CHAPTER 5

CONCLUSIONS

1. On the basis of the experimental data obtained in this investigation of mass transfer coefficient for solid-liquid system in baffled agitated vessels, it is established that the Sherwood number depends on the 0.336, 0.227, 0.123, 0.212, 0.197 power of the Schmidt number and the 1.492, 1.055, 0.957, 0.866. 0.803 power of the Reynold number for standard six bladed turbine, 6-blade fan turbine, 4-blade pitch fan turbine, marine propeller and paddle, respectively.

2. Larger vessels give smaller mass transfer coefficient at the same Reynolds number, indicating effects of vessel diameter to some extent. However, the particle sizes used in the two studies were not the same, the difference in mass transfer in the two vessels could be attributed to the particle sizes. In Boon-Long's study it was found that the influence of the ratio of tank to particle diameter is very small compared to the influence of the Reynolds and Schmidt number.

3. The comparison is made between the standard 6-blades turbine and the other type of agitator, it is concluded that for the same size studied, the standard 6-blade turbine gives the highest value for the dissolution constant in liquid-solid agitation.

The correlation varies from case to case and no general correlation has been reached. Thus variation on mass transfer coefficient could have resulted not only from Reynolds number and Schmidt number but also from other factors such as solid-liquid system, d_p, diameter of the particles, level of agitation, shape of the particles, solid concentration in the liquid system etc. The results from this suggests that further study is required to reach a generalized equation of solid-liquid mass transfer.