

RATE-CONTROLLED SEPARATIONS

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Springer



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Rate-controlled Separations Phillip C. Wankat, 1990

Rate-Controlled Separations P.C. Wankat, 2012-04-18

Separations have always been very important in chemical engineering. This importance has recently escalated with the imminent emergence of new industries in biotechnology and high performance materials. Separations will continue to remain important in bulk chemical manufacturing, petroleum processing and the other standard areas of chemical engineering interest. The development of new industries requiring the expertise of chemical engineers leads to problems and opportunities for chemical engineering education. Chemical engineering students need to be prepared for both the known future and the unknown future. The known future includes the use of standard chemical engineering separation methods such as distillation and absorption which will remain important for many years. The unknown future involves the use of many relatively new separation methods such as adsorption, chromatography, electrophoresis, membrane separations. A major question for chemical engineering education is what to teach. In the area of separations, my personal answer has been to require undergraduates to study classical separations including distillation, adsorption and extraction. Then an elective course on newer methods which require a mass transfer analysis should be made available to seniors and graduate students. I would not mind if this second course were required of graduate students; certainly that would be preferable to an additional distillation course. My first book, *Equilibrium Staged Separations*, was my response for the required undergraduate course. This book is my response to both the proposed second course and to practicing chemical engineers who missed this material when they were in school. *Rate-Controlled Separations* Wankat, 2005-01-01

Principles of Chemical Separations with Environmental Applications Mr. Rohit Manglik, 2023-06-23. Examines separation techniques like distillation and extraction with a focus on environmental applications such as pollution control and waste treatment.

Separations Chemistry Fedor Macásek, James D. Navratil, 2016-06-06. Separation of chemical species is a gate to final success of synthesis and preparation of compounds in pure and defined state. Variability of natural and artificial mixtures to be treated is enormous. Task of chemistry is to separate components of homogeneous mixtures: the gaseous and liquid solutions. The book concentrates on understanding the basic philosophies of both equilibrium and nonequilibrium chemical thermodynamics and engineering performance that lay in principle of separation technique such as distillation, crystallization, centrifugation, sorption, membrane separations, chromatography and liquid-liquid extraction. Specific phenomena connected with photochemical separation, isotope composition and radioactivity are discussed as well. The book is written for advanced students of chemistry having the knowledge of physical chemistry. Calculation examples are based on the international system of units. Unique list of over 1 300 full references covers scientific literature of the eighteenth to the twenty-first centuries. Separation of Molecules, Macromolecules and Particles Kamallesh Sirkar, 2014-01-16. A modern separation

process textbook written for advanced undergraduate and graduate level courses in chemical engineering. **Industrial**

Separation Processes André B. de Haan, H. Burak Eral, Boelo Schuur, 2025-05-06 Separation processes on an industrial scale account for well over half of the capital and operating costs in the chemical industry Knowledge of these processes is key for every student of chemical or process engineering and makes this book with its wealth of exercises and solutions ideally suited to university teaching The Third edition boasts an even greater number of applied examples and updated chapters on drying adsorption and membranes

Principles of Chemical Separations with Environmental Applications Richard D. Noble, Patricia A. Terry, 2004-03-25 Chemical separations are of central importance in many areas of environmental science whether it is the clean up of polluted water or soil the treatment of discharge streams from chemical processes or modification of a specific process to decrease its environmental impact This book is an introduction to chemical separations focusing on their use in environmental applications The authors first discuss the general aspects of separation technology as a unit operation They also describe how property differences are used to generate separations the use of separating agents and the selection criteria for particular separation techniques The general approach for each technology is to present the chemical and or physical basis for the process and explain how to evaluate it for design and analysis The book contains many worked examples and homework problems It is an ideal textbook for undergraduate and graduate students taking courses on environmental separations or environmental engineering

Process Scale Bioseparations for the Biopharmaceutical Industry Abhinav A. Shukla, Mark R. Etzel, Shishir Gadam, 2006-07-07 The biopharmaceutical industry has become an increasingly important player in the global economy and the success of these products depends on the development and implementation of cost effective robust and scaleable production processes Bioseparations also called downstream processing can be a key source of competitive advantage to biopharmaceut

Separation Technology John Garside, Institution of Chemical Engineers (Great Britain), 1994 Separation technology is at the heart of engineering in the chemical and process industries This book takes the pulse of the technology and assesses its health for future use Recently separation technology has been under pressure to improve both the quality and diversity of products In response the condition of older technologies drying crystallization and distillation has been improved while newer ideas like adsorption and bioseparations have been brought rapidly into training Understanding of the underlying phenomena of separations argue the authors leads to better equipment design and more applications Newer processes depend on subtle differences in the molecular architecture of the components to be separated chiral molecules for example The way in which this is reflected at a larger scale is one of the themes of the book

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