CHAPTER I
INTRODUCTION

Surfactant is one of the most versatile chemicals used these days. An important surfactant property is diffusivity. It is of great interest in emulsification, digestion, degreasing, foaming and coating processes. In cleaning processes, diffusivity of surfactant controls the kinetics of detergency. Furthermore, it also plays an important role on the rate of surface wetting in determining suitability of a wetting agent for textile industries (Rosen 1989).

A wildely used technique to determine surfactant diffusivity has been the Taylor dispersion (peak-broadening) method (Pratt and Wakeham 1974). In 2001, Leaist and Abbu devoloped a model to determine SDS diffusivity based on experimental data from the Taylor dispersion method (Leaist and Abbu 2001). The Taylor dispersion method is accurate but its disadvantages include expensive equipment and complex analysis. In this work, transient capillary rise method is proposed as an alternative to the Taylor dispersion method. The method obtains diffusivity though a simple experimental set-up and a mathematical model.

Due to a wide range of applications, SDS, CTAB and Triton X-100 were chosen as anionic, cationic and nonionic surfactants for this study. The capillary rise method was carried out to obtain dynamic surface tension of the surfactant solutions and their diffusivity. The validity of this method in the diffusivity determination was compared to those reported in literatures.