

Chemical Engineering Kinetics Solution Manual By J M Smith Free

Solving problems in chemical reaction engineering and kinetics is now easier than ever! As students read through this text, they'll find a comprehensive, introductory treatment of reactors for single-phase and multiphase systems that exposes them to a broad range of reactors and key design features. They'll gain valuable insight on reaction kinetics in relation to chemical reactor design. They will also utilize a special software package that helps them quickly solve systems of algebraic and differential equations, and perform parameter estimation, which gives them more time for analysis. Key Features Thorough coverage is provided on the relevant principles of kinetics in order to develop better designs of chemical reactors. E-Z Solve software, on CD-ROM, is included with the text. By utilizing this software, students can have more time to focus on the development of design models and on the interpretation of calculated results. The software also facilitates exploration and discussion of realistic, industrial design problems. More than 500 worked examples and end-of-chapter problems are included to help students learn how to apply the theory to solve design problems. A web site, www.wiley.com/college/missen, provides additional resources including sample files, demonstrations, and a description of the E-Z Solve software.

The Definitive, Fully Updated Guide to Solving Real-World Chemical Reaction Engineering Problems For decades, H. Scott Fogler's Elements of Chemical Reaction Engineering has been the world's dominant text for courses in chemical reaction engineering. Now, Fogler has created a new, completely updated fifth edition of his internationally respected book. The result is a refined book that contains new examples and problems, as well as an updated companion Web site. More than ever, Fogler has successfully integrated text, visuals, and computer simulations to help both undergraduate and graduate students master all of the field's fundamentals. As always, he links theory to practice through many relevant examples, ranging from standard isothermal and non-isothermal reactor design to applications, such as solar energy, blood clotting, and drug delivery, and computer chip manufacturing. To promote the transfer of key skills to real-life settings, Fogler presents the following three styles of problems: 1. Straightforward problems that reinforce the principles of chemical reaction engineering 2. Living Example Problems (LEPs) that allow students to rapidly explore the issues and look for optimal solutions 3. Open-ended problems that encourage students to practice creative problem-solving skills ABOUT THE WEB SITE The companion Web site offers extensive enrichment opportunities and additional content, including Complete PowerPoint slides for lecture notes for chemical reaction engineering classes. Links to additional software, including POLYMATH(tm), Matlab(tm), Wolfram Mathematica(tm), AspenTech(tm), and COMSOL(tm). Interactive learning resources linked to each chapter, including Learning Objectives, Summary Notes, Web Modules, Interactive Computer Games, Solved Problems, FAQs, additional homework problems, and links to Learncheme. Living Example Problems that provide more than eighty interactive simulations, allowing students to explore the examples and ask "what-if" questions. The LEPs are unique to this book. Professional Reference Shelf, which includes advanced content on reactors, weighted least squares, experimental planning, laboratory reactors, pharmacokinetics, wire gauze reactors,

trickle bed reactors, fluidized bed reactors, CVD boat reactors, detailed explanations of key derivations, and more. Problem-solving strategies and insights on creative and critical thinking.

Chemical engineers face the challenge of learning the difficult concept and application of entropy and the 2nd Law of Thermodynamics. By following a visual approach and offering qualitative discussions of the role of molecular interactions, Koretsky helps them understand and visualize thermodynamics. Highlighted examples show how the material is applied in the real world. Expanded coverage includes biological content and examples, the Equation of State approach for both liquid and vapor phases in VLE, and the practical side of the 2nd Law. Engineers will then be able to use this resource as the basis for more advanced concepts.

Chemical reaction engineering is concerned with the exploitation of chemical reactions on a commercial scale. Its goal is the successful design and operation of chemical reactors. This text emphasizes qualitative arguments, simple design methods, graphical procedures, and frequent comparison of capabilities of the major reactor types. Simple ideas are treated first, and are then extended to the more complex.

The book presents in a clear and concise manner the fundamentals of chemical reaction engineering. The structure of the book allows the student to solve reaction engineering problems through reasoning rather than through memorization and recall of numerous equations, restrictions, and conditions under which each equation applies. The fourth edition contains more industrial chemistry with real reactors and real engineering and extends the wide range of applications to which chemical reaction engineering principles can be applied (i.e., cobra bites, medications, ecological engineering)

"The fourth edition of Elements of Chemical Reaction Engineering is a completely revised version of the book. It combines authoritative coverage of the principles of chemical reaction engineering with an unsurpassed focus on critical thinking and creative problem solving, employing open-ended questions and stressing the Socratic method. Clear and organized, it integrates text, visuals, and computer simulations to help readers solve even the most challenging problems through reasoning, rather than by memorizing equations."--BOOK JACKET.

Describes how to conduct kinetic experiments with heterogeneous catalysts, analyze and model the results, and characterize the catalysts Detailed analysis of mass transfer in liquid phase reactions involving porous catalysts. Important to the fine chemicals and pharmaceutical industries so it has appeal to many researchers in both industry and academia (chemical engineering and chemistry departments)

A practical approach to chemical reaction kinetics—from basic concepts to laboratory methods—featuring numerous real-world examples and case studies This book focuses on fundamental aspects of reaction kinetics with an emphasis on mathematical methods for analyzing experimental data and interpreting results. It describes basic concepts of reaction kinetics, parameters for measuring the progress of chemical reactions, variables that affect reaction rates, and ideal reactor performance. Mathematical methods for determining reaction kinetic parameters are described in detail with the help of real-world examples and fully-worked step-by-step solutions. Both analytical and numerical solutions

are exemplified. The book begins with an introduction to the basic concepts of stoichiometry, thermodynamics, and chemical kinetics. This is followed by chapters featuring in-depth discussions of reaction kinetics; methods for studying irreversible reactions with one, two and three components; reversible reactions; and complex reactions. In the concluding chapters the author addresses reaction mechanisms, enzymatic reactions, data reconciliation, parameters, and examples of industrial reaction kinetics. Throughout the book industrial case studies are presented with step-by-step solutions, and further problems are provided at the end of each chapter. Takes a practical approach to chemical reaction kinetics basic concepts and methods Features numerous illustrative case studies based on the author's extensive experience in the industry Provides essential information for chemical and process engineers, catalysis researchers, and professionals involved in developing kinetic models Functions as a student textbook on the basic principles of chemical kinetics for homogeneous catalysis Describes mathematical methods to determine reaction kinetic parameters with the help of industrial case studies, examples, and step-by-step solutions Chemical Reaction Kinetics is a valuable working resource for academic researchers, scientists, engineers, and catalyst manufacturers interested in kinetic modeling, parameter estimation, catalyst evaluation, process development, reactor modeling, and process simulation. It is also an ideal textbook for undergraduate and graduate-level courses in chemical kinetics, homogeneous catalysis, chemical reaction engineering, and petrochemical engineering, biotechnology.

Focused on the undergraduate audience, Chemical Reaction Engineering provides students with complete coverage of the fundamentals, including in-depth coverage of chemical kinetics. By introducing heterogeneous chemistry early in the book, the text gives students the knowledge they need to solve real chemistry and industrial problems. An emphasis on problem-solving and numerical techniques ensures students learn and practice the skills they will need later on, whether for industry or graduate work.

The Second Edition features new problems that engage readers in contemporary reactor design Highly praised by instructors, students, and chemical engineers, Introduction to Chemical Engineering Kinetics & Reactor Design has been extensively revised and updated in this Second Edition. The text continues to offer a solid background in chemical reaction kinetics as well as in material and energy balances, preparing readers with the foundation necessary for success in the design of chemical reactors. Moreover, it reflects not only the basic engineering science, but also the mathematical tools used by today's engineers to solve problems associated with the design of chemical reactors. Introduction to Chemical Engineering Kinetics & Reactor Design enables readers to progressively build their knowledge and skills by applying the laws of conservation of mass and energy to increasingly more difficult challenges in reactor design. The first one-third of the text emphasizes general principles of

chemical reaction kinetics, setting the stage for the subsequent treatment of reactors intended to carry out homogeneous reactions, heterogeneous catalytic reactions, and biochemical transformations. Topics include: Thermodynamics of chemical reactions Determination of reaction rate expressions Elements of heterogeneous catalysis Basic concepts in reactor design and ideal reactor models Temperature and energy effects in chemical reactors Basic and applied aspects of biochemical transformations and bioreactors About 70% of the problems in this Second Edition are new. These problems, frequently based on articles culled from the research literature, help readers develop a solid understanding of the material. Many of these new problems also offer readers opportunities to use current software applications such as Mathcad and MATLAB®. By enabling readers to progressively build and apply their knowledge, the Second Edition of Introduction to Chemical Engineering Kinetics & Reactor Design remains a premier text for students in chemical engineering and a valuable resource for practicing engineers.

This fully updated Ninth Edition of Steven and Susan Zumdahl's CHEMISTRY brings together the solid pedagogy, easy-to-use media, and interactive exercises that today's instructors need for their general chemistry course. Rather than focusing on rote memorization, CHEMISTRY uses a thoughtful approach built on problem-solving. For the Ninth Edition, the authors have added a new emphasis on critical systematic problem solving, new critical thinking questions, and new computer-based interactive examples to help students learn how to approach and solve chemical problems--to learn to think like chemists--so that they can apply the process of problem solving to all aspects of their lives. Students are provided with the tools to become critical thinkers: to ask questions, to apply rules and develop models, and to evaluate the outcome. In addition, Steven and Susan Zumdahl crafted ChemWork, an online program included in OWL Online Web Learning to support their approach, much as an instructor would offer support during office hours. ChemWork is just one of many study aids available with CHEMISTRY that supports the hallmarks of the textbook--a strong emphasis on models, real world applications, visual learning, and independent problem solving. Available with InfoTrac Student Collections <http://gocengage.com/infotrac>. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

The third edition of Engineering Flow and Heat Exchange is the most practical textbook available on the design of heat transfer and equipment. This book is an excellent introduction to real-world applications for advanced undergraduates and an indispensable reference for professionals. The book includes comprehensive chapters on the different types and classifications of fluids, how to analyze fluids, and where a particular fluid fits into a broader picture. This book includes various a wide variety of problems and solutions – some whimsical and others directly from industrial applications. Numerous practical examples of heat transfer

Different from other introductory books on fluids Clearly written, simple to understand, written for students to absorb material quickly Discusses non-Newtonian as well as Newtonian fluids Covers the entire field concisely Solutions manual with worked examples and solutions provided

Div This text teaches the principles underlying modern chemical kinetics in a clear, direct fashion, using several examples to enhance basic understanding. Solutions to selected problems. 2001 edition. /div

Learn Chemical Reaction Engineering through Reasoning, Not Memorization Essentials of Chemical Reaction Engineering is the complete, modern introduction to chemical reaction engineering for today's undergraduate students. Starting from the strengths of his classic Elements of Chemical Reaction Engineering, Fourth Edition, in this volume H. Scott Fogler added new material and distilled the essentials for undergraduate students. Fogler's unique way of presenting the material helps students gain a deep, intuitive understanding of the field's essentials through reasoning, using a CRE algorithm, not memorization. He especially focuses on important new energy and safety issues, ranging from solar and biomass applications to the avoidance of runaway reactions.

Thoroughly classroom tested, this text reflects feedback from hundreds of students at the University of Michigan and other leading universities. It also provides new resources to help students discover how reactors behave in diverse situations-including many realistic, interactive simulations on DVD-ROM. New Coverage Includes Greater emphasis on safety: following the recommendations of the Chemical Safety Board (CSB), discussion of crucial safety topics, including ammonium nitrate CSTR explosions, case studies of the nitroaniline explosion, and the T2 Laboratories batch reactor runaway Solar energy conversions: chemical, thermal, and catalytic water spilling Algae production for biomass Steady-state nonisothermal reactor design: flow reactors with heat exchange Unsteady-state nonisothermal reactor design with case studies of reactor explosions About the DVD-ROM The DVD contains six additional, graduate-level chapters covering catalyst decay, external diffusion effects on heterogeneous reactions, diffusion and reaction, distribution of residence times for reactors, models for non-ideal reactors, and radial and axial temperature variations in tubular reactions. Extensive additional DVD resources include Summary notes, Web modules, additional examples, derivations, audio commentary, and self-tests Interactive computer games that review and apply important chapter concepts Innovative "Living Example Problems" with Polymath code that can be loaded directly from the DVD so students can play with the solution to get an innate feeling of how reactors operate A 15-day trial of Polymath(tm) is included, along with a link to the Fogler Polymath site A complete, new AspenTech tutorial, and four complete example problems Visual Encyclopedia of Equipment, Reactor Lab, and other intuitive tools More than 500 PowerPoint slides of lecture notes Additional updates, applications, and information are available at www.umich.edu/~essen and www.essentialsofcre.com.

Download Ebook Chemical Engineering Kinetics Solution Manual By J M Smith Free

Chemical Reaction Engineering: Essentials, Exercises and Examples presents the essentials of kinetics, reactor design and chemical reaction engineering for undergraduate students. Concise and didactic in its approach, it features over 70 resolved examples and many exercises. The work is organized in two parts: in the first part kinetics is presented. Appropriate for a one-semester undergraduate or first-year graduate course, this text introduces the quantitative treatment of chemical reaction engineering. It covers both homogeneous and heterogeneous reacting systems and examines chemical reaction engineering as well as chemical reactor engineering. Each chapter contains numerous worked-out problems and real-world vignettes involving commercial applications, a feature widely praised by reviewers and teachers. 2003 edition.

A comprehensive introduction to chemical engineering kinetics Providing an introduction to chemical engineering kinetics and describing the empirical approaches that have successfully helped engineers describe reacting systems, An Introduction to Chemical Engineering Kinetics & Reactor Design is an excellent resource for students of chemical engineering. Truly introductory in nature, the text emphasizes those aspects of chemical kinetics and material and energy balances that form the broad foundation for understanding reactor design. For those seeking an introduction to the subject, the book provides a firm and lasting foundation for continuing study and practice.

This text combines a description of the origin and use of fundamental chemical kinetics through an assessment of realistic reactor problems with an expanded discussion of kinetics and its relation to chemical thermodynamics. It provides exercises, open-ended situations drawing on creative thinking, and worked-out examples. A solutions manual is also available to instructors. Kinetics of Chemical Processes details the concepts associated with the kinetic study of the chemical processes. The book is comprised of 10 chapters that present information relevant to applied research. The text first covers the elementary chemical kinetics of elementary steps, and then proceeds to discussing catalysis. The next chapter tackles simplified kinetics of sequences at the steady state. Chapter 5 deals with coupled sequences in reaction networks, while Chapter 6 talks about autocatalysis and inhibition. The seventh chapter describes the irreducible transport phenomena in chemical kinetics. The next two chapters discuss the correlations in homogenous kinetics and heterogeneous catalysis, respectively. The last chapter covers the analysis of reaction networks. The book will be of great use to students, researchers, and practitioners of scientific disciplines that deal with chemical reaction, particularly chemistry and chemical engineering.

Solutions Manual to Accompany Chemical Engineering Kinetics [by J.M. Smith], Second Edition Announcement!, Albany Institute, 1881-1882 Solutions Manual to accompany chemical engineering kinetics Chemical Engineering Kinetics Introduction to Chemical Engineering Kinetics and Reactor Design John Wiley & Sons

The Clear, Well-Organized Introduction to Thermodynamics Theory and Calculations for All Chemical Engineering Undergraduate Students This text is designed to make thermodynamics far easier for undergraduate chemical engineering students to learn, and to help them perform thermodynamic calculations with confidence. Drawing on his award-winning courses at Penn State, Dr. Themis Matsoukas focuses on "why" as well as "how." He offers extensive imagery to help students conceptualize the equations, illuminating thermodynamics with more than 100 figures, as well as 190 examples from within and beyond chemical engineering. Part I clearly introduces the laws of thermodynamics with applications to pure fluids. Part II extends thermodynamics to mixtures, emphasizing phase and chemical equilibrium. Throughout, Matsoukas focuses on topics that link tightly to other key areas of undergraduate chemical engineering, including separations, reactions, and capstone design. More than 300 end-of-chapter problems range from basic calculations to realistic environmental applications; these can be solved with any leading mathematical software. Coverage includes • Pure fluids, PVT

behavior, and basic calculations of enthalpy and entropy • Fundamental relationships and the calculation of properties from equations of state • Thermodynamic analysis of chemical processes • Phase diagrams of binary and simple ternary systems • Thermodynamics of mixtures using equations of state • Ideal and nonideal solutions • Partial miscibility, solubility of gases and solids, osmotic processes • Reaction equilibrium with applications to single and multiphase reactions

Reaction Kinetics for Chemical Engineers focuses on chemical kinetics, including homogeneous reactions, nonisothermal systems, flow reactors, heterogeneous processes, granular beds, catalysis, and scale-up methods. The publication first takes a look at fundamentals and homogeneous isothermal reactions. Topics include simple reactions at constant volume or pressure, material balance in complex reactions, homogeneous catalysis, effect of temperature, energy of activation, law of mass action, and classification of reactions. The book also elaborates on adiabatic and programmed reactions, continuous stirred reactors, and homogeneous flow reactions. Topics include nonisothermal flow reactions, semiflow processes, tubular-flow reactors, material balance in flow problems, types of flow processes, rate of heat input, constant heat-transfer coefficient, and nonisothermal conditions. The text ponders on uncatalyzed heterogeneous reactions, fluid-phase reactions catalyzed by solids, and fixed and fluidized beds of particles. The transfer processes in granular masses, fluidization, heat and mass transfer, adsorption rates and equilibria, diffusion and combined mechanisms, diffusive mass transfer, and mass-transfer coefficients in chemical reactions are discussed. The publication is a dependable source of data for chemical engineers and readers wanting to explore chemical kinetics.

Reaction Engineering clearly and concisely covers the concepts and models of reaction engineering and then applies them to real-world reactor design. The book emphasizes that the foundation of reaction engineering requires the use of kinetics and transport knowledge to explain and analyze reactor behaviors. The authors use readily understandable language to cover the subject, leaving readers with a comprehensive guide on how to understand, analyze, and make decisions related to improving chemical reactions and chemical reactor design. Worked examples, and over 20 exercises at the end of each chapter, provide opportunities for readers to practice solving problems related to the content covered in the book. Seamlessly integrates chemical kinetics, reaction engineering, and reactor analysis to provide the foundation for optimizing reactions and reactor design Compares and contrasts three types of ideal reactors, then applies reaction engineering principles to real reactor design Covers advanced topics, like microreactors, reactive distillation, membrane reactors, and fuel cells, providing the reader with a broader appreciation of the applications of reaction engineering principles and methods

This book serves as an introduction to the subject, giving readers the tools to solve real-world chemical reaction engineering problems. It features a section of fully solved examples as well as end of chapter problems. It includes coverage of catalyst characterization and its impact on kinetics and reactor modeling. Each

chapter presents simple ideas and concepts which build towards more complex and realistic cases and situations. Introduces an in-depth kinetics analysis Features well developed sections on the major topics of catalysts, kinetics, reactor design, and modeling Includes a chapter that showcases a fully worked out example detailing a typical problem that is faced when performing laboratory work Offers end of chapter problems and a solutions manual for adopting professors Aimed at advanced chemical engineering undergraduates and graduate students taking chemical reaction engineering courses as well as chemical engineering professionals, this textbook provides the knowledge to tackle real problems within the industry.

This is a review book for people planning to take the PE exam in Chemical Engineering. Prepared specifically for the exam used in all 50 states. It features 188 new PE problems with detailed step by step solutions. The book covers all topics on the exam, and includes easy to use tables, charts, and formulas. It is an ideal desk companion to DAS's Chemical Engineer License Review. It includes sixteen chapters and a short PE sample exam as well as complete references and an index. Chapters include the following topical areas: * Material and energy balances * Fluid dynamics * Heat transfer * Evaporation * Distillation * Absorption * Leaching * Liq-liq extraction * Psychrometry and humidification * Drying * Filtration * Thermodynamics * Chemical kinetics * Process control * Mass transfer * Plant safety The ideal study guide, this book brings all elements of professional problem solving together in one BIG BOOK. It is also an ideal desk reference, and it answers hundreds of the most frequently asked questions. It is the first truly practical, no-nonsense problem and solution book for the difficult PE exam. Full step-by-step solutions are additionally included.

This manual of solutions to the problems in "Kinetics of Catalytic Reactions" has been prepared to assist those who use this book in a teaching function. However, these solutions should also benefit those outside the classroom who want to apply the principles and concepts that are discussed in the book. By studying and observing the approaches used in solving these problems, it is very likely that similar applications can be envisioned in different kinetic problems that the investigator might face. Thus the availability of these solutions is a good learning tool for everyone. Additional details and insight about the solutions provided can be obtained by reading the cited references. I have tried to eliminate all errors, both conceptual and typographical, in these solutions; however, the probability is high that I have not succeeded completely. Should any errors of commission (or omission) be found, I would greatly appreciate being informed. I can be reached at this email address: mavche@engr.psu.edu, or mail can be sent to me at: 107 Fenske Laboratory, Department of Chemical Engineering, The Pennsylvania State University, University Park, PA 16802. Albert Vannice v Contents Preface v Solutions to Problems Chapter 3 - Catalyst Characterization .

The selected solution manual for students contains complete, step-by-step solutions to selected odd-numbered end-of-chapter problems.

Today's Definitive, Undergraduate-Level Introduction to Chemical Reaction Engineering Problem-Solving For 30 years, H. Scott Fogler's Elements of Chemical Reaction Engineering has been the #1 selling text for courses in chemical reaction engineering worldwide. Now, in Essentials of Chemical Reaction Engineering, Second Edition, Fogler has distilled this classic into a modern, introductory-level guide specifically for undergraduates. This is the ideal resource for today's students: learners who demand instantaneous access to information and want to enjoy learning as they deepen their critical thinking and creative problem-solving skills. Fogler successfully integrates text, visuals, and computer simulations, and links theory to practice through many relevant examples. This updated second edition covers mole balances, conversion and reactor sizing, rate laws and stoichiometry, isothermal reactor design, rate data collection/analysis, multiple reactions, reaction mechanisms, pathways, bioreactions and bioreactors, catalysis, catalytic reactors, nonisothermal reactor designs, and more. Its multiple improvements include a new discussion of activation energy, molecular simulation, and stochastic modeling, and a significantly revamped chapter on heat effects in chemical reactors. To promote the transfer of key skills to real-life settings, Fogler presents three styles of problems: Straightforward problems that reinforce the principles of chemical reaction engineering Living Example Problems (LEPs) that allow students to rapidly explore the issues and look for optimal solutions Open-ended problems that encourage students to use inquiry-based learning to practice creative problem-solving skills About the Web Site (umich.edu/~elements/5e/index.html) The companion Web site offers extensive enrichment opportunities and additional content, including Complete PowerPoint slides for lecture notes for chemical reaction engineering classes Links to additional software, including Polymath, MATLAB, Wolfram Mathematica, AspenTech, and COMSOL Multiphysics Interactive learning resources linked to each chapter, including Learning Objectives, Summary Notes, Web Modules, Interactive Computer Games, Computer Simulations and Experiments, Solved Problems, FAQs, and links to LearnChemE Living Example Problems that provide more than 75 interactive simulations, allowing students to explore the examples and ask "what-if" questions Professional Reference Shelf, containing advanced content on reactors, weighted least squares, experimental planning, laboratory reactors, pharmacokinetics, wire gauze reactors, trickle bed reactors, fluidized bed reactors, CVD boat reactors, detailed explanations of key derivations, and more Problem-solving strategies and insights on creative and critical thinking Register your product at informit.com/register for convenient access to downloads, updates, and/or corrections as they become available.

Experimental Methods and Instrumentation for Chemical Engineers, Second Edition, touches many aspects of engineering practice, research, and statistics. The principles of unit operations, transport phenomena, and plant design constitute the focus of chemical engineering in the latter years of the curricula.

Experimental methods and instrumentation is the precursor to these subjects. This resource integrates these concepts with statistics and uncertainty analysis to define what is necessary to measure and to control, how precisely and how often. The completely updated second edition is divided into several themes related to data: metrology, notions of statistics, and design of experiments. The book then covers basic principles of sensing devices, with a brand new chapter covering force and mass, followed by pressure, temperature, flow rate, and physico-chemical properties. It continues with chapters that describe how to measure gas and liquid concentrations, how to characterize solids, and finally a new chapter on spectroscopic techniques such as UV/Vis, IR, XRD, XPS, NMR, and XAS. Throughout the book, the author integrates the concepts of uncertainty, along with a historical context and practical examples. A problem solutions manual is available from the author upon request. Includes the basics for 1st and 2nd year chemical engineers, providing a foundation for unit operations and transport phenomena Features many practical examples Offers exercises for students at the end of each chapter Includes up-to-date detailed drawings and photos of equipment

CHEMISTRY FOR ENGINEERING STUDENTS, connects chemistry to engineering, math, and physics; includes problems and applications specific to engineering; and offers realistic worked problems in every chapter that speak to your interests as a future engineer. Packed with built-in study tools, this textbook gives you the resources you need to master the material and succeed in the course. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Selecting the best type of reactor for any particular chemical reaction, taking into consideration safety, hazard analysis, scale-up, and many other factors is essential to any industrial problem. An understanding of chemical reaction kinetics and the design of chemical reactors is key to the success of the of the chemist and the chemical engineer in such an endeavor. This valuable reference volume conveys a basic understanding of chemical reactor design methodologies, incorporating control, hazard analysis, and other topics not covered in similar texts. In addition to covering fluid mixing, the treatment of wastewater, and chemical reactor modeling, the author includes sections on safety in chemical reaction and scale-up, two topics that are often neglected or overlooked. As a real-world introduction to the modeling of chemical kinetics and reactor design, the author includes a case study on ammonia synthesis that is integrated throughout the text. The text also features an accompanying CD, which contains computer programs developed to solve modeling problems using numerical methods. Students, chemists, technologists, and chemical engineers will all benefit from this comprehensive volume. Shows readers how to select the best reactor design, hazard analysis, and safety in design methodology Features computer programs developed to solve modeling problems using numerical methods

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