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Mass-transfer Operations
CRC Press
Covers all aspects of
chemical process control
and provides a clear and

complete overview of the design and hardware elements needed for practical implementation. **Unit Operations-II** Franklin Classics Trade Press Food Process Engineering and Technology, Third Edition combines scientific depth with practical usefulness, creating a tool for graduate students and practicing food engineers, technologists and researchers looking for the latest information on transformation and preservation processes and

process control and plant hygiene topics. This fully updated edition provides recent research and developments in the area, features sections on elements of food plant design, an introductory section on the elements of classical fluid mechanics, a section on non-thermal processes, and recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail. Provides a strong emphasis on the relationship between engineering and

product quality/safety
Considers cost and environmental factors
Presents a fully updated, adequate review of recent research and developments in the area
Includes a new, full chapter on elements of food plant design
Covers recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail
Mass Transfer John Wiley & Sons
This work has been selected by scholars

as being culturally important and is part of the knowledge base of civilization as we know it. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. To ensure a quality reading experience, this work has been proofread and republished using a format that seamlessly blends the original graphical elements with text in an easy-to-read typeface. We appreciate your

support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.

Gas-liquid Reactions John Wiley & Sons

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 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.
- An Instructors manual for the teachers.

Perry's Chemical Engineers' Handbook, 9th Edition
Butterworth-Heinemann
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 simulators 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.

PHI Learning Pvt. Ltd.
Originally published: New York: McGraw-Hill, 1971. 2nd ed. Includes a new introduction.
Heat and Mass Transfer in Packed Beds PHI Learning Pvt. Ltd.
Distillation: Fundamentals and Principles — winner of the 2015 PROSE Award in Chemistry & Physics — 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 plants, 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 the conceptual design of distillation. 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

PRINCIPLES OF MASS TRANSFER AND SEPERATION PROCESSES

McGraw Hill Professional

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.

Mass Transfer and Separation Processes PHI Learning Pvt. Ltd.

A staple in any chemical engineering curriculum New edition has a stronger emphasis on membrane separations, chromatography and other adsorptive processes, ion exchange Discusses many developing topics in more depth in mass transfer operations, especially in the biological engineering area

Covers in more detail phase equilibrium since distillation calculations are completely dependent on this principle Integrates computational software and problems using Mathcad Features 25-30 problems per chapter

Distillation: Fundamentals and Principles New Age International

This book introduces the fundamental principles of the mass transfer phenomenon and its diverse applications in process industry. It covers the full spectrum of techniques for chemical separations and extraction. Beginning with molecular diffusion in gases, liquids and solids within a single

phase, the mechanism of inter-phase mass transfer is explained with the help of several theories. The separation operations are explained comprehensively in two distinct ways—stage-wise contact and continuous differential contact. The primary design requirements of gas – liquid equipment are discussed. The book provides a detailed discussion on all individual gas – liquid, liquid – liquid, solid – gas, and solid – liquid separation processes. The students are also exposed to the underlying principles of the membrane-based separation processes. The book is replete with real applications of separation processes and equipment. Problems are worked

out in each chapter. Besides, problems with answers, short questions, multiple choice questions with answers are given at the end of each chapter. The text is intended for a course on mass transfer, transport and separation processes prescribed for the undergraduate and postgraduate students of chemical engineering.

Mass-Transfer Operation Universities Press

Mass transfer along with separation processes is an area that is often quite challenging to master, as most volumes currently available complicate the learning by teaching mass transfer linked with heat

transfer, rather than focusing on more relevant techniques. With this thoroughly updated second edition, *Mass Transfer and Separation Processes: Principles and Applications* presents a highly thoughtful and instructive introduction to this sophisticated material by teaching mass transfer and separation processes as unique though related entities. In an ever increasing effort to demystify the subject, with this edition, the author— Avoids more complex separation processes Places a greater emphasis on the art of simplifying assumptions

Conveys a greater sense of scale with the inclusion of numerous photos of actual installations. Makes the math only as complicated as necessary while reviewing fundamental principles that may have been forgotten. The book explores essential principles and reinforces the concepts with classical and contemporary illustrations drawn from the engineering, environmental, and biological sciences. The theories of heat conduction and transfer are utilized not so much to draw analogies but rather to make fruitful use of existing solutions not seen in

other texts on the subject. Both an introductory resource and a reference, this important text serves environmental, biomedical, and engineering professionals, as well as anyone wishing to gain a grasp on this subject and its increasing relevance across a number of fields. It fills a void in traditional chemical engineering literature by providing access to the principles and working practices that allow mass transfer theory to be applied to separation processes.

Chemical Process Control
Mass-transfer Operations

In recent years, the subject of mass transfer has been treated as a minor player in the larger field of transport phenomena and taken a back seat to its more mature "brother," heat transfer. Yet mass transfer is sufficiently mature as a discipline and sufficiently distinct from other transport processes to merit a separate treatment, particularly one that does not overwhelm readers with an abundance of high-level mathematics. **Mass Transfer: Principles and Applications** takes an integrated approach

that uses a wealth of real-world examples, organizes the material according to mode of operation, and highlights the importance of modeling. The author begins by introducing diffusion rates, Fick's Law, film theory, and mass transfer coefficients, then develops these concepts in complementary stages. The treatment of phase equilibria covers topics generally not addressed in thermodynamics courses, and these concepts are then used to analyze compartmental models and

staged processes as well as continuous contact operations. The final chapter offers a concise survey of simultaneous mass and heat transfer. Throughout the book, discussions transition smoothly between theory and practice and clearly reflect the author's many years of engineering experience and the breadth of mass transfer applications. Mass Transfer: Principles and Applications is a unique and accessible treatment of this relatively complicated topic that will fill a significant gap as both a

textbook and professional reference. Unit Operations of Chemical Engineering Prentice Hall A thorough introduction to the fundamentals and applications of microscopic and macroscopic mass transfer. Mass Transfer PHI Learning Pvt. Ltd. This broad-based book covers the three major areas of Chemical Engineering. Most of the books in the market involve one of the individual areas, namely, Fluid Mechanics, Heat Transfer or Mass Transfer, rather than all the three.

This book presents this material in a single source. This avoids the user having to refer to a number of books to obtain information. Most published books covering all the three areas in a single source emphasize theory rather than practical issues. This book is written with emphasis on practice with brief theoretical concepts in the form of questions and answers, not adopting stereotyped question-answer approach practiced in certain books in the market, bridging the two areas of theory and

practice with respect to the core areas of chemical engineering. Most parts of the book are easily understandable by those who are not experts in the field. Fluid Mechanics chapters include basics on non-Newtonian systems which, for instance find importance in polymer and food processing, flow through piping, flow measurement, pumps, mixing technology and fluidization and two phase flow. For example it covers types of pumps and valves, membranes and areas

of their use, different equipment commonly used in chemical industry and their merits and drawbacks. Heat Transfer chapters cover the basics involved in conduction, convection and radiation, with emphasis on insulation, heat exchangers, evaporators, condensers, reboilers and fired heaters. Design methods, performance, operational issues and maintenance problems are highlighted. Topics such as heat pipes, heat pumps, heat tracing, steam traps, refrigeration,

cooling of electronic devices, NO_x control find place in the book. Mass transfer chapters cover basics such as diffusion, theories, analogies, mass transfer coefficients and mass transfer with chemical reaction, equipment such as tray and packed columns, column internals including structural packings, design, operational and installation issues, drums and separators are discussed in good detail. Absorption, distillation, extraction and leaching with applications and design methods, including emerging

practices involving Divided Wall and Petluk column arrangements, multicomponent separations, supercritical solvent extraction find place in the book.

Reaction Kinetics for Chemical Engineers Prentice Hall
Use of Adsorbents for the Removal of Pollutants from Wastewater describes the most commonly occurring industrial effluents, and presents direct means and methodologies for treating them. In addition to its excellent introduction to pollutants, this book contains all of the basics you need for understanding the characteristics

and applications of adsorbent materials. With this book, you can choose from a wide variety of traditional and novel adsorbents, including alternative, relatively inexpensive adsorbents.

Chemical Process Design and Integration Nirali Prakashan

Author's purpose is "to provide a vehicle for teaching, either through a formal course or through self-study, the techniques of, and principles of equipment design for, the mass-transfer operations of chemical engineering." As before, these operations are largely

the responsibility of the chemical engineer, but increasingly practitioners of other engineering disciplines are finding them necessary for their work. This is especially true for those engaged in pollution control and environment protection, where separation processes predominate, and in, for example, extractive metallurgy, where more sophisticated and diverse methods of separation are increasingly relied upon. Fluid Mechanics, Heat Transfer, and Mass Transfer

John Wiley & Sons
This textbook is intended for courses in heat transfer for undergraduates, not only in chemical engineering and related disciplines of biochemical engineering and chemical technology, but also in mechanical engineering and production engineering. The author provides the reader with a very thorough account of the fundamental principles and their applications to engineering practice, including a survey of the recent developments in heat transfer equipment. The three basic modes of heat transfer -

conduction, convection and radiation - have been comprehensively analyzed and elucidated by solving a wide range of practical and design-oriented problems. A whole chapter has been devoted to explain the concept of the heat transfer coefficient to give a feel of its importance in tackling problems of convective heat transfer. The use of the important heat transfer correlations has been illustrated with carefully selected examples.

Solutions Manual to Accompany Mass-transfer Operations, Third Edition Academic Press
Explore and review novel

techniques for intensifying transport and reaction in liquid-liquid and related systems with this essential toolkit. Topics 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 new research in process intensification, in addition to a unique review of the fundamentals of the topic, this book is the perfect guide for senior undergraduate students, graduate students, developers, and research staff in chemical engineering and

biochemical engineering. Food Process Engineering and Technology Courier Corporation This textbook is designed for undergraduate courses in chemical engineering and related disciplines such as biotechnology, polymer technology, petrochemical engineering, electrochemical engineering, environmental engineering, safety engineering and industrial chemistry. The chief objective of this text is to prepare students to make analysis of chemical processes through calculations and also to develop in them systematic problem-solving skills. The students are introduced not only to the application of law of combining proportions to

chemical reactions (as the word ' stoichiometry ' implies) but also to formulating and solving material and energy balances in processes with and without chemical reactions. The book presents the fundamentals of chemical engineering operations and processes in an accessible style to help the students gain a thorough understanding of chemical process calculations. It also covers in detail the background materials such as units and conversions, dimensional analysis and dimensionless groups, property estimation, P-V-T behaviour of fluids, vapour pressure and phase equilibrium relationships, humidity and saturation. With the

help of examples, the book explains the construction and use of reference-substance plots, equilibrium diagrams, psychrometric charts, steam tables and enthalpy composition diagrams. It also elaborates on thermophysics and thermochemistry to acquaint the students with the thermodynamic principles of energy balance calculations. Key Features :

- SI units are used throughout the book.
- Presents a thorough introduction to basic chemical engineering principles.
- Provides many worked-out examples and exercise problems with answers.
- Objective type questions included at the end of the book serve as useful review

material and also assist the students in preparing for competitive examinations such as GATE. Chemical Engineering Thermodynamics CRC Press In A Simple And Systematic Manner, This Book Presents An Exhaustive Account Of Various Mass Transfer Operations Involved In Chemical Engineering. Emphasising The Basic Concepts And Techniques, The Book Discusses In Detail Material And Energy Balances, Distillation, Absorption And Stripping And Extraction. The Book Also Explains The

Relevant Aspects Of Equipment Design. Recent Developments Like Permeation, Ion Exchange And Froth Flootation Have Also Been Discussed. A Large Number Of Digital Computer Programs Are Included To Illustrate Computer-Aided Techniques. Several Solved Examples And Practice Problems Are Presented In Each Chapter To Illustrate The Theory. With All These Features, This Is An Ideal Text For Undergraduate Chemical Engineering Students. Practising Engineers And Students Of Pharmacy And Metallurgy Would Also Find

The Book A Useful Reference
Source.