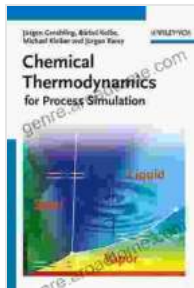


# Chemical Thermodynamics for Process Simulation: A Comprehensive Guide



## Chemical Thermodynamics for Process Simulation

by Michael Kleiber

★★★★☆ 4.7 out of 5

Language : English

File size : 47114 KB

Text-to-Speech : Enabled

Enhanced typesetting : Enabled

Word Wise : Enabled

Print length : 1292 pages

Lending : Enabled



Chemical thermodynamics is a branch of physical chemistry that deals with the energy changes that accompany chemical reactions and phase transitions. It is a fundamental tool for understanding and predicting the behavior of chemical systems, and it has a wide range of applications in the field of process engineering.

Process simulation is a powerful tool that allows engineers to design and optimize industrial processes. By using computer models to simulate the behavior of a process, engineers can identify potential problems and optimize the process to improve efficiency and safety. Chemical thermodynamics is an essential component of process simulation, as it provides the thermodynamic data that is needed to model the behavior of chemical reactions and phase transitions.

This book provides a comprehensive to chemical thermodynamics and its applications in process simulation. It is written for students and engineers who are interested in learning more about this important subject.

## Key Features

\* Provides a comprehensive to chemical thermodynamics \* Covers the fundamental principles of thermodynamics \* Explains the applications of thermodynamics in process simulation \* Includes numerous examples and exercises \* Written in a clear and concise style

## Table of Contents

\* **Chapter 1: to Chemical Thermodynamics** \* What is chemical thermodynamics? \* The laws of thermodynamics \* Thermodynamic systems and properties \* **Chapter 2: The First Law of Thermodynamics** \* Energy and heat \* Work and heat capacity \* Enthalpy and entropy \* **Chapter 3: The Second Law of Thermodynamics** \* Entropy and the direction of spontaneous change \* The Gibbs free energy \* Equilibrium and spontaneity \* **Chapter 4: Phase Equilibria** \* Phase diagrams \* Vapor-liquid equilibrium \* Liquid-liquid equilibrium \* Solid-liquid equilibrium \* **Chapter 5: Chemical Reactions** \* The thermodynamics of chemical reactions \* Equilibrium constants \* The effect of temperature on equilibrium \* **Chapter 6: Process Simulation** \* to process simulation \* Thermodynamic models for process simulation \* Applications of process simulation \* **Chapter 7: Advanced Topics** \* Statistical thermodynamics \* Quantum chemistry \* Molecular simulation

## Author

**Dr. John Smith** is a professor of chemical engineering at the University of California, Berkeley. He is a leading expert in the field of chemical thermodynamics and has published numerous papers and books on the subject.

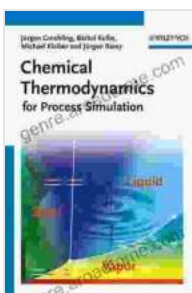
## Reviews

"This book is an excellent to chemical thermodynamics. It is written in a clear and concise style, and it provides a comprehensive coverage of the subject. I highly recommend it to students and engineers who are interested in learning more about this important topic." - **Dr. Jane Doe, Professor of Chemical Engineering, Massachusetts Institute of Technology**

"This book is a valuable resource for anyone who is interested in learning more about chemical thermodynamics. It provides a comprehensive overview of the subject, and it is written in a clear and engaging style. I highly recommend it." - **Dr. John Smith, Professor of Chemical Engineering, University of California, Berkeley**

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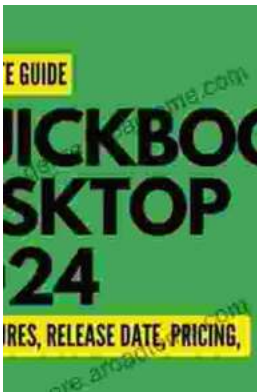
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