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Basic Principles and Calculations in Chemical Engineering

NINTH EDITION

David M. Himmelblau • James B. Riggs



Chemical Principles In Calculations Of I

David M. Himmelblau, James B. Riggs



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Basic Principles and Calculations in Process Technology T. David Griffith, 2015-09-02 A Practical Guide to Physical and Chemical Principles and Calculations for Today's Process Control Operators. In Basic Principles and Calculations in Process Technology, author T. David Griffith walks process technologists through the basic principles that govern their operations, helping them collaborate with chemical engineers to improve both safety and productivity. He shows process operators how to go beyond memorizing rules and formulas to understand the underlying science and physical laws so they can accurately interpret anomalies and respond appropriately when exact rules or calculation methods don't exist. Using simple algebra and non-technical analogies, Griffith explains each idea and technique without calculus. He introduces each topic by explaining why it matters to process technologists and offers numerous examples that show how key principles are applied and calculations are performed. For end-of-chapter problems, he provides the solutions in plain English, discussions of how and why they work. Chapter appendixes provide more advanced information for further exploration. Basic Principles and Calculations in Process Technology is an indispensable practical resource for every process technologist who wants to know what the numbers mean so they can control their systems and processes more efficiently, safely, and reliably. T. David Griffith received his B.S. in chemical engineering from The University of Texas at Austin and his Ph.D. from the University of Wisconsin-Madison, then top-ranked in the discipline. After working in research on enhanced oil recovery (EOR), he cofounded a small chemical company, and later in his career he developed a record-setting Electronic Data Interchange (EDI) software package. He currently instructs in the hydrocarbon processing industry. Coverage includes: Preparing to solve problems by carefully organizing them and establishing consistent sets of measures; Calculating areas and volumes including complex objects and interpolation; Understanding Boyle's Law, Charles's Law, and the Ideal Gas Law; Predicting the behavior of gases under extreme conditions; Applying thermodynamic laws to calculate work and changes in gas enthalpy and to recognize operational problems; Explaining phase equilibria for distillation and fractionalization.

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 Understanding fluid flow including shear viscosity laminar and turbulent flows vectors and tensors
 Characterizing the operation of devices that transport heat energy for heating or cooling
 Analyzing mass transfer in separation processes for materials purification

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The Publishers' Trade List Annual, 1977 **Electrochemical and Metallurgical Industry** Eugene Franz Roeber, Howard Coon Parmelee, 1908 **Chemical News and Journal of Industrial Science**, 1870 *The Chemical News and Journal of Industrial Science* William Crookes, James H. Gardiner, Gerald Druce, H. W. Blood-Ryan, 1871 **Annual Catalogue** Massachusetts Institute of Technology, 1929

Ultra-High Temperature Materials II Igor L. Shabalin, 2019-04-24 This exhaustive work in three volumes and over 1300 pages provides a thorough treatment of ultra high temperature materials with melting points over 2500 C The first volume focuses on Carbon and Refractory Metals whilst the second and third are dedicated solely to Refractory compounds

and the third to Refractory Alloys and Composites respectively Topics included are physical crystallographic thermodynamic thermo physical electrical optical physico mechanical nuclear and chemical solid state diffusion interaction with chemical elements and compounds interaction with gases vapours and aqueous solutions properties of the individual physico chemical phases of carbon graphite graphene refractory metals W Re Os Ta Mo Nb Ir and compounds oxides nitrides carbides borides silicides with melting points in this range It will be of interest to researchers engineers postgraduate graduate and undergraduate students alike The reader is provided with the full qualitative and quantitative assessment for the materials which could be applied in various engineering devices and environmental conditions at ultra high temperatures on the basis of the latest updates in the field of physics chemistry materials science and engineering

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