1. Record Nr. UNICAMPANIASUN0119688

Titolo	Distinguished Figures in Descriptive Geometry and Its Applications for Mechanism Science : From the Middle Ages to the 17th Century / Michela Cigola editor
Pubbl/distr/stampa	vii, 248 p. ; 24 cm
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Descrizione fisica	Pubblicazione in formato elettronico
Lingua di pubblicazione	Inglese
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Titolo	Introduction to chemical engineering computing / / Bruce A. Finlayson
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley Interscience, , 2006 ©2006
ISBN	1-280-34359-1 9786610343591 0-470-30916-4 0-471-77668-8 0-471-77667-X
Descrizione fisica	1 online resource (357 p.)
Disciplina	660.0285 660/.0285
Soggetti	Chemical engineering - Data processing
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	INTRODUCTION TO CHEMICAL ENGINEERING COMPUTING; CONTENTS; Preface; 1 Introduction; Organization; Algebraic Equations; Process

Simulation; Differential Equations; Appendices; 2 Equations of State; Equations of State - Mathematical Formulation; Solving Equations of State Using Excel (single equation in one unknown); Solution Using 'Goal Seek'; Solution Using Solver; Example of a Chemical Engineering Problem Solved Using 'Goal Seek'; Solving Equations of State Using MATLAB (single equation in one unknown); Example of a Chemical Engineering Problem Solved Using MATLAB
Another Example of a Chemical Engineering Problem Solved Using MATLABEquations of State with Aspen Plus; Example; Specific Volume of a Mixture; Chapter Summary; Problems; 3 Vapor-Liquid Equilibrium; Flash and Phase Separation; Isothermal Flash - Development of Equations; Example Using Excel; Thermodynamic Parameters; Example Using MATLAB; Example Using Aspen Plus; Nonideal Liquids - Test of Thermodynamic Model; Chapter Summary; Problems; 4 Chemical Reaction Equilibrium; Chemical Equilibrium Expression; Example of Hydrogen for Fuel Cells; Solution Using Excel; Solution Using MATLAB® Chemical Equilibria with Two or More EquationsMultiple Equations, Few Unknowns Using MATLAB; Method 1 Using the 'fsolve' Command; Method 2 Using the 'fminsearch' Function; Variations in MATLAB; Chemical Equilibria Using Aspen Plus; Chapter Summary; Problems; 5 Mass Balances With Recycle Streams; Mathematical Formulation; Example Without Recycle; Example With Recycle; Comparison of Sequential and Simultaneous Solution Methods; Example of Process Simulation Using Excel for Simple Mass Balances; Example of Process Simulation With Excel Including Chemical Reaction Equilibrium
Example of Process Simulation With Excel Including Phase EquilibriumDid Iterations Converge?; Extensions; Chapter Summary; Class Exercises; Class Discussion; Problems; 6 Simulation of Mass Transfer Equipment; Thermodynamics; Example: Multicomponent Distillation With Shortcut Methods; Mathematical Development; Multicomponent Distillation With Rigorous Plate-to-Plate Methods; Example: Packed Bed Absorption; Example: Gas Plant Production Separation; Chapter Summary; Class Exercise; Problems (Using Aspen Plus); 7 Process Simulation; Model Library; Example: Ammonia Process; Utility Costs
Convergence HintsOptimization; Chapter Summary; Class Exercise; Problems; 8 Chemical Reactors; Mathematical Formulation of Reactor Problems; Example: Plug Flow Reactor and Batch Reactor; Example: Continuous Stirred Tank Reactor; Using MATLAB to Solve Ordinary Differential Equations; Simple Example; Use of the 'Global' Command; Passing Parameters; Example: Isothermal Plug Flow Reactor; Example: Nonisothermal Plug Flow Reactor; Using FEMLAB to Solve Ordinary Differential Equations; Simple Example; Example: Isothermal Plug Flow Reactor; Example: Nonisothermal Plug Flow Reactor
Reactor Problems with Mole Changes and Variable Density

Sommario/riassunto

An innovative introduction to chemical engineering computingAs chemical engineering technology advances, so does the complexity of the problems that arise. The problemsthat chemical engineers and chemical engineering students face today can no longer be answered with programs written on a case-by-case basis. Introduction to Chemical Engineering Computing teaches professionalsand students the kinds of problems they will have to solve, the types of computer programs needed to solvethese problems, and how to ensure that the problems have been solved correctly.Each chapter