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A new approach to teaching university-level chemistry that links core concepts of chemistry and physical science to current global challenges. Introductory chemistry and physics are generally taught at the university level as isolated subjects, divorced from any compelling context. Moreover, the “formalism first” teaching approach presents students with disembodied knowledge, abstract and learned by rote. By contrast, this textbook presents a

new approach to teaching university-level chemistry that links core concepts of chemistry and physical science to current global challenges. It provides the rigorous development of the principles of chemistry but places these core concepts in a global context to engage developments in technology, energy production and distribution, the irreversible nature of climate change, and national security. Each chapter opens with a “Framework” section that establishes the topic’s connection to emerging challenges. Next, the “Core” section addresses concepts including the first and second law of thermodynamics, entropy, Gibbs free energy,

equilibria, acid-base reactions, electrochemistry, quantum mechanics, molecular bonding, kinetics, and nuclear. Finally, the “Case Studies” section explicitly links the scientific principles to an array of global issues. These case studies are designed to build quantitative reasoning skills, supply the technology background, and illustrate the critical global need for the infusion of technology into energy generation. The text’s rigorous development of both context and scientific principles equips students for advanced classes as well as future involvement in scientific and societal arenas. University Chemistry was written for a widely

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adopted course created and taught by the author at Harvard.

A revision guide tailored to the AS and A Level Chemistry syllabus (9701) for first examination in 2016.

Complete Chemistry is a revised and enlarged edition of the popular GCSE Chemistry improved to bring it totally up-to-date. This book covers all syllabuses with core material, for Double Award, and extension material, for Science: Chemistry. The breadth and depth is sufficient to stretch your students aiming for the top grades and makes it an excellent foundation for those intending to progress

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to advanced level chemistry. Key Points: · Now includes all the necessary topics for IGCSE · Concepts and principles of chemistry presented in a clear, straightforward style · Lively and colourful coverage of the relevance of chemistry in the real world · End of chapter testing with more challenging and structured questions · Examination style questions · Pagination remains the same as GCSE Chemistry so that the two can be used alongside each other

This edition of our successful series to support the Cambridge IGCSE Chemistry syllabus (0620) is fully updated for the revised syllabus from first

examination from 2016. Written by a team with teaching and examining experience, Cambridge IGCSE Chemistry Coursebook with CD-ROM gives comprehensive and accessible coverage of the syllabus. Suggestions for practical activities are included, designed to help develop the required experimental skills. Exam-style questions at the end of each chapter and a host of revision and practice material on the CD-ROM are designed to help students maximise their chances in their examinations. Answers to the exam-style questions in the Coursebook are provided on the CD-ROM.

University Chemistry

Solid State Electrochemistry

Plasma Chemistry

Aquatic Organic Matter Fluorescence

Solid State Chemistry

Ensure students achieve top exam marks, and can confidently progress to further study, with an academically rigorous yet accessible approach from Cambridge examiners. With full syllabus match, extensive practice and exam guidance this new edition embeds a comprehensive understanding of scientific concepts and develops advanced skills for strong assessment potential. Be confident of full syllabus support with a comprehensive syllabus matching grid and learning objectives drawn directly from the latest syllabus (9701), for first

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examination from 2022. Written by Cambridge examiners, this new edition is packed with focused and explicit assessment guidance, support and practice to ensure your students are fully equipped for their exams. With a stretching yet accessible approach Cambridge International AS & A Level Complete Chemistry develops advanced problem solving and scientific skills and contextualizes scientific concepts to ensure your students are ready to progress to further study. All answers are available on the accompanying answer support site. Take your students exam preparation further and ensure they get the grades they deserve with additional exam-focused support available in the Enhanced Online Student Book and the Exam Success Guide. Chemistry for the IB Diploma, Second edition, covers in full the

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requirements of the IB syllabus for Chemistry for first examination in 2016. This digital version of Chemistry for the IB Diploma Coursebook, Second edition, comprehensively covers all the knowledge and skills students need during the Chemistry IB Diploma course, for first examination in 2016, in a reflowable format, adapting to any screen size or device. Written by renowned experts in Chemistry teaching, the text is written in an accessible style with international learners in mind. Self-assessment questions allow learners to track their progress, and exam-style questions help learners to prepare thoroughly for their examinations. Answers to all the questions from within the Coursebook are provided.

Spectroscopy is the study of electromagnetic radiation and its

interaction with solid, liquid, gas and plasma. It is one of the widely used analytical techniques to study the structure of atoms and molecules. The technique is also employed to obtain information about atoms and molecules as a result of their distinctive spectra. The fast-spreading field of spectroscopic applications has made a noteworthy influence on many disciplines, including energy research, chemical processing, environmental protection and medicine. This book aims to introduce students to the topic of spectroscopy. The author has avoided the mathematical aspects of the subject as far as possible; they appear in the text only when inevitable. Including topics such as time-dependent perturbation theory, laser action and applications of Group Theory in interpretation of spectra,

the book offers a detailed coverage of the basic concepts and applications of spectroscopy.

This textbook presents a straightforward introduction to physical chemistry. Whilst stressing the fundamentals of the subject, it avoids the mathematical details of specialised techniques such as quantum theory, nuclear magnetic resonance, and spectroscopy. In order to promote an appreciation of 3-dimensional structure in the study of stereo-chemistry and solids, many of the illustrations are presented as stereoscopic views, and directions for observing them are given in an appendix. Each chapter ends with a set of problems of varying degrees of difficulty, which will assist the student in gaining familiarity with the themes of the book, and in testing their ability to apply these themes to new

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situations; full solutions are provided. The SI system of units is used throughout and appendices serve as a useful reference source of numerical data. Some mathematical arguments are also developed in appendices, because their inclusion in the text might distract readers from the development of the subject. The book has been developed from an earlier publication by the authors entitled Modern Physical Chemistry, published by Penguin Books Ltd.

Cambridge International AS and A Level Chemistry Coursebook with CD-ROM

*Cambridge International AS & A Level Complete Chemistry
Complete Chemistry for Cambridge IGCSE®*

A Bridge to Solid-State Chemistry
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Cambridge Checkpoints Preliminary Chemistry

A modern and thorough treatment of the field for upper-level undergraduate and graduate courses in materials science and chemistry.

Combining academic and industrial viewpoints, this is the definitive stand-alone resource for researchers, students and industrialists.

With the latest on foam research, test methods and real-world applications, it provides straightforward answers to why foaming occurs, how it can be avoided, and how different degrees of antifoaming can be achieved.

For the last fifty years, X-ray crystallography and allied methods have been one of the most important analytical techniques for chemical analysis. With improved equipment, computers, and programs, the time required for such determinations has been

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reduced from months to hours. However, crystallography has never found its way into chemical education. There are many reasons for this failure, but the result has been most chemists having little understanding of the method beyond operating equipment and running black box programs. This book provides a basic education on crystallographic methods. As much as possible, it is non-mathematical, and written in language that chemists use. It is designed for the instruction of senior undergraduate students and beginning graduate students, but will also be of interest to any chemist who has had no instruction in crystallography. Much of the book provides information that can be used by chemists who do not plan to conduct crystallographic studies themselves.

Fully updated and matched to the Cambridge syllabus, this stretching Student Book is trusted by teachers around the world to

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support advanced understanding and achievement at IGCSE. The popular, stretching approach will help students to reach their full potential. Written by experienced authors, this updated edition is full of engaging content with up-to-date examples to cover all aspects of the Cambridge syllabus. The step-by-step approach will lead students through the course in a logical learning order building knowledge and practical skills with regular questions and practical activities. Extension material will stretch the highest ability students and prepare them to take the next step in their learning. Practice exam questions will consolidate student understanding and prepare them for exam success. You will also receive free access to extra support online, including practice exam questions, revision checklists and advice on how to prepare for an examination.

Modeling of Atmospheric Chemistry

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Molecular Clusters

Fundamentals of Sum-Frequency Spectroscopy

Engineering Chemistry

Chemistry for IGCSE

Fully revised and updated content matching new Cambridge International Examinations 9701 syllabus for first examination in 2016. Endorsed by Cambridge International Examinations, this digital edition comprehensively covers all the knowledge and skills students need during the A Level Chemistry course (9701), for first examination in 2016, in a reflowable format, adapting to any screen size or device. Written by renowned experts in Chemistry teaching, the text is written in an accessible style with international learners in mind. Self-assessment questions allow learners to track their progress,

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and exam-style questions help learners to prepare thoroughly for their examinations. Answers to all the questions from within the Coursebook are provided.

Fully-updated new edition of successful textbook introducing concepts of pollution, toxicology and risk assessment.

Originally published in 1936, this informative and engaging textbook was primarily aimed at undergraduate students, who already held a familiarity with the elementary principles of general chemistry and physics. The book covers a wide variety of topics, with a particular emphasis on laboratory work and 'the practical side of the subject'. Chapter titles include, 'Aliphatic hydrocarbons', 'Aldehydes and ketones' and 'Amino acids'. Diagrams, a table of symbols, atomic numbers and atomic weights are included for reference. This

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book will be of considerable value to scholars of chemistry as well as to anyone with an interest in the history of education. With a clear, concise approach, this comprehensive resource will support your EAL learners in understanding key scientific concepts. A step-by-step approach will help every learner reach their potential in science. This second edition is up-to-date for the latest Cambridge syllabus.

Advanced Chemistry (Cambridge Low-price Edition)

Atomic and Molecular Spectroscopy

Analytical Chemistry in Archaeology

Liquid Crystal Dimers

The Cambridge History of Science: Volume 6, The Modern

Biological and Earth Sciences

Written in lucid language, the book offers a detailed treatment

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of fundamental concepts of chemistry and its engineering applications.

This book covers in-depth discussion of design principles, synthesis and thermal behavior of all types of liquid crystal (LC) dimers. The text presents recent advances in the field of LC dimers consisting of different mesogenic units such as calamitic, discotic and bent-core molecules. It starts with a chapter on the introduction of liquid crystal dimers, including their odd-even behavior, basic classification of dimers and common mesophases in dimers. The text shows how the molecular architectures are being used to develop new materials to study a range of interesting phenomena such as the biaxial nematic phase containing rod-like and disc-like mesogenic units. Finally, the text presents perspectives

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related to technological relevance of these dimers such as dopants in LC display mixtures exhibiting faster relaxation time, strong flexoelectric coupling and others to effect control over the properties of these materials.

Study as you go with Cambridge Checkpoints. Updated annually to provide the most up-to-date exam preparation available, Cambridge Checkpoints provides everything you need to prepare for your exams in a go-anywhere format that fits easily into your school bag. • Recent official exam papers with suggested responses • Hundreds of additional past exam and exam-style questions with answers • Dot point summaries of key topics and concepts to help you pinpoint where you need further revision

Originally published in 1950, this textbook was intended for

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school students with the aim of providing an introductory understanding of chemistry. The book introduces physical chemistry through multiple and diverse experiments; each experiment designed to reinforce a new topic and reflect theorems, approaches and historical development. Notably, the treatment throughout is from the point of view of the kinetic-molecular theory rather than that of the laws of thermodynamics, whilst emphasis is also placed upon physico-chemical phenomena and their significance in various branches of science, such as metallurgy, chemical syntheses and mineralogy. There are twelve chapters in total, with chapter titles ranging from 'Atoms and molecules' to 'Mass action and the ionic dissociation theory'. Various diagrams and plate sections are also included for reference. This book will

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be of value to chemistry students and scholars as well as those interested in the history of education.

Chemistry for the IB Diploma Workbook with CD-ROM

Fundamentals and Applications

A Primer

Essential Chemistry for Cambridge IGCSE®

Understanding Environmental Pollution

Clusters can be viewed as solids at the nano-scale, yet molecular cluster chemistry and solid state chemistry have traditionally been considered as separate topics. This treatment has made it conceptually difficult to appreciate commonalities of structure and bonding between the two. Using analogous

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models, this is the first book to form a connecting bridge. Although the focus is on clusters, sufficient attention is paid to solid-state compounds at each stage of the development to establish the interrelationship between the two topics. Comprehensive coverage of cluster types by composition, size and ligation, is provided, as is a synopsis of selected research. Written in an accessible style and highly illustrated to aid understanding, this book is suitable for researchers in inorganic chemistry, physical chemistry, materials science, and condensed matter physics.

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First time paperback of successful chemistry monograph.

Mathematical modeling of atmospheric composition is a formidable scientific and computational challenge. This comprehensive presentation of the modeling methods used in atmospheric chemistry focuses on both theory and practice, from the fundamental principles behind models, through to their applications in interpreting observations. An encyclopaedic coverage of methods used in atmospheric modeling, including their advantages and disadvantages, makes this a one-stop resource with a large scope.

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Particular emphasis is given to the mathematical formulation of chemical, radiative, and aerosol processes; advection and turbulent transport; emission and deposition processes; as well as major chapters on model evaluation and inverse modeling. The modeling of atmospheric chemistry is an intrinsically interdisciplinary endeavour, bringing together meteorology, radiative transfer, physical chemistry and biogeochemistry, making the book of value to a broad readership. Introductory chapters and a review of the relevant mathematics make this

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book instantly accessible to graduate students and researchers in the atmospheric sciences.

Engagingly introduces marine chemistry and the ocean's geochemical interactions with the solid earth and atmosphere, for students of oceanography.

The New Chemistry

Complete Chemistry

An Introduction to the Chemistry of the Sea

Essential Principles of Organic Chemistry

Crystallography for Chemists

Unique and accessible overview of modern chemistry, including contributions from several Nobel Prize winners.

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Core text on principles, laboratory/field methodologies, and data interpretation for fluorescence applications in aquatic science, for advanced students and researchers.

Cambridge Low Price Editions are reprints of internationally respected books from Cambridge University Press. Advanced Chemistry covers the syllabuses of all the main examining boards offering A-level chemistry, and contains material suitable for students beginning undergraduate study. The author places the subject in context by discussing the nature and the wider implications and applications of chemistry. The material is divided into four parts: physical, industrial, inorganic and organic chemistry. Each part is divided into short self-contained units, each of which develops a set of well-defined themes or concepts. Students may work through

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the units in order, or individual units may be used separately. This manual introduces the basic concepts of chemistry behind scientific analytical techniques and reviews their application to archaeology. It is an essential tool for students of archaeology that explains key terminology and outlines the procedures to be followed in order to produce good data.

Introduction to Physical Chemistry

Cambridge IGCSE Chemistry Workbook

For Cambridge Checkpoint and beyond

Chemistry of Fossil Fuels and Biofuels

Chemistry for the IB Diploma Coursebook with Free Online Material

This second, fully-updated edition on mass spectrometry forms an ideal undergraduate-postgraduate and research

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textbook.

This edition of our successful series to support the Cambridge IGCSE Chemistry syllabus (0620) is fully updated for the revised syllabus from first examination from 2016. Written by an experienced teacher who is passionate about practical skills, the Cambridge IGCSE® Chemistry Practical Workbook makes it easier to incorporate practical work into lessons. This Workbook provides interesting and varied practical investigations for students to carry out safely, with guided exercises designed to develop the essential skills of handling data, planning investigations, analysis and evaluation. Exam-style questions for each topic offer novel scenarios for students to apply their knowledge and understanding,

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and to help them to prepare for their IGCSE Chemistry paper 5 or paper 6 examinations.

This book in the highly respected Cambridge History of Science series is devoted to the history of the life and earth sciences since 1800. It provides comprehensive and authoritative surveys of historical thinking on major developments in these areas of science, on the social and cultural milieus in which the knowledge was generated, and on the wider impact of the major theoretical and practical innovations. The articles are written by acknowledged experts who provide concise accounts of the latest historical thinking coupled with guides to the most important recent literature. In addition to histories of traditional sciences, the book covers the

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emergence of newer disciplines such as genetics, biochemistry and geophysics. The interaction of scientific techniques with their practical applications in areas such as medicine is a major focus of the book, as is its coverage of controversial areas such as science and religion, and environmentalism.

Fully revised and updated content matching new Cambridge International Examinations 9701 syllabus for first examination in 2016. The Cambridge International AS and A Level Chemistry Workbook with CD-ROM supports students to hone the essential skills of handling data, evaluating information and problem solving through a varied selection of relevant and engaging exercises and exam-style questions. The Workbook is

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endorsed by Cambridge International Examinations for Learner Support. Student-focused scaffolding is provided at relevant points and gradually reduced as the Workbook progresses, to promote confident, independent learning. Answers to all exercises and exam-style questions are provided on the CD-ROM for students to use to monitor their own understanding and track their progress through the course.

Basic Concepts and Applications

Mass Spectrometry for Chemists and Biochemists

Bubble and Foam Chemistry

Cambridge International AS and A Level Chemistry

Revision Guide

Complete Chemistry for Cambridge Secondary 1 Student

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Book

Written by highly experienced authors, Cambridge IGCSE Chemistry Workbook provides complete support for the IGCSE Chemistry syllabus offered by CIE. This book contains exercises that provide clear progression to students as they go along. A wide variety of questions develop all the skills needed to succeed in the IGCSE Chemistry examination. Simple and clear language makes this book accessible to a range of abilities. This workbook is fully endorsed by CIE and is intended to be used alongside the Cambridge IGCSE Chemistry Coursebook. A Teacher's Resource CD-ROM is also available.

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The first book on the topic, and written by the founder of the technique, this comprehensive resource provides a detailed overview of sum-frequency spectroscopy, its fundamental principles, and the wide range of applications for surfaces, interfaces, and bulk.

Beginning with an overview of the historical context, and introductions to the basic theory of nonlinear optics and surface sum-frequency generation, topics covered include discussion of different experimental arrangements adopted by researchers, notes on proper data analysis, an up-to-date survey commenting on the wide range of successful applications of the tool, and a valuable insight into current unsolved problems and

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potential areas to be explored in the future. With the addition of chapter appendices that offer the opportunity for more in-depth theoretical discussion, this is an essential resource that integrates all aspects of the subject and is ideal for anyone using, or interested in using, sum-frequency spectroscopy.

Discusses the formation, composition, properties and processing of the principal fossil and biofuels, ideal for graduate students and professionals.

Making the leap to Cambridge IGCSE can be a challenge - this brand new course leads learners smoothly through all three stages of Cambridge Secondary 1 Chemistry up to Cambridge Checkpoint

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and beyond, with crucial rigour built in from the outset so they can dive into Cambridge IGCSE Science study with confidence.

Physical Chemistry: Experimental and Theoretical
Selected Papers of C.N.R. Rao

Cambridge IGCSE® Chemistry Practical Workbook
Frontiers and Foundations from a Global and Molecular
Perspective

Cambridge International AS and A Level Chemistry
Workbook with CD-ROM

Solid State Chemistry today is a frontier area of mainstream chemistry, and plays a vital role in the development of materials. The present work, consisting

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of a selection of Prof. C N R Rao's papers, covers most of the important aspects of solid state chemistry and provides the flavor of the subject, showing how the subject has evolved over the years. The book is up-to-date, and will be useful to students, teachers, beginning researchers and practitioners in solid state chemistry as well as in the broader area of materials science.

Chemistry for IGCSE is endorsed by CIE and completely matches specification 0620. It is written in a clear and direct manner by a team of experienced authors and CIE examiners, making it ideal for international school students. It takes an exam focus and features include exam-style questions, activities, case studies, key points & did you know?

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Providing a fundamental introduction to all aspects of modern plasma chemistry, this book describes mechanisms and kinetics of chemical processes in plasma, plasma statistics, thermodynamics, fluid mechanics and electrodynamics, as well as all major electric discharges applied in plasma chemistry. Fridman considers most of the major applications of plasma chemistry, from electronics to thermal coatings, from treatment of polymers to fuel conversion and hydrogen production and from plasma metallurgy to plasma medicine. It is helpful to engineers, scientists and students interested in plasma physics, plasma chemistry, plasma engineering and combustion, as well as chemical physics, lasers, energy systems and environmental

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control. The book contains an extensive database on plasma kinetics and thermodynamics and numerical formulas for practical calculations related to specific plasma-chemical processes and applications. Problems and concept questions are provided, helpful in courses related to plasma, lasers, combustion, chemical kinetics, statistics and thermodynamics, and high-temperature and high-energy fluid mechanics.

Chemistry for the IB Diploma, Second edition, covers in full the requirements of the IB syllabus for Chemistry for first examination in 2016. This workbook is specifically for the IB Chemistry syllabus, for examination from 2016. The Chemistry for the IB Diploma Workbook contains straightforward chapters that build learning in a gradual

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way, first outlining key terms and then providing students with plenty of practice questions to apply their knowledge. Each chapter concludes with exam-style questions. This structured approach reinforces learning and actively builds students' confidence using key scientific skills - handling data, evaluating information and problem solving. This helps empower students to become confident and independent learners. Answers to all of the questions are on the CD-ROM.

Solid State Materials Chemistry

Cambridge IGCSE Chemistry Coursebook with CD-ROM