



CHAPTER I

INTRODUCTION

In the field of Chemical Engineering, mass transfer phenomena has been studied by many researchers. Mass transfer depends on several parameters and physico-chemical property is essential among them. Mass transfer coefficient, density, solubility and diffusion coefficient are therefore experimented in this study.

Mass transfer for suspended particle in turbulent liquid flow is important in various chemical operations, such as slurry catalytic reaction, solid dissolution, crystallization and fermentation. Many reports on this problem have been published, especially about suspended particles in agitated vessels. HIXSON and BAUM⁽¹⁾, NAGATA and YAMAGUCHI⁽²⁾, BARKER and TREYBAL⁽³⁾, HARRIOT⁽⁴⁾, and BRAIN et al⁽⁵⁾ are representative investigations for agitated vessels. However these investigations show a variety of results, and no reliable correlation for mass transfer coefficient has been found.

The main objective of this work is to find a correlation equation to predict the mass transfer coefficient of α -naphthol in turbulent liquid in baffled agitated vessel not only for standard 6-bladed turbine but also for other impellers, such as fan turbine, pitch fan turbine, marine propeller and 2-bladed agitator. In each case, the influence of important parameters on mass transfer are studied and the results are correlated in terms of dimensionless numbers of SHERWOOD, REYNOLDS and SCHMIDT.