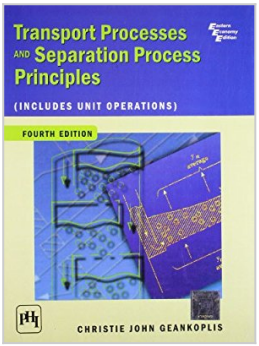

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed.

By GEANKOPLIS CHRISTIE J.

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J.

In *Transport Processes and Separation Process Principles, Fourth Edition*, author Christie John Geankoplis offers a unified and fully updated treatment of momentum transfer, heat transfer, mass transfer, and separation processes. Enhancements to this edition include a more thorough coverage of transport processes, plus new or expanded coverage of separation process applications, fluidized beds, non-Newtonian fluids, membrane separation processes and gas-membrane theory, and much more. The book contains 240+ example problems and 550+ homework problems.

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed.

By GEANKOPLIS CHRISTIE J.

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J.

In *Transport Processes and Separation Process Principles, Fourth Edition*, author Christie John Geankoplis offers a unified and fully updated treatment of momentum transfer, heat transfer, mass transfer, and separation processes. Enhancements to this edition include a more thorough coverage of transport processes, plus new or expanded coverage of separation process applications, fluidized beds, non-Newtonian fluids, membrane separation processes and gas-membrane theory, and much more. The book contains 240+ example problems and 550+ homework problems.

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. Bibliography

- Sales Rank: #455537 in Books
- Published on: 2007
- Ingredients: Example Ingredients
- Original language: English
- Number of items: 1
- Dimensions: .0" h x .0" w x .0" l, 3.02 pounds
- Binding: Paperback
- 1040 pages

Editorial Review

From the Back Cover

The comprehensive, unified, up-to-date guide to transport and separation processes

Today, chemical engineering professionals need a thorough understanding of momentum, heat, and mass transfer processes, as well as separation processes. *Transport Processes and Separation Process Principles, Fourth Edition* offers a unified and up-to-date treatment of all these topics. Thoroughly updated to reflect the field's latest methods and applications, it covers both fundamental principles and practical applications.

Part 1 covers the essential principles underlying transport processes: momentum transfer; steady-state and unsteady-state heat transfer; and mass transfer, including both unsteady-state and convective mass transfer. Part 2 covers key separation processes, including evaporation, drying, humidification, absorption, distillation, adsorption, ion exchange, extraction, leaching, crystallization, dialysis, gas membrane separation, reverse osmosis, filtration, ultrafiltration, microfiltration, settling, centrifugal separation, and more. This edition's extensive updates and enhancements include:

- A more thorough coverage of momentum, heat, and mass transport processes
- Detailed new coverage of separation process applications
- Greatly expanded coverage of momentum transfer, including fluidized beds and non-Newtonian fluids
- More detailed discussions of mass transfer, absorption, distillation, liquid-liquid extraction, and crystallization
- Extensive new coverage of membrane separation processes and gas-membrane theory

Transport Processes and Separation Process Principles, Fourth Edition also features more than 240 example problems and over 550 homework problems reflecting the field's current methods and applications.

About the Author

CHRISTIE JOHN GEANKOPLIS is a Professor of Chemical Engineering and Materials Science at the University of Minnesota. His current research interests involve transport processes, biochemical reactor engineering, mass transfer in liquid solutions, and diffusion and/or reaction in porous solids. He holds a Ph.D. in Chemical Engineering from the University of Pennsylvania.

Preface

The title of this text has been changed from *Transport Processes and Unit Operation*s to *Transport Processes and Separation Process Principles* (Includes Unit Operations). This was done because the term "unit operations" has been largely superseded by the term "separation processes," which better reflects the modern nomenclature being used.

In this fourth edition, the main objectives and the format of the third edition remain the same. The sections

on momentum transfer have been greatly expanded, especially the sections on fluidized beds, flow meters, mixing, and non-Newtonian fluids. Material has been added to the chapters on mass transfer. The chapters on absorption, distillation, and liquid-liquid extraction have also been enlarged. More new material has been added to the sections on ion exchange and crystallization. The chapter on membrane separation processes has been greatly expanded, especially for gas-membrane theory.

The field of chemical engineering involved with physical and physical-chemical changes of inorganic and organic materials and, to some extent, biological materials is overlapping more and more with the other process-engineering fields of ceramic engineering, process metallurgy, agricultural food engineering, wastewater-treatment (civil) engineering, and bioengineering. The principles of momentum, heat, and mass transport and the separation processes are widely used in these processing fields.

The principles of momentum transfer and heat transfer have been taught to all engineers. The study of mass transfer has been limited primarily to chemical engineers. However, engineers in other fields have become more interested in mass transfer in gases, liquids, and solids.

Since chemical and other engineering students must study so many topics today, a more unified introduction to the transport processes of momentum, heat, and mass transfer and to the applications of separation processes is provided. In this text the principles of the transport processes are covered first, and then the separation processes (unit operations). To accomplish this, the text is divided into two main parts.

PART 1: Transport Processes: Momentum, Heat, and Mass

This part, dealing with fundamental principles, includes the following chapters: 1. Introduction to Engineering Principles and Units; 2. Principles of Momentum Transfer and Overall Balances; 3. Principles of Momentum Transfer and Applications; 4. Principles of Steady-State Heat Transfer; 5. Principles of Unsteady-State Heat Transfer; 6. Principles of Mass Transfer; and 7. Principles of Unsteady-State and Convective Mass Transfer.

PART 2: Separation Process Principles (Includes Unit Operations)

This part, dealing with applications, covers the following separation processes: 8. Evaporation; 9. Drying of Process Materials; 10. Stage and Continuous Gas-Liquid Separation

Processes (humidification, absorption); 11. Vapor-Liquid Separation Processes (distillation); 12. Liquid-Liquid and Fluid-Solid Separation Processes (adsorption, ion exchange, extraction, leaching, crystallization); 13. Membrane Separation Processes (dialysis, gas separation, reverse osmosis, ultrafiltration, microfiltration); 14. Mechanical-Physical Separation Processes (filtration, settling, centrifugal separation, mechanical size reduction).

In Chapter 1 elementary principles of mathematical and graphical methods, laws of chemistry and physics, material balances, and heat balances are reviewed. Many readers, especially chemical engineers, may be familiar with most of these principles and may omit all or parts of this chapter.

A few topics, primarily those concerned with the processing of biological materials, may be omitted at the discretion of the reader or instructor; these include Sections 5.5, 6.4, 8.7, 9.11, and 9.12. Over 240 example or sample problems and over 550 homework problems on all topics are included in the text. Some of the homework problems involve biological systems, for those readers who are especially interested in that area.

This text may be used for a course of study following any of the following five suggested plans. In all plans, Chapter 1 may or may not be included.

1. Study of transport processes of momentum, heat, and mass and separation processes. In this plan, most of the entire text, covering the principles of the transport processes in Part 1 and the separation processes in Part 2, is covered. This plan would be applicable primarily to chemical engineering as well as to other process-engineering fields in a one-and-one-half-year course of study at the junior and/or senior level.

2. Study of transport processes of momentum, heat, and mass and selected separation processes. Only the elementary sections of Part 1 (the principles chapters—2, 3, 4, 5, 6, and 7) are covered, plus selected separation-processes topics in Part 2 applicable to a particular field, in a two-semester or three-quarter course. Students in environmental engineering, food process engineering, and process metallurgy could follow this plan.

3. Study of transport processes of momentum, heat, and mass. The purpose of this plan in a two-quarter or two-semester course is to obtain a basic understanding of the transport processes of momentum, heat, and mass transfer. This involves studying sections of the principles chapters—2, 3, 4, 5, 6, and 7 in Part 1—and omitting Part 2, the applied chapters on separation processes.

4. Study of separations processes. If the reader has had courses in the transport processes of momentum, heat, and mass, Chapters 2-7 can be omitted and only the separation processes chapters in Part 2 studied in a one-semester or two-quarter course. This plan could be used by chemical and certain other engineers.

5. Study of mass transfer. For those such as chemical or mechanical engineers who have had momentum and heat transfer, or those who desire only a background in mass transfer in a one-quarter or one-semester course, Chapters 6, 7, and 10 would be covered. Chapters 9, 11, 12, and 13 might be covered optionally, depending on the needs of the reader.

Different schools and instructors differ on the use of computers in engineering courses. All of the equations and homework problems in this text can be solved by using ordinary hand-held computers. However, more complicated problems involving numerical integration, finite-difference calculations, steady- and unsteady-state two-dimensional diffusion and conduction, and so on, can easily be solved with a computer using spreadsheets. Almost all undergraduate students are proficient in their use.

The SI (Systeme International d'Unites) system of units has been adopted by the scientific community. Because of this, the SI system of units has been adopted in this text for use in the equations, example problems, and homework problems. However, the most important equations derived in the text are also given in a dual set of units, SI and English, when different. Many example and homework problems are also given using English units.

Christie John Geankoplis

Users Review

From reader reviews:

Ila Robinette:

Do you have favorite book? In case you have, what is your favorite's book? E-book is very important thing for us to learn everything in the world. Each e-book has different aim or perhaps goal; it means that guide has different type. Some people experience enjoy to spend their the perfect time to read a book. They may be reading whatever they get because their hobby is usually reading a book. What about the person who don't like studying a book? Sometime, particular person feel need book whenever they found difficult problem or

exercise. Well, probably you will need this Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed..

Ray Nicolas:

The reason why? Because this Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. is an unordinary book that the inside of the publication waiting for you to snap that but latter it will zap you with the secret the idea inside. Reading this book adjacent to it was fantastic author who write the book in such amazing way makes the content interior easier to understand, entertaining method but still convey the meaning thoroughly. So , it is good for you for not hesitating having this any longer or you going to regret it. This excellent book will give you a lot of positive aspects than the other book possess such as help improving your ability and your critical thinking way. So , still want to delay having that book? If I ended up you I will go to the guide store hurriedly.

Lloyd Lake:

Is it an individual who having spare time in that case spend it whole day by watching television programs or just telling lies on the bed? Do you need something new? This Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. can be the answer, oh how comes? The new book you know. You are thus out of date, spending your spare time by reading in this completely new era is common not a geek activity. So what these publications have than the others?

Tyler Cote:

A lot of guide has printed but it differs from the others. You can get it by online on social media. You can choose the top book for you, science, amusing, novel, or whatever by simply searching from it. It is identified as of book Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed.. You'll be able to your knowledge by it. Without departing the printed book, it may add your knowledge and make anyone happier to read. It is most critical that, you must aware about e-book. It can bring you from one destination to other place.

Read Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. for online ebook

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. books to read online.

Online Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. ebook PDF download

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. Doc

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. Mobipocket

Transport Processes and Separation Process Principles (Includes Unit Operations), 4th Ed. By GEANKOPLIS CHRISTIE J. EPub