

Solution Of Thermodynamics Gaskell

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Physical Chemistry of Magmas Leonid L. Perchuk 2013-04-09 Physical Chemistry of Magmas investigates the properties, structure, and phase relationships of silicate melts with invited contributions from an international team of experts. Data and some rules for estimating the properties and structures of melts, as well as the implications of the physical chemistry of silicate liquids to igneous petrology are presented. The second section then focuses on phase relationships, with particular attention on the application of experimental and theoretical petrology to modeling the origin of certain magmas.

Stoichiometry and Thermodynamics of Metallurgical Processes Y. K. Rao 1985-10-31 This textbook provides a thorough and comprehensive introduction to stoichiometry and thermodynamics with special emphasis on applications to metallurgical processes. The author's approach is to introduce students early on to the fundamentals of the physical chemistry and thermodynamics of metallurgical processes and then gradually expand the treatment into progressively more advanced areas. Topics covered include the laws of thermodynamics, material and energy balances, gasification and combustion of fuels, the iron blast furnace, direct reduction reactors, nonferrous smelters, fluidized-bed roasters, the theory of solutions, chemical equilibrium, electrochemistry. Also included are over 150 worked examples and 450 exercises, many with solutions. The examples and exercises range from straightforward tests of theory to complex analyses of real processes. Every chapter is provided with a full and up-to-date set of references.

Fundamentals of Thermodynamics Claus Borgnakke 2013-06-27 Now in a new edition, this book continues to set the standard for teaching readers how to be effective problem solvers, emphasizing the authors's signature methodologies that have taught over a half million students worldwide. This new edition provides a student-friendly approach that emphasizes the relevance of thermodynamics principles to some of the most critical issues of today and coming decades, including a wealth of integrated coverage of energy and the environment, biomedical/bioengineering, as well as emerging technologies. Visualization skills are developed and basic principles demonstrated through a complete set of animations that have been interwoven throughout.

Kinetics of Materials Robert W. Balluffi 2005-12-16 A classroom-tested textbook providing a fundamental understanding of basic kinetic processes in materials This textbook, reflecting the hands-on teaching experience of its three authors, evolved from Massachusetts Institute of Technology's first-year graduate curriculum in the Department of Materials Science and Engineering. It discusses key topics collectively representing the basic kinetic processes that cause changes in thesis, shape, composition, and atomistic structure of materials. Readers gain a deeper understanding of these kinetic processes and of the properties and applications of materials. Topics are introduced in a logical order, enabling students to develop a solid foundation before advancing to more sophisticated topics. Kinetics of Materials begins with diffusion, offering a description of the elementary manner in which atoms and molecules move around in solids and liquids. Next, the more complex motion of dislocations and interfaces is addressed. Finally, still more complex kinetic phenomena, such as morphological evolution and phase transformations, are treated. Throughout the textbook, readers are instilled with an appreciation of the subject's analytic foundations and, in many cases, the approximations commonly used in the field. The authors offer many extensive derivations of important results to help illuminate their origins. While the principal focus is on kinetic phenomena in crystalline materials, select phenomena in noncrystalline materials are also discussed. In many cases, the principles involved apply to all materials. Exercises with accompanying solutions are provided throughout. Kinetics of Materials, enabling readers to put their newfound knowledge into practice. In addition, bibliographies are offered with each chapter, helping readers to investigate specialized topics in greater detail. Several appendices presenting important background material are also included. With its unique range of topics, progressive structure, and extensive exercises, this classroom-tested textbook provides an enriching learning experience for first-year graduate students.

Methods for Phase Diagram Determination Ji-Cheng Zhao 2011-05-05 Phase diagrams are "maps" materials scientists often use to design new materials. They define what compounds and solutions are formed and their respective compositions and amounts when several elements are mixed together under a certain temperature and pressure. This monograph is the most comprehensive reference book on experimental methods for phase diagram determination. It covers a wide range of methods that have been used to determine phase diagrams of metals, ceramics, slags, and hydrides. * Extensive discussion on methodologies of experimental measurements and data assessments * Written by experts around the world, covering both traditional and combinatorial methodologies * A must-read for experimental measurements of phase diagrams

Introduction to the Thermodynamics of Materials, Fifth Edition David R. Gaskell 2008-03-13 This classic textbook is the definitive introduction to the thermodynamic behavior of materials systems. Written as a basic text for advanced undergraduates and first year graduate students in metallurgy, metallurgical engineering, ceramics, or materials science, it presents the underlying thermodynamic principles of materials and their plethora of applications. The book is also of proven interest to working professionals in need of a reference or refresher course.

Chemical Thermodynamics W.J. Rankin 2019-11-11 This book develops the theory of chemical thermodynamics from first principles, demonstrates its relevance across scientific and engineering disciplines, and shows how thermodynamics can be used as a practical tool for understanding natural phenomena and developing and improving technologies and products. Concepts such as internal energy, enthalpy, entropy, and Gibbs energy are explained using ideas and experiences familiar to students, and realistic examples are given so the usefulness and pervasiveness of thermodynamics becomes apparent. The worked examples illustrate key ideas and demonstrate important types of calculations, and the problems at the end of chapters are designed to reinforce important concepts and show the broad range of applications. Most can be solved using digitized data from open access databases and a spreadsheet. Answers are provided for the numerical problems. A particular theme of the book is the calculation of the equilibrium composition of systems, both reactive and non-reactive, and this includes the principles of Gibbs energy minimization. The overall approach leads to the intelligent use of thermodynamic software packages but, while these are discussed and their use demonstrated, they are not the focus of the book, the aim being to provide the necessary foundations. Another unique aspect is the inclusion of three applications chapters: heat and energy aspects of processing; the thermodynamics of metal production and recycling; and applications of electrochemistry. This book is aimed primarily at students of chemistry, chemical engineering, applied science, materials science, and metallurgy, though it will be also useful for students undertaking courses in geology and environmental science. A solutions manual is available for instructors.

Introduction to Metallurgical Thermodynamics David R. Gaskell 1981

Problems in Metallurgical Thermodynamics and Kinetics G. S. Upadhyaya 2013-10-22 Problems in Metallurgical Thermodynamics and Kinetics provides an illustration of the calculations encountered in the study of metallurgical thermodynamics and kinetics, focusing on theoretical concepts and practical applications. The chapters of this book provide comprehensive account of the theories, including basic and applied numerical examples with solutions. Unsolved numerical examples drawn from a wide range of metallurgical processes are also provided at the end of each chapter. The topics discussed include the three laws of thermodynamics; Clausius-Clapeyron equation; fugacity, activity, and equilibrium constant; thermodynamics of electrochemical cells; and kinetics. This book is beneficial to undergraduate and postgraduate students in universities, polytechnics, and technical colleges.

Introduction to Materials Science for Engineers Shackelford 2007-09 This Text Provides A Balanced And Current Treatment Of The Full Spectrum Of Engineering Materials, Covering All The Physical Properties, Applications And Relevant Properties Associated With The Subject. It Explores All The Major Categories Of Materials While Offering Detailed Examinations Of A Wide Range Of New Materials With High-Tech Applications. *The Engineering Handbook* Richard C. Dorf 2018-10-03 First published in 1995, *The Engineering Handbook* quickly became the definitive engineering reference. Although it remains a bestseller, the many advances realized in traditional engineering fields along with the emergence and rapid growth of fields such as biomedical engineering, computer engineering, and nanotechnology mean that the time has come to bring this standard-setting reference up to date. New in the Second Edition 19 completely new chapters addressing important topics in bioinstrumentation, control systems, nanotechnology, image and signal processing, electronics, environmental systems, structural systems 131 chapters fully revised and updated Expanded lists of engineering associations and societies *The Engineering Handbook, Second Edition* is designed to enlighten experts in areas outside their own specialties, to refresh the knowledge of mature practitioners, and to educate engineering novices. Whether you work in industry, government, or academia, this is simply the best, most useful engineering reference you can have in your personal, office, or institutional library.

Extended Non-Equilibrium Thermodynamics Hatim Machrafi 2019-02-21 *Extended Non-Equilibrium Thermodynamics* provides powerful tools departing not from empirical or statistical considerations but from fundamental thermodynamic laws, proposing final solutions that are readily usable and recognizable for students, researchers and industry. The book deals with methods that allow combining easily the present theory with other fields of science, such as fluid and solid mechanics, heat and mass transfer processes, electricity and thermoelectricity, and so on. Not only are such combinations facilitated, but they are incorporated into the developments in such a way that they become part of the theory. This book aims at providing for a systematic presentation of *Extended Non-Equilibrium Thermodynamics* in nanosystems with a high degree of applicability. Furthermore, the book deals with how physical properties of systems behave as a function of their size. Moreover, it provides for a systematic approach to understand the behavior of thermal, electrical, thermoelectric, photovoltaic and nanofluid properties in nanosystems. Experimental results are used to validate the theory, the comparison is analysed, justified and discussed, and the theory is then again used to understand better experimental observations. The new developments in this book, being recognizable in relation with familiar concepts, should make it appealing for academics and researchers to teach and apply and graduate students to use. The text in this book is intended to bring attention to how the theory can be applied to real-life applications in nanoscaled environments. Case studies, and applications of theories, are explored including thereby nanoporous systems, solar panels, nanomedicine drug permeation and properties of nanoporous scaffolds. Explores new generalized thermodynamic models Provides introductory context of *Extended Non-Equilibrium Thermodynamics* within classical thermodynamics, theoretical fundamentals and several applications in nanosystems Provides for a systematic approach to understand the behavior of thermal, electric, thermoelectric and viscous properties as a function of several parameters in nanosystems Includes reflections to encourage the reader to think further and put the information into context Examines future developments of new constitutive equations and theories and places them in the framework of real-life applications in the energetic and medical sectors, such as photovoltaic and thermoelectric devices, nanoporous media, drug delivery and scaffolds **Thermodynamics** Yunus A. Cengel 2002 The 4th Edition of Cengel & Boles *Thermodynamics: An Engineering Approach* takes thermodynamics education to the next level through its intuitive and innovative approach. A long-time favorite among students and instructors alike because of its highly engaging, student-oriented conversational writing style, this book is now the most widely adopted thermodynamics text in the U.S. and in the world.

Introduction to the Thermodynamics of Materials, Sixth Edition David R. Gaskell 2017-08-15 Maintaining the substance that made *Introduction to the Thermodynamic of Materials* a perennial best seller for decades, this Sixth Edition is updated to reflect the broadening field of materials science and engineering. The new edition is reorganized into three major sections to align the book for practical coursework, with the first (Thermodynamic Principles) and second (Phase Equilibria) sections aimed at use in a one semester undergraduate course. The third section (Reactions and Transformations) can be used in other courses of the curriculum that deal with oxidation, energy, and phase transformations. The book is updated to include the role of work terms other than PV work (e.g., magnetic work) along with their attendant aspects of entropy, Maxwell equations, and the role of such applied fields on phase diagrams. There is also an increased emphasis on the thermodynamics of phase transformations and the Sixth Edition features an entirely new chapter 15 that links specific thermodynamic applications to the study of phase transformations. The book also features more than 50 new end of chapter problems and more than 50 new figures.

Structure and Bonding in Crystalline Materials Gregory S. Rohrer 2001-07-19 Publisher Description

Methods of Thermodynamics Howard Reiss 2012-09-05 Outstanding text focuses on physical technique of thermodynamics, typical problems, and significance and use of thermodynamic potential. Mathematical apparatus, first law of thermodynamics, second law and entropy, more. 1965 edition.

An Introduction to Aspects of Thermodynamics and Kinetics Relevant to Materials Science Eugene Machlin 2010-07-07 This book is based on a set of notes developed over many years for an introductory course taught to seniors and entering graduate students in materials science. An Introduction to Aspects of Thermodynamics and Kinetics Relevant to Materials Science is about the application of thermodynamics and kinetics to solve problems within Materials Science. Emphasis is to provide a physical understanding of the phenomenon under discussion, with the mathematics presented as a guide. The problems are used to provide practice in quantitative application of principles, and also to give examples of applications of the general subject matter to problems having current interest and to emphasize the important physical concepts. End of chapter problems are included, as are references, and bibliography to reinforce the text. This book provides students with the theory and mathematics to understand the important physical understanding of phenomena. Based on a set of notes developed over many years for an introductory course taught to seniors and entering graduate students in materials science Provides students with the theory and mathematics to understand the important physical understanding of phenomena Includes end of chapter problems, references, and bibliography to reinforce the text

Structure of Materials Marc De Graef 2012-11-15 This highly readable, popular textbook for upper undergraduates and graduates comprehensively covers the fundamentals of crystallography and symmetry, applying these concepts to a large range of materials. New to this edition are more streamlined coverage of crystallography, additional coverage of magnetic point group symmetry and updated material on extraterrestrial minerals and rocks. New exercises at the end of chapters, plus over 500 additional exercises available online, allow students to check their understanding of key concepts and put into practice what they have learnt. Over 400 illustrations within the text help students visualise crystal structures and more abstract mathematical objects, supporting more difficult topics like point group symmetries. Historical and biographical sections add colour and interest by giving an insight into those who have contributed significantly to the field. Supplementary online material includes password-protected solutions, over 100 crystal structure data files, and Powerpoints of figures from the book.

Phase Diagrams and Thermodynamic Modeling of Solutions Arthur D. Pelton 2018-09-19 Phase Diagrams and Thermodynamic Modeling of Solutions provides readers with an understanding of thermodynamics and phase equilibria that is required to make full and efficient use of these tools. The book systematically discusses phase diagrams of all types, the thermodynamics behind them, their calculations from thermodynamic databases, and the structural models of solutions used in the development of these databases. Featuring examples from a wide range of systems including metals, salts, ceramics, refractories, and concentrated aqueous solutions, *Phase Diagrams and Thermodynamic Modeling of Solutions* is a vital resource for researchers and developers in materials

science, metallurgy, combustion and energy, corrosion engineering, environmental engineering, geology, glass technology, nuclear engineering, and other fields of inorganic chemical and materials science and engineering. Additionally, experts involved in developing thermodynamic databases will find a comprehensive reference text of current solution models. Presents a rigorous and complete development of thermodynamics for readers who already have a basic understanding of chemical thermodynamics Provides an in-depth understanding of phase equilibria Includes information that can be used as a text for graduate courses on thermodynamics and phase diagrams, or on solution modeling Covers several types of phase diagrams (paraequilibrium, solidus projections, first-melting projections, Scheil diagrams, enthalpy diagrams), and more **Thermitic Thermodynamics** Anthony Peter Gordon Shaw 2020-05-13 Thermites, which are generally considered to be reactive mixtures of powdered metals and metal oxides, are an important subset of energetic materials. The underlying thermodynamic properties of a given mixture dictate whether it may undergo a self-sustaining reaction, liberating heat in the process. Thermodynamic information in the existing scientific literature regarding thermitic combinations is scattered and incomplete. Currently, a comprehensive overview of this nature would be of great use to those working in the areas of pyrotechnics, pyrometallurgy, high-temperature chemistry, and materials science. Thermitic Thermodynamics solves this problem by describing the results of calculations on over 800 combinations of metal, metalloid, and metal oxide reactants. Other features include: A first-of-its-kind adiabatic survey of binary thermitic reactions Provides an overview of key trends in exothermic metal-metal oxide reactivity Describes the role of non-oxide product formation in thermitic systems Explains how to interpret the results of thermochemical calculations effectively An invaluable resource, this book provides an accessible introduction for students and is also an enduring guide for professionals.

Fundamentals of Electrochemical Corrosion Ele Eugene Stansbury 2000-01-01 Covering the essential aspects of the corrosion behavior of metals in aqueous environments, this book is designed with the flexibility needed for use in courses for upper-level undergraduate and graduate students, for concentrated courses in industry, for individual study, and as a reference book.

An Introduction to Transport Phenomena In Materials Engineering, 2nd edition David Gaskell 2012-08-24 This classic text on fluid flow, heat transfer, and mass transport has been brought up to date in this second edition. The author has added a chapter on "Boiling and Condensation" that expands and rounds out the book's comprehensive coverage on transport phenomena. These new topics are particularly important to current research in renewable energy resources involving technologies such as windmills and solar panels. The book provides you and other materials science and engineering students and professionals with a clear yet thorough introduction to these important concepts. It balances the explanation of the fundamentals governing fluid flow and the transport of heat and mass with common applications of these fundamentals to specific systems existing in materials engineering. You will benefit from: • The use of familiar examples such as air and water to introduce the influences of properties and geometry on fluid flow. • An organization with sections dealing separately with fluid flow, heat transfer, and mass transport. This sequential structure allows the development of heat transport concepts to employ analogies of heat flow with fluid flow and the development of mass transport concepts to employ analogies with heat transport. • Ample high-quality graphs and figures throughout. • Key points presented in chapter summaries. • End of chapter exercises and solutions to selected problems. • An all new and improved comprehensive index.

Advances in Combustion Synthesis and Technology Mehmet Bugdayci 2022-03-21 This reference is an accessible update on combustion synthesis and the chemical technology for synthesizing composite materials. Nine chapters offer an overview of the subject with recent references, giving the reader an informed perspective. The book starts with an introduction to thermodynamic models used in combustion synthesis. Subsequent chapters explain the application of combustion synthesis to manufacture different materials such as nanostructured non-ferrous alloys, ceramic powders, functionally graded materials, boron carbide-based superhard materials, shape memory alloys, biomaterials, high-entropy alloys and rare earth phosphates. The range of topics makes this book a useful guide for students, scientists and industrial professionals in the field of chemical engineering, metallurgy and materials science. *Calculus on Manifolds* Michael Spivak 1965 This book uses elementary versions of modern methods found in sophisticated mathematics to discuss portions of "advanced calculus" in which the subtlety of the concepts and methods makes rigor difficult to attain at an elementary level.

An Introduction to Transport Phenomena in Materials Engineering David R. Gaskell 1992 This introduction to transport phenomena in materials engineering balances an explanation of the fundamentals governing fluid flow and the transport of heat and mass with their common applications to specific systems in materials engineering. It introduces the influences of properties and geometry on fluid flow using familiar fluids such as air and water. Covers topics such as engineering units and pressure in static fluids; momentum transport and laminar flow of Newtonian fluids; equations of continuity and conservation of momentum and fluid flow past submerged objects; turbulent flow; mechanical energy balance and its application to fluid flow; transport of heat by conduction; transport of heat by convection; transient heat flow; heat transport by thermal radiation; mass transport in the solid state by diffusion; mass transport in fluids. Includes extensive appendices.

Thermodynamics in Materials Science Robert DeHoff 2006-03-13 *Thermodynamics in Materials Science, Second Edition* is a clear presentation of how thermodynamic data is used to predict the behavior of a wide range of materials, a crucial component in the decision-making process for many materials science and engineering applications. This primary textbook accentuates the integration of principles, strategies, a

Thermodynamics of Materials David V. Ragone 1995 "In response to the growing economic and technological importance of polymers, ceramics, and semi-conductors, many materials science and engineering as they apply to all the classes of materials."--Back cover

Materials Characterization Yang Leng 2009-03-04 This book covers state-of-the-art techniques commonly used in modern materials characterization. Two important aspects of characterization, materials structures and chemical analysis, are included. Widely used techniques, such as metallography (light microscopy), X-ray diffraction, transmission and scanning electron microscopy, are described. In addition, the book introduces advanced techniques, including scanning probe microscopy. The second half of the book accordingly presents techniques such as X-ray energy dispersive spectroscopy (commonly equipped in the scanning electron microscope), fluorescence X-ray spectroscopy, and popular surface analysis techniques (XPS and SIMS). Finally, vibrational spectroscopy (FTIR and Raman) and thermal analysis are also covered.

Chemical Thermodynamics of Materials C. H. P. Lupis 1993

Introduction to Materials Science and Engineering Elliot P. Douglas 2013-01-23 *ℹ* For students taking the Materials Science course. This book is also suitable for professionals seeking a guided inquiry approach to materials science. *ℹ* This unique book is designed to serve as an active learning tool that uses carefully selected information and guided inquiry questions. Guided inquiry helps readers reach true understanding of concepts as they develop greater ownership over the material presented. First, background information or data is presented. Then, concept invention questions lead the students to construct their own understanding of the fundamental concepts represented. Finally, application questions provide the reader with practice in solving problems using the concepts that they have derived from their own valid conclusions. *ℹ* 0133354733 / 9780133354737 *Introduction to Materials Science and Engineering: A Guided Inquiry with Mastering Engineering with Pearson eText -- Access Card Package* consists of: *ℹ* 0132136422 / 9780132136426 *Introduction to Materials Science and Engineering: A Guided Inquiry* 0133411443 / 9780133411447 *Mastering Engineering with Pearson eText -- Access Card -- Introduction to Materials Science* *ℹ*

Introduction to Metallurgical Thermodynamics David R. Gaskell 1981

Introduction to the Thermodynamics of Materials, Fifth Edition David R. Gaskell 2003-02-07

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Advances in Physical Geochemistry Surendra K. Saxena 2012-12-06 The second volume of this series consists of three parts. Part I focuses on the research on intracrystalline reactions. This work, which began nearly two decades ago, is critically reviewed by Ghose and Ganguly in Chapter 1. Besides the review, the authors include some of their previously unpublished work to demonstrate how future research could aid in obtaining data on thermodynamics of solid solutions and in understanding the cooling history of igneous and metamorphic rocks. The latter is also the theme adopted by Kretz in the second chapter, which examines the redistribution of Fe and Mg in coexisting silicates during cooling. Chapter 3 contains new data on Fe-Mg distribution in clinopyroxenes. Dal Negro and his co-authors have selected a series of clinopyroxenes from volcanic rocks and present site occupancy data on several clinopyroxenes of intermediate compositions. The data set has not been published before and is the first of its kind. Part II of this book begins with a chapter on melts by Ghakul, who explores the relationship between density and structure of silicate melts. This is followed by the synthesis of data generated in the U.S.S.R. by Shmulovich and his co-authors on fluids. Blencoe, Merkel and Seif present a thorough analysis of the phase equilibrium data on feldspars coexisting with fluids in the third chapter in this part.

Physical Metallurgy David E. Laughlin 2014-07-24 This fifth edition of the highly regarded family of titles that first published in 1965 is now a three-volume set and over 3,000 pages. All chapters have been revised and expanded, either by the fourth edition authors alone or jointly with new co-authors. Chapters have been added on the physical metallurgy of light alloys, the physical metallurgy of titanium alloys, atom probe field ion microscopy, computational metallurgy, and orientational imaging microscopy. The books incorporate the latest experimental research results and theoretical insights. Several thousand citations to the research and review literature are included. Exhaustively synthesizes the pertinent, contemporary developments within physical metallurgy so scientists have authoritative information at their fingertips Replaces existing articles and monographs with a single, complete solution Enables metallurgists to predict changes and create novel alloys and processes

Thermodynamics of Solids Richard Arthur Swalin 1970

Thermodynamics, Diffusion and the Kirkendall Effect in Solids Alok Paul 2014-07-16 In this book basic and some more advanced thermodynamics and phase as well as stability diagrams relevant for diffusion studies are introduced. Following, Fick's laws of diffusion, atomic mechanisms, interdiffusion, intrinsic diffusion, tracer diffusion and the Kirkendall effect are discussed. Short circuit diffusion is explained in detail with an emphasis on grain boundary diffusion. Recent advances in the area of interdiffusion will be introduced. Interdiffusion in multi-component systems is also explained. Many practical examples will be given, such that researchers working in this area can learn the practical evaluation of various diffusion parameters from experimental results. Large number of illustrations and experimental results are used to explain the subject. This book will be appealing for students, academicians, engineers and researchers in academic institutions, industry research and development laboratories.

High Temperature Corrosion César A. C. Sequeira 2018-12-14 Reviews the science and engineering of high-temperature corrosion and provides guidelines for selecting the best materials for an array of system processes High-temperature corrosion (HTC) is a widespread problem in an array of industries, including power generation, aerospace, automotive, and mineral and chemical processing, to name a few. This book provides engineers, physicists, and chemists with a balanced presentation of all relevant basic science and engineering aspects of high-temperature corrosion. It covers most HTC types, including oxidation, sulfidation, nitridation, molten salts, fuel-ash corrosion, H2S/H2 corrosion, molten fluoride/HF corrosion, and carburization. It also provides corrosion data essential for making the appropriate choices of candidate materials for high-temperature service in process conditions. A form of corrosion that does not require the presence of liquids, high-temperature corrosion occurs due to the interaction at high temperatures of gases, liquids, or solids with materials. HTC is a subject of increasing importance in many areas of science and engineering, and students, researchers, and engineers need to be aware of the nature of the processes that occur in high-temperature materials and equipment in common use today, especially in the chemical, gas, petroleum, electric power, metal manufacturing, automotive, and nuclear industries. Provides engineers and scientists with the essential data needed to make the most informed decisions on materials selection Includes up-to-date information accompanied by more than 1,000 references, 80% of which from within the past fifteen years Includes details on systems of critical engineering importance, especially the corrosion induced by low-energy radionuclides Includes practical guidelines for testing and research in HTC, along with both the European and International Standards for high-temperature corrosion engineering Offering balanced, in-depth coverage of the fundamental science behind and engineering of HTC, High Temperature Corrosion: Fundamentals and Engineering is a valuable resource for academic researchers, students, and professionals in the material sciences, solid state physics, solid state chemistry, electrochemistry, metallurgy, and mechanical, chemical, and structural engineers.

Introduction to the Thermodynamics of Materials David R. Gaskell 2016 "For more than thirty years, this textbook has been the definitive introduction to the thermodynamic principles of materials and their multitude of applications. New to this edition is a detailed discussion of acetylene combustion and a numerical explanation for the expansion of ideal gases, as well as additional worked examples covering a wide variety of applied thermodynamics concepts ... Students can conduct thermodynamic calculations, generate equation parameters from tabular data, calculate reaction parameters, and perform equilibrium calculations involving non-ideal solutions. This textbook is ideal for advanced undergraduates and first year graduate students and as a reference for professionals in metallurgy, metallurgical engineering, ceramics, and materials science. "--Page 4 of cover.