



Separation Process Engineering: Includes Mass Transfer Analysis (3rd Edition)

By Phillip C. Wankat

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The Definitive, Fully Updated Guide to Separation Process Engineering—Now with a Thorough Introduction to Mass Transfer Analysis

Separation Process Engineering, Third Edition, is the most comprehensive, accessible guide available on modern separation processes and the fundamentals of mass transfer. Phillip C. Wankat teaches each key concept through detailed, realistic examples using real data—including up-to-date simulation practice and new spreadsheet-based exercises.

Wankat thoroughly covers each of today's leading approaches, including flash, column, and batch distillation; exact calculations and shortcut methods for multicomponent distillation; staged and packed column design; absorption; stripping; and more. In this edition, he also presents the latest design methods for liquid-liquid extraction. This edition contains the most detailed coverage available of membrane separations and of sorption separations (adsorption, chromatography, and ion exchange).

Updated with new techniques and references throughout, *Separation Process Engineering, Third Edition*, also contains more than 300 new homework problems, each tested in the author's Purdue University classes.

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- Modular, up-to-date process simulation examples and homework problems, based on Aspen Plus and easily adaptable to any simulator
- Extensive new coverage of mass transfer and diffusion, including both Fickian and Maxwell-Stefan approaches
- Detailed discussions of liquid-liquid extraction, including McCabe-Thiele, triangle and computer simulation analyses; mixer-settler design; Karr columns; and related mass transfer analyses
- Thorough introductions to adsorption, chromatography, and ion exchange—designed to prepare students for advanced work in these areas
- Complete coverage of membrane separations, including gas permeation,

- reverse osmosis, ultrafiltration, pervaporation, and key applications
- A full chapter on economics and energy conservation in distillation
 - Excel spreadsheets offering additional practice with problems in distillation, diffusion, mass transfer, and membrane separation

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Bibliography

- Sales Rank: #534175 in Books

- Published on: 2011-08-10
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x 1.40" w x 7.30" l, 3.10 pounds
- Binding: Hardcover
- 992 pages

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Editorial Review

About the Author

Phillip C. Wankat is Clifton L. Lovell Distinguished Professor of Chemical Engineering and director of undergraduate degree programs at Purdue University's School of Engineering Education. His current research interests include adsorption, large-scale chromatography, simulated moving bed systems, and distillation, as well as improvements in engineering education. He received the 2007 Distinguished Education Alumni Award of Distinction from Purdue's College of Education, and the 2005 Shreve Prize in Chemical Engineering. With K. S. Knaebel, he contributed the Mass Transfer section to *Perry's Handbook of Chemical Engineering, Eighth Edition* (McGraw-Hill, 2008).

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