



CONCEPTUAL DESIGN OF CHEMICAL PROCESSES

JAMES M. DOUGLAS

Conceptual Design Of Chemical Processes McGraw Hill Chemical Engineering Series

**Lorenz T. Biegler, Ignacio E.
Grossmann, Arthur W. Westerberg**



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Conceptual Design of Chemical Processes James Merrill Douglas, 1988 This text explains the concepts behind process design It uses a case study approach guiding readers through realistic design problems and referring back to these cases at the end of each chapter Throughout the author uses shortcut techniques that allow engineers to obtain the whole focus for a design in a very short period generally less than two days

Integrated Design and Simulation of Chemical Processes Alexandre C. Dimian, 2003-05-13 This title aims to teach how to invent optimal and sustainable chemical processes by making use of systematic conceptual methods and computer simulation techniques The material covers five sections process simulation thermodynamic methods process synthesis process integration and design project including case studies It is primarily intended as a teaching support for undergraduate and postgraduate students following various process design courses and projects but will also be of great value to professional engineers interested in the newest design methods

Provides an introduction to the newest design methods Of great value to undergraduate and postgraduate students as well as professional engineers Numerous examples illustrate theoretical principles and design issues Conceptual Design Chemical Processes James Douglas, 1988-01-01

Chemical Engineering Dynamics John Ingham, Irving J. Dunn, Elmar Heinzle, Jiri E. Prenosil, Jonathan B. Snape, 2008-02-08 In this book the modelling of dynamic chemical engineering processes is presented in a highly understandable way using the unique combination of simplified fundamental theory and direct hands on computer simulation The mathematics is kept to a minimum and yet the nearly 100 examples supplied on www.wiley.vch.de illustrate almost every aspect of chemical engineering science Each example is described in detail including the model equations They are written in the modern user friendly simulation language Berkeley Madonna which can be run on both Windows PC and Power Macintosh computers Madonna solves models comprising many ordinary differential equations using very simple programming including arrays It is so powerful that the model parameters may be defined as sliders which allow the effect of their change on the model behavior to be seen almost immediately Data may be included for curve fitting and sensitivity or multiple runs may be performed The results can be seen simultaneously on multiple graph windows or by using overlays The resultant learning effect of this is tremendous The examples can be varied to fit any real situation and the suggested exercises provide practical guidance The extensive experience of the authors both in university teaching and international courses is reflected in this well balanced presentation which is suitable for the teacher the student the chemist or the engineer This book provides a greater understanding of the formulation and use of mass and energy balances for chemical engineering in a most stimulating manner This book is a third edition which also includes biological environmental and food process examples

Reactive and Membrane-Assisted Separations Philip Lutze, Andrzej Górak, 2016-07-28 Process intensification aims for increasing efficiency and sustainability of bio chemical production processes This book presents strategies for improving fluid separation such as reactive distillation reactive absorption and membrane assisted separations

The authors discuss computer simulation model development methodological approaches for synthesis and the design and scale up of final industrial processes Applications of Metaheuristics in Process Engineering Jayaraman Valadi,Patrick Siarry,2014-08-07 Metaheuristics exhibit desirable properties like simplicity easy parallelizability and ready applicability to different types of optimization problems such as real parameter optimization combinatorial optimization and mixed integer optimization They are thus beginning to play a key role in different industrially important process engineering applications among them the synthesis of heat and mass exchange equipment synthesis of distillation columns and static and dynamic optimization of chemical and bioreactors This book explains cutting edge research techniques in related computational intelligence domains and their applications in real world process engineering It will be of interest to industrial practitioners and research academics *Improving the thermal Processing of Foods* P Richardson,2004-07-16 The application of heat is both an important method of preserving foods and a means of developing texture flavour and colour It has long been recognised that thermal technologies must ensure the safety of food without compromising food quality Improving the thermal processing of foods summarises key research both on improving particular thermal processing techniques and measuring their effectiveness Part one examines how best to optimise thermal processes with chapters addressing safety and quality efficiency and productivity and the application of computational fluid dynamics Part two focuses on developments in technologies for sterilisation and pasteurisation with chapters on modelling retort temperature control and developments in packaging sous vide and cook chill processing There are chapters covering continuous heat processing including developments in tubular heat exchangers aseptic processing and ohmic and air impingement heating The fourth part considers the validation of thermal processes modelling heat penetration curves using data loggers and time temperature integrators and other new measuring techniques The final group of chapters detail methods of analysing microbial inactivation in thermal processing and identifying and dealing with heat resistant bacteria Improving the thermal processing of foods is a standard reference book for those working in the food processing industry Concisely explores prevailing developments in thermal technologies Summarises key research for improving food preservation techniques Analyses the effectiveness of methods used to enhance the quality of food *AIChE Symposium Series* American Institute of Chemical Engineers,2001 **European Symposium on Computer Aided Process Engineering - 13** Andrzej Kraslawski,Ilkka Turunen,2003-05-07 This book contains papers presented at the 13th European Symposium on Computer Aided Process Engineering ESCAPE 13 The ESCAPE symposia bring together scientists students and engineers from academia and industry who are active in the research and application of Computer Aided Process Engineering The objective of ESCAPE 13 is to promote CAPE applications into new businesses and technologies by highlighting the use of computers and information technology tools in five specific areas process design process control and dynamics modeling simulation and optimization applications in pulp and paper industry and applications in biotechnology Includes 190 papers selected from 391 submitted

abstracts All papers have been reviewed by 33 members of the international scientific community **Conceptual Design of Distillation Systems with CD-ROM** Michael F. Doherty, Michael F. Malone, 2001-01-18 This book is a pioneering effort by two of the world's top researchers The authors have fashioned a text which develops models the basis for software tools for conceptual design The book clearly addresses both analysis and design with sharp attention to supplying mathematical correctness and providing physical insight A software supplement accompanies the text in a student version **Unit Operations of Chemical Engineering** Warren Lee McCabe, Julian Cleveland Smith, Peter Harriott, 2001 The seventh edition of Unit Operations of Chemical Engineering contains new material throughout the textbook and many additional problems However the basic structure general level of treatment and overall length are largely unchanged This is an introductory text written for undergraduates in their junior or senior year who have completed the usual courses in mathematics chemistry physics and an introduction to chemical engineering An elementary knowledge of the above mentioned subjects and energy balances is assumed Book Jacket Introduction to Chemical Engineering Thermodynamics Joseph Mauk Smith, Hendrick C. Van Ness, Michael M. Abbott, 2001 Presents comprehensive coverage of the subject of thermodynamics from a chemical engineering viewpoint This text provides an exposition of the principles of thermodynamics and details their application to chemical processes It contains problems examples and illustrations to help students understand complex concepts

Introduction to Chemical Processes: Principles, Analysis, Synthesis Regina M. Murphy, 2007 Introduction to Chemical Processes Principles Analysis Synthesis enhances student understanding of the connection between the chemistry and the process Users will find strong coverage of chemistry gain a solid understanding of what chemical processes do convert raw materials into useful products using energy and other resources and learn about the ways in which chemical engineers make decisions and balance constraints to come up with new processes and products The author presents material and energy balances as tools to achieve a real goal workable economical and safe chemical processes and products Loaded with intriguing pedagogy this text is essential to a student's first course in Chemical Engineering Additional resources intended to guide users are also available as package options such as ChemSkill Builder *Chemical Engineering*, 1998

Systematic Methods of Chemical Process Design Lorenz T. Biegler, Ignacio E. Grossmann, Arthur W. Westerberg, 1997 Over the last 20 years fundamental design concepts and advanced computer modeling have revolutionized process design for chemical engineering Team work and creative problem solving are still the building blocks of successful design but new design concepts and novel mathematical programming models based on computer based tools have taken out much of the guess work This book presents the new revolutionary knowledge taking a systematic approach to design at all levels **Fifth International Conference on Foundations of Computer-Aided Process Design** Michael F. Malone, James A. Trainham, Brice Carnahan, 2000 Looks at challenges for the future including the broader challenge of extending design to include creating new value for a company and a discussion of how emerging technologies particularly

increased computer speeds may impact future design **Chemical Engineering Progress** ,2005 *Paper Technology*
,2004 **Encyclopedia of Chemical Technology** Raymond Eller Kirk,Donald Frederick Othmer,1991 Contains a library of
information for the chemical industry The 4th edition has undergone a complete revision with the inclusion of many new
subjects which reflect the growth in chemical technology through the 1990s The book includes expanded coverage of
biotechnology and materials science Proceedings American Society for Engineering Education. Conference,1995

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