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## TRISTEN NICHOLSON

*Classic Chemistry Experiments* Royal Society of Chemistry  
This book is aimed at chemistry teachers, teacher educators, chemistry education researchers, and all those who are interested in increasing the relevance of chemistry teaching and learning as well as students' perception of it. The book consists of 20 chapters. Each chapter focuses on a certain issue related to the relevance of chemistry education. These chapters are based on a recently suggested model of the relevance of science education, encompassing individual, societal, and vocational relevance, its present and future implications, as well as its intrinsic and extrinsic aspects. "Two highly distinguished chemical educators, Ingo Eilks and AviHofstein, have brought together 40 internationally renowned colleagues from 16 countries to offer an authoritative view of chemistry teaching today. Between them, the authors, in 20 chapters, give an exceptional description of the current state of chemical education and signpost the future in both research and in the classroom. There is special emphasis on the many attempts to enthuse students with an understanding of the central science, chemistry, which will be helped by having an appreciation of the role of the science in today's world. Themes which transcend all education such as collaborative work, communication skills, attitudes, inquiry learning and teaching, and problem solving are covered in detail and used in the context of teaching modern chemistry. The book is divided into four parts which describe the individual, the societal, the vocational and economic, and the non-formal dimensions and the editors bring all the disparate leads into a coherent narrative, that will be highly satisfying to experienced and new researchers and to teachers with the daunting task of teaching such an intellectually demanding subject. Just a brief glance at the index and the references will convince anyone interested in chemical education that this book is well worth studying; it is scholarly and readable and has tackled the most important issues in chemical education today and in the foreseeable future." – Professor David Waddington, Emeritus Professor in Chemistry Education, University of York, United Kingdom

*A Handbook for International Students* CreateSpace  
Almost 100 years have passed since Trautz and Lewis put forward their collision theory of molecular processes. Today, knowledge of molecular collisions forms a key part of predicting and understanding chemical reactions. This book begins by setting out the classical and quantum theories of atom-atom collisions. Experimentally observable aspects of the scattering processes; their relationship to reaction rate constants and the experimental methods used to determine them are described. The quantum mechanical theory of reactive scattering is presented and related to experimental observables. The role of lasers in the measurement and analysis of reactive molecular collisions is also discussed. Written with postgraduates and

newcomers to the field in mind, mathematics is kept to a minimum, and readers are guided to appendices and further reading to gain a deeper understanding of the mathematics involved.

*Alternative Energy Sources for Green Chemistry* Royal Society of Chemistry

Aging is a natural phenomenon that is peculiar to all living things. However, accumulating findings indicate that senescence could be postponed or prevented by certain approaches. Substantial evidence has emerged supporting the possibility of radical human health and lifespan extension, in particular through pharmacological modulation of aging. A number of natural dietary ingredients and synthetic drugs have been assumed to have geroprotective potential. In the development of anti-aging therapeutics, several cell, insect, and animal models may provide useful starting points prior to human studies. This book provides an overview of current research aimed to search for life-extending medications and describes pharmacological aspects of anti-aging medicine. Readers are introduced to the fascinating historical background of geroprotection in the first chapter. In-depth information on models for investigating geroprotective drugs precedes a section covering anti-aging properties of pharmaceutical compounds, such as calorie restriction mimetics, autophagy inducers, senolytics and mitochondrial antioxidants. Finally, strategies to translate discoveries from aging research into drugs and healthcare policy perspectives on anti-ageing medicine are provided to give a complete picture of the field. A timely and carefully edited collection of chapters by leading researchers in the field, this book will be a fascinating and useful resource for pharmacologists, gerontologists and any scientifically interested person wishing to know more about the current status of research into anti-aging remedies, challenges and opportunities.

*Kitchen Chemistry* John Wiley & Sons

1. That Fascinating Nonclassical Ion Problem.- 1.1. Introduction.- 1.2. Origins.- 1.3. The Nonclassical Ion Era.- 1.4. Steric Assistance.- 1.5. An Alternative Interpretation.- 1.6. The Rococo Period of Carbonium Ion Structures.- 1.7. Difficulties in Challenging an Accepted Theory.- 1.8. Further Difficulties-A "Soft" Theory.- 1.9. Still Further Difficulties-Selective Reviews.- 1.10. Conclusion.- Comments.- 2. Steric Assistance in Solvolytic Processes.- 2.1. Introduction.- 2.2. Steric Assistance in the Solvolysis of Highly Branched Alkyl Derivatives.- 2.3. Steric Assistance in the Relative Effec.

Royal Society of Chemistry

The medical MRI community is by far the largest user of diffusion NMR techniques and this book captures the current surge of methods and provides a primary source to aid adoption in this field. There is a trend to adapting the more advanced diffusion encoding sequences developed by NMR researchers within the fields of porous media, chemical engineering, and colloid science to medical research. Recently published papers indicate great potential for improved diagnosis of the numerous pathological conditions associated with changes of tissue microstructure that

are invisible to conventional diffusion MRI. This book disseminates these recent developments to the wider community of MRI researchers and clinicians. The chapters cover the theoretical basis, hardware and pulse sequences, data analysis and validation, and recent applications aimed at promoting further growth in the field. This is a fast moving field and chapters are written by key MRI scientists that have contributed to the successful translation of the advanced diffusion NMR methods to the context of medical MRI, from global locations. The Chemical Biology of Phosphorus Royal Society of Chemistry

The use of alternative energy forms and transfer mechanisms is one of the key approaches of process intensification. In recent years, significant amounts of research have been carried out in developing chemical processing technologies enhanced by plasma, electric and magnetic fields, electromagnetic and ultrasound waves and high gravity fields. Discussing the broad impact of alternative energy transfer technologies on reactions, separations and materials synthesis, this book reports on recent breakthrough results in various application areas. It provides a comprehensive overview of the current developments in the field. The book enables industrialists, academics and postgraduates in alternative-energy based processing to see the potential of alternative energies for green chemistry and sustainability of chemical manufacturing.

Theory of Molecular Collisions MIT Press

Long before Oliver Sacks became a distinguished neurologist and bestselling writer, he was a small English boy fascinated by metals—also by chemical reactions (the louder and smellier the better), photography, squids and cuttlefish, H.G. Wells, and the periodic table. In this endlessly charming and eloquent memoir, the author of *The Man Who Mistook His Wife for a Hat* and *Awakenings* chronicles his love affair with science and the magnificently odd and sometimes harrowing childhood in which that love affair unfolded. In *Uncle Tungsten* we meet Sacks' extraordinary family, from his surgeon mother (who introduces the fourteen-year-old Oliver to the art of human dissection) and his father, a family doctor who imbues in his son an early enthusiasm for housecalls, to his "Uncle Tungsten," whose factory produces tungsten-filament lightbulbs. We follow the young Oliver as he is exiled at the age of six to a grim, sadistic boarding school to escape the London Blitz, and later watch as he sets about passionately reliving the exploits of his chemical heroes—in his own home laboratory. *Uncle Tungsten* is a crystalline view of a brilliant young mind springing to life, a story of growing up which is by turns elegiac, comic, and wistful, full of the electrifying joy of discovery.

**Compendium of Polymer Terminology and Nomenclature** Vintage

This book is designed as a teaching aid to help communicate the excitement and wonder of chemistry to students.

From Fundamentals to Bioassays The Stationery Office

Images and text capture the astonishing beauty of the chemical processes that create snowflakes, bubbles, flames, and other wonders of nature. Chemistry is not just about microscopic atoms doing inscrutable things; it is the process that makes flowers and galaxies. We rely on it for bread-baking, vegetable-growing, and producing the materials of daily life. In stunning images and illuminating text, this book captures chemistry as it unfolds. Using such techniques as microphotography, time-lapse photography, and infrared thermal imaging, *The Beauty of Chemistry* shows us how chemistry underpins the formation of snowflakes, the science of champagne, the colors of flowers, and other wonders of nature and technology. We see the marvelous configurations of chemical gardens; the amazing transformations of evaporation, distillation, and precipitation; heat made visible;

and more.

**A is for Arsenic** Springer Science & Business Media

Surface plasmon resonance (SPR) plays a dominant role in real-time interaction sensing of biomolecular binding events, this book provides a total system description including optics, fluidics and sensor surfaces for a wide researcher audience.

Microporous Framework Solids Springer Science & Business Media

This book provides a concise and inexpensive introduction for an undergraduate course in glass science and technology. The level of the book has deliberately been maintained at the introductory level to avoid confusion of the student by inclusion of more advanced material, and is unique in that its text is limited to the amount suitable for a one term course for students in materials science, ceramics or inorganic chemistry. The contents cover the fundamental topics of importance in glass science and technology, including glass formation, crystallization, phase separation and structure of glasses. Additional chapters discuss the most important properties of glasses, including discussion of physical, optical, electrical, chemical and mechanical properties. A final chapter provides an introduction to a number of methods used to form technical glasses, including glass sheet, bottles, insulation fibre, optical fibres and other common commercial products. In addition, the book contains discussion of the effects of phase separation and crystallization on the properties of glasses, which is neglected in other texts. Although intended primarily as a textbook, *Introduction to Glass Science and Technology* will also be invaluable to the engineer or scientist who desires more knowledge regarding the formation, properties and production of glass.

Practical experiments in school science lessons and science field trips Nova Science Pub Incorporated

This resource for schools and colleges demonstrates the role of chemistry in the kitchen and highlights the wide applicability of chemical principles.

**A Curriculum Resource** Royal Society of Chemistry

Presenting a concise, basic introduction to modelling and computational chemistry this text includes relevant introductory material to ensure greater accessibility to the subject. Provides a comprehensive introduction to this evolving and developing field. Focuses on MM, MC, and MD with an entire chapter devoted to QSAR and Discovery Chemistry. Includes many real chemical applications combined with worked problems and solutions provided in each chapter. Ensures that up-to-date treatment of a variety of chemical modeling techniques are introduced.

Using ICT to Enhance Teaching and Learning in Chemistry

Bloomsbury Publishing

*Silas Marner* is the third novel by George Eliot, published in 1861. An outwardly simple tale of a linen weaver, it is notable for its strong realism and its sophisticated treatment of a variety of issues ranging from Religion to industrialisation to community.

**Prevention, Diagnosis and Cure** Royal Society of Chemistry

This book contains microscale experiments designed for use in schools and colleges.

The Beauty of Chemistry Royal Society of Chemistry

Electrogenerated chemiluminescence (ECL) is a powerful and versatile analytical technique, which is widely applied for biosensing and successfully commercialized in the healthcare diagnostic market. After introducing the fundamental concepts, this book will highlight the recent analytical applications with a special focus on immunoassays, genotoxicity, imaging, DNA and enzymatic assays. The topic is clearly at the frontier between several scientific domains involving analytical chemistry, electrochemistry, photochemistry, materials science, nanoscience and biology. This book is ideal for graduate

students, academics and researchers in industry looking for a comprehensive guide to the different aspects of electrogenerated chemiluminescence.

**Anti-aging Drugs** Royal Society of Chemistry

This is the first comprehensive overview of this topic. It serves as a single source for information about the properties, preparation, and uses of all relevant primary explosives. The first chapter provides background such as the basics of initiation and differences between requirements on primary explosives used in detonators and igniters. The authors then clarify the influence of physical characteristics on explosive properties, focusing on those properties required for primary explosives. Furthermore, the issue of sensitivity is discussed. All the chapters on particular groups of primary explosives are structured in the same way, including introduction, physical and chemical properties, explosive properties, preparation and documented use. The authors thoroughly verified all data and information. A unique feature of this book are original microscopic images of some explosives.

**Silas Marner Illustrated** Classic Chemistry Demonstrations

Ideal for overseas students studying at English-medium colleges and universities, this practical writing course enables international students to meet the required standard of writing and use an appropriate style for essays, exams and dissertations. Newly revised and updated to include extra exercises and material suggested by teachers and students, Academic Writing explains and demonstrates all the key writing skills and is ideal for use in the classroom or for independent study. Useful at every stage of an academic career and beyond, this indispensable book features: different styles and formats from CVs and letters to formal essays a focus on accuracy coverage of all stages of writing, from understanding titles to checking your work essential academic writing skills such as proper referencing, summarising and paraphrasing diagrams and practice exercises, complete with answers.

**The Poisons of Agatha Christie** Courier Corporation

Chemistry is a conceptual subject and, in order to explain many of the concepts, teachers use models to describe the microscopic world and relate it to the macroscopic properties of matter. This can lead to problems, as a student's every-day experiences of the

world and use of language can contradict the ideas put forward in chemical science. These titles have been designed to help tackle this issue of misconceptions. Part 1 deals with the theory, by including information on some of the key alternative conceptions that have been uncovered by research; ideas about a variety of teaching approaches that may prevent students acquiring some common alternative conceptions; and general ideas for assisting students with the development of appropriate scientific conceptions. Part 2 provides strategies for dealing with some of the misconceptions that students have, by including ready to use classroom resources including copies of probes that can be used to identify ideas held by students; some specific exercises aimed at challenging some of the alternative ideas; and classroom activities that will help students to construct the chemical concepts required by the curriculum. Used together, these two books will provide a good theoretical underpinning of the fundamentals of chemistry. Trialled in schools throughout the UK, they are suitable for teaching ages 11-18.

**Analytical Electrogenerated Chemiluminescence** Royal Society of Chemistry

The IUPAC system of polymer nomenclature has aided the generation of unambiguous names that reflect the historical development of chemistry. However, the explosion in the circulation of information and the globalization of human activities mean that it is now necessary to have a common language for use in legal situations, patents, export-import regulations, and environmental health and safety information. Rather than recommending a 'unique name' for each structure, rules have been developed for assigning 'preferred IUPAC names', while continuing to allow alternatives in order to preserve the diversity and adaptability of nomenclature. Compendium of Polymer Terminology and Nomenclature is the only publication to collect the most important work on this subject into a single volume. It serves as a handy compendium for scientists and removes the need for time consuming literature searches. One of a series issued by the International Union of Pure and Applied Chemistry (IUPAC), it covers the terminology used in many and varied aspects of polymer science as well as the nomenclature of several different types of polymer including regular and irregular single-strand organic polymers, copolymers and regular double-strand (ladder and spiro) organic polymers.