CHAPTER I
INTRODUCTION

One of the most common problems in the industry wastewater is heavy hydrocarbon composition in the industrial wastewater especially the wastewater from petroleum refinery plant, oil and petroleum products are considerably hazardous to the environment. They are also directly toxic to animals and plants in the water. Moreover, they can commonly leak from storages. The leakage does not only contaminate in soil but also lead to contaminate in underground water and nearly surface water because of the immigration of soil. They are caused high BOD and COD value that show a negative quality of the wastewater.

The main problem of wastewater treatment is some hydrocarbon cannot easy to remove such as motor oil which can affect the performance of biological wastewater treatment plants because motor oil cannot be degraded biologically. It must be removed before entering biological treatment plant.

Froth Flotation is a surfactant-based separation process. It has been pointed out to be a promissing technique for wastewater treatment especially for removing oil from wastewater because of several advantages, including rapid operation, high removal efficiency, flexibility for treatment of various pollutants and low treatment cost. In a froth flotation operation, an oily wastewater and a surfactant solution are continuously fed to a froth flotation column while compressed air is introduced into the system to generate fine air bubbles. The added surfactant tends to adsorb preferentially at the air/water interface of the air bubbles which come up to form froth on the top of the column. The oil particle then coadsorb at the tail resion of the adsorbing surfactants. As a result, the oil can be separated effectively by froth flotation.

Froth Flotation is a process for selectively separating hydrophobic materials from hydrophilic. This is used in several processing industries such as mining, waste water treatment and paper recycling. In mining technology, this technology is used to separate minerals. It also widely used in industrial waste water treatment plants, where it removes fats, oil, grease and suspended solids from waste water. Dissolving air flotation units are used in removing oil from the wastewater effluents of oil refineries, petrochemical and chemical plants, natural gas processing plants and similar

industrial facilities. It can be used to recover recycled paper in paper industry by remove the contaminants that are mostly printing ink and stickies.

The propose of this research was to investigate a potential of multistage foam fractionation to remove oil from water. The effects of operational parameter, including surfactant concentration, salinity, air flow rate and feed flow rate of the multistage foam fractionation unit on the process efficiency of oil removal.