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Bioseparations Science and Engineering Roger G. Harrison 2015-01-27 Designed for undergraduates, graduate students, and industry practitioners, *Bioseparations Science and Engineering* fills a critical need in the field of bioseparations. Current, comprehensive, and concise, it covers bioseparations unit operations in unprecedented depth. In each of the chapters, the authors use a consistent method of explaining unit operations, starting with a qualitative description noting the significance and general application of the unit operation. They then illustrate the scientific application of the operation, develop the required mathematical theory, and finally, describe the applications of the theory in engineering practice, with an emphasis on design and scaleup. Unique to this text is a chapter dedicated to bioseparations process design and economics, in which a process simulator, SuperPro Designer® is used to analyze and evaluate the production of three important biological products. New to this second edition are updated discussions of moment analysis, computer simulation, membrane chromatography, and evaporation, among others, as well as revised problem sets. Unique features include basic information about bioproducts and engineering analysis and a chapter with bioseparations laboratory exercises. *Bioseparations Science and Engineering* is ideal for students and professionals working in or studying bioseparations, and is the premier text in the field.

Energy Efficiency and Management in Food Processing Facilities Lijun Wang 2008-12-04 Energy efficiency, environmental protection, and processing waste management continue to attract increased attention in the food processing industry. As with other industrial sectors, reducing costs while also reducing environmental impact and improving overall sustainability is becoming an important part of the business process. Providing practical guidance, *Energy Efficiency and Management in Food Processing Facilities* explores energy efficiency technologies, emerging energy efficient processes, and methods for converting food processing wastes into energy. Organized around five central themes, the book explores: Fundamentals of energy conservation, analysis, and management Energy conservation technologies as applied to the food processing industry Energy efficiency and conservations in current food processing systems Emerging systems Energy conversion technologies for utilization of food processing wastes Conservation Techniques that Improve the Bottom Line The lack of information on energy conservation and conversion technologies has been a major barrier to energy efficiency improvement and the utilization of processing wastes in the food processing industry. With coverage ranging from basic theory to traditional and alternative energy, this book provides the required skill set for the increased energy conservation and reduced consumption that will positively impact the bottom line in food processing

facilities.

Microwave-Mediated Biofuel Production Veera G. Gude 2017-08-22 This book focuses on chemical syntheses and processes for biofuel production mediated by microwave energy. This is the first contribution in this area serving as a resource and guidance manual for understanding the principles, mechanisms, design, and applications of microwaves in biofuel process chemistry. Green chemistry of microwave-mediated biofuel reactions and thermodynamic potentials for the process biochemistry are the focus of this book. Microwave generation, wave propagation, process design, development and configurations, and biofuel applications are discussed in detail.

Process Plant Instrumentation Miguel J. Bagajewicz 2000-11-27 This is the first in-depth presentation in book form of current analytical methods for optimal design, selection and evaluation of instrumentation for process plants. The presentation is clear, concise and systematic-providing process engineers with a valuable tool for improving quality, costs, safety, loss prevention, and production accounting.

Coulson & Richardson's Chemical Engineering John Metcalfe Coulson 2002 *Chemical Engineering Volume 2* covers the properties of particulate systems, including the character of individual particles and their behaviour in fluids. Sedimentation of particles, both singly and at high concentrations, flow in packed and fluidised beds and filtration are then examined. The latter part of the book deals with separation processes, such as distillation and gas absorption, which illustrate applications of the fundamental principles of mass transfer introduced in *Chemical Engineering Volume 1*. In conclusion, several techniques of growing importance - adsorption, ion exchange, chromatographic and membrane separations, and process intensification - are described. * A logical progression of chemical engineering concepts, volume 2 builds on fundamental principles contained in *Chemical Engineering volume 1* and these volumes are fully cross-referenced * Reflects the growth in complexity and stature of chemical engineering over the last few years * Supported with further reading at the end of each chapter and graded problems at the end of the book

Feature Papers Michael Henson 2018-10-04 This book is a printed edition of the Special Issue "Feature Papers" that was published in *Processes*

Chemical Process Equipment - Selection and Design (Revised 2nd Edition) James R. Couper 2009-08-11 A facility is only as efficient and profitable as the equipment that is in it: this highly influential book is a powerful resource for chemical, process, or plant engineers who need to select, design or configure plant successfully and profitably. It includes updated information on design methods for all standard equipment, with an emphasis on real-world process design and performance. The comprehensive and influential guide to the selection and design of a wide range of chemical

process equipment, used by engineers globally • Copious examples of successful applications, with supporting schematics and data to illustrate the functioning and performance of equipment Revised edition, new material includes updated equipment cost data, liquid-solid and solid systems, and the latest information on membrane separation technology Provides equipment rating forms and manufacturers' data, worked examples, valuable shortcut methods, rules of thumb, and equipment rating forms to demonstrate and support the design process Heavily illustrated with many line drawings and schematics to aid understanding, graphs and tables to illustrate performance data

Chemical Process Design and Simulation: Aspen Plus and Aspen Hysys Applications Juma Haydari 2019-01-03 A comprehensive and example oriented text for the study of chemical process design and simulation Chemical Process Design and Simulation is an accessible guide that offers information on the most important principles of chemical engineering design and includes illustrative examples of their application that uses simulation software. A comprehensive and practical resource, the text uses both Aspen Plus and Aspen Hysys simulation software. The author describes the basic methodologies for computer aided design and offers a description of the basic steps of process simulation in Aspen Plus and Aspen Hysys. The text reviews the design and simulation of individual simple unit operations that includes a mathematical model of each unit operation such as reactors, separators, and heat exchangers. The author also explores the design of new plants and simulation of existing plants where conventional chemicals and material mixtures with measurable compositions are used. In addition, to aid in comprehension, solutions to examples of real problems are included. The final section covers plant design and simulation of processes using nonconventional components. This important resource: Includes information on the application of both the Aspen Plus and Aspen Hysys software that enables a comparison of the two software systems Combines the basic theoretical principles of chemical process and design with real-world examples Covers both processes with conventional organic chemicals and processes with more complex materials such as solids, oil blends, polymers and electrolytes Presents examples that are solved using a new version of Aspen software, ASPEN One 9 Written for students and academics in the field of process design, Chemical Process Design and Simulation is a practical and accessible guide to the chemical process design and simulation using proven software.

Preliminary Chemical Engineering Plant Design W.D. Baasal 1989-11-30

Directory of Graduate Research American Chemical Society. Committee on Professional Training 1979
Introduction to Chemical Reaction Engineering and Kinetics Ronald W. Missen 1999 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.

Chemical Engineering Design Ray Sinnott 2005-07-01 Chemical Engineering Design is one of the best-known and widely adopted texts available for students of chemical engineering. It deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, the fourth edition covers the latest aspects of process design, operations, safety, loss prevention and equipment selection, among others. Comprehensive and detailed, the book is supported by problems and selected solutions. In addition the book is widely used by professionals as a day-to-day reference. Best selling chemical engineering text Revised to keep pace with the latest chemical industry changes; designed to see students through from undergraduate study to professional practice End of chapter exercises and solutions

Separation Processes C. Judson King 2013-12-18 Originally published: New York: McGraw-Hill, 1971. 2nd ed. Includes a new introduction.

Biodiesel Meisam Tabatabaei 2018-11-02 This book presents in-depth information on the state of the art of global biodiesel production and investigates its impact on climate change. Subsequently, it comprehensively discusses biodiesel production in terms of production systems (reactor technologies) as well as biodiesel purification and upgrading technologies. Moreover, the book reviews essential parameters in biodiesel production systems as well as major principles of operation, process control, and trouble-shooting in these systems. Conventional and emerging applications of biodiesel by-products with a view to further economize biodiesel production are also scrutinized. Separate chapters are dedicated to economic risk analysis and critical comparison of biodiesel production systems as well as techno-economical aspects of biodiesel plants. The book also thoroughly investigates the important aspects of biodiesel production and combustion by taking advantage of advanced sustainability analysis tools including life cycle assessment (LCA) and exergy techniques. In closing, the application of Omics technologies in biodiesel production is presented and discussed. This book is relevant to anyone with an interest in renewable, more sustainable fuel and energy solutions.

Conceptual Design of Chemical Processes James Merrill Douglas 1988 This text explains the concepts behind process design. It uses a case study approach, guiding readers through realistic design problems, and referring back to these cases at the end of each chapter.

Throughout, the author uses shortcut techniques that allow engineers to obtain the whole focus for a design in a very short period (generally less than two days).

Life Cycle of a Process Plant Mahdi Nouri 2021-12-04 Life Cycle of a Process Plant focuses on workflows, work processes, and interfaces. It is an ideal reference book for engineers of all disciplines, technicians, and business people working in the upstream, midstream, and downstream fields. This book is tailored to the everyday work tasks of the process and project engineer/manager and relates regulations to actions engineers can take in the workplace via case studies. It covers oil, gas, chemical, petrochemical, and carbon capture industries. The content in this book will be interesting for any engineers (from all disciplines) and other project team members who understand the technical principles of their work, but who would like to have a better idea of where their contribution fits into the complete picture of the life cycle of a process plant. This book shows the basic

principles and approaches of process plant lifecycle information management and how they can be applied to generate substantial cost and time savings. Thus, the readers with their own knowledge and experience in plant design and operations can adapt and implement them into their specific plant lifecycle applications. Authors bring their practical and hands-on industry expertise to this book Covers the entire workflow process of a process plant from project initiation and design through to the commissioning stage Cost estimations which relate to process plants are discussed Covers the program and project management in O&G industry

Chemical Engineering Design Gavin Towler 2012-01-25
Chemical Engineering Design, Second Edition, deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, this edition has been specifically developed for the U.S. market. It provides the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards. It contains new discussions of conceptual plant design, flowsheet development, and revamp design; extended coverage of capital cost estimation, process costing, and economics; and new chapters on equipment selection, reactor design, and solids handling processes. A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data, and Excel spreadsheet calculations, plus over 150 Patent References for downloading from the companion website. Extensive instructor resources, including 1170 lecture slides and a fully worked solutions manual are available to adopting instructors. This text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken, plus graduates) and lecturers/tutors, and professionals in industry (chemical process, biochemical, pharmaceutical, petrochemical sectors). New to this edition: Revised organization into Part I: Process Design, and Part II: Plant Design. The broad themes of Part I are flowsheet development, economic analysis, safety and environmental impact and optimization. Part II contains chapters on equipment design and selection that can be used as supplements to a lecture course or as essential references for students or practicing engineers working on design projects. New discussion of conceptual plant design, flowsheet development and revamp design Significantly increased coverage of capital cost estimation, process costing and economics New chapters on equipment selection, reactor design and solids handling processes New sections on fermentation, adsorption, membrane separations, ion exchange and chromatography Increased coverage of batch processing, food, pharmaceutical and biological processes All equipment chapters in Part II revised and updated with current information Updated throughout for latest US codes and standards, including API, ASME and ISA design codes and ANSI standards Additional worked examples and homework problems The most complete and up to date coverage of equipment selection 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data and Excel spreadsheet calculations plus over 150 Patent References, for downloading from the companion website Extensive instructor resources: 1170 lecture slides plus fully worked solutions manual available to adopting instructors

Chemical Engineering: Solutions to the Problems in Volume 1 J R Backhurst 2013-10-22 This volume in the Coulson and Richardson series in chemical engineering contains full worked solutions to the problems posed in volume 1. Whilst the main volume contains illustrative worked examples throughout the text, this book contains answers to the more challenging questions posed at the

end of each chapter of the main text. These questions are of both a standard and non-standard nature, and so will prove to be of interest to both academic staff teaching courses in this area and to the keen student. Chemical engineers in industry who are looking for a standard solution to a real-life problem will also find the book of considerable interest. * An invaluable source of information for the student studying the material contained in Chemical Engineering Volume 1 * A helpful method of learning - answers are explained in full

Chemical Process Equipment Ka Ng 2001-11

Chemical Process Design and Integration Robin Smith 2016-08-02 Written by a highly regarded author with industrial and academic experience, this new edition of an established bestselling book provides practical guidance for students, researchers, and those in chemical engineering. The book includes a new section on sustainable energy, with sections on carbon capture and sequestration, as a result of increasing environmental awareness; and a companion website that includes problems, worked solutions, and Excel spreadsheets to enable students to carry out complex calculations.

The Engineer's Cost Handbook Richard E. Westney 1997-02-26 Offers coverage of each important step in engineering cost control process, from project justification to life-cycle costs. The book describes cost control systems and shows how to apply the principles of value engineering. It explains estimating methodology and the estimation of engineering, engineering equipment, and construction and labour costs *The Publishers' Trade List Annual* 1971

Energy Efficient Solvents for CO₂ Capture by Gas-Liquid Absorption Wojciech M. Budzianowski 2016-12-01 This book reviews and characterises promising single-compound solvents, solvent blends and advanced solvent systems suitable for CO₂ capture applications using gas-liquid absorption. Focusing on energy efficient solvents with minimal adverse environmental impact, the contributions included analyse the major technological advantages, as well as research and development challenges of promising solvents and solvent systems in various sustainable CO₂ capture applications. It provides a valuable source of information for undergraduate and postgraduate students, as well as for chemical engineers and energy specialists.

Fluid flow, heat transfer and mass transfer John Metcalfe Coulson 1977

Analysis, Synthesis and Design of Chemical Processes Richard Turton 2008-12-24 The Leading Integrated Chemical Process Design Guide: Now with New Problems, New Projects, and More More than ever, effective design is the focal point of sound chemical engineering. Analysis, Synthesis, and Design of Chemical Processes, Third Edition, presents design as a creative process that integrates both the big picture and the small details—and knows which to stress when, and why. Realistic from start to finish, this book moves readers beyond classroom exercises into open-ended, real-world process problem solving. The authors introduce integrated techniques for every facet of the discipline, from finance to operations, new plant design to existing process optimization. This fully updated Third Edition presents entirely new problems at the end of every chapter. It also adds extensive coverage of batch process design, including realistic examples of equipment sizing for batch sequencing; batch scheduling for multi-product plants; improving production via intermediate storage and parallel equipment; and new optimization techniques specifically for batch processes. Coverage includes Conceptualizing and analyzing chemical processes: flow diagrams, tracing, process conditions, and more Chemical process economics: analyzing capital and manufacturing costs, and predicting or assessing profitability Synthesizing and

optimizing chemical processing: experience-based principles, BFD/PFD, simulations, and more Analyzing process performance via I/O models, performance curves, and other tools Process troubleshooting and “debottlenecking” Chemical engineering design and society: ethics, professionalism, health, safety, and new “green engineering” techniques Participating successfully in chemical engineering design teams Analysis, Synthesis, and Design of Chemical Processes, Third Edition, draws on nearly 35 years of innovative chemical engineering instruction at West Virginia University. It includes suggested curricula for both single-semester and year-long design courses; case studies and design projects with practical applications; and appendixes with current equipment cost data and preliminary design information for eleven chemical processes—including seven brand new to this edition.

Computer Methods in Chemical Engineering Nayef Ghasem 2021-11-23 While various software packages have become essential for performing unit operations and other kinds of processes in chemical engineering, the fundamental theory and methods of calculation must also be understood to effectively test the validity of these packages and verify the results. Computer Methods in Chemical Engineering, Second Edition presents the most used simulation software along with the theory involved. It covers chemical engineering thermodynamics, fluid mechanics, material and energy balances, mass transfer operations, reactor design, and computer applications in chemical engineering. The highly anticipated Second Edition is thoroughly updated to reflect the latest updates in the featured software and has added a focus on real reactors, introduces AVEVA Process Simulation software, and includes new and updated appendixes. Through this book, students will learn the following: What chemical engineers do The functions and theoretical background of basic chemical engineering unit operations How to simulate chemical processes using software packages How to size chemical process units manually and with software How to fit experimental data How to solve linear and nonlinear algebraic equations as well as ordinary differential equations Along with exercises and references, each chapter contains a theoretical description of process units followed by numerous examples that are solved step by step via hand calculation and computer simulation using Hysys/UniSim, PRO/II, Aspen Plus, and SuperPro Designer. Adhering to the Accreditation Board for Engineering and Technology (ABET) criteria, the book gives chemical engineering students and professionals the tools to solve real problems involving thermodynamics and fluid-phase equilibria, fluid flow, material and energy balances, heat exchangers, reactor design, distillation, absorption, and liquid extraction. This new edition includes many examples simulated by recent software packages. In addition, fluid package information is introduced in correlation to the numerical problems in book. An updated solutions manual and PowerPoint slides are also provided in addition to new video guides and UniSim program files.

Transport Phenomena Robert S. Brodkey 2003-02 Part II covers applications in greater detail. The three transport phenomena--heat, mass, and momentum transfer--are treated in depth through simultaneous (or parallel) developments.

Dow's Fire and Explosion Index Hazard Classification Guide American Institute of Chemical Engineers (AIChE) 2016-03-21 This popular safety best-seller is designed to help the user quantify the expected damage of potential fire and explosion incidents in realistic terms, identify the equipment likely to contribute to the creation or escalation of an incident, and communicate the fire and explosion risk potential to management. Based on Dow's Fire and Explosion Risk Analysis Program, the index provides a step-by-step,

objective evaluation of the actual fire and explosion, as well as reactivity potential of process equipment and its contents.

CRC Handbook of Thermal Engineering, Second Edition Frank Kreith 2017-11-08 The CRC Handbook of Thermal Engineering, Second Edition, is a fully updated version of this respected reference work, with chapters written by leading experts. Its first part covers basic concepts, equations and principles of thermodynamics, heat transfer, and fluid dynamics. Following that is detailed coverage of major application areas, such as bioengineering, energy-efficient building systems, traditional and renewable energy sources, food processing, and aerospace heat transfer topics. The latest numerical and computational tools, microscale and nanoscale engineering, and new complex-structured materials are also presented. Designed for easy reference, this new edition is a must-have volume for engineers and researchers around the globe.

Frontiers in Chemical Engineering National Research Council 1988-02-01 In the next 10 to 15 years, chemical engineers have the potential to affect every aspect of American life and promote the scientific and industrial leadership of the United States. Frontiers in Chemical Engineering explores the opportunities available and gives a blueprint for turning a multitude of promising visions into realities. It also examines the likely changes in how chemical engineers will be educated and take their place in the profession, and presents new research opportunities.

Engineering Economics and Economic Design for Process Engineers Thane Brown 2016-04-19 Engineers often find themselves tasked with the difficult challenge of developing a design that is both technically and economically feasible. A sharply focused, how-to book, Engineering Economics and Economic Design for Process Engineers provides the tools and methods to resolve design and economic issues. It helps you integrate technical and economic decision making, creating more profit and growth for your organization. The book puts methods that are simple, fast, and inexpensive within easy reach. Author Thane Brown sets the stage by explaining the engineer's role in the creation of economically feasible projects. He discusses the basic economics of projects – how they are funded, what kinds of investments they require, how revenues, expenses, profits, and risks are interrelated, and how cash flows into and out of a company. In the engineering economics section of the book, Brown covers topics such as present and future values, annuities, interest rates, inflation, and inflation indices. He details how to create order-of-magnitude and study grade estimates for the investments in a project and how to make study grade production cost estimates. Against this backdrop, Brown explores a unique scheme for producing an Economic Design. He demonstrates how using the Economic Design Model brings increased economic thinking and rigor into the early parts of design, the time in a project's life when its cost structure is being set and when the engineer's impact on profit is greatest. The model emphasizes three powerful new tools that help you create a comprehensive design option list. When the model is used early in a project, it can drastically lower both capital and production costs. The book's uniquely industrial focus presents topics as they would happen in a real work situation. It shows you how to combine technical and economic decision making to create economically optimum designs and increase your impact on profit and growth, and, therefore, your importance to your organization. Using these time-tested techniques, you can design processes that cost less to build and operate, and improve your company's profit.

Biorefineries Carlos Ariel Cardona Alzate 2018-09-03 Aimed at presenting a systematic design of biorefineries, the book initiates with an overview about

relevance and applications explained through origin of raw materials, transformation routes and products. Then, concepts as hierarchy, sequencing and integration are considered which helps in generating a sustainable and strategic design of biorefineries. Further, framework for biorefineries based on techno-economic, environmental and social aspects is analyzed with examples to show the applications. Finally, some mass, energy and economic indices are considered to assess the biorefinery sustainability and key challenges for future development of biorefineries. Key Features Presents current state-of-the-art of the biorefineries design and analyses for in depth understanding of biofuels and biomaterials Explores conceptual design of processes Concepts discussed with strong engineering approach, including design strategies and techno-economic analyses Includes bio-based materials, natural products and food products in the biorefinery concept Presentation of structured method to calculate indices of performance of biorefineries

Product and Process Design Jan Harmsen 2018-05-22

Product and Process Design: Driving Innovation is a comprehensive textbook for students and industrial professionals. It treats the combined design of innovative products and their innovative manufacturing processes, providing specific methods for BSc, MSc, PEng and PhD courses. Students, industrial innovators and managers are guided through all design steps in all innovation stages (discovery, concept, feasibility, development, detailed engineering, and implementation) to successfully obtain novel products and their novel processes. The authors' decades of innovation experience in industry, as well as in teaching BSc, MSc, and post-academic product and process design courses, thereby including the latest design publications, culminate in this book.

Extracting Bioactive Compounds for Food Products M.

Angela A. Meireles 2008-12-16 The demand for functional foods and nutraceuticals is on the rise, leaving product development companies racing to improve bioactive compound extraction methods – a key component of functional foods and nutraceuticals development. From established processes such as steam distillation to emerging techniques like supercritical fluid technology, *Extracting Bioactive Compounds for Food Products: Theory and Applications* details the engineering aspects of the processes used to extract bioactive compounds from their food sources. Covers Bioactive Compounds Found in Foods, Cosmetics, and Pharmaceuticals Each well-developed chapter provides the fundamentals of transport phenomena and thermodynamics as they relate to the process described, a state-of-the-art literature review, and replicable case studies of extraction processes. This authoritative reference examines a variety of established and groundbreaking extraction processes including: Steam distillation Low-pressure solvent extraction Liquid-liquid extraction Supercritical and pressurized fluid extraction Adsorption and desorption The acute view of thermodynamic, mass transfer, and economical engineering provided in this book builds a foundation in the processes used to obtain high-quality bioactive extracts and purified compounds. Going beyond the information traditionally found in unit operations reference books, *Extracting Bioactive Compounds for Food Products: Theory and Applications* demonstrates how to successfully optimize bioactive compound extraction methods and use them to create new and better natural food options.

Sustainable Engineering Bhavik R. Bakshi 2019-06-13 A multidisciplinary introduction to sustainable engineering exploring challenges and solutions through practical examples and exercises.

Chemical Process Engineering Harry Silla 2003-08-08 Chemical Process Engineering presents a systematic approach to solving design problems by listing the

needed equations, calculating degrees-of-freedom, developing calculation procedures to generate process specifications- mostly pressures, temperatures, compositions, and flow rates- and sizing equipment. This illustrative reference/text tabulates numerous easy-to-follow calculation procedures as well as the relationships needed for sizing commonly used equipment. *Chemical and Catalytic Reaction Engineering* James J. Carberry 2001-01-01 Designed to give chemical engineers background for managing chemical reactions, this text examines the behavior of chemical reactions and reactors; conservation equations for reactors; heterogeneous reactions; fluid-fluid and fluid-solid reaction systems; heterogeneous catalysis and catalytic kinetics; diffusion and heterogeneous catalysis; and analyses and design of heterogeneous reactors. 1976 edition.

Principles and Case Studies of Simultaneous Design

William L. Luyben 2012-02-08 There are many comprehensive design books, but none of them provide a significant number of detailed economic design examples of typically complex industrial processes. Most of the current design books cover a wide variety of topics associated with process design. In addition to discussing flowsheet development and equipment design, these textbooks go into a lot of detail on engineering economics and other many peripheral subjects such as written and oral skills, ethics, "green" engineering and product design. This book presents general process design principles in a concise readable form that can be easily comprehended by students and engineers when developing effective flow sheet and control structures. Ten detailed case studies presented illustrate an in-depth and quantitative way the application of these general principles. Detailed economic steady-state designs are developed that satisfy economic criterion such as minimize total annual cost of both capital and energy or return on incremental capital investment. Complete detailed flow sheets and Aspen Plus files are provided. Then conventional PI control structures are developed and tested for their ability to maintain product quality during disturbances. Complete Aspen Dynamics files are provided of the dynamic simulations.

Elementary Principles of Chemical Processes, 3rd Edition

2005 Edition Integrated Media and Study Tools, with Student Workbook Richard M. Felder 2005-02-02 This best selling text prepares students to formulate and solve material and energy balances in chemical process systems and lays the foundation for subsequent courses in chemical engineering. The text provides a realistic, informative, and positive introduction to the practice of chemical engineering. The Integrated Media Edition update provides a stronger link between the text, media supplements, and new student workbook.

Engineering Ethics: Concepts and Cases Charles E. Harris, Jr. 2013-01-11 Bridging the gap between theory and practice, *ENGINEERING ETHICS, Fifth Edition*, will help you quickly understand the importance of your conduct as a professional and how your actions can affect the health, safety, and welfare of the public. *ENGINEERING ETHICS, Fifth Edition*, provides dozens of diverse engineering cases and a proven and structured method for analyzing them; practical application of the Engineering Code of Ethics; focus on critical moral reasoning as well as effective organizational communication; and in-depth treatment of issues such as sustainability, acceptable risk, whistle-blowing, and globalized standards for engineering. Additionally, a new companion website offers study questions, self-tests, and additional case studies. 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.

