

PREFACE

The thesis entitled “Studies on Bubble Behaviour in Gas-Liquid Dispersion using Acoustic Method”, uses an efficient, cost effective and alternative technique viz. acoustic technique for hydrodynamic study of opaque bubble columns. Most of the bubble columns in industrial practice are opaque in nature and it is difficult to analyse the inside hydrodynamics using conventional methods. But using acoustic method this problem can be sorted out. The technique is based on analyzing acoustic signals produced by the bubbles in the column and received by acoustic sensors. The frequencies contained in the column depends upon bubble size only.

Further, in most of the conventional methods, local hydrodynamics of the bubble column cannot be analysed without disturbing inside flow. Local hydrodynamics of a bubble column can be studied using this technique.

To carryout the experiments, a rectangular Bubble Column made up of Perpex was used. The Acoustic signal was collected through condenser mikes and were saved as wave files for analysis using MATLAB program. Mass-transfer coefficient was calculated using DO meter and also using titration method.

I express my deep sense of gratitude and indebtedness to my esteemed supervisor Prof. Ashok Kumar Verma, for his guidance and encouragement during the PhD dissertation work.

It is hoped that this PhD work will help to overcome the difficulties to study hydrodynamics of opaque bubble columns. The thesis has been divided in five chapters. The scope and aim of the work is presented in chapter-1. Literature relevant to the work is presented in chapter-2. Details of experimental set-up and experimental procedure

are given in presented in chapter-3. Analysis of data and findings are presented in chapter-4. The last chapter summarises the results of the work.

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