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## KEY=SOLUTIONS - GAVIN PAOLA

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**Introduction to the Thermodynamics of Materials, Fifth Edition CRC Press** 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. **Introduction to the Thermodynamics of Materials, Fifth Edition CRC Press** **Introduction to the Thermodynamics of Materials Routledge** **Introduction to the Thermodynamics of Materials CRC Press** 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. **Thermodynamics in Materials Science CRC Press** 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 Springer Science & Business Media** "Thermodynamics of Materials" introduces the basic underlying principles of thermodynamics as well as their applicability to the behavior of all classes of materials, while providing an integrated approach from macro- (or classical) thermodynamics to meso- and nanothermodynamics, and microscopic (or statistical) thermodynamics. The book is intended for scientists, engineers and graduate students in all fields involving materials science-related disciplines. Both Dr. Qing Jiang and Dr. Zi Wen are professors at Jilin University. **Chemical and Engineering Thermodynamics John Wiley & Sons Incorporated** A revised edition of the well-received thermodynamics text, this work retains the thorough coverage and excellent organization that made the first edition so popular. Now incorporates industrially relevant microcomputer programs, with which readers can perform sophisticated thermodynamic calculations, including calculations of the type they will encounter in the lab and in industry. Also provides a unified treatment of phase equilibria. Emphasis is on analysis and prediction of liquid-liquid and vapor-liquid equilibria, solubility of gases and solids in liquids, solubility of liquids and solids in gases and supercritical fluids, freezing point depressions and osmotic equilibria, as well as traditional vapor-liquid and chemical reaction equilibria. Contains many new illustrations and exercises. **Kinetics of Materials John Wiley & Sons** 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 the size, 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. **Introduction To Mechanical Engineering: Thermodynamics, Mechanics And Strength Of Material New Age International** This Book Is The Systematic Presentation Of The Concepts And Principles Essential For Understanding Engineering Thermodynamics, Engineering Mechanics And Strength Of Materials. Textbook Covers The Complete Syllabus Of Compulsory Subject Of Mechanical Engineering Of Uttar Pradesh Technical University, Lucknow In Particular And

Other Universities Of The Country In General For Undergraduate Students Of Engineering And Technology. \* Basic Concepts And Laws Of Thermodynamics Have Been Clearly Explained Using A Large Number Of Solved Problems \* Entropy, Properties Of Pure Substances, Thermodynamic Cycles And Ic Engines Are Described In Detail. Steam Tables And mollier Diagram Is Included \* Principles Of Engineering Mechanics Have Been Discussed In Detail And Supported By Sufficient Number Of Solved And Unsolved Problems \* Simple And Compound Stresses Are Discussed At Length \* Bending Stresses In Beam And Torsion Have Been Covered In Detail \* Large Number Of Solved And Unsolved Problems With Answers Are Given At The End Of Each Chapter \* SI Units Are Used Throughout The Book

**A HEAT TRANSFER TEXTBOOK Phlogiston Press Phase Transformations in Metals and Alloys, Third Edition (Revised Reprint) CRC Press** In the decade since the first edition of this popular text was published, the metallurgical field has undergone rapid developments in many sectors. Nonetheless, the underlying principles governing these developments remain the same. A textbook that presents these advances within the context of the fundamentals is greatly needed by instructors in the field Phase Transformations in Metals and Alloys, Second Edition maintains the simplicity that undergraduate instructors and students have come to appreciate while updating and expanding coverage of recently developed methods and materials. The book is effectively divided into two parts. The beginning chapters contain the background material necessary for understanding phase transformations - thermodynamics, kinetics, diffusion theory and the structure and properties of interfaces. The following chapters deal with specific transformations - solidification, diffusional transformation in solids and diffusionless transformation. Case studies of engineering alloys are incorporated to provide a link between theory and practice. New additions include an extended list of further reading at the end of each chapter and a section containing complete solutions to all exercises in the book Designed for final year undergraduate and postgraduate students of metallurgy, materials science, or engineering materials, this is an ideal textbook for both students and instructors.

**Thermodynamics of Materials** "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.

**The Properties of Gases and Liquids McGraw Hill Professional** Must-have reference for processes involving liquids, gases, and mixtures Reap the time-saving, mistake-avoiding benefits enjoyed by thousands of chemical and process design engineers, research scientists, and educators. Properties of Gases and Liquids, Fifth Edition, is an all-inclusive, critical survey of the most reliable estimating methods in use today --now completely rewritten and reorganized by Bruce Poling, John Prausnitz, and John O'Connell to reflect every late-breaking development. You get on-the-spot information for estimating both physical and thermodynamic properties in the absence of experimental data with this property data bank of 600+ compound constants. Bridge the gap between theory and practice with this trusted, irreplaceable, and expert-authored expert guide -- the only book that includes a critical analysis of existing methods as well as hands-on practical recommendations. Areas covered include pure component constants; thermodynamic properties of ideal gases, pure components and mixtures; pressure-volume-temperature relationships; vapor pressures and enthalpies of vaporization of pure fluids; fluid phase equilibria in multicomponent systems; viscosity; thermal conductivity; diffusion coefficients; and surface tension.

**PHYSICAL METALLURGY: PRINCIPLES AND PRACTICE, Third Edition PHI Learning Pvt. Ltd.** This well-established book, now in its Third Edition, presents the principles and applications of engineering metals and alloys in a highly readable form. This new edition retains all the basic topics covered in earlier editions such as phase diagrams, phase transformations, heat treatment of steels and nonferrous alloys, shape memory alloys, solidification, fatigue, fracture and corrosion, as well as applications of engineering alloys. A new chapter on 'Nanomaterials' has been added (Chapter 8). The field of nano-materials is interdisciplinary in nature, covering many disciplines including physical metallurgy. Intended as a text for undergraduate courses in Metallurgical and Materials Engineering, the book is also suitable for students preparing for associate membership examination of the Indian Institute of Metals (AMIIM) and other professional examinations like AMIE.

**Introduction to Food Engineering Gulf Professional Publishing** Food engineering is a required class in food science programs, as outlined by the Institute for Food Technologists (IFT). The concepts and applications are also required for professionals in food processing and manufacturing to attain the highest standards of food safety and quality. The third edition of this successful textbook succinctly presents the engineering concepts and unit operations used in food processing, in a unique blend of principles with applications. The authors use their many years of teaching to present food engineering concepts in a logical progression that covers the standard course curriculum. Each chapter describes the application of a particular principle followed by the quantitative relationships that define the related processes, solved examples, and problems to test understanding. The subjects the authors have selected to illustrate engineering principles demonstrate the relationship of engineering to the chemistry, microbiology, nutrition and processing of foods. Topics incorporate both traditional and contemporary food processing operations.

**Chemistry of High-Energy Materials Walter de Gruyter GmbH & Co KG** The 4th revised edition expands on the basic chemistry of high energy materials of the precious editions and examines new research developments, including hydrodynamics and ionic liquids. Applications in military and civil fields are discussed. This work is of interest to advanced students in chemistry, materials science and engineering, as well as to all those working in defense technology.

**Modern Engineering Thermodynamics Academic Press** Designed for use in a standard two-semester engineering thermodynamics course sequence. The first half of the text contains material suitable for a basic Thermodynamics course taken by engineers from all majors. The second half of the text is suitable for an Applied Thermodynamics course in mechanical engineering programs. The text has numerous features that are unique among engineering textbooks, including historical vignettes, critical thinking boxes, and case studies. All are designed to bring real engineering applications into a subject that can be somewhat abstract and mathematical. Over 200 worked examples and more than 1,300 end of chapter problems provide the use opportunities to practice solving problems related to concepts in the text. Provides the reader with clear presentations of the fundamental principles of basic and applied engineering thermodynamics. Helps students develop engineering problem solving skills through the use of structured problem-solving techniques. Introduces the Second Law of Thermodynamics through a basic entropy concept, providing students a more intuitive understanding of this key course topic. Covers Property Values before the First Law of Thermodynamics to ensure students have a firm understanding of property data before using them. Over 200 worked examples and more than 1,300 end of chapter problems offer students extensive opportunity to practice solving problems. Historical Vignettes, Critical Thinking boxes and Case Studies throughout the book help relate abstract concepts to actual engineering applications. For greater instructor flexibility at exam time, thermodynamic tables are provided in a separate accompanying booklet. Available online testing and assessment component helps students assess their knowledge of the topics. Email textbooks@elsevier.com for details.

**Introduction to**

**Metallurgical Thermodynamics Chem/Mats-Sci/E Introductory Chemical Engineering Thermodynamics Prentice Hall** A Practical, Up-to-Date Introduction to Applied Thermodynamics, Including Coverage of Process Simulation Models and an Introduction to Biological Systems Introductory Chemical Engineering Thermodynamics, Second Edition, helps readers master the fundamentals of applied thermodynamics as practiced today: with extensive development of molecular perspectives that enables adaptation to fields including biological systems, environmental applications, and nanotechnology. This text is distinctive in making molecular perspectives accessible at the introductory level and connecting properties with practical implications. Features of the second edition include Hierarchical instruction with increasing levels of detail: Content requiring deeper levels of theory is clearly delineated in separate sections and chapters Early introduction to the overall perspective of composite systems like distillation columns, reactive processes, and biological systems Learning objectives, problem-solving strategies for energy balances and phase equilibria, chapter summaries, and "important equations" for every chapter Extensive practical examples, especially coverage of non-ideal mixtures, which include water contamination via hydrocarbons, polymer blending/recycling, oxygenated fuels, hydrogen bonding, osmotic pressure, electrolyte solutions, zwitterions and biological molecules, and other contemporary issues Supporting software in formats for both MATLAB® and spreadsheets Online supplemental sections and resources including instructor slides, ConcepTests, coursecast videos, and other useful resources

**An Introduction to Thermodynamics and Statistical Mechanics Cambridge University Press** This introductory textbook for standard undergraduate courses in thermodynamics has been completely rewritten to explore a greater number of topics, more clearly and concisely. Starting with an overview of important quantum behaviours, the book teaches students how to calculate probabilities in order to provide a firm foundation for later chapters. It introduces the ideas of classical thermodynamics and explores them both in general and as they are applied to specific processes and interactions. The remainder of the book deals with statistical mechanics. Each topic ends with a boxed summary of ideas and results, and every chapter contains numerous homework problems, covering a broad range of difficulties. Answers are given to odd-numbered problems, and solutions to even-numbered problems are available to instructors at [www.cambridge.org/9781107694927](http://www.cambridge.org/9781107694927).

**An Introduction to Materials Engineering and Science for Chemical and Materials Engineers John Wiley & Sons** An Introduction to Materials Engineering and Science for Chemical and Materials Engineers provides a solid background in materials engineering and science for chemical and materials engineering students. This book: Organizes topics on two levels; by engineering subject area and by materials class. Incorporates instructional objectives, active-learning principles, design-oriented problems, and web-based information and visualization to provide a unique educational experience for the student. Provides a foundation for understanding the structure and properties of materials such as ceramics/glass, polymers, composites, bio-materials, as well as metals and alloys. Takes an integrated approach to the subject, rather than a "metals first" approach.

**The Equations of Materials Oxford University Press** This primer describes important equations of materials and the scientists who derived them. It provides an excellent introduction to the subject by making the material accessible and enjoyable. The book is dedicated to a number of propositions: 1. The most important equations are often simple and easily explained; 2. The most important equations are often experimental, confirmed time and again; 3. The most important equations have been derived by remarkable scientists who lived interesting lives. Each chapter covers a single equation and materials subject, and is structured in three sections: first, a description of the equation itself; second, a short biography of the scientist after whom it is named; and third, a discussion of some of the ramifications and applications of the equation. The biographical sections intertwine the personal and professional life of the scientist with contemporary political and scientific developments. Topics included are: Bravais lattices and crystals; Bragg's law and diffraction; the Gibbs phase rule and phases; Boltzmann's equation and thermodynamics; the Arrhenius equation and reactions; the Gibbs-Thomson equation and surfaces; Fick's laws and diffusion; the Scheil equation and solidification; the Avrami equation and phase transformations; Hooke's law and elasticity; the Burgers vector and plasticity; Griffith's equation and fracture; and the Fermi level and electrical properties. The book is written for students interested in the manufacture, structure, properties and engineering application of materials such as metals, polymers, ceramics, semiconductors and composites. It requires only a working knowledge of school maths, mainly algebra and simple calculus.

**Introduction to Engineering Thermodynamics Wiley Exploring Engineering An Introduction to Engineering and Design Academic Press** Winner in its first edition of the Best New Undergraduate Textbook by the Professional and Scholarly Publishing Division of the American Association of Publishers (AAP), Kosky, et al is the first text offering an introduction to the major engineering fields, and the engineering design process, with an interdisciplinary case study approach. It introduces the fundamental physical, chemical and material bases for all engineering work and presents the engineering design process using examples and hands-on projects. Organized in two parts to cover both the concepts and practice of engineering: Part I, Minds On, introduces the fundamental physical, chemical and material bases for all engineering work while Part II, Hands On, provides opportunity to do design projects An Engineering Ethics Decision Matrix is introduced in Chapter 1 and used throughout the book to pose ethical challenges and explore ethical decision-making in an engineering context Lists of "Top Engineering Achievements" and "Top Engineering Challenges" help put the material in context and show engineering as a vibrant discipline involved in solving societal problems New to this edition: Additional discussions on what engineers do, and the distinctions between engineers, technicians, and managers (Chapter 1) New coverage of Renewable Energy and Environmental Engineering helps emphasize the emerging interest in Sustainable Engineering New discussions of Six Sigma in the Design section, and expanded material on writing technical reports Re-organized and updated chapters in Part I to more closely align with specific engineering disciplines new end of chapter exercises throughout the book

**Fundamentals of Chemical Engineering Thermodynamics, SI Edition Cengage Learning** A brand new book, FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS makes the abstract subject of chemical engineering thermodynamics more accessible to undergraduate students. The subject is presented through a problem-solving inductive (from specific to general) learning approach, written in a conversational and approachable manner. Suitable for either a one-semester course or two-semester sequence in the subject, this book covers thermodynamics in a complete and mathematically rigorous manner, with an emphasis on solving practical engineering problems. The approach taken stresses problem-solving, and draws from best practice engineering teaching strategies. FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS uses examples to frame the importance of the material. Each topic begins with a motivational example that is investigated in context to that topic. This framing of the material is helpful to all readers, particularly to global learners who require big picture insights, and hands-on learners who struggle with abstractions. Each worked example is fully annotated with sketches and comments on the thought process behind the solved problems. Common errors are

presented and explained. Extensive margin notes add to the book accessibility as well as presenting opportunities for investigation. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. **Thermodynamics and Kinetics in Materials Science A Short Course Oxford University Press** Accompanying CD-ROM contains ... "computer tests and laboratories."--CD-ROM label. **Thermodynamics An Engineering Approach** 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 to most widely adopted thermodynamics text in theU.S. and in the world. **Applied Thermodynamics for Engineering Technologists Pearson Education India** **Physics in Biology and Medicine Academic Press** This third edition covers topics in physics as they apply to the life sciences, specifically medicine, physiology, nursing and other applied health fields. It includes many figures, examples and illustrative problems and appendices which provide convenient access to the most important concepts of mechanics, electricity, and optics. **Materials Characterization Introduction to Microscopic and Spectroscopic Methods John Wiley & Sons** 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. **Fundamentals of Thermodynamics** 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. **Fundamentals of Thermal-fluid Sciences McGraw-Hill Company** THE FOURTH EDITION IN SI UNITS of Fundamentals of Thermal-Fluid Sciences presents a balanced coverage of thermodynamics, fluid mechanics, and heat transfer packaged in a manner suitable for use in introductory thermal sciences courses. By emphasizing the physics and underlying physical phenomena involved, the text gives students practical examples that allow development of an understanding of the theoretical underpinnings of thermal sciences. All the popular features of the previous edition are retained in this edition while new ones are added. THIS EDITION FEATURES: A New Chapter on Power and Refrigeration Cycles The new Chapter 9 exposes students to the foundations of power generation and refrigeration in a well-ordered and compact manner. An Early Introduction to the First Law of Thermodynamics (Chapter 3) This chapter establishes a general understanding of energy, mechanisms of energy transfer, and the concept of energy balance, thermo-economics, and conversion efficiency. Learning Objectives Each chapter begins with an overview of the material to be covered and chapter-specific learning objectives to introduce the material and to set goals. Developing Physical Intuition A special effort is made to help students develop an intuitive feel for underlying physical mechanisms of natural phenomena and to gain a mastery of solving practical problems that an engineer is likely to face in the real world. New Problems A large number of problems in the text are modified and many problems are replaced by new ones. Some of the solved examples are also replaced by new ones. Upgraded Artwork Much of the line artwork in the text is upgraded to figures that appear more three-dimensional and realistic. MEDIA RESOURCES: Limited Academic Version of EES with selected text solutions packaged with the text on the Student DVD. The Online Learning Center ([www.mheducation.asia/olc/cengelFTFS4e](http://www.mheducation.asia/olc/cengelFTFS4e)) offers online resources for instructors including PowerPoint® lecture slides, and complete solutions to homework problems. McGraw-Hill's Complete Online Solutions Manual Organization System (<http://cosmos.mhhe.com/>) allows instructors to streamline the creation of assignments, quizzes, and tests by using problems and solutions from the textbook, as well as their own custom material. **A Different Thermodynamics and its True Heroes CRC Press** Modern thermodynamics is a unique but still not a logically self-consistent field of knowledge. It has a proven universal applicability and significance but its actual potential is still latent. The development of the foundations of thermodynamics was in effect non-stop but absolutely no one has any idea about this. This book is the first of its kind that will motivate researchers to build up a logically consistent field of thermodynamics. It greatly appreciates the actual depth and potential of thermodynamics which might also be of interest to readers in history and philosophy of scientific research. The book presents the life stories of the protagonists in detail and allows readers to cast a look at the whole scene of the field by showcasing a significant number of their colleagues whose works have fittingly complemented their achievements. It also tries to trigger a detailed analysis of the reasons why the actual work in this extremely important field has in effect gone astray. It comprises five chapters and introduces three scientists in the first two chapters, which are specifically devoted to the Scandinavian achievements in macroscopic thermodynamics. These introductions are novel and call for a detailed reconsideration of the field. The third chapter acquaints the readers with their fourth colleague in Germany who was working on the proper link between the macroscopic thermodynamics, kinetics, and the atomistic representation of matter. The fourth chapter brings in their fifth colleague in the United States who could formally infer the famous formula  $S = k \cdot \ln(W)$ , ingeniously guessed by Ludwig Boltzmann, and thus clarify the physical sense of the entropy notion. The last chapter summarizes the above-mentioned discourses. **Solutions Manual to Accompany Fundamentals of Engineering Thermodynamics Materials Engineering Bonding, Structure, and Structure-Property Relationships Cambridge University Press** An easy-to-read textbook linking together bond strength and the arrangement of atoms in space with the properties that they control. **Mechanical Behavior of Materials Engineering Methods for Deformation, Fracture and Fatigue Prentice Hall** Comprehensive in scope and readable, this book explores the methods used by engineers to analyze and predict the mechanical behavior of materials. Author Norman E. Dowling provides thorough coverage of materials testing and practical methods for forecasting the strength and life of mechanical parts and structural members. **Fox and McDonald's Introduction to Fluid Mechanics John Wiley & Sons** Through ten editions, Fox and McDonald's Introduction to Fluid Mechanics has helped students understand the physical concepts, basic principles, and analysis methods of fluid mechanics. This market-leading textbook provides a balanced, systematic approach to mastering critical concepts with the proven Fox-McDonald solution methodology. In-depth yet accessible chapters present governing

equations, clearly state assumptions, and relate mathematical results to corresponding physical behavior. Emphasis is placed on the use of control volumes to support a practical, theoretically-inclusive problem-solving approach to the subject. Each comprehensive chapter includes numerous, easy-to-follow examples that illustrate good solution technique and explain challenging points. A broad range of carefully selected topics describe how to apply the governing equations to various problems, and explain physical concepts to enable students to model real-world fluid flow situations. Topics include flow measurement, dimensional analysis and similitude, flow in pipes, ducts, and open channels, fluid machinery, and more. To enhance student learning, the book incorporates numerous pedagogical features including chapter summaries and learning objectives, end-of-chapter problems, useful equations, and design and open-ended problems that encourage students to apply fluid mechanics principles to the design of devices and systems. **Structure of Materials An Introduction to Crystallography, Diffraction and Symmetry Cambridge University Press** 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. **Fluid Physics in Geology An Introduction to Fluid Motions on Earth's Surface and Within Its Crust Oxford University Press on Demand** Fluid Physics in Geology is a fluid mechanics text for geologists; it provides an introductory treatment of the physical and dynamical behaviour of fluids, aimed at students who need to understand fluid behaviour and motion in the context of a wide variety of geological problems. **Introduction to the Thermodynamics of Materials** "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.