Infrared (FTIR) and Differential Scanning Calorimeter (DSC) testing were done as to characterize the laminated membrane.

CHAPTER 1

INTRODUCTION

1.1. Introduction

Usage of the membrane is not new things to point out in our daily life. Membrane and the membrane process have been developed long ago. It has been a part of our life. The applications of membrane as separation method were widely used in the world [Strathmann *et all*, 2006]. The applications of membrane are varies in biochemical, biological, engineering, medicine and mass separation. Today, membranes are used of the large scale to produce portable water from sea and brackish water to clean industrial effluents and recover valuable constituents, to concentrate macromolecular mixture in the food and drug industries and to separate gases and vapor in petrochemical process.[Strathmann *et all*, 2006].

Membrane technology has become critical in separation technology over the past decade. The need of the membrane in separation technology has been developed because of the great characteristic such as simply and flexible to produce, low energy requirement, good stability, environment compatibility, easy control and large variety of application and operation. All this needed to