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2.10 Application of thermodynamic models and factual databanks for the development and simulation of separation processes; 2.11 Summary; Acknowledgment; References; Chapter 3 - Mass Transfer in Distillation; 3.1 Introduction; 3.2 Fluxes and conservation equations; 3.3 Constitutive relations; 3.4 Diffusion coefficients; 3.5 Mass transfer coefficients; 3.6 Estimation of mass transfer coefficients in binary systems
3.7 Models for mass transfer in multicomponent mixtures3.8 Mass transfer in tray columns; 3.9 Mass transfer in packed columns; 3.10 Further reading; References; Chapter 4 - Principles of Binary Distillation; 4.1 Introduction; 4.2 Vapor-liquid equilibrium; 4.3 Differential distillation; 4.4 Flash distillation; 4.5 Continuous distillation with rectification; 4.6 Concluding remarks; References; Chapter 5 - Design and Operation of Batch Distillation; 5.1 Introduction; 5.2 Batch column operation; 5.3 Design of batch distillation; 5.4 Batch distillation configurations
5.5 Control of batch distillation5.6 Complex batch distillation; 5.7 Modeling of batch distillation; 5.8 Optimization of batch distillation; 5.9 The future of batch distillation; References; Chapter 6 - Energy Considerations in Distillation; 6.1 Introduction to energy efficiency; 6.2 Energy-efficient distillation; 6.3 Energy-efficient distillation: operation and control; 6.4 Heat integration of distillation; 6.5 Energy-efficient distillation: advanced and complex column configurations; 6.6 Energy-efficient distillation: evaluation of energy requirements; 6.7 Conclusions; References
Chapter 7 - Conceptual Design of Zeotropic Distillation Processes

Sommario/riassunto

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