

January 2013 F324 Chemistry Past Paper

The goal of this book is to show the high potential of chiral sulfur-containing ligands to promote numerous asymmetric catalytic transformations. These ligands can now be recognised as real competitors to the more usual phosphorus- or nitrogen-containing ligands. Since laboratory testing and biomarkers are an integral part in the diagnosis and treatment of kidney disease, Kidney Biomarkers: Clinical Aspects and Laboratory Determination covers currently used biomarkers as well as markers that are in development. Laboratories are increasingly more involved in the follow-up confirmatory laboratory testing and this unique volume showcases the collaboration needed to solve diagnostic clinical puzzles between the laboratory and clinician. This volume provides guidance on laboratory test selection and results interpretation in patients. Sources of inaccurate results in the measurement of kidney biomarkers are discussed along with possibility of eliminating such interferences. Each chapter is organized with a uniform easy-to-follow format with insightful case examples highlighting the collaboration between clinical laboratorians and clinicians. Categorizes biomarkers into diagnostic markers, disease follow-up markers, and prognostic biomarkers Include case examples to show the collaboration between the clinical laboratorian and clinician Discusses the application of kidney biomarkers in clinical practice along with addressing laboratory aspects of kidney biomarker determination

OCR A Chemistry A2 Student Unit Guide: Unit F324 New Edition: Rings, Polymers and Analysis ePubPhilip Allan

You will easily synthesize and analyze oligonucleotide conjugates by following the step-by-step protocols presented in this volume. These techniques are widely used by all molecular biologists and antisense researchers and find special application by pharmacologists working in new drug development and quality assurance assay.

Nanoporous Gold
Assembling Spaces, Texts & Collectives
Principles, Analysis and Design
Chronic Kidney Disease
Kidney Biomarkers
Clinical Aspects and Laboratory Determination

This book contains stories of women engineers' paths through the golden age of microelectronics, stemming from the invention of the transistor in 1947. These stories, like the biographies of Marie Curie and the National Geographic's stories of Jane Goodall's research that inspired the authors will inspire and guide readers along unconventional pathways to contributions to microelectronics that we can only begin to imagine. The book explores why and how the women writing here chose their career paths and how they navigated their careers. This topic is of interest to a vast audience, from students to professionals to university advisers to industry CEOs, who can imagine the advantages of a future with a diverse work force. Provides insight into women's early contributions to the field of microelectronics and celebrates the challenges they overcame; Presents compelling innovations from academia, research, and industry into advances, applications, and the future of microelectronics; Includes a fascinating look into topics such as nanotechnologies, video games, analog electronics, design automation, and neuromorphic circuits.

The book focuses on protein allostery in drug discovery. Allosteric regulation, the second secret of life, fine-tunes virtually most biological processes and controls physiological activities. Allostery can both cause human diseases and contribute to development of new therapeutics. Allosteric drugs exhibit unparalleled advantages compared to conventional orthosteric drugs, rendering the development of allosteric modulators as an appealing strategy to improve selectivity and pharmacodynamic properties in drug leads. The Series delineates the immense significance of protein allostery—as demonstrated by recent advances in the repertoires of the concept, its mechanistic mechanisms, and networks, characteristics of allosteric proteins, modulators, and sites, development of computational and experimental methods to predict allosteric sites, small-molecule allosteric modulators of protein kinases and G-protein coupled receptors, engineering allostery, and the underlying role of allostery in precise medicine. Comprehensive understanding of protein allostery is expected to guide the rational design of allosteric drugs for the treatment of human diseases. The book would be useful for scientists and students in the field of protein science and Pharmacology etc.

How do we make social democracy? Should we seize the unknown possibilities offered by the future, or does lasting change really occur when we focus our attention on the immediate present? These arguments are fundamental to the divisions within left-wing politics in particular. A modernist vision of revolution suggests that the present is precisely the time that needs to be surpassed, but can society change without putting today's experience of social injustice at the heart of its programme? In Time Present, Time Future, Julian Wright asks how, from the mid-nineteenth to the mid-twentieth centuries, socialists in France tried to follow a democratic commitment to political voices in the present. The debate about time and modernity that emerged in French socialism sat beneath the surface of political arguments within the left. Socialists reflected on how political programmes of change connected with social experience. But how did this focus on the present relate to the tradition of revolution in France? And in particular, what did socialism have to say about the human experience of the present? Wright examines French socialism's fascination with modern history, through a new reading of Jean Jaures's multi-authored project to write a "socialist history" of France since 1789. Then, in four interlocking biographical essays, he analyses the search for a new timeframe of social transformation, by uncovering the reformist and idealist socialism of the Third Republic, long sidelined in the historical literature. With an intimate and emotional focus on the present-times of Benoit Malon, Georges Renard, Marcel Sembat, and Leon Blum, a personal history of socialist thought emerges that allows us to revisit the story of left-wing intellectual life and modern socialism through the "human scale" of time - that of the present.

One of the most important organisms in biotechnology, *Corynebacterium glutamicum* is currently used to produce 2 million tons of amino acids per year for a rapidly expanding market. Until now, research and information have been scattered among individual papers which are often difficult to locate in a timely manner. As the first complete compilation of major findings, Handbook of *Corynebacterium glutamicum* is a comprehensive source of scientific and technical information required for the understanding and manipulation of *C. glutamicum*. The book summarizes the current knowledge in the field of *C. glutamicum* research from its discovery in 1957 through the most recent studies at the genomic and systemic level, and provides a basis for future work. Written by experts from industry and academia, chapters cover all major aspects of *C. glutamicum*, including physiology, biochemistry, genetics, and industrial applications. Just as *C. glutamicum* has proven its profitability in industry and research, this book will demonstrate its value to the scientists striving to understand and develop even more efficient producer strains of this promising microorganism.

The Prokaryotes
Development of Protein-Based Electronics
Local Workshops - Foreign Connections
The Science and Philosophy of the Organism
Socialism and Modernity in France
Thermodynamics and Energy Engineering

This guideline presents clear criteria for testing of chronic kidney disease, for suspecting progressive CKD and referring people for specialist assessment.

Consult this title on your favorite e-reader, conduct rapid searches, and adjust font sizes for optimal readability. The right amount of basic science and practical clinical guidance assists in making efficient and informed decisions. Extensive updates on key topics keep you at the forefront of the field. New chapters on glomerulonephritis associated with complement disorders, interventional treatments for hypertension, renal disease and cancer, and epidemiology and prognostic impact of acute kidney injury. Over 1,500 color illustrations highlight key topics and detail pathogenesis for a full range of kidney conditions and clinical management. Hundreds of color coded algorithms promote quick reference and to help you retain concepts. Over 400 NEW self-assessment questions available at Expert Consult.

This volume presents the preliminary results of the work carried out by the interdisciplinary cultural techniques research lab at the University of Erfurt. Taking up an impulse from media studies, its contributions examine—from a variety of disciplinary perspectives—the interplay between the formative processes of knowledge and action outlined within the conceptual framework of cultural techniques. Case studies in the fields of history, literary (and media) studies, and the history of science reconstruct seemingly fundamental demarcations such as nature and culture, the human and the nonhuman, and materiality and the symbolical order as the result of concrete practices and operations. These studies reveal that particularly basic operations of spatialization form the very conditions that determine emergence within any cultural order. Ranging from manual and philological "paper work" to practices of opening up and closing off spaces and collective techniques of assembly, these case studies replace the grand narratives of cultural history focusing on micrological examinations of specific constellations between human and nonhuman actors.

Atomic thin two-dimensional (2D) materials are the thinnest forms of materials to ever occur in nature and have the potential to dramatically alter and revolutionize our material world. Some of the unique properties of these materials including wide photoresponse wavelength, passivated surfaces, strong interaction with incident light, and high mobility have created tremendous interest in photodetector application. This book provides a comprehensive state-of-the-art knowledge about photodetector technology in the range visible to infrared region using various 2D materials including graphene, transition metal dichalcogenides, III-V semiconductor, and so on. It consists of 10 chapters contributed by a team of experts in this exciting field. We believe that this book will provide new opportunities and guidance for the development of next-generation 2D photodetector.

Handbook of *Corynebacterium glutamicum*
Comprehensive Clinical Nephrology E-Book
Chiral Sulfur Ligands
Quantum Mechanical/Molecular Mechanical Approaches for the Investigation of Chemical Systems - Recent Developments and Advanced Applications
Molecular Communication
Synthesis and Analytical Techniques

Assessment of Research Needs for Advanced Fuel Cells covers the status of fuel cell research and development efforts, as well as inputs on research needs. Chapter 1 presents a summary of research recommendations and Chapters 2-6 describes the surveys on salient features of individual fuel cell types, including elaborations of long-term research needs relating to the expeditious introduction of improved fuel cells. The book further tackles phosphoric acid fuel cells; alkaline fuel cells; solid polymer electrolyte fuel cells; molten carbonate fuel cells; and high-temperature solid-oxide fuel cells.

Diabetes and Kidney Disease reviews the most up-to-date research on diabetic nephropathy, the current understanding of its pathophysiology, renal structural alterations and clinical features and summarizes recent evidence-based clinical treatment modalities for the prevention and management of diabetic kidney disease. General clinical aspects are covered, as well as an overview to the novel approaches being designed by leading researchers in the field. A convenient compendium for physicians involved in the care of diabetic patients with varying degrees of kidney involvement, Diabetes and Kidney Disease is also a handy resource for medical residents and students interested in the current status and future approaches to reducing the burden of diabetes and diabetic kidney disease.

Presents the physical background of ligand binding and instructs on how experiments should be designed and analyzed Reversible Ligand Binding: Theory and Experiment discusses the physical background of protein-ligand interactions—providing a comprehensive view of the various biochemical considerations that govern reversible, as well as irreversible, ligand binding. Special consideration is devoted to enzymology, a field usually treated separately from ligand binding, but actually governed by identical thermodynamic relationships. Attention is given to the design of the experiment, which aids in showing clear evidence of biochemical features that may otherwise escape notice. Classical experiments are reviewed in order to further highlight the importance of the design of the experiment. Overall, the book supplies students with the understanding that is necessary for interpreting ligand binding experiments, formulating plausible reaction schemes, and analyzing the data according to the chosen model(s). Topics covered include: theory of ligand binding to monomeric proteins; practical considerations and commonly encountered problems; oligomeric proteins with multiple binding sites; ligand binding kinetics; hemoglobin and its ligands; single-substrate enzymes and their inhibitors; two-substrate enzymes and their inhibitors; and rapid kinetic methods for studying enzyme reactions. Bridges theory of ligand binding and allostery with experiments Applies historical and physical insight to provide a clear understanding of ligand binding Written by a renowned author with long-standing research and teaching expertise in the area of ligand binding and allostery Based on FEBS Advanced Course lectures on the topic Reversible Ligand Binding: Theory and Experiment is an ideal text reference for students and scientists involved in biophysical chemistry, physical biochemistry, biophysics, molecular biology, protein engineering, drug design, pharmacology, physiology, biotechnology, and bioengineering.

The QM/MM method, short for quantum mechanical/molecular mechanical, is a highly versatile approach for the study of chemical phenomena, combining the accuracy of quantum chemistry to describe the region of interest with the efficiency of molecular mechanical potentials to represent the remaining part of the system. Originally conceived in the 1970s by the influential work of the the Nobel laureates Martin Karplus, Michael Levitt and Arieh Warshel, QM/MM techniques have evolved into one of the most accurate and general approaches to investigate the properties of chemical systems via computational methods. Whereas the first applications have been focused on studies of organic and biomolecular systems, a large variety of QM/MM implementations have been developed over the last decades, extending the range of applicability to address research questions relevant for both solution and solid-state chemistry as well. Despite approaching their 50th anniversary in 2022, the formulation of improved QM/MM methods is still an active field of research, with the aim to (i) extend the applicability to address an even broader range of research questions in chemistry and related disciplines, and (ii) further push the accuracy achieved in the QM/MM description beyond that of established formulations. While being a highly successful approach on its own, the combination of the QM/MM strategy with other established theoretical techniques greatly extends the capabilities of the computational approaches. For instance the integration of a suitable QM/MM technique into the highly successful Monte-Carlo and molecular dynamics simulation protocols enables the description of the chemical systems on the basis of an ensemble that is in part constructed on a quantum-mechanical basis. This eBook presents the contributions of a recent Research Topic published in Frontiers in Chemistry, that highlight novel approaches as well as advanced applications of QM/MM method to a broad variety of targets. In total 2 review articles and 10 original research contributions from 48 authors are presented, covering 12 different countries on four continents. The range of research questions addressed by the individual contributions provide a lucid overview on the versatility of the QM/MM method, and demonstrate the general applicability and accuracy that can be achieved for different problems in chemical sciences. Together with the development of improved algorithms to enhance the capabilities of quantum chemical methods and the continuous advancement in the capacities of computational resources, it can be expected that the impact of QM/MM methods in chemical sciences will be further increased already in the near future.

Protein Allostery in Drug Discovery

Docket No. 9373

The Cognitive Semiotics of Cultural Evolution

First International Workshop, HBAI 2019, Held in Conjunction with IJCAI 2019, Macao, China, August 12, 2019, Revised Selected Papers

OCR A Chemistry A2 Student Unit Guide: Unit F324 New Edition: Rings, Polymers and Analysis ePub

Quantum Modeling of Complex Molecular Systems

This multi-author contributed volume includes methodological advances and original applications to actual chemical or biochemical phenomena which were not possible before the increased sophistication of modern computers. The chapters contain detailed reviews of the developments of various computational techniques, used to study complex molecular systems such as molecular liquids and solutions (particularly aqueous solutions), liquid-gas, solid-gas interphase and biomacromolecular systems. Quantum modeling of complex molecular systems is a useful resource for graduate students and fledgling researchers and is also an excellent companion for research professionals engaged in computational chemistry, material science, nanotechnology, physics, drug design, and molecular biochemistry.

This book is a primary survey of basic thermodynamic concepts that will allow one to predict states of a fuel cell system, including potential, temperature, pressure, volume and moles. The specific topics explored include enthalpy, entropy, specific heat, Gibbs free energy, net output voltage irreversible losses in fuel cells and fuel cell efficiency. It contains twelve chapters organized into two sections on "Theoretical Models" and "Applications." The specific topics explored include enthalpy, entropy, specific heat, Gibbs free energy, net output voltage irreversible losses in fuel cells and fuel cell efficiency.

Flugelaltare sind komplexe Spiegel des geistigen, wirtschaftlichen und kulturellen Lebens eines Landes. Der umfangreiche Band bietet eingehende kunstgeschichtliche und historische Analysen verschiedener Gruppen von Flugelretabeln Siebenburgens, vor allem der von Sachsen bewohnten Landstriche. Ein vollständiger Katalog der erhaltenen siebenburgischen Flugelaltare und zahlreiche Farbabbildungen dokumentieren dieses wichtige Kapitel der europäischen Kunstgeschichte und machen das Buch zu einem unentbehrlichen Nachschlagewerk.

The Eighth Doctor faces new perils in this bumper collection of classic comic adventures This volume features eight amazing stories: "The Fallen," "Unnatural Born Killers," "The Road to Hell," "The Company of Thieves," "The Glorious Dead," "The Autonomy Bug," "Happy Deathday," and "TV Action"

Also included are two bonus stories from the early days of "Doctor Who Weekly," "Throwback: The Soul of a Cyberman" and "Ship of Fools," telling the origins of Kroton the Cyberman And, a special six-page, behind-the-scenes feature where writers Scott Gray, Alan Barnes, and Adrian Salmon

reveal background information on the stories' origins, alongside never-before-seen sketches and character designs from Salmon and fellow artists Martin Geraghty and Roger Langridge.

The University Address Book

Grids, Filters, Doors, and Other Articulations of the Real

Human Brain and Artificial Intelligence

Theory and Experiment

Proteotronics

Principles of Clinical Pharmacology

Whereas the hydrolases such as proteases, esterases and lipases are sufficiently well researched to be applied in every standard laboratory, other types of enzymes are still waiting to be discovered with respect to their applicability in organic-chemistry transformations on a preparative scale. This latter point is stressed here, with the focus on the newcomer-enzymes which show great synthetic potential.

High-surface-area materials have recently attracted significant interest due to potential applications in various fields such as electrochemistry and catalysis, gas-phase catalysis, optics, sensors and actuators, energy harvesting and storage. In contrast to classical materials the properties of high-surface-area materials are no longer determined by their bulk, but by their nanoscale architecture. Nanoporous gold (np-Au) represents the fascinating class of mesoporous metals that have been intensively investigated in recent years. The current interest and the increasing number of scientific publications show that np-Au by itself is an outstanding nano-material that justifies a book devoted to all aspects of its properties and applications. The resulting publication is a discussion of this unique nano-material and is an accessible and comprehensive introduction to the field. The book provides a broad, multi-disciplinary platform to learn more about the properties of nanoporous gold from an inter-disciplinary perspective. It starts with an introduction and overview of state-of-the-art applications and techniques characterizing this material and its applications. It then covers the progress in research within the last years. The chapters are in-depth overviews written by the world's leading scientists in the particular field. Each chapter covers one technique or application so that the reader can easily target their favoured topic and will get the latest and state-of-the-art information in the field.

An attempt is made to place before students (degree and post-degree) and professionals in the fields of Civil and Agricultural Engineering, Geology and Earth Sciences, this important branch of Hydrosience, i.e., Hydrology. It deals with all phases of the Hydrologic cycle and related optics in a lucid style and in metric system. There is a departure from empiricism, with emphasis on collection of hydrological data, processing and analysis of data, and hydrological design on sound principles and matured judgement. Large number of hydrological design problems are worked out at the end of each article, to illustrate the principles involved and the design procedure. Problems for assignment are given at the end of each chapter, along with objective type and intelligence questions.

The Prokaryotes is a comprehensive, multi-authored, peer reviewed reference work on Bacteria and Achaea. This fourth edition of The Prokaryotes is organized to cover all taxonomic diversity, using the family level to delineate chapters. Different from other resources, this new Springer product includes not only taxonomy, but also prokaryotic biology and technology of taxa in a broad context. Technological aspects highlight the usefulness of prokaryotes in processes and products, including biocontrol agents and as genetics tools. The content of the expanded fourth edition is divided into two parts: Part 1 contains review chapters dealing with the most important general concepts in molecular, applied and general prokaryote biology; Part 2 describes the known properties of specific taxonomic groups. Two completely new sections have been added to Part 1: bacterial communities and human bacteriology. The bacterial communities section reflects the growing realization that studies on pure cultures of bacteria have led to an incomplete picture of the microbial world for two fundamental reasons: the vast majority of bacteria in soil, water and associated with biological tissues are currently not culturable, and that an understanding of microbial ecology requires knowledge on how different bacterial species interact with each other in their natural environment. The new section on human microbiology deals with bacteria associated with healthy humans and bacterial pathogenesis. Each of the major human diseases caused by bacteria is reviewed, from identifying the pathogens by classical clinical and non-culturing techniques to the biochemical mechanisms of the disease process. The 4th edition of The Prokaryotes is the most complete resource on the biology of prokaryotes. The following volumes are published consecutively within the 4th Edition: Prokaryotic Biology and Symbiotic Associations Prokaryotic Communities and Ecophysiology Prokaryotic Physiology and Biochemistry Applied Bacteriology and Biotechnology Human Microbiology Actinobacteria Firmicutes Alphaproteobacteria and Betaproteobacteria Gammaproteobacteria Deltaproteobacteria and Epsilonproteobacteria Other Major Lineages of Bacteria and the Archaea Electrometallurgy 2012

Active Materials

Assessment of Research Needs for Advanced Fuel Cells

Mechanisms of Vessel Development: From a Primitive Draft to a Mature Vasculature Biotransformations**From an Ancient Technology to a High-tech Material**

A comprehensive guide written by pioneers in the field, providing a detailed introduction to the state of the art in molecular communication.

Proceedings of a symposium sponsored by The Metallurgy and Materials Society of CIM and the Hydrometallurgy and Electrometallurgy Committee of the Extraction and Processing Division of TMS (The Minerals, Metals & Materials Society) 2012 Annual Meeting & Exhibition Orlando, Florida, USA, March 11-15, 2012

This book constitutes the refereed proceedings of the workshop held in conjunction with the 28th International Conference on Artificial Intelligence, IJCAI 2019, held in Macao, China, in August 2019: the First International Workshop on Human Intelligence, HBAI 2019. The 24 full papers presented were carefully reviewed and selected from 62 submissions. The papers are organized according to the following topical headings: computational brain science and its applications; brain-intelligence and its applications.

Molecular, Genetic, and Nutritional Aspects of Major and Trace Minerals is a unique reference that provides a complete overview of the non-vitamin micronutrients, including calcium, copper, iodine, iron, magnesium, manganese, molybdenum, potassium, selenium, sodium, and zinc. In addition, the book covers the nutritional and toxicological properties of nonessential minerals chromium, fluoride and boron, and silicon and vanadium, as well as ultra-trace minerals and those with a requirement for humans. Users will find in-depth chapters on each essential mineral and mineral metabolism, along with discussions of dietary recommendations in the United States and around the world. Presents the only scientific reference on nutritionally relevant essential major and trace minerals Provides a broad introductory chapter on each mineral to give readers valuable background and context Clarifies the cellular and molecular aspects of each mineral and its genetic and biochemical coverage of all nutritionally relevant minerals—essential major trace minerals and ultra-trace minerals Underscores the important interactions between minerals so readers learn how metabolism of one mineral influences another

Reversible Ligand Binding

The Economic and Fiscal Consequences of Immigration

Molecular, Genetic, and Nutritional Aspects of Major and Trace Minerals

Human Lifeworlds

Women in Microelectronics

Protein-mediated charge transport is of relevant importance in the design of protein-based electronics and in attaining an adequate level of understanding of protein functioning. This book reviews a variety of experiments devoted to the investigation of charge transport in proteins and presents a unified theoretical model to interpret macroscopic results in terms of the amino acids backbone-structure of the single protein. It aims to serve a broad audience of researchers involved in the field of electrical characterization of biological materials and in the development of new molecular devices based on proteins and also as a reference platform that surveys existing data and presents the basis for future development of a new branch of nano-electronics, which by mixing proteomics, that is, the large-scale study of proteins, particularly their structures and functions, and electronics is introduced here as proteotronics.

In a crucial shift within posthumanistic media studies, Bernhard Siegert dissolves the concept of media into a network of operations that reproduce, displace, process, and reflect the distinctions fundamental for a given culture. Cultural Techniques aims to forget our traditional understanding of media so as to redefine the concept through something more fundamental than the empiricist study of a medium's individual or collective uses or of its cultural semantics or aesthetics. Rather, Siegert seeks to relocate media and culture on a level where the distinctions between object and performance, matter and form, human and nonhuman, sign and channel, the symbolic and the real are still in the process of becoming. The result is to turn ontology into a domain of all that is meant in German by the word Kultur. Cultural techniques comprise not only self-referential symbolic practices like reading, writing, counting, or image-making. The analysis of artifacts as cultural techniques emphasizes their ontological status as "in-between," shifting from first-order to second-order techniques, from the technical to the artistic, from object to sign, from the natural to the cultural, from the operational to the representational. Cultural Techniques ranges from seafaring, drafting, and eating to the production of the sign-signal distinction in old and new media, to the reproduction of anthropological difference, to the study of trompe-l'oeils, grids, registers, and doors. Throughout, Siegert addresses fundamental questions of how ontological distinctions can be replaced by chains of operations that process those alleged ontological distinctions within the ontic. Grounding

posthumanist theory both historically and technically, this book opens up a crucial dialogue between new German media theory and American postcybernetic discourses.

This revised second edition covers the pharmacologic principles underlying the individualization of patient therapy and contemporary drug development, focusing on the fundamentals that underlie the clinical use and contemporary development of pharmaceuticals. Authors drawn from academia, the pharmaceutical industry and government agencies cover the spectrum of material, including pharmacokinetic practice questions, covered by the basic science section of the certifying examination offered by the American Board of Clinical Pharmacology. This unique reference is recommended by the Board as a study text and includes modules on drug discovery and development to assist students as well as practicing pharmacologists. Unique breadth of coverage ranging from drug discovery and development to individualization and quality assessment of drug therapy Unusual cohesive of presentation that stems from author participation in an ongoing popular NIH course Instructive linkage of pharmacokinetic theory and applications with provision of sample problems for self-study Wide-ranging perspective of authors drawn from the ranks of Federal agencies, academia and the pharmaceutical industry Expanded coverage of pharmacogenetics Expanded coverage of drug transporters and their role in interactions Inclusion of new material on enzyme induction mechanisms in chapters on drug metabolism and drug interactions A new chapter on drug discovery that focuses on oncologic agents Inclusion of therapeutic antibodies in chapter on biotechnology products

What are active materials? This book aims to introduce and redefine conceptions of matter by considering materials as entities that "sense" and respond to their environment. By examining the modeling of, the experiments on, and the construction of these materials, and by developing a theory of their structure, their collective activity, and their functionality, this volume identifies and develops a novel scientific approach to active materials. Moreover, essays on the history and philosophy of metallurgy, chemistry, biology, and materials science provide these various approaches to active materials with a historical and cultural context. The interviews with experts from the natural sciences included in this volume develop new understandings of "active matter" and active materials in relation to a range of research objects and from the perspective of different scientific disciplines, including biology, physics, chemistry, and materials science. These insights are complemented by contributions on the activity of matter and materials from the humanities and the design field. Discusses the mechanisms of active materials and their various conceptualizations in materials science. Redefines conceptions of active materials through interviews with experts from the natural sciences. Contextualizes, historizes, and reflects on different notions of matter/materials and activity through contributions from the humanities.

A highly interdisciplinary approach to a cutting-edge research topic, with contributions from both the sciences and the humanities.

Firmicutes and Tenericutes

OCR Chemistry

Two-dimensional Materials for Photodetector

The Gifford Lectures Delivered Before the University of Aberdeen in the Year 1907[-08]

Diabetes and Kidney Disease

Time Present, Time Future

The Economic and Fiscal Consequences of Immigration finds that the long-term impact of immigration on the wages and employment of native-born workers overall is very small, and that any negative impacts are most likely to be found for prior immigrants or native-born high school dropouts. First-generation immigrants are more costly to governments than are the native-born, but the second generation are among the strongest fiscal and economic contributors in the U.S. This report concludes that immigration has an overall positive impact on long-run economic growth in the U.S. More than 40 million people living in the United States were born in other countries, and almost an equal number have at least one foreign-born parent. Together, the first generation (foreign-born) and second generation (children of the foreign-born) comprise almost one in four Americans. It comes as little surprise, then, that many U.S. residents view immigration as a major policy issue facing the nation. Not only does immigration affect the environment in which everyone lives, learns, and works, but it also interacts with nearly every policy area of concern, from jobs and the economy, education, and health care, to federal, state, and local government budgets. The changing patterns of immigration and the evolving consequences for American society, institutions, and the economy continue to fuel public policy debate that plays out at the national, state, and local levels. The Economic and Fiscal Consequences of Immigration assesses the impact of dynamic immigration processes on economic and fiscal outcomes for the United States, a major destination of world population movements. This report will be a fundamental resource for policy makers and law makers at the federal, state, and local levels but extends to the general public, nongovernmental organizations, the business community, educational institutions, and the research community.

Student Unit Guides are perfect for revision. Each guide is written by an examiner and explains the unit requirements, summarises the relevant unit content and includes a series of specimen questions and answers. There are three sections to each guide: Introduction - includes advice on how to use the guide, an explanation of the skills being tested by the assessment objectives, an outline of the unit or module and, depending on the unit, suggestions for how to revise effectively and prepare for the examination questions. Content Guidance - provides an examiner's overview of the module's key terms and concepts and identifies opportunities to exhibit the skills required by the unit. It is designed to help students to structure their revision and make them aware of the concepts they need to understand the exam and how they might analyse and evaluate topics. Question and Answers - sample questions and with graded answers which have been carefully written to reflect the style of the unit. All responses are accompanied by commentaries which highlight their respective strengths and weaknesses, giving students an insight into the mind of the examiner.

This book, which presents a cognitive-semiotic theory of cultural evolution, including that taking place in historical time, analyses various cognitive-semiotic artefacts and abilities. What makes the human species human is to a considerable extent the semiotic and cultural skills by which she endows her Lifeworld with meaning.

This special-topic book, devoted to "Solid Phase Transformations", covers a broad range of phenomena which are of importance in a number of technological processes. Most commercial alloys undergo thermal treatment after casting, with the aim of imparting desired compositions and/or optimal morphologies to the component phases.

Optogenetics: A Roadmap

Late Medieval Altarpieces from Transylvania

Cultural Techniques

Asymmetric Catalysis

National Clinical Guideline for Early Identification and Management in Adults in Primary and Secondary Care

Hydrology

This volume focuses on the optogenetics workflow, and covers topics on viral vectors, targeting strategies, choice on opsins, animal models and readouts, and applications in systems neuroscience. This book shows readers how to identify the critical aspects of each methodological step, and how to determine the necessary level of complexity to address the particular research question. In Neuromethods series style, chapters include the kind of detail and key advice from the specialists needed to get successful results in your laboratory. Comprehensive and cutting-edge, Optogenetics: A Roadmap is a valuable guide for both the optogenetics novices and the experts.

Solid Phase Transformations

Protocols for Oligonucleotide Conjugates