

Chemistry Structure And Reactivity Keeler

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Understanding NMR Spectroscopy James Keeler 2011-09-19 This text is aimed at people who have some familiarity with high-resolution NMR and who wish to deepen their understanding of how NMR experiments actually 'work'. This revised and updated edition takes the same approach as the highly-acclaimed first edition. The text concentrates on the description of commonly-used experiments and explains in detail the theory behind how such experiments work. The quantum mechanical tools needed to analyse pulse sequences are introduced set by step, but the approach is relatively informal with the emphasis on obtaining a good understanding of how the experiments actually work. The use of two-colour printing and a new larger format improves the readability of the text. In addition, a number of new topics have been introduced: How product operators can be extended to describe experiments in AX2 and AX3 spin systems, thus making it possible to discuss the important APT, INEPT and DEPT experiments often used in carbon-13 NMR. Spin system analysis i.e. how shifts and couplings can be extracted from strongly-coupled (second-order) spectra. How the presence of chemically equivalent spins leads to spectral features which are somewhat unusual and possibly misleading, even at high magnetic fields. A discussion of chemical exchange effects has been introduced in order to help with the explanation of transverse relaxation. The double-quantum spectroscopy of a three-spin system is now considered in more detail. Reviews of the First Edition "For anyone wishing to know what really goes on in their NMR experiments, I would highly recommend this book" - Chemistry World "...I warmly recommend for budding NMR spectroscopists, or others who wish to deepen their understanding of elementary NMR theory or theoretical tools" - Magnetic Resonance in Chemistry

Physical Chemistry Volume 1: Thermodynamics and Kinetics Peter Atkins 2010-02-26 With its modern emphasis on the molecular view of physical chemistry, its wealth of contemporary applications, vivid full-color presentation, and dynamic new media tools, the thoroughly revised new edition is again the most modern, most effective full-length textbook available for the physical chemistry classroom. Volume 1 of Physical Chemistry, Ninth Edition, contains the new edition's new Fundamentals chapters (Chapter 0), plus coverage of thermodynamics (Chapters 1-6) and kinetics (Chapters 20-23)

Frontier Orbitals and Organic Chemical Reactions Ian Fleming 1976-01-01 Provides a basic introduction to frontier orbital theory with a review of its applications in organic chemistry. Assuming the reader is familiar with the concept of molecular orbital as a linear combination of atomic orbitals the book is presented in a simple style, without mathematics making it accessible to readers of all levels.

Chemistry3 Andrew Burrows 2021 Chemistry is widely considered to be the central science: it encompasses concepts on which all other branches of science are developed. Yet, for many students entering university, gaining a firm grounding in chemistry is a real challenge. Chemistry3 responds to this

challenge, providing students with a full understanding of the fundamental principles of chemistry on which to build later studies. Uniquely amongst the introductory chemistry texts currently available, Chemistry3's author team brings together experts in each of organic, inorganic, and physical chemistry with specialists in chemistry education to provide balanced coverage of the fundamentals of chemistry in a way that students both enjoy and understand. The result is a text that builds on what students know already from school and tackles their misunderstandings and misconceptions, thereby providing a seamless transition from school to undergraduate study. Written with unrivalled clarity, students are encouraged to engage with the text and appreciate the central role that chemistry plays in our lives through the unique use of real-world context and photographs. Chemistry3 tackles head-on two issues pervading chemistry education: students' mathematical skills, and their ability to see the subject as a single, unified discipline. Instead of avoiding the maths, Chemistry3 provides structured support, in the form of careful explanations, reminders of key mathematical concepts, step-by-step calculations in worked examples, and a Maths Toolkit, to help students get to grips with the essential mathematical element of chemistry. Frequent cross-references highlight the connections between each strand of chemistry and explain the relationship between the topics, so students can develop an understanding of the subject as a whole. Digital formats and resources Chemistry3 is available for students and institutions to purchase in a variety of formats, and is supported by online resources. The e-book offers a mobile experience and convenient access along with functionality tools, navigation features, and links that offer extra learning support: www.oxfordtextbooks.co.uk/ebooks The e-book also features interactive animations of molecular structures, screencasts in which authors talk step-by-step through selected examples and key reaction mechanisms, and self-assessment activities for each chapter. The accompanying online resources will also include, for students: DT Chapter 1 as an open-access PDF; DT Chapter summaries and key equations to download, to support revision; DT Worked solutions to the questions in the book. The following online resources are also provided for lecturers: DT Test bank of ready-made assessments for each chapter with which to test your students DT Problem-solving workshop activities for each chapter for you to use in class DT Case-studies showing how instructors are successfully using Chemistry3 in digital learning environments and to support innovative teaching practices DT Figures and tables from the book

Physical Chemistry for the Life Sciences Peter Atkins 2011-01-30 Peter Atkins and Julio de Paula offer a fully integrated approach to the study of physical chemistry and biology.

NMR Data Interpretation Explained Neil E. Jacobsen 2016-10-21 Through numerous examples, the principles of the relationship between chemical structure and the NMR spectrum are developed in a logical, step-by-step fashion. Includes examples and exercises based on real NMR data including full 600 MHz one- and two-dimensional datasets of sugars, peptides, steroids and natural products. Includes detailed solutions and explanations in the text for the numerous examples and problems and also provides large, very detailed and annotated sets of NMR data for use in understanding the material. Describes both simple aspects of solution-state NMR of small molecules as well as more complex topics not usually covered in NMR books such as complex splitting patterns, weak long-range couplings, spreadsheet analysis of strong coupling patterns and resonance structure analysis for prediction of chemical shifts. Advanced topics include all of the common two-dimensional experiments (COSY, ROESY, NOESY, TOCSY, HSQC, HMBC) covered strictly from the point of view of data interpretation, along with tips for parameter settings.

Solutions Manual to Accompany Organic Chemistry Jonathan Clayden 2013 This text contains detailed worked solutions to all the end-of-chapter exercises in the textbook *Organic Chemistry*. Notes in tinted boxes in the page margins highlight important principles and comments.

A Textbook of Physical Chemistry K. L. Kapoor 2006-02-01 This book is fourth of the five volume series, which provides an extensive coverage of the topics discussed, focusing on the applications of the principles involved. Each of the five volumes distinguishes itself by projecting the subject through a number

Physical Chemistry Peter William Atkins 1990

Elements of Physical Chemistry Peter William Atkins 2017 This revision of the introductory textbook of physical chemistry has been designed to broaden its appeal, particularly to students with an interest in biological applications.

Chemical Structure and Reactivity James Keeler 2013-11 *Chemical Structure and Reactivity: An Integrated Approach* rises to the challenge of depicting the reality of chemistry. Offering a fresh approach, it depicts the subject as a seamless discipline, showing how organic, inorganic, and physical concepts can be blended together to achieve the common goal of understanding chemical systems.

Chemistry³ Andrew Burrows 2013-03-21 Providing equal coverage of organic, inorganic and physical chemistry - coverage that is uniformly authoritative - this text builds on what students may already know and tackles their misunderstandings and misconceptions. The authors achieve unrivalled accessibility through carefully-worded explanations, the introduction of concepts in a logical and progressive manner, and the use of annotated diagrams and step-by-step worked examples. Students are encouraged to engage with the text and appreciate the central role that chemistry plays in our lives through the unique use of real-world examples and visuals. Frequent cross-references highlight the connections between each strand of chemistry and explain the relationship between the topics, so students can develop an understanding of the subject as a whole.

Reactions Peter Atkins 2011-09-15 Explains how different kinds of chemical reactions ranging from precipitation and combustion to polymerization and catalysis are formed, including examples, color illustrations, and real-life applications for each reaction.

Molecular Orbitals and Organic Chemical Reactions Ian Fleming 2011-08-31 Winner of the PROSE Award for Chemistry & Physics 2010 Acknowledging the very best in professional and scholarly publishing, the annual PROSE Awards recognise publishers' and authors' commitment to pioneering works of research and for contributing to the conception, production, and design of landmark works in their fields. Judged by peer publishers, librarians, and medical professionals, Wiley are pleased to congratulate Professor Ian Fleming, winner of the PROSE Award in Chemistry and Physics for *Molecular Orbitals and Organic Chemical Reactions*. Molecular orbital theory is used by chemists to describe the arrangement of electrons in chemical structures. It is also a theory capable of giving some insight into the forces involved in the making and breaking of chemical bonds—the chemical reactions that are often the focus of an organic chemist's interest. Organic chemists with a serious interest in understanding and explaining their work usually express their ideas in molecular orbital terms, so much so that it is now an essential component of every organic chemist's skills to have some acquaintance with molecular orbital theory. *Molecular Orbitals and Organic Chemical Reactions* is both a simplified account of molecular orbital theory and a review of its applications in organic chemistry; it provides a basic introduction to the subject and a wealth of illustrative examples. In this book molecular orbital theory is presented in a much simplified, and entirely non-mathematical language, accessible to every organic chemist, whether student or research worker, whether mathematically competent or not. Topics covered include: Molecular Orbital Theory Molecular Orbitals and the Structures of Organic Molecules Chemical Reactions — How Far and How Fast Ionic Reactions — Reactivity Ionic Reactions — Stereochemistry Pericyclic Reactions

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Radical Reactions Photochemical Reactions Slides for lectures and presentations are available on the supplementary website: www.wiley.com/go/fleming_student Molecular Orbitals and Organic Chemical Reactions: Student Edition is an invaluable first textbook on this important subject for students of organic, physical organic and computational chemistry. The Reference Edition edition takes the content and the same non-mathematical approach of the Student Edition, and adds extensive extra subject coverage, detail and over 1500 references. The additional material adds a deeper understanding of the models used, and includes a broader range of applications and case studies. Providing a complete in-depth reference for a more advanced audience, this edition will find a place on the bookshelves of researchers and advanced students of organic, physical organic and computational chemistry. Further information can be viewed here. "These books are the result of years of work, which began as an attempt to write a second edition of my 1976 book Frontier Orbitals and Organic Chemical Reactions. I wanted to give a rather more thorough introduction to molecular orbitals, while maintaining my focus on the organic chemist who did not want a mathematical account, but still wanted to understand organic chemistry at a physical level. I'm delighted to win this prize, and hope a new generation of chemists will benefit from these books." -Professor Ian Fleming

Modern Organic Synthesis George S. Zweifel 2017-03-13 This book bridges the gap between sophomore and advanced / graduate level organic chemistry courses, providing students with a necessary background to begin research in either an industry or academic environment. • Covers key concepts that include retrosynthesis, conformational analysis, and functional group transformations as well as presents the latest developments in organometallic chemistry and C-C bond formation • Uses a concise and easy-to-read style, with many illustrated examples • Updates material, examples, and references from the first edition • Adds coverage of organocatalysts and organometallic reagents

Student Solutions Manual to Accompany Atkins' Physical Chemistry 11th Edition Peter Bolgar 2018 The Student Solutions Manual to accompany Atkins' Physical Chemistry 11th Edition provides full worked solutions to the 'a' exercises, and the odd-numbered discussion questions and problems presented in the parent book. The manual is intended for students and provides helpful comments and friendly advice to aid understanding.

Organic Structure Determination Using 2-D NMR Spectroscopy Jeffrey H. Simpson 2011-12-30 "The second edition of this book comes with a number of new figures, passages, and problems. Increasing the number of figures from 290 to 448 has necessarily added considerable length, weight, and, expense. It is my hope that the book has not lost any of its readability and accessibility. I firmly believe that most of the concepts needed to learn organic structure determination using nuclear magnetic resonance spectroscopy do not require an extensive mathematical background. It is my hope that the manner in which the material contained in this book is presented both reflects and validates this belief"--

Solid State NMR Klaus Müller 2021-08-23 Solid State NMR A thorough and comprehensive textbook covering the theoretical background, experimental approaches, and major applications of solid-state NMR spectroscopy Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful non-destructive technique capable of providing information about the molecular structure and dynamics of molecules. Alongside solution-state NMR, a well-established technique to study chemical structures and investigate physico-chemical properties of molecules in solutions, solid-state NMR (SSNMR) offers many exciting possibilities for the analysis of solid and soft materials across scientific fields. SSNMR shows unique capabilities for a detailed investigation of structural and dynamic properties of materials over wide space and time ranges. For this reason, and thanks to significant advances in the past several years, the application of SSNMR to materials is rapidly increasing in disciplines such as chemistry, physics, and materials and life sciences.

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Solid State NMR: Principles, Methods, and Applications offers a systematic introduction to the theory, methodological concepts, and major experimental methods of SSNR spectroscopy. Exploring the unique potential of SSNR for the structural and dynamic characterization of soft and either amorphous or crystalline solid materials, this comprehensive textbook provides foundational knowledge and recent developments of SSNR, covering physical and theoretical background, experimental methods, and applications to pharmaceuticals, polymers, inorganic and hybrid materials, liquid crystals, and model membranes. Written by two expert authors to ensure a clear and consistent presentation of the subject, this textbook: Includes a brief introduction to the historical aspects and broad theoretical background of solid-state NMR spectroscopy Provides helpful illustrations to explain the various SSNR concepts and methods Features accessible descriptive text with self-consistent use of quantum mechanics Covers the experimental aspects of SSNR spectroscopy and in particular a description of many useful pulse sequences Contains references to relevant literature Solid State NMR: Principles, Methods, and Applications is the ideal textbook for university courses on SSNR, advanced spectroscopies, and a valuable single-volume reference for spectroscopists, chemists, and researchers in the field of materials.

Foundations of Science Mathematics D. S. Sivia 2007 The authors cover a large range of topics, from basic arithmetic and algebra to calculus and Fourier transforms, bridging the gap between school and university. The informal tutorial style should make it accessible to the novice.

Antimony, Gold, and Jupiter's Wolf Peter Wothers 2019-11-28 The iconic Periodic Table of the Elements is now in its most satisfyingly elegant form. This is because all the 'gaps' corresponding to missing elements in the seventh row, or period, have recently been filled and the elements named. But where do these names come from? For some, usually the most recent, the origins are quite obvious, but in others - even well-known elements such as oxygen or nitrogen - the roots are less clear. Here, Peter Wothers explores the fascinating and often surprising stories behind how the chemical elements received their names. Delving back in time to explore the history and gradual development of chemistry, he sifts through medieval manuscripts for clues to the stories surrounding the discovery of the elements, showing how they were first encountered or created, and how they were used in everyday lives. As he reveals, the oldest-known elements were often associated with astronomical bodies, and connections with the heavens influenced the naming of a number of elements. Following this, a number of elements, including hydrogen and oxygen, were named during the great reform of chemistry, set amidst the French Revolution. While some of the origins of the names were controversial (and indeed incorrect - some saying, for instance, that oxygen might be literally taken to mean 'the son of a vinegar merchant'), they have nonetheless influenced language used around the world to this very day. Throughout, Wothers delights in dusting off the original sources, and bringing to light the astonishing, the unusual, and the downright weird origins behind the names of the elements so familiar to us today.

High-resolution NMR Techniques in Organic Chemistry T. Claridge 1999-12-24 From the initial observation of proton magnetic resonance in water and in paraffin, the discipline of nuclear magnetic resonance has seen unparalleled growth as an analytical method. Modern NMR spectroscopy is a highly developed, yet still evolving, subject which finds application in chemistry, biology, medicine, materials science and geology. In this book, emphasis is on the more recently developed methods of solution-state NMR applicable to chemical research, which are chosen for their wide applicability and robustness. These have, in many cases, already become established techniques in NMR laboratories, in both academic and industrial establishments. A considerable amount of information and guidance is given on the implementation and execution of the techniques described in this book.

Antimony, Gold, and Jupiter's Wolf Peter Wothers 2019 How did the elements get their names? The

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origins of californium may be obvious, but what about oxygen? Investigating their origins takes Peter Wothers deep into history. Drawing on a wide variety of original sources, he brings to light the astonishing, the unusual, and the downright weird origins behind the element names we take for granted.

Atoms and Molecules Martin Karplus 1970

Making the Transition to University Chemistry Michael Clugston 2021 Making the transition to university chemistry is the perfect companion as students take the significant step from school to university, setting them up to be confident and successful in their chemistry studies. Each topic opens with expanded bullet points that remind the reader of familiar ideas from their pre-university studies that they will be expected to understand at the start of their undergraduate course. Taking the next step sections expand on these familiar ideas by way of more detailed explanations, which allow the reader to make links to work that will be important at university. Finally, A Deeper Look sections explore more challenging concepts (either because the mathematical level is higher or the explanation is more complicated). Some of the concepts presented in these sections are among the most exciting in the subject: they give a flavour of the new insights the study of chemistry at university can offer. Its focus on those topics that may not have previously been studied by all students, and those topics that are regularly misunderstood by incoming undergraduates, provides guidance tailored to the particular needs of this student cohort, laying the foundation they need to succeed throughout their university studies. Digital formats and resources Making the transition to university chemistry is available for students and institutions to purchase in a variety of formats. The e-book offers a mobile experience and convenient access along with functionality tools, navigation features, and links that offer extra learning support: www.oxfordtextbooks.co.uk/ebooks

Chemistry Education Javier García-Martínez 2015-02-17 Winner of the CHOICE Outstanding Academic Title 2017 Award This comprehensive collection of top-level contributions provides a thorough review of the vibrant field of chemistry education. Highly-experienced chemistry professors and education experts cover the latest developments in chemistry learning and teaching, as well as the pivotal role of chemistry for shaping a more sustainable future. Adopting a practice-oriented approach, the current challenges and opportunities posed by chemistry education are critically discussed, highlighting the pitfalls that can occur in teaching chemistry and how to circumvent them. The main topics discussed include best practices, project-based education, blended learning and the role of technology, including e-learning, and science visualization. Hands-on recommendations on how to optimally implement innovative strategies of teaching chemistry at university and high-school levels make this book an essential resource for anybody interested in either teaching or learning chemistry more effectively, from experience chemistry professors to secondary school teachers, from educators with no formal training in didactics to frustrated chemistry students.

NMR Spectroscopy Harald Günther 2013-12-13 Nuclear magnetic resonance (NMR) spectroscopy is one of the most powerful and widely used techniques in chemical research for investigating structures and dynamics of molecules. Advanced methods can even be utilized for structure determinations of biopolymers, for example proteins or nucleic acids. NMR is also used in medicine for magnetic resonance imaging (MRI). The method is based on spectral lines of different atomic nuclei that are excited when a strong magnetic field and a radiofrequency transmitter are applied. The method is very sensitive to the features of molecular structure because also the neighboring atoms influence the signals from individual nuclei and this is important for determining the 3D-structure of molecules. This new edition of the popular classic has a clear style and a highly practical, mostly non-mathematical approach. Many

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examples are taken from organic and organometallic chemistry, making this book an invaluable guide to undergraduate and graduate students of organic chemistry, biochemistry, spectroscopy or physical chemistry, and to researchers using this well-established and extremely important technique. Problems and solutions are included.

Why Chemical Reactions Happen James Keeler 2003-03-27 Discusses chemical reactions, examining the bonding in molecules, how molecules interact, what determines whether an interaction is favourable or not, and what the outcome will be.

Physical Chemistry Peter Atkins 2014-01-17 Edition after edition, Atkins and de Paula's #1 bestseller remains the most contemporary, most effective full-length textbook for courses covering thermodynamics in the first semester and quantum mechanics in the second semester. Its molecular view of physical chemistry, contemporary applications, student friendly pedagogy, and strong problem-solving emphasis make it particularly well-suited for pre-meds, engineers, physics, and chemistry students. Now organized into briefer, more manageable topics, and featuring additional applications and mathematical guidance, the new edition helps students learn more effectively, while allowing instructors to teach the way they want. Available in Split Volumes For maximum flexibility in your physical chemistry course, this text is now offered as a traditional text or in two volumes: Volume 1: Thermodynamics and Kinetics: 1-4641-2451-5 Volume 2: Quantum Chemistry: 1-4641-2452-3

Basic Chemical Thermodynamics E Brian Smith 2013-10-04 This widely acclaimed text, now in its sixth edition and translated into many languages, continues to present a clear, simple and concise introduction to chemical thermodynamics. An examination of equilibrium in the everyday world of mechanical objects provides a starting point for an accessible account of the factors that determine equilibrium in chemical systems. This straightforward approach leads students to a thorough understanding of the basic principles of thermodynamics, which are then applied to a wide range of physical chemical systems. The book also discusses the problems of non-ideal solutions and the concept of activity, and provides an introduction to the molecular basis of thermodynamics. Over six editions, the views of teachers of the subject and their students have been incorporated. Reference to the phase rule has been included in this edition and the notation has been revised to conform to current IUPAC recommendations. Students taking courses in thermodynamics will continue to find this popular book an excellent introductory text.

Atkins' Physical Chemistry 11e Peter Atkins 2019-08-20 Atkins' Physical Chemistry: Molecular Thermodynamics and Kinetics is designed for use on the second semester of a quantum-first physical chemistry course. Based on the hugely popular Atkins' Physical Chemistry, this volume approaches molecular thermodynamics with the assumption that students will have studied quantum mechanics in their first semester. The exceptional quality of previous editions has been built upon to make this new edition of Atkins' Physical Chemistry even more closely suited to the needs of both lecturers and students. Re-organised into discrete 'topics', the text is more flexible to teach from and more readable for students. Now in its eleventh edition, the text has been enhanced with additional learning features and maths support to demonstrate the absolute centrality of mathematics to physical chemistry. Increasing the digestibility of the text in this new approach, the reader is brought to a question, then the math is used to show how it can be answered and progress made. The expanded and redistributed maths support also includes new 'Chemist's toolkits' which provide students with succinct reminders of mathematical concepts and techniques right where they need them. Checklists of key concepts at the end of each topic add to the extensive learning support provided throughout the book, to reinforce the main take-home messages in each section. The coupling of the broad coverage of the subject with a structure and use of pedagogy that is even more innovative will ensure Atkins' Physical Chemistry

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remains the textbook of choice for studying physical chemistry.

Basic One- and Two-dimensional NMR Spectroscopy Horst Friebolin 1993

Illuminating Disease Marc Zimmer 2015 Since scientists began experimenting with green fluorescent proteins in the middle of the 1990s, these proteins have become one of the most important tools available to researchers in modern medicine and biology. By using them to illuminate other proteins that were previously invisible even under microscope, scientists are now able to observe facets of disease that would have otherwise gone undetected. Green fluorescent proteins are a part of over three million experiments a year, and are invaluable for tasks such as tracking HIV, breeding bird flu-resistant chickens, and confirming the existence ...

Chemical Structure and Reactivity James Keeler 2008-05-15 Dr James Keeler, Department of Chemistry, University of Cambridge, and Fellow of Selwyn College, Cambridge Dr Peter Wothers, Department of Chemistry, University of Cambridge, and Fellow of St Catharine's College, Cambridge

Understanding Biochemistry 3 2017

Chemical Structure and Reactivity James Keeler 2014 *Chemical Structure and Reactivity: An Integrated Approach* rises to the challenge of depicting the reality of chemistry. Offering a fresh approach, it depicts the subject as a seamless discipline, showing how organic, inorganic, and physical concepts can be blended together to achieve the common goal of understanding chemical systems.

What is Chemistry? Peter Atkins 2013-08-22 Most people remember chemistry from their schooldays as a subject that was largely incomprehensible, fact-rich but understanding-poor, smelly, and so far removed from the real world of events and pleasures that there seemed little point, except for the most introverted, in coming to terms with its grubby concepts, spells, recipes, and rules. Peter Atkins wants to change all that. In *What is Chemistry?* he encourages us to look at chemistry anew, through a chemist's eyes, to understand its central concepts and to see how it contributes not only towards our material comfort, but also to human culture. Atkins shows how chemistry provides the infrastructure of our world, through the chemical industry, the fuels of heating, power generation, and transport, as well as the fabrics of our clothing and furnishings. By considering the remarkable achievements that chemistry has made, and examining its place between both physics and biology, Atkins presents a fascinating, clear, and rigorous exploration of the world of chemistry - its structure, core concepts, and exciting contributions to new cutting-edge technologies.

Organic Chemistry Jonathan Clayden 2012-03-15 Rev. ed. of: *Organic chemistry* / Jonathan Clayden ... [et al.].

Properties of Materials Robert E. Newnham 2005 Tensors, matrices, symmetry, and structure-property relationships form the main subjects of the book. While tensors and matrices provide the mathematical framework for understanding anisotropy, on which the physical and chemical properties of crystals and textured materials often depend, atomistic arguments are also needed to qualify the property coefficients in various directions. The atomistic arguments are partly based on symmetry and partly on the basic physics and chemistry of materials.

Metals Reference Book Colin James Smithells 1967

D-block Chemistry Mark J. Winter 2015 The colourful field of transition metal chemistry is succinctly presented in this primer, giving a coherent overview of a subject which can seem daunting in its level of detail.