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Nota di contenuto	CONTENTS; List of Figures; List of Tables; Preface; Nomenclature; 1. Introduction; PART ONE; 2. Bubble Columns; 2.1 Introduction; 2.2 Types of Bubble Columns; 2.3 Introduction of Gas; 2.3.1 Methodology of Gas Injection; 2.3.2 Bubble Formation and Size Change; 2.3.3 Bubble Movement; 2.3.4 Void Fraction Prediction; 2.3.5 Detailed Behaviour of the Flow; 2.3.6 Gas-Liquid Mass Transfer; 2.3.7 Design of Gas Introduction Arrangement; 2.3.8 Worked Example; 2.4 Disengagement of Liquid from Gas; 2.4.1 Mechanisms of Drop Formation; 2.4.2 Drop Capture; 2.4.3 Wave Plate Mist Eliminators 2.4.4 Mesh Mist EliminatorsQuestions; References; 3. Sparged Stirred Vessels; 3.1 Introduction; 3.2 Flow Regimes; 3.3 Variations; 3.4 Spargers; 3.5 Impellers; 3.5.1 Disc Turbines; 3.5.2 Pitched Blade Turbines; 3.5.3 Hydrofoil Impellers; 3.5.4 Multiple Impellers; 3.6 Baffles; 3.7 Power Requirements; 3.7.1 Single Impellers; 3.7.2 Multiple Impellers; 3.7.3 Single-Phase Power; 3.8 Gas Fraction; 3.9 Mass Transfer; 3.9.1 Bubble Size; 3.9.2 Interfacial Area; 3.9.3 Mass Transfer;

Sommario/riassunto

"The design of chemical reactors and their safety are as critical to the success of a chemical process as the actual chemistry taking place within the reactor. This book provides a comprehensive overview of the practical aspects of multiphase reactor design and operation with an emphasis on safety and clean technology. It considers not only standard operation conditions, but also the problems of runaway reaction conditions and protection against ensuing over-pressure. Hydrodynamics of Multiphase Reactors addresses both practical and theoretical aspects of this topic. Initial chapters discuss various different types of gas/liquid reactors from a practical viewpoint, and later chapters focus on the modelling of multiphase systems and computational methods for reactor design and problem solving. The material is written by experts in their specific fields and will include chapters on the following topics: Multiphase flow, Bubble columns, Sparged stirred vessels, Macroscale modelling, Microscale modelling, Runaway conditions, Behaviour of vessel contents, Choked flow, Measurement techniques"--