

# Separation Process Engineering: Includes Mass Transfer Analysis (4th Edition)

Phillip C. Wankat



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# **Separation Process Engineering: Includes Mass Transfer Analysis (4th Edition)**

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Separation Process Engineering: Includes Mass Transfer Analysis (4th Edition) Phillip C. Wankat The Definitive, Up-to-Date, Student-Friendly Guide to Separation Process Engineering—With More Mass Transfer Coverage and a New Chapter on Crystallization

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

Wankat thoroughly covers each separation process, including flash, column, and batch distillation; exact calculations and shortcut methods for multicomponent distillation; staged and packed column design; absorption; stripping; and more. This edition provides expanded coverage of mass transfer and diffusion, so faculty can cover separations and mass transfer in one course.

Detailed discussions of liquid-liquid extraction, adsorption, chromatography, and ion exchange prepare students for advanced work. Wankat presents coverage of membrane separations, including gas permeation, reverse osmosis, ultrafiltration, pervaporation, and applications. An updated chapter on economics and energy conservation in distillation adds coverage of equipment costs.

This edition contains more than 300 new, up-to-date homework problems, extensively tested in undergraduate courses at Purdue University and the University of Canterbury (New Zealand).

## Coverage includes

- New chapter on crystallization from solution, including equilibrium, chemical purity, crystal size distribution, and pharmaceutical applications
- Thirteen up-to-date Aspen Plus process simulation labs, adaptable to any simulator
- Eight detailed Aspen Chromatography labs
- Extensive new coverage of ternary stage-by-stage distillation calculations
- Fraction collection and multicomponent calculations for simple batch distillation
- New mass transfer analysis sections on numerical solution for variable diffusivity
- Mass transfer to expanding or contracting objects, including ternary mass transfer
- Expanded coverage of pervaporation
- Updated Excel spreadsheets offering more practice with distillation, diffusion, mass transfer, and membrane separation problems



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