

Books To Read For Chemical Engineering

Chemical Thermodynamics for Process Simulation
Material Balance and Process Calculations: A Book for Chemical Engineers and Chemists
Rules of Thumb for Chemical Engineers
Chemistry for Beginners
H₂O
Introduction to Chemical Engineering
Phase Equilibria in Chemical Engineering
Fundamentals of Petroleum and Petrochemical Engineering
Basic Chemistry Calculations: A Book for Chemistry and Chemical Engineering Students
Perfect Chemistry
MATHEMATICAL METHODS IN CHEMICAL ENGINEERING
The Alchemy of Air
The Molecule of More
From Alchemy to Chemistry
Chemical Process Technology
Chemical Magic
Physical and Chemical Reactions : 6th Grade Chemistry Book | Children's Chemistry Books
Practical Numerical Methods for Chemical Engineers
Textbook of Chemical Peels
What is Chemistry?
Compound Interest
The Case of the Frozen Addicts
The Practice of Medicinal Chemistry
Essentials of Pharmaceutical Chemistry
Chemical-Free Kids
Chemistry
Chemical Kinetics and Reaction Dynamics
The Poisoner's Handbook
Chemistry and the Chemical Industry
The Practice of Medicinal Chemistry
Chemical Engineering Thermodynamics
Chemical Engineering in Practice
Chemical Reactions
Artificial Intelligence in Chemical Engineering
Industrial Chemistry
Chemical Engineering and Chain Reactions
Wither Chemical Engineering
Unit Operations of Chemical Engineering
Kaboom!

Chemical Thermodynamics for Process Simulation

Chemistry for grades 9 to 12 is designed to aid in the review and practice of chemistry topics. Chemistry covers topics such as metrics and measurements, matter, atomic structure, bonds, compounds, chemical equations, molarity, and acids and bases. The book includes realistic diagrams and engaging activities to support practice in all areas of chemistry. The 100+ Series science books span grades 5 to 12. The activities in each book reinforce essential science skill practice in the areas of life science, physical science, and earth science. The books include engaging, grade-appropriate activities and clear thumbnail answer keys. Each book has 128 pages and 100 pages (or more) of reproducible content to help students review and reinforce essential skills in individual science topics. The series will be aligned to current science standards.

Material Balance and Process Calculations: A Book for Chemical Engineers and Chemists

Artificial intelligence (AI) is the part of computer science concerned with designing intelligent computer systems (systems that exhibit characteristics we associate with intelligence in human behavior). This book is the first published textbook of AI in chemical engineering, and provides broad and in-depth coverage of AI programming, AI principles, expert systems, and neural networks in chemical engineering. This book introduces the computational means and methodologies that are used to enable computers to perform intelligent engineering tasks. A key goal is to move beyond the principles of AI into its

applications in chemical engineering. After reading this book, a chemical engineer will have a firm grounding in AI, know what chemical engineering applications of AI exist today, and understand the current challenges facing AI in engineering. Allows the reader to learn AI quickly using inexpensive personal computers Contains a large number of illustrative examples, simple exercises, and complex practice problems and solutions Includes a computer diskette for an illustrated case study Demonstrates an expert system for separation synthesis (EXSEP) Presents a detailed review of published literature on expert systems and neural networks in chemical engineering

Rules of Thumb for Chemical Engineers

Basic Chemistry Calculations is intended to help students overcome the challenges associated with solving problems in chemistry. This book contains numerous solved problems in some important areas of chemistry. These worked examples will really improve students understanding in the aspect of calculations in chemistry. This book will be useful to students in high schools and higher institutions of learning. It will also be a useful guide for students of chemical engineering in order to improve their chemistry calculation skills which is required for proper understanding of chemical engineering calculations. The worked examples in this book are presented in a simple, logical and self-explanatory manner that will impart students with the required numerical skills for excelling in chemistry and chemical engineering calculations. Exercises are presented at the end of each topic in order for students to attempt and assess themselves. The topics covered in this book include: CALCULATIONS ON MOLE FRACTION AND MASS FRACTION CALCULATIONS ON AVERAGE MOLECULAR MASS OF MIXED COMPOUNDS/MOLECULES CALCULATIONS INVOLVING COMBUSTION CALCULATIONS INVOLVING LIMITING REACTANTS CALCULATIONS INVOLVING THE FORMULA OF COMPOUND EQUILIBRIUM REACTION CALCULATION These topics are well simplified with the numerous worked examples explained in a step-by-step order under them. A thorough study of this textbook will definitely improve your calculation skills in chemistry

Chemistry for Beginners

A practical, concise guide to chemical engineering principles and applications Chemical Engineering: The Essential Reference is the condensed but authoritative chemical engineering reference, boiled down to principles and hands-on skills needed to solve real-world problems. Emphasizing a pragmatic approach, the book delivers critical content in a convenient format and presents on-the-job topics of importance to the chemical engineer of tomorrow—OM&I (operation, maintenance, and inspection) procedures, nanotechnology, how to purchase equipment, legal considerations, the need for a second language and for oral and written communication skills, and ABET (Accreditation Board for Engineering and Technology) topics for practicing engineers. This is an indispensable resource for anyone working as a chemical engineer or planning to enter the field. Praise for Chemical Engineering: The Essential Reference: “Current and relevant over a dozen topics not

normally addressed invaluable to my work as a consultant and educator.” —Kumar Ganesan, Professor and Department Head, Department of Environmental Engineering, Montana Tech of the University of Montana “A much-needed and unique book, tough not to like loaded with numerous illustrative examples a book that looks to the future and, for that reason alone, will be of great interest to practicing engineers.” —Anthony Buonicore, Principal, Buonicore Partners Coverage includes: Basic calculations and key tables Process variables Numerical methods and optimization Oral and written communication Second language(s) Chemical engineering processes Stoichiometry Thermodynamics Fluid flow Heat transfer Mass transfer operations Membrane technology Chemical reactors Process control Process design Biochemical technology Medical applications Legal considerations Purchasing equipment Operation, maintenance, and inspection (OM&I) procedures Energy management Water management Nanotechnology Project management Environment management Health, safety, and accident management Probability and statistics Economics and finance Ethics Open-ended problems

H2O

With a focus on actual industrial processes, e.g. the production of light alkenes, synthesis gas, fine chemicals, polyethylene, it encourages the reader to think “out of the box” and invent and develop novel unit operations and processes. Reflecting today’s emphasis on sustainability, this edition contains new coverage of biomass as an alternative to fossil fuels, and process intensification. The second edition includes: New chapters on Process Intensification and Processes for the Conversion of Biomass Updated and expanded chapters throughout with 35% new material overall Text boxes containing case studies and examples from various different industries, e.g. synthesis loop designs, Sasol I Plant, Kaminsky catalysts, production of Ibuprofen, click chemistry, ammonia synthesis, fluid catalytic cracking Questions throughout to stimulate debate and keep students awake! Richly illustrated chapters with improved figures and flow diagrams Chemical Process Technology, Second Edition is a comprehensive introduction, linking the fundamental theory and concepts to the applied nature of the subject. It will be invaluable to students of chemical engineering, biotechnology and industrial chemistry, as well as practising chemical engineers. From reviews of the first edition: “The authors have blended process technology, chemistry and thermodynamics in an elegant manner... Overall this is a welcome addition to books on chemical technology.” - The Chemist “Impressively wide-ranging and comprehensive... an excellent textbook for students, with a combination of fundamental knowledge and technology.” - Chemistry in Britain (now Chemistry World)

Introduction to Chemical Engineering

Phase Equilibria in Chemical Engineering

Fundamentals of Petroleum and Petrochemical Engineering

Wile E. Coyote is on a mission to finally catch Road Runner. Watch as he uses chemical reactions to help him achieve his goal. Will these experiments help Wile E. catch that bird? Or will his plans explode in his face? Read inside to find out!

Basic Chemistry Calculations: A Book for Chemistry and Chemical Engineering Students

A sparkling and original romantic comedy about love, science and the search for the g-spot.

Perfect Chemistry

A profile of pioneering scientists Fritz Haber and Carl Bosch describes their seminal discovery of a way to pull nitrogen out of the air to create synthetic fertilizer, a process that offered a solution to the critical food shortage confronting a growing global population but also led to the development of the gunpowder and explosives that killed millions during the World Wars. 30,000 first printing.

MATHEMATICAL METHODS IN CHEMICAL ENGINEERING

Helps parents to protect their children from being exposed to harmful substances by providing information on which foods are devoid of unhealthy additives and how to create a chemical-free home environment.

The Alchemy of Air

The Molecule of More

An introduction to pharmaceutical chemistry for undergraduate pharmacy, chemistry and medicinal chemistry students. Essentials of Pharmaceutical Chemistry is a chemistry introduction that covers all of the core material necessary to provide an understanding of the basic chemistry of drug molecules. Now a core text on many university courses, it contains numerous worked examples and problems. The 4th edition includes new chapters on Chromatographic Methods of Analysis, and Medicinal Chemistry - The Science of Drug Design.

From Alchemy to Chemistry

In the summer of 1982, hospital emergency rooms in the San Francisco Bay Area were suddenly confronted with mysteriously “frozen” patients – young men and women who, though conscious, could neither move nor speak. Doctors were baffled, until neurologist J. William Langston, recognizing the symptoms of advanced Parkinson’s disease, administered L-dopa – the only known effective treatment – and “unfroze” his patient. Dr. Langston determined that this patient and five others had all used the same tainted batch of synthetic heroin, inadvertently laced with a toxin that had destroyed an area of their brains essential to normal movement. This same area, the substantia nigra, slowly deteriorates in Parkinson’s disease. As scientists raced to capitalize on this breakthrough, Dr. Langston struggled to salvage the lives of his frozen patients, for whom L-dopa provided only short-term relief. The solution he found lay in the most daring area of research: fetal-tissue transplants. The astonishing recovery of two of his patients garnered worldwide press coverage, helped overturn federal restrictions on fetal-tissue research, and offered hope to millions suffering from Parkinson’s, Alzheimer’s, and other degenerative brain disorders. This is the story behind the headline – a spellbinding account that brings to life the intellectual excitement, ethical dilemmas, and fierce competitiveness of medical research. This new updated edition of the classic neurological mystery tale, “The Case of the Frozen Addicts,” illuminates how the solution to a baffling mystery of the brain’s chemistry opened a new frontier in medicine and restored life to people without hope. “It begins with a series of quixotic discoveries, escalates to providing possible solutions for one of humanity’s most intractable medical problems, and then catapults the reader into the center of America’s hottest political arena – abortion and fetal sanctity. Bravo! A brilliant read.” – Laurie Garrett, author of *The Coming Plague* “[Langston and Palfreman] weave a highly readable and spellbinding medical detective tale It is as absorbing as a good mystery, as entertaining as an exciting novel, and as enlightening as a good biography.” – Stanley Fahn, *New England Journal of Medicine* “I could not put it down it is the lives of the ‘frozen addicts’ themselves – and the fullness with which this is presented – which makes the whole thing overwhelming.” – Oliver Sacks

Chemical Process Technology

Broad, humanistic treatment focuses on great figures of chemistry and ideas that revolutionized the science. Much on alchemy, also development of modern chemistry, atomic theory, elements, organic chemistry, more. 50 illustrations.

Chemical Magic

Examines how chemical engineers combine the science of chemistry with the engineering design process to develop products used in daily life such as cleaning supplies, fuels, and medicines.

Physical and Chemical Reactions : 6th Grade Chemistry Book | Children's Chemistry Books

Classic guide provides intriguing entertainment while elucidating sound scientific principles, with more than 100 unusual stunts: cold fire, dust explosions, a nylon rope trick, a disappearing beaker, much more.

Practical Numerical Methods for Chemical Engineers

The Practice of Medicinal Chemistry, Fourth Edition provides a practical and comprehensive overview of the daily issues facing pharmaceutical researchers and chemists. In addition to its thorough treatment of basic medicinal chemistry principles, this updated edition has been revised to provide new and expanded coverage of the latest technologies and approaches in drug discovery. With topics like high content screening, scoring, docking, binding free energy calculations, polypharmacology, QSAR, chemical collections and databases, and much more, this book is the go-to reference for all academic and pharmaceutical researchers who need a complete understanding of medicinal chemistry and its application to drug discovery and development. Includes updated and expanded material on systems biology, chemogenomics, computer-aided drug design, and other important recent advances in the field Incorporates extensive color figures, case studies, and practical examples to help users gain a further understanding of key concepts Provides high-quality content in a comprehensive manner, including contributions from international chapter authors to illustrate the global nature of medicinal chemistry and drug development research An image bank is available for instructors at www.textbooks.elsevier.com

Textbook of Chemical Peels

This comprehensive, well organized and easy to read book presents concepts in a unified framework to establish a similarity in the methods of solutions and analysis of such diverse systems as algebraic equations, ordinary differential equations and partial differential equations. The distinguishing feature of the book is the clear focus on analytical methods of solving equations. The text explains how the methods meant to elucidate linear problems can be extended to analyse nonlinear problems. The book also discusses in detail modern concepts like bifurcation theory and chaos. To attract engineering students to applied mathematics, the author explains the concepts in a clear, concise and straightforward manner, with the help of examples and analysis. The significance of analytical methods and concepts for the engineer/scientist interested in numerical applications is clearly brought out. Intended as a textbook for the postgraduate students in engineering, the book could also be of great help to the research students.

What is Chemistry?

Why does cooking bacon smell so good? Can cheese really give you bad dreams? Why do onions make you cry? Find out the answers in this illustrated compendium of amazing and easy-to-understand chemistry. Featuring 58 different questions, you will discover all sorts of wonderful science that affects us on daily basis. Andy Brunning opens up the chemical world behind the sensations we experience through food and drink - popping candy, hangovers, spicy chillies and many more. Exploring the aromas, flavours and bodily reactions with beautiful infographics and explanations, **WHY DOES ASPARAGUS MAKE YOUR WEE SMELL?** is guaranteed to satisfy curious minds. And did you know that nutmeg can make you hallucinate? Prepare to be astounded by chemical breakdown like never before.

Compound Interest

Phase Equilibria in Chemical Engineering is devoted to the thermodynamic basis and practical aspects of the calculation of equilibrium conditions of multiple phases that are pertinent to chemical engineering processes. Efforts have been made throughout the book to provide guidance to adequate theory and practice. The book begins with a long chapter on equations of state, since it is intimately bound up with the development of thermodynamics. Following material on basic thermodynamics and nonidealities in terms of fugacities and activities, individual chapters are devoted to equilibria primarily between pairs of phases. A few topics that do not fit into these categories and for which the state of the art is not yet developed quantitatively have been relegated to a separate chapter. The chapter on chemical equilibria is pertinent since many processes involve simultaneous chemical and phase equilibria. Also included are chapters on the evaluation of enthalpy and entropy changes of nonideal substances and mixtures, and on experimental methods. This book is intended as a reference and self-study as well as a textbook either for full courses in phase equilibria or as a supplement to related courses in the chemical engineering curriculum. Practicing engineers concerned with separation technology and process design also may find the book useful.

The Case of the Frozen Addicts

Equal parts true crime, twentieth-century history, and science thriller, *The Poisoner's Handbook* is "a vicious, page-turning story that reads more like Raymond Chandler than Madame Curie" (The New York Observer) A fascinating Jazz Age tale of chemistry and detection, poison and murder, *The Poisoner's Handbook* is a page-turning account of a forgotten era. In early twentieth-century New York, poisons offered an easy path to the perfect crime. Science had no place in the Tammany Hall-controlled coroner's office, and corruption ran rampant. However, with the appointment of chief medical examiner Charles Norris in 1918, the poison game changed forever. Together with toxicologist Alexander Gettler, the duo set the justice system on fire with their trailblazing scientific detective work, triumphing over seemingly unbeatable odds to become the pioneers of forensic chemistry and the gatekeepers of justice. In 2014, PBS's *AMERICAN EXPERIENCE* released a film based

on The Poisoner's Handbook.

The Practice of Medicinal Chemistry

The only textbook that applies thermodynamics to real-world process engineering problems This must-read for advanced students and professionals alike is the first book to demonstrate how chemical thermodynamics work in the real world by applying them to actual engineering examples. It also discusses the advantages and disadvantages of the particular models and procedures, and explains the most important models that are applied in process industry. All the topics are illustrated with examples that are closely related to practical process simulation problems. At the end of each chapter, additional calculation examples are given to enable readers to extend their comprehension. Chemical Thermodynamics for Process Simulation instructs on the behavior of fluids for pure fluids, describing the main types of equations of state and their abilities. It discusses the various quantities of interest in process simulation, their correlation, and prediction in detail. Chapters look at the important terms for the description of the thermodynamics of mixtures; the most important models and routes for phase equilibrium calculation; models which are applicable to a wide variety of non-electrolyte systems; membrane processes; polymer thermodynamics; enthalpy of reaction; chemical equilibria, and more. -Explains thermodynamic fundamentals used in process simulation with solved examples -Includes new chapters about modern measurement techniques, retrograde condensation, and simultaneous description of chemical equilibrium -Comprises numerous solved examples, which simplify the understanding of the often complex calculation procedures, and discusses advantages and disadvantages of models and procedures -Includes estimation methods for thermophysical properties and phase equilibria thermodynamics of alternative separation processes -Supplemented with MathCAD-sheets and DDBST programs for readers to reproduce the examples Chemical Thermodynamics for Process Simulation is an ideal resource for those working in the fields of process development, process synthesis, or process optimization, and an excellent book for students in the engineering sciences.

Essentials of Pharmaceutical Chemistry

Chemical peels have returned to the forefront of the practitioner's armamentarium and are popular because they offer nearly immediate results. The Textbook of Chemical Peels is the definitive guide to all types of chemical peel treatments. It covers the practical application and scientific background for a wide variety of chemical peels. The book reflects the new classification of peels as a medical, rather than cosmetic, treatment and helps providers by making chemical peel formulas easier, safer, and quicker to use. The book covers the appropriate selection of peels to treat the face, scalp, neck, hands, body, and forearms. It also discusses the use of peels to treat aging skin, stretch marks, scars, melasma, chloasma, acne, postinflammatory hyperpigmentation, and scalp keratoses. The mechanism of action, indication, application, and results are

discussed for a variety of chemical peels including alpha hydroxy acids, trichloroacetic acid, salicylic acid, resorcinol, and phenols. Also covered are any contraindications, precautions, and safety issues. This edition includes new material on adjunctive procedures such as microneedling and mesotherapy as well as new information on mosaic peels. Treatment prior to and following the peel are also discussed in detail, and a full chapter is devoted to discussing complications associated with chemical peels. The book incorporates color clinical photographs throughout as well as descriptive tables summarizing key information. Based on the author's extensive experience in both research and practice, this updated reference is an invaluable guide to all providers involved with chemical peel treatments.

Chemical-Free Kids

Why are we obsessed with the things we want only to be bored when we get them? Why is addiction perfectly logical to an addict? Why does love change so quickly from passion to indifference? Why are some people die-hard liberals and others hardcore conservatives? Why are we always hopeful for solutions even in the darkest times—and so good at figuring them out? The answer is found in a single chemical in your brain: dopamine. Dopamine ensured the survival of early man. Thousands of years later, it is the source of our most basic behaviors and cultural ideas—and progress itself. Dopamine is the chemical of desire that always asks for more—more stuff, more stimulation, and more surprises. In pursuit of these things, it is undeterred by emotion, fear, or morality. Dopamine is the source of our every urge, that little bit of biology that makes an ambitious business professional sacrifice everything in pursuit of success, or that drives a satisfied spouse to risk it all for the thrill of someone new. Simply put, it is why we seek and succeed; it is why we discover and prosper. Yet, at the same time, it's why we gamble and squander. From dopamine's point of view, it's not the having that matters. It's getting something—anything—that's new. From this understanding—the difference between possessing something versus anticipating it—we can understand in a revolutionary new way why we behave as we do in love, business, addiction, politics, religion—and we can even predict those behaviors in ourselves and others. In *The Molecule of More: How a Single Chemical in Your Brain Drives Love, Sex, and Creativity—and Will Determine the Fate of the Human Race*, George Washington University professor and psychiatrist Daniel Z. Lieberman, MD, and Georgetown University lecturer Michael E. Long present a potentially life-changing proposal: Much of human life has an unconsidered component that explains an array of behaviors previously thought to be unrelated, including why winners cheat, why geniuses often suffer with mental illness, why nearly all diets fail, and why the brains of liberals and conservatives really are different.

Chemistry

The most complete guide of its kind, this is the standard handbook for chemical and process engineers. All new material on fluid flow, long pipe, fractionators, separators and accumulators, cooling towers, gas treating, blending, troubleshooting

field cases, gas solubility, and density of irregular solids. This substantial addition of material will also include conversion tables and a new appendix, "Shortcut Equipment Design Methods." This convenient volume helps solve field engineering problems with its hundreds of common sense techniques, shortcuts, and calculations. Here, in a compact, easy-to-use format, are practical tips, handy formulas, correlations, curves, charts, tables, and shortcut methods that will save engineers valuable time and effort. Hundreds of common sense techniques and calculations help users quickly and accurately solve day-to-day design, operations, and equipment problems.

Chemical Kinetics and Reaction Dynamics

After modern science turns every human into a genetic time bomb with men dying at age twenty-five and women dying at age twenty, girls are kidnapped and married off in order to repopulate the world.

The Poisoner's Handbook

This text teaches the principles underlying modern chemical kinetics in a clear, direct fashion, using several examples to enhance basic understanding. Solutions to selected problems. 2001 edition. /div

Chemistry and the Chemical Industry

As chemical companies strive to be more competitive in the world economy, it is essential that their employees, including sales and marketing personnel, as well as administrative support groups understand the basic concepts of the science upon which the industry is based. The authors, who have over 100 years of combined experience in the chemical industry, developed this easy-to-read book to provide a fundamental understanding of the chemical industry for non-chemists and those poised to enter the chemical profession. Designed specifically for self-study, *Chemistry and the Chemical Industry: A Practical Guide for Non-Chemists* reviews the important aspects of industrial chemistry in a way that can be easily understood even if you have not taken any formal chemistry courses. The authors provide a clear, concise presentation of the foremost issues behind the chemical discipline along with key definitions and concepts so you can readily obtain an appreciation of the nature of the industry and its contribution to society. Even though you are not at the lab bench, you can still understand, recognize, and partake in discussions about the work being done at your company. Compiled in a straightforward and accessible manner, this book is unique in that it bridges the gap between nonscientific employees and the scientific world in which they operate. The first chapter begins with a description of the chemical industry. It defines the most common terms used in chemistry, drawing on nonscientific analogies whenever possible. In the following chapters, the authors review the concepts and terminology of organic and inorganic chemistry, polymer chemistry, high volume

chemicals, and environmental concerns about chemical production with each subject presented as a graphic representation accompanied by a description. Finally, there is a short compilation of general information sources for further study. Chemistry and the Chemical Industry: A Practical Guide for Non-Chemists will allow you to communicate effectively within your organization and become more familiar with this vital industry.

The Practice of Medicinal Chemistry

The Practice of Medicinal Chemistry fills a gap in the list of available medicinal chemistry literature. It is a single-volume source on the practical aspects of medicinal chemistry. Considered ""the Bible"" by medicinal chemists, the book emphasizes the methods that chemists use to conduct their research and design new drug entities. It serves as a practical handbook about the drug discovery process, from conception of the molecules to drug production. The first part of the book covers the background of the subject matter, which includes the definition and history of medicinal chemistry, the measurement of biological activities, and the main phases of drug activity. The second part of the book presents the road to discovering a new lead compound and creating a working hypothesis. The main parts of the book discuss the optimization of the lead compound in terms of potency, selectivity, and safety. The Practice of Medicinal Chemistry can be considered a ""first-read"" or ""bedside book"" for readers who are embarking on a career in medicinal chemistry. NEW TO THIS EDITION: * Focus on chemoinformatics and drug discovery * Enhanced pedagogical features * New chapters including: - Drug absorption and transport - Multi-target drugs * Updates on hot new areas: NEW! Drug discovery and the latest techniques NEW! How potential drugs can move through the drug discovery/ development phases more quickly NEW! Chemoinformatics

Chemical Engineering Thermodynamics

When wealthy Brittany Ellis and Alex Fuentes, a gang member from the other side of town, develop a relationship after Alex discovers that Brittany is not exactly who she seems to be, they must face the disapproval of others.

Chemical Engineering in Practice

Sixth graders have to balance their academics and social lives. It isn't easy, especially if they're stuck on lessons that are difficult to digest. That's why we decided to create this chemistry book of physical and chemical reactions. With easy-to-understand texts and wonderful background images, this book promises an easy read. This is definitely a must-have!

Chemical Reactions

Explores the world of chemistry, including its structure, core concepts, and contributions to human culture and material comforts.

Artificial Intelligence in Chemical Engineering

This book offers a full account of thermodynamic systems in chemical engineering. It provides a solid understanding of the basic concepts of the laws of thermodynamics as well as their applications with a thorough discussion of phase and chemical reaction equilibria. At the outset the text explains the various key terms of thermodynamics with suitable examples and then thoroughly deals with the virial and cubic equations of state by showing the P-V-T (pressure, molar volume and temperature) relation of fluids. It elaborates on the first and second laws of thermodynamics and their applications with the help of numerous engineering examples. The text further discusses the concepts of exergy, standard property changes of chemical reactions, thermodynamic property relations and fugacity. The book also includes detailed discussions on residual and excess properties of mixtures, various activity coefficient models, local composition models, and group contribution methods. In addition, the text focuses on vapour-liquid and other phase equilibrium calculations, and analyzes chemical reaction equilibria and adiabatic reaction temperature for systems with complete and incomplete conversion of reactants. **key Features** □ Includes a large number of fully worked-out examples to help students master the concepts discussed. □ Provides well-graded problems with answers at the end of each chapter to test and foster students' conceptual understanding of the subject. The total number of solved examples and end-chapter exercises in the book are over 600. □ Contains chapter summaries that review the major concepts covered. The book is primarily designed for the undergraduate students of chemical engineering and its related disciplines such as petroleum engineering and polymer engineering. It can also be useful to professionals. The Solution Manual containing the complete worked-out solutions to chapter-end exercises and problems is available for instructors.

Industrial Chemistry

Chemical Engineering and Chain Reactions

The brilliantly told and gripping story of the most familiar - yet, amazingly, still poorly understood - substance in the universe: Water. The extent to which water remains a scientific mystery is extraordinary, despite its prevalence and central importance on Earth. Whether one considers its role in biology, its place in the physical world (where it refuses to obey the usual rules of liquids) or its deceptively simple structure, there is still no complete answer to the question: what is water? Philip Ball's book explains what, exactly, we do and do not know about the strange character of this most essential and

ubiquitous of substances. H₂O begins by transporting its readers back to the Big Bang and the formation of galaxies to witness the birth of water's constituent elements: hydrogen and oxygen. It then explains how the primeval oceans were formed four billion years ago; where water is to be found on other planets; why ice floats when most solids sink; why, despite being highly corrosive, water is good for us; why there are at least fifteen kinds of ice and perhaps two kinds of liquid water; how scientists have consistently misunderstood water for centuries; and why wars have been waged over it. Philip Ball's gloriously offbeat and intelligent book conducts us on a journey through the history of science, folklore, the wilder scientific fringes, cutting-edge physics, biology and ecology, to give a fascinating new perspective on life and the substance that sustains it. After reading this book, drinking a glass of water will never be the same again.

Wither

This latest 3rd edition expands the breadth of Practical Numerical Methods with over 100 VBA macros for extending Excel's power for engineering and scientific analysis. Engineers and scientists will find the enhanced coverage of computational tools applicable to a variety of problems in their own disciplines. ** The selection of software reflects Excel's status as the de facto computational tool used by practicing engineers. Engineers & scientists should become proficient at extending Excel's capabilities with VBA programming to boost their worksheets with time saving enhancements and powerful numerical techniques. ** Topics include an introduction to modeling, documentation, Excel & VBA, root-finding for linear & nonlinear systems of equations, multivariate optimization, experimental uncertainty propagation & analysis, least-squares regression & model validation, interpolation, integration, and ordinary & partial differential equations. ** A companion web site has links to digital files for downloading up to 200 illustrations & examples & the refined PNM3Suite workbook with VBA user-defined functions, macros, & user forms for advanced numerical techniques. Practice problems are also available from the web site (<https://www.d.umn.edu/~rdavis/PNM/PNMExcelVBA3/>). Example files & macros are ready to be modified by users for their own needs. ** Chapter 1 includes a brief introduction to chemical reaction engineering that provides some background needed for problems involving mass & energy balances with reactions. ** The next two chapters introduce frequently overlooked features of Excel and VBA for engineering programming to apply numerical methods in Excel, as well as document results. The remaining chapters present powerful numerical techniques using Excel & VBA, including: ** General Methods: Sub & User-defined Function Procedures, Pseudo-random Number Generation, Sorting, Formula Graphing & Evaluation, Random Sampling, User forms ** Linear Equations: Gaussian Elimination with Maximum Column Pivoting, Error Correction, Crout Reduction, Thomas algorithm for tri-diagonal & Cholesky's method for symmetric matrices, Matrix functions, Jacobi & Gauss-Seidel Iteration, Wegstein & Steffenson's version of Aitkin's Delta Square methods, Power method for Eigenproblems ** Nonlinear Equations: Ordinary Fixed-Point Iteration, Bisection, Secant, Regula Falsi, Newton & Quasi-Newton, Continuation (homotopy), Goal Seek, Solver, Bairstow's method for polynomial roots ** Derivative Approximation: Finite Difference, Richardson's extrapolation, Jacobian, Sensitivity Analysis, Lagrange polynomials, splines ** Uncertainty

Analysis: Jitter method for the Law of Propagation of Uncertainty, Monte Carlo with Latin-Hypercube sampling, Jack knife for regression parameter uncertainty ** Optimization: Graphical, Quadratic with acceleration, Powell, Golden Section, Luus-Jaakola, Solver (for linear and nonlinear programming), Parameter Scaling ** Least-squares Regression: multivariate linear models, Gauss-Newton, Levenberg-Marquardt, and Monte Carlo for nonlinear regression with parameter uncertainty, Rational Least Squares, Weighting ** Interpolation: Linear, Newton Divided Difference, Lagrange, Rational, Stineman, Cubic Spline, Constrained Splines, Bivariate 2-D, Data Smoothing ** Integration: Trapezoid, Improper, Midpoint, Romberg, Adaptive Gauss-Kronrod & Simpson, Splines, multiple integrals with Simpson, Kronrod, & Monte Carlo methods ** Initial-Value ODEs: Taylor Series, improved & modified Euler, implicit Trapezoidal for stiff problems, fixed & variable single step 4-5 order Runge-Kutta, Cash-Karp & Dormand-Prince, Adams-Bashforth-Moulton multi-step methods ** Boundary Value ODEs and PDEs: Shooting, Finite Difference, Collocation on Finite Elements, Quasilinearization, Method of Lines, semi-implicit Crank-Nicholson methods ** Tables for quick reference of Excel, VBA, and custom functions & macros for numerical m

Chemical Engineering

The supply of petroleum continues to dwindle at an alarming rate, yet it is the source of a range of products- from gasoline and diesel to plastic, rubber, and synthetic fiber. Critical to the future of this commodity is that we learn to use it more judiciously and efficiently. Fundamentals of Petroleum and Petrochemical Engineering provides a holi

Unit Operations of Chemical Engineering

This textbook, Material Balance and Process Calculations, has been carefully written to teach you important topics in material balance and process calculations by explaining them with a mindset to fully equip you in the topics. Whether you want this book for general studies of these topics or you want this book to study for an exam, you will find it a very useful tool. This textbook is a mass balance teacher which is suitable for students in universities and students in colleges. It will also serve as a useful tool for direct entry students who are preparing for entrance examinations into colleges and universities. This book is not only for engineering students but also for chemistry students or any student who is offering a course in chemistry. The step by step explanations presented in the worked examples are easy to understand since care was taken to sufficiently explain salient points and process ideas. Efforts have been made to achieve a complete and simplified explanation of every example given in this textbook. Many worked examples have been included in each topic in order to fully cover every complexity the topic might contain. This book will boost your level of understanding of material balance and process calculations. Numerous exercises at the end of each chapter are intended to test students' understanding of the topic. Therefore students are thus presented with an effective means of self-assessment whereby they

can determine their individual strengths and revision needs. The topics covered in this eBook include:

Kaboom!

Readers will learn what chemical reactions are, how they work, what changes happen during reactions, and how we can stop reactions.

[ROMANCE](#) [ACTION & ADVENTURE](#) [MYSTERY & THRILLER](#) [BIOGRAPHIES & HISTORY](#) [CHILDREN'S](#) [YOUNG ADULT](#) [FANTASY](#)
[HISTORICAL FICTION](#) [HORROR](#) [LITERARY FICTION](#) [NON-FICTION](#) [SCIENCE FICTION](#)