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KEY=SOLID - BRYAN PATRICK

Organic Superconductors

Springer Science & Business Media **Organic Superconductors** is an introduction to organic conductors and superconductors and a review of the current status of the field. First, organic conductors are described, then the structures and electronic properties of organic superconductors are discussed, illustrated with examples of typical compounds. The book deals in detail with theories of the mechanism of superconductivity, and more briefly with spin-density waves. The design, principle, and synthesis of organic superconductors are also described. This second edition covers the research activities of the last few years.

High-Temperature Cuprate Superconductors

Experiment, Theory, and Applications

Springer Science & Business Media **High-Temperature Cuprate Superconductors** provides an up-to-date and comprehensive review of the properties of these fascinating materials. The essential properties of high-temperature cuprate superconductors are reviewed on the background of

their theoretical interpretation. The experimental results for structural, magnetic, thermal, electric, optical and lattice properties of various cuprate superconductors are presented with respect to relevant theoretical models. A critical comparison of various theoretical models involving strong electron correlations, antiferromagnetic spin fluctuations, phonons and excitons provides a background for understanding of the mechanism of high-temperature superconductivity. Recent achievements in their applications are also reviewed. A large number of illustrations and tables gives valuable information for specialists. A text-book level presentation with formulation of a general theory of strong-coupling superconductivity will help students and researches to consolidate their knowledge of this remarkable class of materials.

Superconductivity and Electromagnetism

Springer This book introduces readers to the characteristic features of electromagnetic phenomena in superconductivity. It first demonstrates not only that the diamagnetism in the superconductivity complies with Maxwell's theory, which was formulated before the discovery of superconductivity, but also that the dominant E-B analogy in the electromagnetism loses perfection without the superconductivity. The book then explores flux pinning, which is responsible for the non-dissipative current in DC, leading to irreversibility in AC. Drawing on Maxwell's work, it also proves theoretically that if there is no energy dissipation in the superconductivity caused by the break in time reversal symmetry, it contradicts the thermodynamic principle of energy conservation - something that had previously only been proved experimentally. Lastly, the book addresses the longitudinal magnetic field effect, and explains how this phenomenon leads to a new development of Maxwell's theory. Featuring numerous appendices to help readers understand the methods of derivation of equations, this book offers students and young scientists an introduction to applied superconductivity, especially in the context of power applications. Presenting the characteristic features of electromagnetic phenomena in superconductivity from basic to advanced topics for applications, the book offers a valuable resource for graduate students and researchers studying superconductivity as well as engineers working in electric utility industry.

Advances in Polaron Physics

Springer Science & Business Media This book reviews recent developments in the field of polarons, starting with the basics and covering a number of active directions of research. It integrates theory and experimental results.

Topological Insulators

Dirac Equation in Condensed Matters

Springer Science & Business Media **Topological insulators are insulating in the bulk, but process metallic states present around its boundary owing to the topological origin of the band structure. The metallic edge or surface states are immune to weak disorder or impurities, and robust against the deformation of the system geometry. This book, the first of its kind on topological insulators, presents a unified description of topological insulators from one to three dimensions based on the modified Dirac equation. A series of solutions of the bound states near the boundary are derived, and the existing conditions of these solutions are described. Topological invariants and their applications to a variety of systems from one-dimensional polyacetalene, to two-dimensional quantum spin Hall effect and p-wave superconductors, and three-dimensional topological insulators and superconductors or superfluids are introduced, helping readers to better understand this fascinating new field. This book is intended for researchers and graduate students working in the field of topological insulators and related areas. Shun-Qing Shen is a Professor at the Department of Physics, the University of Hong Kong, China.**

Solid-state Physics

An Introduction to Theory and Experiment

This introduction to solid-state physics emphasizes both experimental and theoretical aspects of the subject. Three important areas of modern research are treated in particular detail: magnetism, superconductivity, and semiconductor physics. Experimental aspects with examples taken from research areas of current interest are presented in the form of separate panels. This novel format was highly praised by readers of the original German text and, here too, should help the student to relate the theoretical concepts described in the text to important practical applications. Students will benefit significantly from working through the problems related to each chapter. In many cases these lead into areas outside the scope of the main text and are designed to stimulate further reading.

Strong Correlation and Superconductivity

Proceedings of the IBM Japan International Symposium, Mt. Fuji, Japan, 21-25 May, 1989

Springer Science & Business Media **This volume contains the proceedings of the ffIM Japan International Symposium on Strong Correlation and Superconductivity, which was held in Keidan ren Guest House at the foot of Mt. Fuji, May 21-25, 1989. The purpose of the Symposium was to provide an opportunity for discussions on the problem of strong correlation of electrons in the context of high-Tc superconductivity. Sixty-eight scientists were invited from seven countries and forty-three papers were presented in the Symposium. Soon after the discovery of high-Tc superconducting oxides, Professor P. W. Anderson proposed that the essence of high-Tc superconductivity lies in the strong correlation among the electrons in these materials. This proposal has stimulated a wide range of theoretical investigations on this profound and difficult problem, which are expected to lead eventually to new concepts describing strong electron correlation. In the Symposium, Anderson himself started lively discussions by his talk entitled "Myth and Reality in High-Tc Superconductivity", which was followed by various reports on theoretical studies and experimental results. Concise and thoughtful summaries of experiment and theory were given by Professors H. R. Ott and P. A. Lee, respectively. It is our hope that this volume reflects the present status of the research activity on this outstanding problem from the viewpoint of the basic physics and that it will further stimulate the effort to understand these fascinating systems, the high-Tc oxides.**

Superconductivity in Ternary Compounds II

Superconductivity and Magnetism

Springer Science & Business Media **With contributions by numerous experts**

Superconductivity

Fundamentals and Applications

John Wiley & Sons This well-respected and established standard work, which has been successful for over three decades, offers a comprehensive introduction into the topic of superconductivity, including its latest developments and applications. The book has been completely revised and thoroughly expanded by Professor Reinhold Kleiner. By dispensing with complicated mathematical derivations, this book is of interest to both science and engineering students. For almost three decades now, the German version of this book - currently in its sixth edition - has been established as one of the state of the art works on superconductivity.

Flux Pinning in Superconductors

Springer Science & Business Media The book deals with the flux pinning mechanisms and properties and the electromagnetic phenomena caused by the flux pinning common for metallic, high-temperature and MgB₂ superconductors. The loss originates from the ohmic dissipation of normal electrons in the normal core driven by the electric field induced by the flux motion. Readers will learn why the resultant loss is of hysteresis type in spite of such mechanism.

Electronic Properties of Novel

Nanostructures

XIX International

Winterschool/Euroconference on

Electronic Properties of Novel

Materials

American Institute of Physics All papers were peer-reviewed. The 19th Winterschool focused mainly on new nanostructured materials, with data presented on functionalized fullerenes and carbon nanotubes, filled and double-wall nanotubes, non-carbon nanotubes, such as BN and MoS₂ tubes, and other nanostructures. The direction of nanoelectronics research was explored in depth, and advancements in composite technology and

novel applications for nanotubes were discussed. Importantly, participants were updated on the theoretical and experimental determinations of structural and electronic properties as well as on characterization methods for molecular nanostructures.

Advances in Synthetic Metals

Twenty Years of Progress in Science and Technology

Elsevier This edited work contains eight extensive, review-type contributions by leading scientists in the field of synthetic metals. The authors were invited by the organisers of the International Conference on Science and Technology of Synthetic Metals '98 (ICSM'98) to review the progress of research in the past two decades in a unifying and pedagogical manner. The present work highlights the state-of-the-art of the field and assesses the prospects for future research.

Collective Excitations in Unconventional Superconductors and Superfluids

World Scientific This title gives a complete and detailed description of collective modes (CMs) in unconventional superfluids and superconductors (USC).

Solid-State Physics

Introduction to the Theory

Springer Science & Business Media While the standard solid state topics are covered, the basic ones often have more detailed derivations than is customary (with an emphasis on crystalline solids). Several recent topics are introduced, as are some subjects normally included only in condensed matter physics. Lattice vibrations, electrons, interactions, and spin effects (mostly in magnetism) are discussed the most comprehensively. Many problems are included whose level is from "fill in the steps" to long and challenging, and the text is equipped with references and several comments about experiments with figures and tables.

Physical Acoustics in the Solid State

Springer Science & Business Media **Physical Acoustics in the Solid State** reviews the modern aspects in the field, including many experimental results, especially those involving ultrasonics. It covers practically all fields of solid-state physics. After a review of the relevant experimental techniques and an introduction to the theory of elasticity, the book details applications in the various fields of condensed matter physics.

Modern trends in Superconductivity and Superfluidity

Springer This book concisely presents the latest trends in the physics of superconductivity and superfluidity and magnetism in novel systems, as well as the problem of BCS-BEC crossover in ultracold quantum gases and high-T_c superconductors. It further illuminates the intensive exchange of ideas between these closely related fields of condensed matter physics over the last 30 years of their dynamic development. The content is based on the author's original findings obtained at the Kapitza Institute, as well as advanced lecture courses he held at the Moscow Engineering Physical Institute, Amsterdam University, Loughborough University and LPTMS Orsay between 1994 and 2011. In addition to the findings of his group, the author discusses the most recent concepts in these fields, obtained both in Russia and in the West. The book consists of 16 chapters which are divided into four parts. The first part describes recent developments in superfluid hydrodynamics of quantum fluids and solids, including the fashionable subject of possible supersolidity in quantum crystals of ⁴He, while the second describes BCS-BEC crossover in quantum Fermi-Bose gases and mixtures, as well as in the underdoped states of cuprates. The third part is devoted to non-phonon mechanisms of superconductivity in unconventional (anomalous) superconductors, including some important aspects of the theory of high-T_c superconductivity. The last part considers the anomalous normal state of novel superconductive materials and materials with colossal magnetoresistance (CMR). The book offers a valuable guide for senior-level undergraduate students and graduate students, postdoctoral and other researchers specializing in solid-state and low-temperature physics.

Nuclear Magnetic Resonance

Royal Society of Chemistry As a spectroscopic method, nuclear magnetic resonance (NMR) has seen spectacular growth, both as a technique and in its applications. Today's applications of NMR span a wide range of scientific disciplines, from physics to biology to medicine. Each volume of Nuclear

Magnetic Resonance comprises a combination of annual and biennial reports which together provide comprehensive coverage of the literature on this topic. This Specialist Periodical Report reflects the growing volume of published work involving NMR techniques and applications, in particular NMR of natural macromolecules, which is covered in two reports: NMR of Proteins and Nucleic Acids and NMR of Carbohydrates, Lipids and Membranes. For those wanting to become rapidly acquainted with specific areas of NMR, Nuclear Magnetic Resonance provides unrivalled scope of coverage. Seasoned practitioners of NMR will find this an invaluable source of current methods and applications.

The Physics of Superconductors

Introduction to Fundamentals and Applications

Springer Science & Business Media The original Russian edition is based on a lecture course given by the author and provides a modern treatment of the physics of superconductors with special attention paid to the physical interpretation of the phenomena. This revised English translation has been enlarged by the inclusion of such new developments as High Temperature Superconductivity, and, as such, is the most up-to-date textbook on the subject available. The editor, Paul Müller, is himself a winner of the Walter Schottky Award for Solid State Research.

Electronic Properties of High-Tc Superconductors

The Normal and the Superconducting State of High-Tc Materials

Springer Science & Business Media The International Winter School on Electronic Properties of High-Temperature Superconductors, held between March 7-14, 1992, in Kirchberg, (Tyrol) Austria, was the sixth in a series of meetings to be held at this venue. Four of the earlier meetings were dedicated to issues in the field of conducting polymers, while the winter school held in 1990 was devoted to the new discipline of high-T_c superconductivity. This year's meeting constituted a forum not only for the

large number of scientists engaged in high- T_c research, but also for those involved in the new and exciting field of fullerenes. Many of the issues raised during the earlier winter schools on conducting polymers, and the last one on high- T_c superconductivity, have taken on a new significance in the light of the discovery of superconducting C materials. 60 The Kirchberg meetings are organized in the style of a school where experienced scientists from universities, research laboratories and industry have the opportunity to discuss their most recent results, and where students and young scientists can learn about the present status of research and applications from some of the most eminent workers in their field. In common with the previous winter school on high- T_c superconductors, the of the cuprate superconductors. present one focused on the electronic properties In addition, consideration was given to related compounds which are relevant to the understanding of the electronic structure of the cuprates in the normal state, to other oxide superconductors and to fulleride superconductors.

Conductors, Semiconductors, Superconductors

An Introduction to Solid State Physics

Springer This undergraduate textbook provides an introduction to the fundamentals of solid state physics, including a description of the key people in the field and the historic context. The book concentrates on the electric and magnetic properties of materials. It is written for students up to the bachelor level in the fields of physics, materials science, and electric engineering. Because of its vivid explanations and its didactic approach, it can also serve as a motivating pre-stage and supporting companion in the study of the established and more detailed textbooks of solid state physics. The textbook is suitable for a quick repetition prior to examinations. This second edition is extended considerably by detailed mathematical treatments in many chapters, as well as extensive coverage of magnetic impurities.

Magnetic Flux Structures in Superconductors

Extended Reprint of a Classic Text

Springer Science & Business Media **This second edition has been brought up to date by the inclusion of an extensive new chapter on aspects relevant to high-temperature superconductors. The new edition provides researchers, engineers and other scientists with an introduction to the field and makes useful supplementary reading for graduate students in low-temperature physics.**

Point-Contact Spectroscopy

Springer **Various experimental techniques for point contact production are described. Examples of point-contact spectra are presented for pure metals, alloys and compounds, as well as for semimetals and semiconductors, heavy fermion systems, Kondo-lattices, mixed valence compounds and more. Superconducting point contacts are considered in respect to Andreev reflection and Josephson effects. Special attention is paid to contact conductance fluctuation, and new trends of research are outlined.**

Electron Correlations in Molecules and Solids

Springer Science & Business Media **Dieser Titel verbindet die Festkörpertheorie mit der Quantenchemie. Neue Konzepte der Vielteilchen-Verarbeitung und Korrelations-Effekte, normale quantenchemische Verfahren mit Projektionstechniken, Greensche Funktionen und Monte-Carlo-Methoden werden erarbeitet. Anwendungsbereiche der Molekültheorie, von Halbleitern, supraleitender high-Tc-Materialien, etc., werden vorgestellt.**

Neuropsychologie

Springer-Verlag **Reine Nervensache! Die Folgen, die bei Ausfällen in bestimmten Hirnregionen auftreten können, sind vielfältig und reichen von Amusie über Neglect bis zu Störungen der Sprache und des Bewusstseins. Aber neben den durch Hirnschäden hervorgerufenen neuropsychologischen Leistungsstörungen ist auch das Verständnis der zugrunde liegenden Funktionen unverzichtbar. Daher werden klinische Störungsmuster, neuroanatomische, neurophysiologische und allgemein-psychologische Grundlagen u.a. zu folgenden Themenbereichen aufgeführt: Sprache, visuelle Wahrnehmung, Musikwahrnehmung, Erkennen von Objekten, Gesichtern und Geräuschen. Der Einstieg in die Neuropsychologie macht Spaß: Merksätze und Zusammenfassungen erleichtern das Lernen; Fallbeispiele und Exkurse vertiefen das Wissen. Neu in der 2. Auflage:**

Zusätzliche Kapitel zu bildgebenden Verfahren und zur Zahlenverarbeitung und Glossar zum Nachschlagen der wichtigsten Fachbegriffe.

Fundamentals of the Physics of Solids

Volume 3 - Normal, Broken-Symmetry, and Correlated Systems

Springer Science & Business Media This book is the third of a three-volume series written by the same author. It aims to deliver a comprehensive and self-contained account of the fundamentals of the physics of solids. In the presentation of the properties and experimentally observed phenomena together with the basic concepts and theoretical methods, it goes far beyond most classic texts. The essential features of various experimental techniques are also explained. This volume is devoted mostly to the discussion of the effects of electron–electron interaction beyond the one-electron approximation. The density-functional theory is introduced to account for correlation effects. The response to external perturbations is discussed in the framework of linear response theory. Landau’s Fermi-liquid theory is followed by the theory of Luttinger liquids. The subsequent chapters are devoted to electronic phases with broken symmetry: to itinerant magnetism, to spin- and charge-density waves and their realizations in quasi-one-dimensional materials, as well as to the microscopic theory of superconductivity. An overview is given of the physics of strongly correlated systems. The last chapter covers selected problems in the physics of disordered systems.

Transition Metal Compounds

Cambridge University Press Describes all aspects of the physics of transition metal compounds, providing a comprehensive overview of this diverse class of solids. Set within a modern conceptual framework, this is an invaluable, up-to-date resource for graduate students, researchers and industrial practitioners in solid-state physics and chemistry, materials science, and inorganic chemistry.

Critical Currents In Superconductors

For Practical Applications - Proceedings Of The International Workshop

World Scientific This proceedings volume reviews the recent developments of superconducting materials for practical applications and critical current characteristics. It contains 18 invited papers and 72 contributed papers. The scope of these papers includes: (1) synthesis and processing of practical materials, (2) properties of high-T_c tapes, coils and bulk materials, (3) critical currents and microstructure, (4) flux dynamics and pinning mechanisms, (5) applications of high-T_c materials, (6) applications of low-T_c superconductors, (7) processing, physical properties and applications of high-T_c thin films.

Handbook of Superconductivity

Elsevier The field of superconductivity has tremendous potential for growth and further development in industrial applications. The subject continues to occupy physicists, chemists, and engineers interested in both the phenomena itself and possible financially viable industrial devices utilizing the physical concepts. For the past five years, within the publications of the American Physical Society, for example, 40%-60% of all articles submitted to major journals in the area of Solid State Physics have been on the subject of superconductivity, including the newer, extremely important subfield of high temperature superconductivity (high T_c). The present volume is the first handbook to address this field. It covers both "classic" superconductivity-related topics and high T_c. Numerous properties, including thermal, electrical, magnetic, mechanical, phase diagrams, and spectroscopic crystallographic structures are presented for many types of superconductors. Critical fields, critical currents, coherence lengths, penetration depths, and transition temperatures are tabulated. First handbook on Superconductivity Coherence lengths and depths are tabulated Crystallographic structures of over 100 superconductor types Main results of several theories are submitted Phase diagrams for synthesizing new superconductors are included

Organic Superconductors

Springer Science & Business Media The initial impetus for the search for an organic superconductor was the proposal of the existence of a polymer superconductor with a high critical temperature (T_c). This spurred on activities having the aim of synthesizing and characterizing organic conductors, which had already been going on for two decades. These

efforts have resulted in the thriving field of low dimensional conductors and superconductors. This monograph is intended to be an introduction to and review of the study of organic conductors and superconductors. The investigations are to warrant a treatise of some length. At the same time sufficiently rich they have produced a few active subfields, each containing exciting topics. This situation seems to necessitate a monograph describing the current status of the field for both researchers and newcomers to the field. Such a need may also be felt by scientists engaged in the study of the high-T_c oxide superconductors for comparison of the two kinds of new superconductors, which share some important aspects, for example, the low-dimensionality and the competition or coexistence of superconductivity and magnetism. However, available experimental and theoretical results are sometimes conflicting and have not yet been arranged into a coherent standard picture of the whole field. Further developments are continually being reported and therefore it is still premature to write a textbook about some of the topics. However, we have tried to include discussions of recent topics in this volume.

Green's Functions in Quantum Physics

Springer Science & Business Media Of interest to advanced students, this book focuses on Green's functions for obtaining simple and general solutions to basic problems in quantum physics. It demonstrates the unifying formalism of Green's functions across many applications, including transport properties, carbon nanotubes, and photonics and photonic crystals.

Advances in Organic Conductors and Superconductors

MDPI This book is a printed edition of the Special Issue "Advances in Organic Conductors and Superconductors" that was published in Crystals

Concise Encyclopedia of Magnetic and Superconducting Materials

Elsevier Magnetic and superconducting materials pervade every avenue of the technological world - from microelectronics and mass-data storage to medicine and heavy engineering. Both areas have experienced a recent revitalisation of interest due to the discovery of new materials, and the re-evaluation of a wide range of basic mechanisms and phenomena. This Concise Encyclopedia draws its material from the award-winning

Encyclopedia of Materials and Engineering, and includes updates and revisions not available in the original set -- making it the ideal reference companion for materials scientists and engineers with an interest in magnetic and superconducting materials. * Contains in excess of 130 articles, taken from the award-winning Encyclopedia of Materials: Science and Technology, including ScienceDirect updates not available in the original set. * Each article discusses one aspect of magnetic and superconducting materials and includes photographs, line drawings and tables to aid the understanding of the topic at hand. * Cross-referencing guides readers to articles covering subjects of related interest.

Materials for Electronic Packaging

Elsevier Although materials play a critical role in electronic packaging, the vast majority of attention has been given to the systems aspect. **Materials for Electronic Packaging** targets materials engineers and scientists by focusing on the materials perspective. The last few decades have seen tremendous progress in semiconductor technology, creating a need for effective electronic packaging. **Materials for Electronic Packaging** examines the interconnections, encapsulations, substrates, heat sinks and other components involved in the packaging of integrated circuit chips. These packaging schemes are crucial to the overall reliability and performance of electronic systems. Consists of 16 self-contained chapters, contributed by a variety of active researchers from industrial, academic and governmental sectors Addresses the need of materials scientists/engineers, electrical engineers, mechanical engineers, physicists and chemists to acquire a thorough knowledge of materials science Explains how the materials for electronic packaging determine the overall effectiveness of electronic systems

Progress in Superconductivity Research

Nova Publishers This book presents state-of-the art research on superconductivity which is the ability of certain materials to conduct electrical current with no resistance and extremely low losses. High temperature superconductors, such as $\text{La}_{2-x}\text{Sr}_x\text{CuO}_x$ ($T_c=40\text{K}$) and $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ($T_c=90\text{K}$), were discovered in 1987 and have been actively studied since. In spite of an intense, world-wide, research effort during this time, a complete understanding of the copper oxide (cuprate) materials is still lacking. Many fundamental questions are unanswered, particularly the mechanism by which high- T_c superconductivity occurs. More broadly, the cuprates are in a class of solids with strong electron-electron interactions. An understanding of such "strongly correlated" solids is perhaps the major unsolved problem of condensed matter physics with over ten thousand

researchers working on this topic.

Electrodynamics of High-temperature Superconductors

World Scientific These lectures are concerned with the application of high temperature superconductors to both passive and active high-frequency devices. The central issue addressed is the electrodynamics of granular superconductors, particularly where grain boundaries (either natural or synthetic) act as Josephson weak-links. Grain boundaries are responsible for residual dissipation and for unwanted dependence of the electromagnetic properties on ambient magnetic fields and on elevated power level. Properly controlled, similar weak-links are the key to high sensitivity dc and rf SQUIDS at readily accessible temperatures, and to modulators, mixers and detectors. Such structures may conveniently lead to superconductive electronic devices as well as coherent sources of radiation in the very far infrared.

High T_c Superconductivity and the CuO Family

CRC Press

Physics of Transition Metal Oxides

Springer Science & Business Media The fact that magnetite (Fe_3O_4) was already known in the Greek era as a peculiar mineral is indicative of the long history of transition metal oxides as useful materials. The discovery of high-temperature superconductivity in 1986 has renewed interest in transition metal oxides. High-temperature superconductors are all cuprates. Why is it? To answer to this question, we must understand the electronic states in the cuprates. Transition metal oxides are also familiar as magnets. They might be found stuck on the door of your kitchen refrigerator. Magnetic materials are valuable not only as magnets but as electronics materials. Manganites have received special attention recently because of their extremely large magnetoresistance, an effect so large that it is called colossal magnetoresistance (CMR). What is the difference between high-temperature superconducting cuprates and CMR manganites? Elements with incomplete d shells in the periodic table are called transition elements. Among them, the following eight elements with the atomic numbers from 22 to 29, i. e. , Ti, V, Cr, Mn, Fe, Co, Ni and Cu are the most important. These elements make compounds with oxygen and present a variety of properties. High-temperature superconductivity and CMR are examples. Most of the textbooks on magnetism discuss the

magnetic properties of transition metal oxides. However, when one studies magnetism using traditional textbooks, one finds that the transport properties are not introduced in the initial stages.

Solid-State Physics

An Introduction to Principles of Materials Science

Springer This new edition of the well-received introduction to solid-state physics provides a comprehensive overview of the basic theoretical and experimental concepts of materials science. Experimental aspects and laboratory details are highlighted in separate panels that enrich text and emphasize recent developments. Notably, new material in the third edition includes sections on important new devices, aspects of non-periodic structures of matter, phase transitions, defects, superconductors and nanostructures. Students will benefit significantly from solving the exercises given at the end of each chapter. This book is intended for university students in physics, materials science and electrical engineering. It has been thoroughly updated to maintain its relevance and usefulness to students and professionals.

Handbook of Optical Constants of Solids

Academic Press This handbook--a sequel to the widely used Handbook of Optical Constants of Solids--contains critical reviews and tabulated values of indexes of refraction (n) and extinction coefficients (k) for almost 50 materials that were not covered in the original handbook. For each material, the best known n and k values have been carefully tabulated, from the x-ray to millimeter-wave region of the spectrum by expert optical scientists. In addition, the handbook features thirteen introductory chapters that discuss the determination of n and k by various techniques. * Contributors have decided the best values for n and k * References in each critique allow the reader to go back to the original data to examine and understand where the values have come from * Allows the reader to determine if any data in a spectral region needs to be filled in * Gives a wide and detailed view of experimental techniques for measuring the optical constants n and k * Incorporates and describes crystal structure, space-group symmetry, unit-cell dimensions, number of optic and acoustic modes, frequencies of optic modes, the irreducible representation, band gap, plasma frequency, and static dielectric constant

Engineering Properties of Superconducting Materials

***MDPI* Plastic (and microplastic) pollution has been described as one of the greatest environmental challenges of our time, and a hallmark of the human-driven epoch known as the Anthropocene. It has gained the attention of the general public, governments, and environmental scientists worldwide. To date, the main focus has been on plastics in the marine environment, but interest in the presence and effects of plastics in freshwaters has increased in the recent years. The occurrence of plastics within inland lakes and rivers, as well as their biota, has been demonstrated. Experiments with freshwater organisms have started to explore the direct and indirect effects resulting from plastic exposure. There is a clear need for further research, and a dedicated space for its dissemination. This book is devoted to highlighting current research from around the world on the prevalence, fate, and effects of plastic in freshwater environments.**