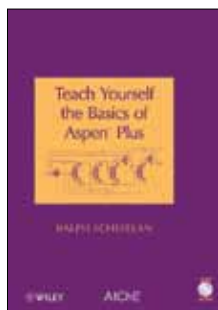




## TEACH YOURSELF THE BASICS OF ASPEN PLUS

**Ralph Schefflan, John Wiley & Sons, Hoboken, NJ, \$65, 232 pages, March 2011, ISBN: 978-0-470-56795-1**



For more than 20 years, Aspen Plus software has been one of the most popular and powerful modeling tools in the chemical engineer's arsenal — with its wide application in the conceptual design, optimization, and performance monitoring of chemical processes. This book presents the fundamentals of Aspen Plus in a style based on classroom and work-

shop teaching and learning.

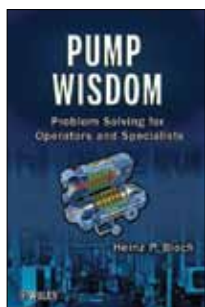
The author is an adjunct professor of chemical engineering and materials science at Stevens Institute of Technology who, over the past 20 years, has incorporated process simulation in his graduate-level courses. Acknowledging in the book's preface that Aspen Plus is a complex process-simulation tool, the author draws from his classroom teaching technique — which incorporates targeted, hands-on workshops — to guide the learning process.

The lecture-style chapters cover a range of chemical engineering topics, including physical and thermodynamic properties, heat exchangers, reactors, optimization, and difficult equilibrium separations such as azeotropic distillation. Accompanying each chapter is a selection of related workshop assignments that allow readers to test their understanding of the chapter while practicing tasks related to that chapter's lessons. The book includes a CD — in Aspen Plus executable format as well as in .txt format — containing details of the examples and workshops, as well as their solutions.

Suitable for students and practitioners, the examples, workshops, and hands-on techniques in this book should allow learners to master the basics of Aspen Plus, helping them to create dynamic designs and effective control structures.

## PUMP WISDOM: PROBLEM SOLVING FOR OPERATORS AND SPECIALISTS

**Heinz P. Bloch, John Wiley & Sons, Hoboken, NJ, \$50, 224 pages, April 2011, ISBN: 978-1-1180-4123-9**



Pumps are vital to the flow of fluids in many industries, including oil, water, chemicals, food, and pharmaceutical manufacturing. Yet, each year, unacceptably large numbers of these critical process components fail catastrophically. An estimated 95%

of these are repeat failures, and most of these failures are costly, dangerous, or both.

This book explains the many — often elusive — reasons that pumps fail, and tells readers what they can do about it.

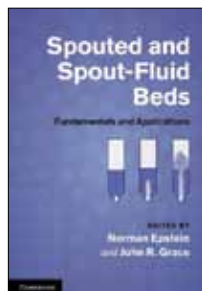
The author points out that, while pump manufacturers have concentrated their design and improvement efforts on the metallurgical and power-efficiency-related performance of the hydraulic assembly, the mechanical assembly (or drive end) of process pumps is often treated with relative indifference. To correct this imbalance, the book offers proven tactics for reducing pump vulnerabilities, and supplies sound advice for detecting and rectifying risky shortcuts taken by pump designers and manufacturers.

Addressing both pump operators and pump designers, the author explains the causes of failure in centrifugal pump function — including improper pump selection, overlooked installation criteria, and the accumulation of small deviations — and maps out remedies with well-defined methods that target specific problem areas.

Offering insight into techniques for stabilizing pump performance and maximizing pump efficiency, this book will help users to devise strategies to prevent costly failures.

## SPOUTED AND SPOUT-FLUID BEDS: FUNDAMENTALS AND APPLICATIONS

**Norman Epstein and John R. Grace, Cambridge Univ. Press, New York, NY, \$130, 360 pages, Feb. 2011, ISBN: 978-0-5215-1797-3**



Since the publication of *Spouted Beds*, the pioneering 1974 textbook by Kishan Mathur and Norman Epstein, considerable efforts have been made in applying spouted beds in agricultural and industrial operations. The continual output of new research and development in the field has produced an enormous body of scattered literature.

This new and comprehensive volume — which the editors have dedicated to Mathur, co-inventor of spouted beds — represents the first unified survey of the changes in this field over the past 35 years, providing an up-to-date reference on all major areas of spouted bed research and practice.

The editors solicited contributions from an international array of research groups and authors who underpin their discussion of current applications of spouted beds with fundamental theory, guiding readers through new developments and models while providing insights into research, design and operating purposes.

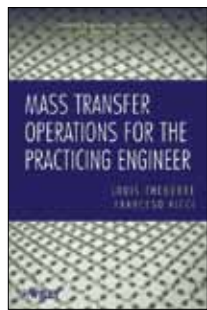
The book explores hydrodynamic and reactor models

## Books

of spouted and spout-fluid beds, as well as such topics as particle segregation, heat and mass transfer, mixing, and scale-up. Later chapters focus on drying, particle coating, and energy-related applications based on spouted and spout-fluid beds. Among the new areas of development examined in the book are mechanically assisted spouting, slot-rectangular spouted beds, spouted and spout-fluid bed gasifiers, spouted bed electrolysis, and application of computational fluid dynamics (CFD) to spouted beds. The book also includes up-to-date design equations, which will benefit practicing chemical and mechanical engineers as well as researchers.

### MASS TRANSFER OPERATIONS FOR THE PRACTICING ENGINEER

**Louis Theodore and Francesco Ricci, John Wiley & Sons, Hoboken, NJ, \$150, 648 pages, Aug. 2010, ISBN: 978-0-470-57758-5**



Mass transfer is one of the basic tenets of chemical engineering. This book, part of Wiley's Essential Engineering Calculations Series, takes a pragmatic approach to solving both traditional and novel mass-transfer problems, and employs many examples to illustrate key concepts.

The book begins with chapters devoted to the general engineering principles that apply to mass-transfer operations. It then provides step-by-step guidance for traditional mass-transfer operations, including distillation, absorption and stripping, and adsorption, as well as novel mass-transfer processes. Many example problems and solutions with real-world applications illustrate the concepts, along with detailed explanations of how to carry out the calculations associated with mass-transfer operations.

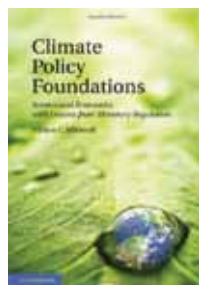
The book's concluding section offers an overview of Accreditation Board for Engineering and Technology (ABET)-related topics as they apply to mass-transfer operations and processes, and also includes guidance for people preparing for professional engineering (P.E.) exams. The appendix features useful mass-transfer charts and tables.

An accompanying website contains more than 200 additional problems and 15 hours of exams, with solutions.

Geared toward chemical, environmental, civil, and mechanical engineers, the book covers the topic of mass transfer from the ground up. Even those without prior knowledge of the subject should be able to acquire a working knowledge of the principles of mass transfer, while trained engineers will gain experience in mass-transfer applications, permitting them to approach industrial applications with more confidence.

### CLIMATE POLICY FOUNDATIONS: SCIENCE AND ECONOMICS WITH LESSONS FROM MONETARY REGULATION

**William C. Whitesell, Cambridge Univ. Press, New York, NY, \$80, 256 pages, Jan. 2011, ISBN: 978-1-107-00228-9**

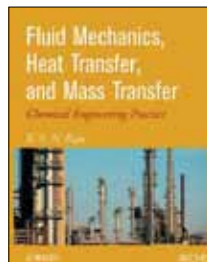


In the introduction to this book, the author — a director at the Center for Clean Air Policy and formerly of the U.S. Federal Reserve Board — says that never before has a species arisen with the ability to take conscious control of the Earth's climate, adding, "whether we like it or not, we are now the managers of the planet's future."

This book provides a grounding in both the science and economics of climate policy. It begins with chapters devoted to climate history and climate science, including considerations of human-climate and industry-climate interactions, along with forecasts related to greenhouse gas emissions and climate change. The book then delves into the technological and economic choices involved in climate policy and in addressing climate change risks. The author describes similarities in risk management approaches for climate and monetary policy, assesses market-based approaches such as cap-and-trade, and discusses how economists' techniques can be adapted in a hybrid climate policy approach to achieve environmental goals while making carbon prices predictable and ensuring well-functioning carbon markets.

### FLUID MECHANICS, HEAT TRANSFER, AND MASS TRANSFER

**K. S. N. Raju, John Wiley & Sons, Hoboken, NJ, \$150, 768 pages, April 2011, ISBN: 978-0-470-63774-6**



This multi-disciplinary text, suitable for students as well as for practicing engineers in the chemical process industries, incorporates the three core areas of chemical engineering — fluid mechanics, heat transfer, and mass transfer — into one comprehensive volume.

The author bridges the gap between theory and practice by emphasizing practical concepts, presenting related theory in the form of questions and answers. This single-source reference covers a breadth of topics, including non-Newtonian fluid mechanics, divided wall mass-transfer columns, membrane separations technology, and key design relationships in radiant heat transfer. The book also describes the applications and equipment used in chemical engineering processes, instilling an understanding of plant operation, troubleshooting, and maintenance practices.