CHAPTER I
INTRODUCTION

Surfactant adsorption on solid surface plays an important role in many industrial applications, for examples detergency, adhesion, and wetting. The adsorbed surfactant typically reduces the surface free energy resulting in modification of interfacial properties. In order to effectively utilize the surfactant, the surfactant adsorption isotherm and the mechanism must be well understood. The typical factors that affect the surfactant adsorption can come from both solid surface nature and solution properties. The solid surfaces can be either hydrophobic or hydrophilic and the surfactant solution parameters can be surfactant concentration, ionic strength, pH, etc.

The adsorption of surfactant has been widely studied with hydrophilic surface, e.g. silica and alumina. Surprisingly, much less study of the surfactant adsorption on hydrophobic surfaces, e.g. plastic, has been reported even though they are industrially important.

For several processes that involve with hydrophobic surface the surfactant have many important functions. For example, surfactant acts as a dispersant to separate ink particles from plastic surface and prevents redoposition of separated ink particles on the surface in the flotation deinking process. In the coating process surfactant acts as a wetting agent to enhance the ability of organic solutions to wet and spread over the hydrophobic surface by reducing solution surface tension.

In this research, both adsorption isotherm and zeta potential were investigated to elucidate the mechanism of adsorption of the surfactant on hydrophobic plastic surfaces. Three surfactant representatives used were sodium dodecyl sulfate (anionic surfactant), cetyl triammoniumbromide (cationic surfactant) and t-cetylphenol polyethoxylate (nonionic surfactant). The plastics used for adsorption study were high-density polyethylene and polypropylene.