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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	CHEMICAL REACTOR ANALYSIS AND APPLICATIONS FOR THE PRACTICING ENGINEER; CONTENTS; Preface; Overview; PART I INTRODUCTION; 1 HISTORY OF CHEMICAL REACTIONS; Introduction; Early History; Recent History; The Chemical Industry Today; Microscopic vs Macroscopic Approach; References; 2 THE FIELD OF CHEMISTRY; Introduction; Inorganic Chemistry; Organic Chemistry; Physical Chemistry; Other Chemistry Topics; Analysis Procedures; References; 3 PROCESS VARIABLES; Introduction; Temperature; Pressure; Moles and Molecular Weights; Mass and Volume; Viscosity; Heat Capacity; Thermal Conductivity Reynolds NumberpH; Vapor Pressure; The Ideal Gas Law; Latent Enthalpy Effects; Property Estimation; References; 4 KINETIC PRINCIPLES; Introduction; Reaction Rates; Rate vs Equilibrium Considerations; Representation of Rate Expressions; Solutions to Rate Expressions; Reaction Rate Theories; References; 5 STOICHIOMETRY

AND CONVERSION VARIABLES; Introduction; Stoichiometry; Conversion Variables; Volume Correction Factor; Yield and Selectivity; References; PART II TRADITIONAL REACTOR ANALYSIS; 6 REACTION AND REACTOR CLASSIFICATION; Introduction; Classification of Reactions Classification of Reactors Other Industrial Chemical Reactors; Ancillary Equipment; References; 7 THE CONSERVATION LAWS; Introduction; Conservation of Mass; Conservation of Energy; Conservation of Momentum; References; 8 BATCH REACTORS; Introduction; Equipment Description and Operation; Describing Equations; Specific Reactions; Applications; References; 9 CONTINUOUS STIRRED TANK REACTORS; Equipment Description and Operation; Describing Equations; Applications; References; 10 TUBULAR FLOW REACTORS; Introduction; Equipment Description and Operation; Describing Equations; Applications; References
11 REACTOR COMPARISONS Introduction; Specific Comparisons: Batch, CSTR, and TF; Graphical Analysis; Applications; References; PART III REACTOR APPLICATIONS; 12 THERMAL EFFECTS; Introduction; Thermal Fundamentals and Principles; Batch Reactors; CSTR Reactors; Tubular Flow Reactors; References; 13 INTERPRETATION OF KINETIC DATA; Introduction; Experimental Methods and Analysis of Kinetic Data; Method of Least Squares; Application To Specific Reactors; Reactions of Complex Mechanism; References; 14 NON-IDEAL REACTORS; Introduction; Non-Ideal Approaches; Definitions; Estimation of Mean and Variance
Residence Time Distributions Residence Time Distribution Functions; Experimental Tracer Techniques; References; 15 REACTOR DESIGN CONSIDERATIONS; Introduction; Design Principles; Specific Design Considerations; Operation and Maintenance and Improving Performance; Reactor Selection; Applications; References; PART IV OTHER REACTOR TOPICS; 16 CATALYSTS; Introduction; Key Definitions and Testing Procedures; Chemical and Formulated Catalysts; Catalytic Processes; Catalyst Selection and Evaluation; References; 17 CATALYTIC REACTIONS; Introduction; The Overall Process; Convective Transfer Molecular Diffusion

Sommario/riassunto

"This book's format follows an applications-oriented text and serves as a training tool for individuals in education and industry involved directly, or indirectly, with chemical reactors. It addresses both technical and calculational problems in this field. While this text can be complimented with texts on chemical kinetics and/or reactor design, it also stands alone as a self-teaching aid. The first part serves as an introduction to the subject title and contains chapters dealing with history, process variables, basic operations, kinetic principles, and conversion variables. The second part of the book addresses traditional reactor analysis; chapter topics include batch, CSTRs, tubular flow reactors, plus a comparison of these classes of reactors. Part 3 keys on reactor applications that include non-ideal reactors: thermal effects, interpretation of kinetic data, and reactor design. The book concludes with other reactor topics; chapter titles include catalysis, catalytic reactors, other reactions and reactors, and ABET-related topics. An extensive Appendix is also included"--
