

# Read Book Random Packing Sulzer Pdf For Free

Handbook of Separation Process Technology Packed Bed Columns Albright's Chemical Engineering Handbook Process Technology Sulzer Technical Review Rules of Thumb for Chemical Engineers Process Engineering Fundamentals of Natural Gas Processing Encyclopedia of Chemical Processes and Design, Volume 69 (Supplement 1) Thermal Separation Processes Tritium Technologies for Thermonuclear Fusion Reactors Chemical Engineering Encyclopedia of Chemical Processing (Or CO2 Capture Encyclopedia of Chemical Processing Advances in Air Conditioning Technologies Chemical Engineering Progress Distillation: Equipment and Processes NPRA, a Century of Achievement and Excellence Proceedings of the World Conference on Palm and Coconut Oils for 21st Century Petroleum Refining Design and Applications Handbook, Volume 3 Fundamentals of Natural Gas Processing, Third Edition Intensification of Liquid-Liquid Processes Distillation: Operation and Applications Integrated Chemical Processes Distillation Absorption The Fundamentals of Process Intensification The Chemical Engineer Separation of Isotopes of Biogenic Elements phase Systems The Oil and Gas Engineering Guide PRINCIPLES OF MASS TRANSFER AND SEPERATION PROCESSES Emerging Technologies and Biological Systems for Biogas Upgrading Separation Process Principles Absorption-Based Post-Combustion Capture of Carbon Dioxide For Technology 1992 Between Making And Knowing: Tools In The History Of Materials Research Integration and Optimization of Unit Operations Modeling of Column Apparatus Processes App Process Design for Chemical and Petrochemical Plants:

Process Engineering Oct 29 2022 This textbook provides a comprehensive introduction to chemical process engineering, linking the fundamental theory and concepts to the industrial day-to-day practice. It bridges the gap between chemical sciences and the practical chemical industry. It enables students to integrate fundamental knowledge of the basic disciplines, to understand the most important processes, and to apply this knowledge to the practice in the industry.

Albright's Chemical Engineering Handbook Mar 02 2023 Taking greater advantage of powerful computing capabilities over the last several years, the development of fundamental informatic models has led to major advances in nearly every aspect of chemical engineering. Albright's Chemical Engineering Handbook represents a reliable source of updated methods, applications, and fundamental concepts that will continue to play a significant role in driving new research and improving plants and operations. Well-rounded, concise, and practical by design, this handbook collects valuable insights from an exceptional diversity of leaders in their respective specialties. Each chapter provides a review of basic information, case examples, and references to additional, more in-depth information. They explain essential principles, calculations, and issues relating to topics including reaction engineering, process control and design, waste disposal, and electrochemical and biochemical engineering. The final chapters cover aspects of patents and intellectual property, practical communication, and ethical considerations that are most relevant to engineers. From fundamental plant operations, Albright's Chemical Engineering Handbook offers a thorough, yet succinct guide to day-to-day methods and calculations used in chemical engineering applications. This handbook will serve the needs of practicing professionals as well as students preparing to enter the field.

Process Technology Feb 01 2023 The book provides a general overview about process technology and focuses on the structure and development of production processes, main technological operations, and some important aspects of process economics. For the technological operations the authors

operating principles, reasons for application and available industrial equipment.

**Tritium Technologies for Thermonuclear Fusion Reactors** **Jan 04 2022** Tritium Technologies for Thermonuclear Fusion Reactors summarizes the most recent research and practice in tritium technologies for the processing of hydrogen isotopes in fuel cycles. Authors Dr. Perevezentsev and Professor Rozenkevich combine their wealth of first-hand experience to present this comprehensive guide which promotes the best radiation protection practices and a more sustainable way to generate power in a thermonuclear reactor plant. Applicable to both magnetic and inertial confinement fusion plasma, this book covers tritium processing systems, tritium recovery from the plasma chamber, and various safety systems devoted to lessening the impact on the public and environment. The research was also led through various modeling techniques, such as the separation of hydrogen isotopes, and the detritiation of liquid and gaseous streams in dynamic and steady state operation modes. This is a practical guide which includes various case studies and examples which will help solidify the reader's learning. It combines the latest research of tritium technologies with applications for fusion reactors, and includes solutions and directions for the resolution of various common challenges. Engineers, researchers, and students of tritium technologies, fusion energy, and nuclear power generation will gain a detailed and integrated understanding of how tritium can be used within a nuclear setting, for cleaner and more efficient power generation. Guides the reader through problem solving via step-by-step processes and models Includes case studies and examples throughout of the most recognized experts in the field with firsthand knowledge of the subject Presents a comprehensive, practical reference on the tritium fuel cycle for fusion reactors

**Distillation: Equipment and Processes** **Nov 17 2021** Distillation: Equipment and Processes—winner of the 2015 PROSE Award in Chemistry & Physics from the Association of American Publishers—single source of authoritative information on all aspects of the theory and practice of modern distillation, suitable for advanced students and professionals working in a laboratory, industrial setting, or a managerial capacity. It addresses the most important and current research on industrial distillation, including all steps in process design (feasibility study, modeling, and experimental validation), together with operation and control aspects. This volume features an extra focus on distillation equipment and processes. Winner of the 2015 PROSE Award in Chemistry & Physics from the Association of American Publishers Practical information on the newest developments written by recognized experts Coverage of a huge range of laboratory and industrial distillation approaches Extensive references for each chapter facilitates further study

**Modeling of Column Apparatus Processes** **Jan 26 2020** This book presents a new approach for the modeling of chemical and interphase mass transfer processes in industrial column apparatuses using convection-diffusion and average-concentration models. The convection-diffusion type models are used for a qualitative analysis of the processes and to assess the main, small and slight physical effects, then reject the slight effects. As a result, the process mechanism can be identified. It also introduces average concentration models for quantitative analysis, which use the average values of the variables over the cross-sectional area of the column. The new models are used to analyze various processes (simple and complex chemical reactions, absorption, adsorption and catalytic reactions) and make it possible to model the processes of gas purification with sulfur dioxide, which form the basis of several patents.

**Chemical Engineering Progress** **Dec 19 2021**

**CO2 Capture** **Mar 22 2022** CO2 capture and geological storage (CCS) is now recognised as being one of the pathways that can be implemented to reduce CO2 emissions and fight against global warming. But where, how and at what price can CO2 be captured? This book attempts to provide the answers to these questions, reviewing the state of the art of the technologies required. It presents the t

pathways considered in which the CO<sub>2</sub> capture technologies are expected to be implemented respectively: the post-combustion pathway, in which the CO<sub>2</sub> contained in industrial flue gas is extracted; the oxy-combustion pathway, in which combustion is performed in oxygen to obtain a gas with high CO<sub>2</sub> concentration; and lastly the pre-combustion pathway, in which carbon is extracted from the initial fuel to generate hydrogen, whose combustion will produce only water vapour. The book introduces, for each pathway, the technologies currently available and those under development intended for everyone wanting to gain a better understanding of the mechanisms implemented in capture operations, as well as the technological and economic challenges to be met to ensure that the costs generated by these operations are no longer an obstacle to their worldwide generalisation.

Contents: 1. Why capture and store CO<sub>2</sub>? Global warming. How to reduce CO<sub>2</sub> emissions. Main links of the CCS chain. 2. Where capture CO<sub>2</sub>? CO<sub>2</sub> fixed emission sources worldwide. Fixed sources in France. CO<sub>2</sub> capture potential in France. 3. Post-Combustion CO<sub>2</sub> capture. Principles and stakes. Characteristics of post-combustion flue gases. Separation techniques potentially applicable to post-combustion CO<sub>2</sub> capture. Technologies under development for post-combustion CO<sub>2</sub> capture. CO<sub>2</sub> conditioning. Conclusion. 4. Oxy-combustion CO<sub>2</sub> capture. Principles and stakes. Oxy-combustion. Chemical looping combustion. CO<sub>2</sub> conditioning. Demonstrations. 5. Pre-combustion CO<sub>2</sub> capture. Principles and stakes. Syngas production. Water-gas shift reaction. CO<sub>2</sub> extraction. CO<sub>2</sub> conditioning. Hydrogen combustion. Integrated power production processes with pre-combustion CO<sub>2</sub> capture. 6. Capture and store CO<sub>2</sub>: at what cost? Calculation bases. CO<sub>2</sub> capture costs. CO<sub>2</sub> storage costs. Trend in the cost of the CCS chain - Power production. Variability of chain costs. Application to existing installations. Conclusion. Appendix.

Advances in Air Conditioning Technology January 2022 This book highlights key recent developments in air conditioning technologies for cooling and dehumidification with the specific objectives to improve energy efficiency and to minimize environmental impact. Today, air conditioning, comprising cooling and dehumidification, is a necessity in commercial and residential buildings and even in many industrial processes. This book provides key update on recent developments in air conditioning systems, cooling cycles and innovative cooling/dehumidification technologies. Key technologies related to cooling include heat-driven absorption and adsorption cooling and water-based dew point evaporative cooling. Technologies connected with dehumidification involve new generations of adsorbent-desiccant dehumidifiers, liquid-based desiccants and membranes that sieve out water vapor from air. Load estimation, cooling cycles and thermo-economic analysis for a sustainable economy are also judiciously documented.

Distillation: Operation and Applications May 12 2021 Distillation: Operation and Applications—winner of the 2015 PROSE Award in Chemistry & Physics from the Association of American Publishers—is a single source of authoritative information on all aspects of the theory and practice of modern distillation, suitable for advanced students and professionals working in a laboratory, industrial setting or a managerial capacity. It addresses the most important and current research on industrial distillation, including all steps in process design (feasibility study, modeling, and experimental validation), together with operation and control aspects. This volume features an extra focus on distillation applications. Winner of the 2015 PROSE Award in Chemistry & Physics from the Association of American Publishers Practical information on the newest development written by recognized experts Coverage of a huge range of laboratory and industrial distillation approaches Extensive references for each chapter facilitates further study

Handbook of Separation Process Technology May 04 2023 Surveys the selection, design, and operation of most of the industrially important separation processes. Discusses the underlying principles of the processes are based, and provides illustrative examples of the use of the processes in a range of industries.

context. Features thorough treatment of newer separation processes based on membranes, chromatography, ion exchange, and chemical complexation. Includes a review of historically important separation processes such as distillation, absorption, extraction, leaching, and crystallization and considers these techniques in light of recent developments affecting them.

**Separation Process Principles** 2020 **Separation Process Principles with Applications Using Process Simulator**, 4th Edition is the most comprehensive and up-to-date treatment of the major separation operations in the chemical industry. The 4th edition focuses on using process simulation to design separation processes and prepares readers for professional practice. Completely rewritten to enhance clarity, this fourth edition provides engineers with a strong understanding of the field. With the help of an additional co-author, the text presents new information on bioseparations throughout the chapters. A new chapter on mechanical separations covers settling, filtration and centrifugation including mechanical separations in biotechnology and cell lysis. Boxes help highlight fundamental equations. Numerous new examples and exercises are integrated throughout as well.

**Absorption** Feb 06 2021 This book gives a practical account of the modern theory of calculating absorbers for binary and multicomponent physical absorption and absorption with simultaneous chemical reaction. The book consists of two parts: the theory of absorption and the calculation of absorbers. Part I covers basic knowledge on diffusion and the theory of mass transfer in binary and multicomponent systems. Significant stress is laid on diffusion theory because this forms the basis of the absorption process. In the next chapters the fundamentals of simultaneous mass transfer and chemical reaction, the theory of the desorption of gases from liquids and the formulation of differential balances are discussed. Part II is devoted to the calculation of absorbers and the classification of absorbers. The chapters present calculation methods for the basic types of absorber with a detailed analysis of the calculation methods for packed, plate and bubble columns. The authors illustrate the presented material with a large number of examples, starting with simple ones for binary systems and ending with column calculation for multicomponent systems.

**Absorption-Based Post-Combustion Capture of Carbon Dioxide** May 31 2020 **Absorption-Based Post-Combustion Capture of Carbon Dioxide** provides a comprehensive and authoritative review of absorption-based methods for post-combustion capture of carbon dioxide. As fossil fuel-based power generation technologies are likely to remain key in the future, at least in the short- and medium-term, carbon capture and storage will be a critical greenhouse gas reduction technique. Post-combustion capture involves the removal of carbon dioxide from flue gases after fuel combustion, meaning that carbon dioxide can then be compressed and cooled to form a safely transportable liquid that can be stored underground. Provides researchers in academia and industry with an authoritative overview of amine-based methods for carbon dioxide capture from flue gases and related processes Edited by two contributors are well known experts in the field Presents the first book on this specific topic

**Thermal Separation Processes** Jul 26 2022 This much-needed book presents a clear and very practical oriented overview of thermal separation processes. An extensive introduction elucidates the physical and physicochemical fundamentals of different unit operations used to separate homogeneous mixtures. This is followed by a concise text with numerous explanatory figures and tables referring to process design, flowsheets, basic engineering and examples of separation process applications. Very helpful guidance in the form of process descriptions, calculation models and operation data is presented in an easy-to-understand manner thereby assisting the practicing engineer in the choosing and evaluation of separation processes and facilitating the modeling and design of innovative equipment. A comprehensive reference list provides further opportunity for the following up of special separation problems. Chemical and mechanical engineers, chemists, physicists and biotechnologists in research and development, plant design and environmental protection, as well as students in chemical

engineering and natural sciences will find this all-embracing reference guide of tremendous value for practical use.

Sulzer Technical Review Dec 31 2022

Fusion Technology 1992 30 2020 The aim of the biennial series of symposia on Fusion Technology organized by the European Fusion Laboratories, is the exchange of information on the design, construction and operation of fusion experiments and on the technology being developed for step devices and fusion reactors. The coverage of the volume includes the technological aspects of fusion reactors in relation to new developments, thus forming a guideline for the definition of work. These proceedings comprise three volumes and contain both the invited lectures and contributed papers presented at the symposium, which was attended by 569 participants from around the world. 343 papers, including 12 invited papers, characterise the increasing interest of industry in the programme, giving a broad and current overview on the progress and trends fusion technology is experiencing now, as well as indicating the future for fusion devices.

Integration and Optimization of Unit Operations Feb 27 2020 The chemical industry changes and becomes more and more integrated worldwide. This creates a need for information exchange and includes not only the principles of operation but also the transfer of practical knowledge. Integration and Optimization of Unit Operations provides up-to-date and practical information on chemical operations from the R&D stage to scale-up and demonstration to commercialization and optimization. A global collection of industry experts systematically discuss all innovation stages, complex processes, different unit operations, including solids processing and recycle flows, and the importance of integrated process validation. The book addresses the needs of engineers who want to increase their skill levels in various disciplines so that they are able to develop, commercialize and optimize processes. After reading this book, you will be able to acquire new skills and knowledge to collaborate across disciplines and develop creative solutions. Shows the impacts of upstream process decisions on downstream operations Provides troubleshooting strategies at each process stage Asks challenging questions to develop creative solutions to process problems

Separation of Isotopes of Biogenic Elements in Two-phase Systems Nov 05 2020 Separation of Isotopes of Biogenic Elements provides a detailed overview of this area of research covering all aspects of the value of isotope effects to their practical use (equilibrium single-stage isotope effect - kinetic isotope effect - transfer - multiplication of the single-stage isotope separation factor - technological peculiarities of separation processes) with the purpose of extraction from the natural mixture of the enriched and highly concentrated isotopes. In contrast to traditional books on the theory of isotope separation, the theoretical part of the book describes separation in two-phase processes in counter-flow columns. The experimental part of the book presents systematic analysis of specialists in the field of isotope separation in counter-flow columns. This book will be of interest to scientists, engineers and technical workers engaged in isotope separation processes and isotope application in nuclear physics, medicine, chemistry, biology and other areas. This book may also be used in teaching theory and practice in courses on physical chemistry and Isotope separation of light elements by physicochemical methods. \* summarises current state of isotope research, especially biogenic elements \* covering all aspects of the value of isotope effects to their practical use \* of interest to scientists, engineers and technical workers engaged in isotope separation processes and isotope application

Encyclopedia of Chemical Processes Feb 18 2022 Supplying nearly 350 expertly-written articles on current technologies that can maximize and enhance the research and production phases of current and emerging chemical manufacturing practices and techniques, this second edition provides goldmine articles on the methods, practices, products, and standards recently influencing the chemical industry. New material includes: design of key unit operations involved with chemical processes; design

operation, and integration of reactors and separation systems; process system peripherals such as pumps, valves, and controllers; analytical techniques and equipment; current industry practice; pilot plant design and scale-up criteria.

Between Making And Knowing: Tools In The History Of Materials Research Mar 29 2020 This book offers a comprehensive sketch of the tools used in material research and the rich and diverse ways how those tools came to be. We aim to give readers a sense of what tools materials researchers used in the late 20th century, and how those tools were developed and became accessible. The book is in a sense a collective biography of the components of what the philosopher of science, Ian Hacking called the 'instrumentarium' of materials research. Readers should gain an appreciation of the work that materials researchers put into developing and using such tools, and of the tremendous variety of such tools. Readers should also gain some insight into the material (and hence financial) prerequisites for materials research. Materials research requires funding for the availability and maintenance of its tools. This category of tools encompasses a broad range of substances, apparatus, institutions, and infrastructure. The Chemical Engineer Dec 07 2020

NPRA, a Century of Achievement and Excellence Oct 17 2021  
Proceedings of the World Conference on Palm and Coconut Oils for the 21st Century Sep 15 2021 This book covers a wide range of food and oleochemical applications of palm and coconut oils. The presentations were part of the World Conference on Palm and Coconut Oils for the 21st Century in Bali and reflect the changes in the oleochemical industry during the past decade.

Packed Bed Columns Apr 03 2023 Packed bed columns are largely employed for absorption, desorption, rectification and direct heat transfer processes in chemical and food industry, environmental protection and also processes in thermal power stations like water purification, flue gas heat recovery and SO<sub>2</sub> removal. These Separation processes, are estimated to account for 40%-70% of capital and operating costs in process industry. Packed bed columns are widely employed in this area. They are also used for direct heat transfer between gas and liquid, enlarge their importance. They are the basic apparatuses, from thermodynamical point of view, for mass and heat transfer processes between gas and liquid phase. Their wide spreading is due to low capital investments and operating costs. Since 1995 there has not been published a specialised book in this area, and this is a period of quick development of packed columns. Packed Bed Columns reflects the state of this field including the author's experience on creating and investigating of new packings, column internals and industrial packed columns. Considers the theories of mass transfer processes and shows how they help the construction of highly effective packings Complete information about the performance characteristics of different modern types of highly effective packings Considers the models for calculation and areas of their application

Applied Process Design for Chemical and Petrochemical Plants Dec 27 2019 This latest edition covers the technical performance and mechanical details of converting the chemical and petrochemical processes into appropriate hardware for distillation and packed towers. It incorporates recent advances and major innovations in distillation contacting devices and features new generations of packing. In addition, this new edition reflects the significant progress that has been made in process design techniques in recent years. Volume 2's example calculation techniques guide in the preparation of preliminary and final rating designs. In some instances, the book includes manufacturers' procedures and notes clearly indicate when manufacturers should verify results. Covers distillation and packed towers, and contains material on azeotropes and ideal and non-ideal systems Includes important findings from recent literature to illustrate alternate design methods New illustrations and references

Intensification of Liquid-Liquid Processes Sep 12 2021 Explore and review novel techniques for intensifying transport and reaction in liquid-liquid and related systems with this essential tool

include discussion of the principles of process intensification, the nexus between process intensification and sustainable engineering, and the fundamentals of liquid-liquid contacting, from an expert with over forty-five years' experience in the field. Providing promising directions for investment and for research in process intensification, in addition to a unique review of the fundamentals of the field, this book is the perfect guide for senior undergraduate students, graduate students, developers, and staff in chemical engineering and biochemical engineering.

Chemical Engineering May 24 2022

Integrated Chemical Processes Apr 10 2021 This is the first book dedicated to the entire field of integrated chemical processes, covering process design, analysis, operation and control of the processes. Both the editors and authors are internationally recognized experts from different industries and academia, and their contributions describe all aspects of intelligent integrations of chemical reactions and physical unit operations such as heat exchange, separational operations, and mechanical unit operations. As a unique feature, the book also introduces new concepts for different integration concepts on a generalized basis. Of great value to a broad audience of researchers and engineers from industry and academia.

Rules of Thumb for Chemical Engineers Nov 29 2022 Annotation A handbook for chemical and process engineers who need a solution to their practical on-the-job problems. It solves process design problems quickly, accurately and safely, with hundreds of techniques, shortcuts and calculations.

Fundamentals of Natural Gas Processing Sep 7 2022 Offering indispensable insight from experts in the field, Fundamentals of Natural Gas Processing, Second Edition provides an introduction to the industry and the processes required to convert wellhead gas into valuable natural gas and hydrocarbons liquids products. The authors compile information from the literature, meeting proceedings, and industry reports.

Encyclopedia of Chemical Processing and Design, Volume 69 (Supplement) Aug 27 2022 This 69th volume presents information on circulating fluidized bed reactors and looks at subjects ranging from basic concepts and hydrodynamics to structure, properties and applications of polyolefines produced by single-site catalyst technology.

The Oil and Gas Engineering Guide Oct 05 2020 Each engineering task is described and illustrated with a sample document taken from a real project. --

Petroleum Refining Design and Applications Handbook, Volume 3 Aug 15 2021 PETROLEUM REFINING The third volume of a multi-volume set of the most comprehensive and up-to-date coverage of the advances of petroleum refining designs and applications, written by one of the world's most known process engineers, this is a must-have for any chemical, process, or petroleum engineer. This volume continues the most up-to-date and comprehensive coverage of the most significant advances and changes to petroleum refining, presenting the state-of-the-art to the engineer, scientist, or student. This book provides the design of process equipment, such as vessels for the separation of two-phase and three-phase fluids, using Excel spreadsheets, and extensive process safety investigations of recent incidents, distillation, distillation sequencing, and dividing wall columns. It also covers multicomponent distillation, packed towers, liquid-liquid extraction using UniSim design software, and process safety incidents involving these equipment items and pertinent industrial case studies. Useful as a text, this is also an excellent, handy go-to reference for the veteran engineer, a volume no chemical or process engineering library should be without. Written by one of the world's foremost authorities, this book sets the standard for the industry and is an integral part of the petroleum refining renaissance. Truly a must-have for any practicing engineer or student in this area. This groundbreaking new book Assists engineers in rapidly analyzing problems and finding effective design methods and selecting mechanical specifications Provides improved design manuals to methods and proven fundamental process design with related data and charts Covers a complete range of basic day-to-day petro-

refining operations topics with new materials on significant industry changes Includes extensive spreadsheets for the design of process vessels for mechanical separation of two-phase and three-phase fluids Provides UniSim<sup>®</sup>-based case studies for enabling simulation of key processes outlined in the book Helps achieve optimum operations and process conditions and shows how to translate design fundamentals into mechanical equipment specifications Has a related website that includes case studies applications along with spreadsheets and concise applied process design flow charts and process sheets Provides various case studies of process safety incidents in refineries and means of mitigation of these from investigations by the US Chemical Safety Board Includes a vast Glossary of Petroleum Technical Terminology

Encyclopedia of Chemical Processing (Online) 2022 This second edition Encyclopedia supplies nearly 350 gold standard articles on the methods, practices, products, and standards influencing the chemical industries. It offers expertly written articles on technologies at the forefront of the industry to maximize and enhance the research and production phases of current and emerging chemical manufacturing practices and techniques. This collecting of information is of vital interest to chemical, polymer, electrical, mechanical, and civil engineers, as well as chemists and chemical researchers. This complete reconceptualization of the classic reference series the Encyclopedia of Chemical Process Design and Design, whose first volume published in 1976, this resource offers extensive A-Z treatment of the subject in five simultaneously published volumes, with comprehensive indexing of all five volumes in the back matter of each tome. It includes material on the design of key unit operations involved in chemical processes; the design, unit operation, and integration of reactors and separation systems; process system peripherals such as pumps, valves, and controllers; analytical techniques and equipment; and pilot plant design and scale-up criteria. This reference contains well-researched sections on automation, equipment, design and simulation, reliability and maintenance, separation technologies, and energy and environmental issues. Authoritative contributions cover chemical processing equipment, engineered systems, and laboratory apparatus currently utilized in the industry. It also presents expert overviews on key engineering science topics in property predictions, measurement, and analysis, novel materials and devices, and emerging chemical fields. ALSO AVAILABLE ONLINE This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for both researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online combination packages. US: (Tel) 1.888.318.2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online.sales@tandf.co.uk

Distillation Mar 10 2021 Distillation Principles and Practice Second Edition covers all the main aspects of distillation including the thermodynamics of vapor/liquid equilibrium, the principles of distillation, the synthesis of distillation processes, the design of the equipment, and the control of process operation. Most textbooks deal in detail with the principles and laws of distilling binary mixtures. When it comes to multi-component mixtures, they refer to computer software now available. One of the special features of the second edition is a clear and easy understandable presentation of the principles and laws of ternary distillation. The right understanding of ternary distillation is the link to a better understanding of multi-component distillation. Ternary distillation is the basis for a conceptual process design, for separating azeotropic mixtures by using an entrainer for reactive distillation, which is a rapidly developing field of distillation. Another special feature of the book is the design of distillation equipment, i.e. tray columns and packed columns. In practice, design know-how is preferably used in many companies, often in form of empirical equations, which are even dimensionally correct. The objective of the proposed book is the derivation of the relevant



equations for column design based on first principles. The field of column design is permanent developing with respect to the type of equipment used and the know-how of two-phase flow interfacial mass transfer.

Emerging Technologies and Biological Systems for Biogas Upgrading 2020 Emerging Technologies and Biological Systems for Biogas Upgrading systematically summarizes the fundamental principles and the state-of-the-art of biogas cleaning and upgrading technologies, with special emphasis on biological processes for carbon dioxide (CO<sub>2</sub>), hydrogen sulfide (H<sub>2</sub>S), siloxane, and hydrocarbon removal. After analyzing the global scenario of biogas production, upgrading and utilization, the book discusses the integration of methanation processes to power-to-gas systems for methane (CH<sub>4</sub>) production and physiochemical upgrading technologies, such as chemical absorption, water sorption, pressure swing adsorption and the use of membranes. It then explores more recent and sustainable upgrading technologies, such as photosynthetic processes using algae, hydrogen-mediated methanation techniques, electrochemical, bioelectrochemical, and cryogenic approaches. H<sub>2</sub>S removal with iron-based catalysts is also covered, as well as removal of siloxanes through polymerization, peroxidation, biological degradation and gas-liquid absorption. The authors also thoroughly consider issues of mass transfer limitation in biomethanation from waste gas, biogas upgrading and life cycle assessment of upgrading technologies, techno-economic aspects, challenges for upscaling, and future trends. Providing comprehensive information on biogas upgrading technology, and focusing on the most recent developments, Emerging Technologies and Biological Systems for Biogas Upgrading is a unique resource for researchers, engineers, and graduate students in the field of biogas production and utilization, including waste-to-energy and power-to-gas. It is also useful for entrepreneurs, consultants, and decision-makers in governmental agencies in the fields of sustainable energy, environmental protection, greenhouse gas emissions and climate change, and strategic planning. Explores all major technologies for biogas upgrading through physiochemical, biological, and electrochemical processes Discusses CO<sub>2</sub>, H<sub>2</sub>S, and siloxane removal techniques Provides a systematic approach to discuss technologies, including challenges to gas-liquid mass transfer, life cycle assessment, techno-economic implications, upscaling, and systems integration

PRINCIPLES OF MASS TRANSFER AND SEPERATION PROCESSES Sep 03 2020 This textbook is targeted to undergraduate students in chemical engineering, chemical technology, and biochemical engineering for courses in mass transfer, separation processes, transport processes, and unit operations. The principles of mass transfer, both diffusional and convective have been comprehensively discussed. The application of these principles to separation processes is explained. The more common separation processes used in the chemical industries are individually described in separate chapters. The book also provides a good understanding of the construction, the operating principles, and the selection criteria of separation equipment. Recent developments in equipment have been included as far as possible. The procedure of equipment design and sizing has been illustrated by simple examples. An overview of different applications and aspects of membrane separation has also been provided. 'Humidification and water cooling', necessary in every process industry, is also described. Finally, elementary principles of 'unsteady state diffusion' and mass transfer accompanied by a chemical reaction are covered. SALIENT FEATURES : • A balanced coverage of theoretical principles and practical applications. • Important recent developments in mass transfer equipment and practice are included. A large number of solved problems of varying levels of complexities showing the applications of the theory are included. • Many end-chapter exercises. • Chapter-wise multiple choice questions. Instructors manual for the teachers.

The Fundamentals of Process Intensification Jan 10 2021 This advanced textbook covering the fundamentals and industry applications of process intensification (PI) discusses both the theoretical

conceptual basis of the discipline. Since interdisciplinarity is a key feature of PI, the material covered in the book reaches far beyond the classical area of chemical engineering. Developments in other relevant disciplines, such as chemistry, catalysis, energy technology, applied physics, electronics, and materials science, are extensively described and discussed, while maintaining a chemical engineering perspective. Divided into three major parts, the first introduces the PI principles in detail and illustrates them using practical examples. The second part is entirely devoted to fundamental approaches in four domains: spatial, thermodynamic, functional and temporal. The third and final part explores the methodology for applying fundamental PI approaches in practice. As well as detailing technological advances, the book focuses on safety, energy and environmental issues, giving guidance on how to incorporate these into plant design and operation -- safely, efficiently and effectively.

**Fundamentals of Natural Gas Processing, Third Edition** (2021) Offering indispensable insight from experts in the field, *Fundamentals of Natural Gas Processing, Third Edition* provides an authoritative introduction to the gas industry and the processes required to convert wellhead gas into valuable natural gas and hydrocarbon liquids products including LNG. The authors compile information from the latest literature, meeting proceedings, short courses, and their own work experiences to give an accurate picture of where gas processing technology stands today as well as to highlight relatively new technologies that could become important in the future. The third edition of this bestselling textbook provides updates on North American gas processing and changing gas treating requirements due to shale gas production. It covers the international nature of natural gas trade, LNG, economics, and more. For nonengineers to understand technical issues, the first 5 chapters present an overview of the basic engineering concepts applicable throughout the gas, oil, and chemical industries. The following chapters address natural gas processing, with a focus on gas plant processes and technologies. The book contains 2 appendices. The first contains an updated glossary of gas processing terminology and the second is available only online and contains useful conversion factors and physical properties. Aimed at students as well as natural gas processing professionals, this edition includes both end-of-chapter questions and exercises designed to reinforce important concepts, making this book suitable as a textbook in upper-level or graduate engineering courses.

[digitaltutorials.jrn.columbia.edu](http://digitaltutorials.jrn.columbia.edu)