

Mass Transfer Operations I Video Course Nptel

Mass Transfer in Multicomponent Mixtures
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 Mass Transfer-II
 Advances in Industrial Mixing
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 Heat and Mass Transfer in the Melting of Frost
 Proceedings of a Conference Held at NASA Goddard Space Flight Center, Greenbelt, Maryland, September 22-24, 1992
 Mass Transfer Concepts
 Goddard Conference on Mass Storage Systems and Technologies
 Food Processing Technology
 Scientific and Technical Aerospace Reports
 A Companion to the Handbook of Industrial Mixing
 Principles of Chemical Engineering
 Fluid Mechanics, Heat Transfer, and Mass Transfer

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TYRONE JOSEPH

Mass Transfer in Multicomponent Mixtures Cambridge University Press

The first guide to compile current research and frontline developments in the science of process intensification (PI), Re-Engineering the Chemical Processing Plant illustrates the design, integration, and application of PI principles and structures for the development and optimization of chemical and industrial plants. This volume updates professionals on emerging PI equipment and methodologies to promote technological advances and operational efficacy in chemical, biochemical, and engineering environments and presents clear examples illustrating the implementation and application of specific process-intensifying equipment and methods in various commercial arenas.

Separation Process Essentials Springer

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 Floatation 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.

Chemical Engineering Practice New Age International

Introduction - Conduction - Convection - Radiation - Heat Exchange Equipments - Evaporation - Diffusion - Distillation - Gas Absorption - Liquid Liquid Extraction - Crystallisation - Drying - Appendix I Try yourself - Appendix II Thermal conductivity data - Appendix III Steam tables

Mass Transfer Springer Nature

The term 'transport phenomena' describes the fundamental processes of momentum, energy, and mass transfer. This text provides a thorough discussion of transport phenomena, laying the foundation for understanding a wide variety of operations used by chemical engineers. The book is arranged in three parallel parts covering the major topics of momentum, energy, and mass transfer. Each part begins with the theory, followed by illustrations of the way the theory can be used to obtain fairly complete solutions, and concludes with the four most common types of averaging used to obtain approximate solutions. A broad range of technologically important examples, as well as numerous exercises, are provided throughout the text. Based on the author's extensive teaching experience, a suggested lecture outline is also included. This book is intended for first-year graduate engineering students; it will be an equally useful reference for researchers in this field.

Process Intensification PHI Learning Pvt. Ltd.

The book provides the whole horizon of process engineering and plant design from concept phase through the execution to commissioning of the plant in the real practice. Providing a complete industrial perspective, the book • Covers the guidelines and standards followed in the industry and how engineering documents are generated using these standards • Describes Hazardous Area Classification, Relief System Design, Revamp Engineering, Interaction with Other Disciplines, and Pre-commissioning and Commissioning • Contains several illustrated practical examples, which clarify the fundamentals to a raw chemical engineer • Includes description of a complete chemical project from concept to commissioning Treating the topic from the perspective of an industrial employee with extensive experience in process engineering and plant design, it aims to aid chemical and plant engineers to deal with decision making processes on strategic level, management tasks

and leading functions beside the technical know-how.

Mass-transfer Operations John Wiley & Sons

Separation Process Essentials provides an interactive approach for students to learn the main separation processes (distillation, absorption, stripping, and solvent extraction) using material and energy balances with equilibrium relationships, while referring readers to other more complete works when needed. Membrane separations are included as an example of non-equilibrium processes. This book reviews and builds on material learned in the first chemical engineering courses such as Material and Energy Balances and Thermodynamics as applied to separations. It relies heavily on example problems, including completely worked and explained problems followed by "Try This At Home" guided examples. Most examples have accompanying downloadable Excel spreadsheet simulations. The book also offers a complementary website, <http://separationsbook.com>, with supplementary material such as links to YouTube tutorials, practice problems, and the Excel simulations. This book is aimed at second and third year undergraduate students in Chemical engineering, as well as professionals in the field of Chemical engineering, and can be used for a one semester course in separation processes and unit operations.

Advancement in Process Modelling Nirali Prakashan

Part of the Essential Engineering Calculations Series, this book presents step-by-step solutions of the basic principles of mass transfer operations, including sample problems and solutions and their applications, such as distillation, absorption, and stripping. Presenting the subject from a strictly pragmatic point of view, providing both the principles of mass transfer operations and their applications, with clear instructions on how to carry out the basic calculations needed, the book also covers topics useful for readers taking their professional exams.

Separation Process Engineering Woodhead Publishing

Contains the papers presented at a symposium which aimed to address and record changes in distillation and absorption and to discuss new directions. Topics covered include: column sequencing; equipment; batch distillation; azeotropic and extractive distillation; packed columns and more.

Mass Transfer John Wiley & Sons

Learn and apply heat and mass transfer principles to real-world chemical engineering problems This hands-on textbook provides a concept-based introduction to heat and mass transfer procedures and lays out the foundation to practical applications in a broad range of fields relevant to chemical and biochemical processing. Written by a recognized academic and experienced author, Heat and Mass Transfer for Chemical Engineers: Principles and Applications contains comprehensive discussions on conductive and diffusive processes and the engineering correlations between momentum, heat, and mass transfer. Readers will get Mathematica workbooks that facilitate calculations and explore trends. The book refers extensively to Perry's Chemical Engineers' Handbook, Ninth Edition for data and correlations. Coverage includes: Introduction to heat and mass transfer Thermal conductivity Steady-state, one-dimensional heat conduction Combined conductive and convective heat transfer Multidimensional and transient heat conduction Convective heat transfer Thermal design of heat exchangers Fick's law and diffusivity One-dimensional, multi-dimensional, and transient diffusion Convective mass transfer Design of packed gas absorption and stripping columns Multicomponent diffusion and coupled mass transfer processes Mass transfer with chemical reaction

Mass Transfer in Engineering Practice BoD - Books on Demand

Reviews and compares the major types of bioreactors, defines their pros and cons, and identifies research needs and figures of merit that have yet to be addressed Describes common modes of operation in bioreactors Covers the three common bioreactor types, including stirred-tank bioreactors, bubble column bioreactors, and airlift bioreactors Details less common bioreactors types, including fixed bed bioreactors and novel bioreactor designs Discusses advantages and

disadvantages of each bioreactor and provides a procedure for optimal bioreactor selection based on current process needs. Reviews the problems of bioreactor selection globally while considering all bioreactor options rather than concentrating on one specific bioreactor type.

Booker's Complete Video Directory 2001 Springer Science & Business Media

Principles and Modern Applications of Mass Transfer Operations John Wiley & Sons

An Introduction to Bioreactor Hydrodynamics and Gas-Liquid Mass Transfer CRC Press

Mass transfer involves the use of various operations to separate a mixture into its individual components—a frequent requirement in chemical industries. The differences in the physical properties of the components to be separated, such as the vapour pressure, solubility or diffusivity, are utilized to transfer material from one homogenous phase to another. Techniques such as gas absorption, distillation, leaching, extraction, crystallization, humidification, drying, adsorption and membrane based separation processes involve mass transfer and can be carried out due to the existence of a concentration gradient within the system. Mass Transfer Concepts supplies engineers with the required knowledge of all these operations. Designed for a two-semester course in chemical, biotechnology, petrochemical, and pharmaceutical engineering, the book provides a simple treatment of the concepts, definitions, and derivations with numerous figures and worked examples typical of their industrial applications. A number of exercise problems with solutions help clarify key concepts.

Principles and Practice Prentice Hall

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 stereo-typed 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, NOx 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.

Process Engineering and Plant Design Universities Press

The All-in-One Guide to Mass Transport Phenomena: From Theory to Examples and Computation. Mass transfer processes exist in practically all engineering fields and many biological systems; understanding them is essential for all chemical engineering students, and for practitioners in a broad range of practices, such as biomedical engineering, environmental engineering, material engineering, and the like. Mass Transfer Processes combines a modern, accessible introduction to modeling and computing these processes with demonstrations of their application in designing reactors and separation systems. P. A. Ramachandran's integrated approach balances all the knowledge readers need to be effective, rather than merely paying lip service to some crucial topics. He covers both analytical and numerical solutions to mass transfer problems, demonstrating numerical problem-solving with widely used software packages, including MATLAB and CHEBFUN. Throughout, he links theory to realistic examples, both traditional and contemporary. Theory, examples, and in-depth coverage of differential, macroscopic, and mesoscopic modeling. Physical chemistry aspects of diffusion phenomena. Film models for calculating local mass transfer rates and diffusional interaction in gas-solid and gas-liquid reaction systems. Application of mass transfer models in rate-based separation processes, and systems with simultaneous heat and mass transfer. Convective mass transfer: empirical correlation, internal and external laminar flows, and turbulent flows. Heterogeneous systems, from laminar flow reactors, diffusion-reaction models, reactive membranes, and electrochemical reactors. Computations of mass transfer effects in multicomponent systems. Solid-gas noncatalytic reactions for chemical, metallurgical, environmental, and electronic processes. Applications in electrochemical and biomedical systems. Design calculations for humidification, drying, and condensation systems and membrane-based separations. Analysis of adsorption, chromatography, electrodialysis, and electrophoresis.

Principles and Modern Applications of Mass Transfer Operations Prentice Hall

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.

Heat and Mass Transfer for Chemical Engineers: Principles and Applications CRC Press

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.

Official Gazette of the United States Patent and Trademark Office CRC Press

The Albuquerque Convention Center was the venue for the 1993 Cryogenic Engineering Conference.

The meeting was held jointly with the International Cryogenic Materials Conference. Walter F. Stewart, of Los Alamos National Laboratory, was conference chairman. Albuquerque is near Los Alamos National Laboratory which has been a significant contributor to the cryogenics community since the early days of the Manhattan Project. Albuquerque is also the home of the Air Force's Phillips Laboratory which has a lead role in developing cryocoolers. The program consisted of 322 CEC papers, more than a 30% increase from CEC-91 and 20% more than CEC-89. This was the largest number of papers ever submitted to the CEC. Of these, 249 papers are published here, in Volume 39 of Advances in Cryogenic Engineering. Once again the volume is published in two books. This volume includes a cumulative index for the CEC volumes from 1975-1993 (volumes 21,23,25,27,29,31,33,35,37, and 39 of Advances in Cryogenic Engineering). The first 20 volumes are indexed in Volume 20. A companion cumulative index for the ICMC volumes (volumes 22 through 40) appears in Volume 40. This is my first volume as editor. I would not have been able to have done it without the assistance of the many reviewers. Especially appreciated was the instruction manual left me by the previous editor, Ron Fast.

Mass Transfer-II CBS Publishers & Distributors Pvt Limited, India

Food Processing Technology: Principles and Practice, Fourth Edition, has been updated and extended to include the many developments that have taken place since the third edition was published. The new edition includes an overview of the component subjects in food science and technology, processing stages, important aspects of food industry management not otherwise considered (e.g. financial management, marketing, food laws and food industry regulation), value chains, the global food industry, and over-arching considerations (e.g. environmental issues and sustainability). In addition, there are new chapters on industrial cooking, heat removal, storage, and distribution, along with updates on all the remaining chapters. This updated edition consolidates the position of this foundational book as the best single-volume introduction to food manufacturing technologies available, remaining as the most adopted standard text for many food science and technology courses. Updated edition completely revised with new developments on all the processing stages and aspects of food industry management not otherwise considered (e.g. financial management, marketing, food laws, and food industry regulation), and more. Introduces a range of processing techniques that are used in food manufacturing. Explains the key principles of each process, including the equipment used and the effects of processing on micro-organisms that contaminate foods. Describes post-processing operations, including packaging and distribution logistics. Includes extra textbook elements, such as videos and calculations slides, in addition to summaries of key points in each chapter.

Advances in Industrial Mixing CRC Press

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.

Trademarks Wiley Global Education

This Brief is aimed at engineers and researchers involved in the refrigeration industry: specifically, those interested in energy utilization and system efficiency. The book presents what the authors believe is the first comprehensive frost melting study involving all aspects of heat and mass transfer. The volume's description of in-plane and normal digital images of frost growth and melting is also unique in the field, and the digital analysis technique offers an advantage over invasive measurement methods. The scope of book's coverage includes modeling and experimentation for the frost formation and melting processes. The key sub-specialties to which the book are aimed include refrigeration system analysis and design, coupled heat and mass transfer, and phase-change processes.

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