

**REMOVAL OF FE(II) FROM WASTEWATER BY USING INTEGRATED
COMPLEXATION METHOD**

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**This report is submitted in partial fulfillment of the requirements needed for the
award of Bachelor in Chemical Engineering (Hons.)**

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JULY 2017

ACKNOWLEDGEMENT

In preparing this research project report, many people including academicians and lecturers had involved. They had contributed on my understanding to perform this project. On top of that, I would like to give a special thank you to my supervisor, Dr Norin Zamiah Kassim Shaari for all the guidance and time spent from the beginning of the project until completion. Due to her expertise in this scope of research, I was able to gain as much knowledge as I can. In fact, she gave me a lot of ideas to write this research paper. Other than that, a huge gratitude goes to Universiti Teknologi Mara for giving me the opportunity to involve and establish this research paper successfully. Last but not least, I wish to express my appreciation to my parents and colleagues for the support and encouragement along the journey.

ABSTRACT

Environmental pollution became major concern these recent years. The presence of heavy metals in wastewater and industrial effluent became major problems to environment if being discharged without treating them. Heavy metals may cause a lot of problems to environment and humans' health if being exposed with higher concentration. The need to treat wastewater and industrial effluent became important nowadays. This paper study on the removal of Fe(II) from wastewater using integrated complexation method. The integrated complexation method used to remove Fe(II) from wastewater is hybrid membrane through thin film composite membrane. Hybrid membrane formulated from blended poly(vinyl alcohol) PVA and chitosan was cross linked with tetraethyl orthosilicate (TEOS) using sol-gel method and coated on polysulfone membrane as the support membrane will be used. Different pH of wastewater was conducted to study the separation process using this method. The influence of different pH of wastewater used were investigated to study the percentage removal of Fe(II) from wastewater. Based on the results obtained, the highest percentage removal of Fe(II) from wastewater using composite membrane with hybrid membrane is at pH 10 with 99.89% of removal during filtration process.

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CHAPTER ONE

INTRODUCTION

1.1 RESEARCH BACKGROUND

Globalization and industrial become one of the factors that cause the environmental issues rises rapidly. All the environmental issues caused by chemical industries such as air pollution, water pollution, greenhouse effect, and soil sediment. Thus, variety methods are needed to treat all the problems that causes by the chemical industries. The methods are important to reduce the emissions of uncontrolled chemicals produced from industries and cause the environment to be polluted. One of the major concerns of the environmental issues caused by chemical industries is the presence of heavy metal in wastewater and in industrial effluent.

Heavy metals are the elements that have relatively high density and can become toxic at low concentrations. They also give bad effect to environment and human if it is produced uncontrollably. If the body absorbed heavy metals in excess, it can cause variety of serious health effects and can lead to death. Thus, to reduce the emission of heavy metals in wastewater such as iron or Fe(II), methods to reduce heavy metals are effectively used. Reducing Fe(II) contain in wastewater is not only cause to minimize the pollution that may occur but also to follow the guidelines of Environmental Quality Act 1974, an act that relates to control environment from being polluted. (Gunatilake, 2015).