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Electrochemical Energy Elsevier

This book contains a series of exercises and problems posed in the subject of green metrics. Essentially it is a "how to" book on evaluating the material efficiency, environmental impact, safety-hazard impact, and energy efficiency of any kind of chemical reaction or synthesis plan. Only the essential green metrics in each of these categories are used. The introduction highlights the hierarchy of metrics used throughout the book, explains the structure of how the book is arranged, how the problems are posed, and how the reader is to use the book. Examples refer to themes according to the headings given in the table of contents and are arranged in a hierarchical order. Key Features: The topics cover fundamentals in chemistry and the chemical industry in a blended fashion. A unique text covering the fundamentals of green metrics from materials efficiency and environmental and safety-hazard impact, to new green technologies and more. The book will be useful in a range of chemistry courses, from early undergraduate to advanced graduate courses, whether based in lectures, tutorials or laboratory experiments. Using an extensive glossary of terms used in green metrics, each chapter has a specified theme where the relevant metrics definitions pertaining to that theme will be given with one or two illustrative worked examples. Supplemental web-based downloadable material including extra problems, full solutions, Excel files, ChemDraw files, templates, and exercises.

Encyclopedia of Automotive Engineering Academic Press
The Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 6th Edition provides the most current and authoritative guidance on selecting, performing, and evaluating the results of new and established laboratory tests. This classic clinical chemistry reference offers encyclopedic coverage detailing everything you need to know, including: analytical criteria for the medical usefulness of laboratory tests, variables that affect tests and results, laboratory medicine, applications of statistical methods, and most importantly clinical utility and interpretation of laboratory tests. It is THE definitive reference in clinical chemistry and molecular diagnostics, now fully searchable and with quarterly content updates, podcasts, clinical cases, animations, and extended content online through Expert Consult. Analytical criteria focus on the medical usefulness of laboratory procedures. Reference ranges show new approaches for establishing these ranges — and provide the latest information on this topic. Lab management and costs gives students and chemists the practical information they need to assess costs, allowing them to do their job more efficiently and effectively. Statistical methods coverage provides you with information critical to the practice of clinical chemistry. Internationally recognized chapter authors are considered among the best in their field. Two-color design highlights important features, illustrations, and content to help you find information easier and faster. NEW! Internationally recognized chapter authors are considered among the best in their field. NEW! Expert Consult features fully searchable text, quarterly content updates, clinical case studies, animations, podcasts, atlases, biochemical calculations, multiple-choice questions, links to Medline, an image collection, and audio interviews. You will now enjoy an online version making utility of this book even greater. UPDATED! Expanded Molecular Diagnostics section with 12 chapters that focus on emerging issues and techniques in the rapidly evolving and important field of molecular diagnostics and genetics ensures this text is on the cutting edge and of the most value. NEW! Comprehensive list of Reference

Intervals for children and adults with graphic displays developed using contemporary instrumentation. NEW! Standard and international units of measure make this text appropriate for any user — anywhere in the world. NEW! 22 new chapters that focus on applications of mass spectrometry, hematology, transfusion medicine, microbiology, biobanking, biomarker utility in the pharmaceutical industry and more! NEW! Expert senior editors, Nader Rifai, Carl Wittwer and Rita Horvath, bring fresh perspectives and help ensure the most current information is presented. UPDATED! Thoroughly revised and peer-reviewed chapters provide you with the most current information possible.

Nanomaterials and Nanotechnology CRC Press
Issues in Medical Chemistry: 2012 Edition ScholarlyEditions
Biopolymer-Based Metal Nanoparticle Chemistry for Sustainable Applications Springer

This book includes a selection of reviewed papers presented at the 2016 China Academic Conference on Printing, Packaging Engineering & Media Technology, held on November 25-27, 2016 in Xi'an, China. The conference was jointly organized by China Academy of Printing Technology, Xi'an University of Technology and Stuttgart Media University of Germany. The proceedings cover the recent outcomes on color science and technology, image processing technology, digital media technology, digital process management technology in packaging and packaging etc. They will be of interest to university researchers, R&D engineers and graduate students in graphic communications, packaging, color science, image science, material science, computer science, digital media and network technology fields.

Advances in Physical Organic Chemistry CRC Press
Electrochemical Energy: Advanced Materials and Technologies covers the development of advanced materials and technologies for electrochemical energy conversion and storage. The book was created by participants of the International Conference on Electrochemical Materials and Technologies for Clean Sustainable Energy (ICES-2013) held in Guangzhou, China, and incorporates select papers presented at the conference. More than 300 attendees from across the globe participated in ICES-2013 and gave presentations in six major themes: Fuel cells and hydrogen energy, Lithium batteries and advanced secondary batteries, Green energy for a clean environment, Photo-Electrocatalysis, Supercapacitors, Electrochemical clean energy applications and markets. Comprised of eight sections, this book includes 25 chapters featuring highlights from the conference and covering every facet of synthesis, characterization, and performance evaluation of the advanced materials for electrochemical energy. It thoroughly describes electrochemical energy conversion and storage technologies such as batteries, fuel cells, supercapacitors, hydrogen generation, and their associated materials. The book contains a number of topics that include electrochemical processes, materials, components, assembly and manufacturing, and degradation mechanisms. It also addresses challenges related to cost and performance, provides varying perspectives, and emphasizes existing and emerging solutions. The result of a conference encouraging enhanced research collaboration among members of the electrochemical energy community, **Electrochemical Energy: Advanced Materials and Technologies** is dedicated to the development of advanced materials and technologies for electrochemical energy conversion and storage and details the technologies, current achievements, and future directions in the field.

IUTAM Laminar-Turbulent Transition Royal Society of Chemistry
This PhD thesis presents the latest findings on the tunable surface chemistry of graphene/graphene oxide by systematically investigating the tuning of oxygen and nitrogen containing functional groups using an innovative carbonization and ammonia treatment. In addition, novel macroscopic assemblies or hybrids of graphene were produced, laying the theoretical foundation for developing graphene-based energy storage devices. This work will be of interest to university researchers, R&D engineers and graduate students working with carbon materials, energy storage and nanotechnology.

Tietz Textbook of Clinical Chemistry and Molecular Diagnostics Springer Nature

Carbon-Based Polymer Nanocomposites for Environmental and Energy Applications provides the fundamental physico-chemical characterizations of recently explored carbon-based polymer nanocomposites, such as carbon nanotubes, graphene and its derivatives, nanodiamond, fullerenes and other nano-sized carbon allotropes. The book also covers the applications of carbon-based polymer nanocomposite in the environmental and energy fields. Topics range from the various approaches that have been explored and developed

for the fabrication of carbon-based polymer nanocomposite, to their applications in tackling environmental and energy related issues. Provides a clear picture of the current state-of-the-art and future trends in carbon-based polymer nanomaterials. Explains the interactions between nanofiller-polymer matrices and mechanisms related to applications in environmental pollution and energy shortage. Includes computational and experimental studies of the physical and chemical properties of carbon-based polymer nanocomposites. Features chapters written by world leading experts.

Minimisation of Energy and Water Use, Waste and Emissions John Wiley & Sons

This book provides a complete overview of a wide range of nanomaterials from their synthesis and characterization to current and potential applications with special focus on the use of such nano-based products as functional agents in biomedical, environmental and industrial applications. It addresses the intrinsic relationship between aspects involving the synthesis of nanocompounds, their biophysico-chemical properties and their interactions occurring in biomedical, environmental and industrial matrix. This book is of interest to engineers, academics and research scholars working in these fields.

Advances in Clinical Chemistry Springer

Renewable fuel research and process development requires interdisciplinary approaches involving chemists and physicists from both scientific and engineering backgrounds. Here is an important volume that emphasizes green chemistry and green engineering principles for sustainable process development from an interdisciplinary point of view. It creates an enriching knowledge base on green chemistry of biofuel production, sustainable process development, and green engineering principles for renewable fuel production. This book includes chapters contributed by both research scientists and research engineers with significant experience in biofuel chemistry and processes. The book offers an abundance of scientific experimental methods and analytical procedures and interpretation of the results that capture the state-of-the-art knowledge in this field. The wide range of topics make this book a valuable resource for academicians, researchers, industrial practitioners and scientists, and engineers in various renewable energy fields. Key features: • Emphasizes green chemistry and green engineering principles for sustainable process development for biofuel production • Discusses a wide array of biofuels from algal biomass to waste-to-energy technologies and wastewater treatment and activated sludge processes • Presents advances and developments in biofuel green chemistry and green engineering, including process intensification (microwaves/ultrasound), ionic liquids, and green catalysis • Looks at environmental assessment and economic impact of biofuel production

A Practical Guide CRC Press

Issues in Medical Chemistry / 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Medicinal Chemistry. The editors have built **Issues in Medical Chemistry: 2012 Edition** on the vast information databases of ScholarlyNews™. You can expect the information about Medicinal Chemistry in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of **Issues in Medical Chemistry: 2012 Edition** has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Carbon Nanomaterials Based on Graphene Nanosheets Elsevier

This thesis presents a theoretical and experimental approach for the rapid fabrication, optimization and testing of holographic sensors for the quantification of pH, organic solvents, metal cations, and glucose in solutions. Developing non-invasive and reusable diagnostics sensors that can be easily manufactured will support the monitoring of high-risk individuals in any clinical or point-of-care setting. Sensor fabrication approaches outlined include silver-halide chemistry, laser ablation and photopolymerization. The sensors employ off-axis Bragg diffraction gratings of ordered silver nanoparticles and localized refractive index changes in poly (2-hydroxyethyl

methacrylate) and polyacrylamide films. The sensors exhibited reversible Bragg peak shifts, and diffracted the spectrum of narrow-band light over the wavelength range 495-1100 nm. Clinical trials of glucose sensors in the urine samples of diabetic patients demonstrated that they offer superior performance compared to commercial high-throughput urinalysis devices. Lastly, a generic smartphone application to quantify colorimetric tests was developed and tested for both Android and iOS operating systems. The sensing platform and smartphone application may have implications for the development of low-cost, reusable and equipment-free point-of-care diagnostic devices.

Applications and Industrialization Royal Society of Chemistry Functional diversity and molecular architecture in biologically active oxindoles. Transition metal-catalyzed intramolecular Heck reactions and amide alpha-arylations. Asymmetric rearrangements of O-carbonylated oxindoles and related processes. Amination, hydroxylation, and halogenation reactions of 3-substituted oxindoles. Conjugate addition and alkylation reactions of 3-substituted oxindoles. Asymmetric aldol and Mannich reactions of isatins. Michael additions to isatin-derived electron-deficient alkynes. Nucleophilic substitution reactions of functionalized 3-substituted oxindoles. Enantioselective construction of spirooxindoles by cycloaddition, annulation, and cascade cyclization reactions of methyleneindolinone derivatives. The

3,3-disubstituted-2-oxindole moiety is present in many chiral alkaloids that exhibit interesting biological activities. The enantioselective synthesis of chiral oxindole derivatives has been mainly achieved by asymmetric catalytic methods. In this review we highlight the most important catalytic methods relevant to the synthesis of chiral, non-spirocyclic 3,3-disubstituted oxindoles.

Part 1: Engines - Fundamentals Springer

Advances in Physical Organic Chemistry provides the chemical community with authoritative and critical assessments of the many aspects of physical organic chemistry. The field is a rapidly developing one, with results and methodologies finding application from biology to solid-state physics. Reviews the application of quantitative and mathematical methods toward understanding chemical problems Covers organic, organometallic, bioorganic, enzymes and materials topics

9th IUTAM Symposium, London, UK, September 2–6, 2019 Elsevier Health Sciences

Comprehensive Energy Systems provides a unified source of information covering the entire spectrum of energy, one of the most significant issues humanity has to face. This comprehensive book describes traditional and novel energy systems, from single generation to multi-generation, also covering theory and applications. In addition, it also presents high-level coverage on energy policies, strategies, environmental impacts and sustainable development. No other published work covers such breadth of topics in similar depth. High-level sections include Energy Fundamentals, Energy Materials, Energy Production, Energy Conversion, and Energy Management. Offers the most comprehensive resource available on the topic of energy systems Presents an authoritative resource authored and edited by leading experts in the field Consolidates information currently scattered in publications from different research fields (engineering as well as physics, chemistry, environmental sciences and economics), thus ensuring a common standard and language

Surface Chemistry and Macroscopic Assembly of Graphene for Application in Energy Storage CRC Press

The unique structures and properties of dendrimers make them attractive for many applications, from drug delivery and antimicrobial agents to catalysis and as functional materials. *Dendrimer Chemistry* provides an overview of the latest advances in the synthesis of dendrimers and other complex dendritic architectures. The book focuses on established building block families for generating dendritic macromolecules, capitalizing on the evolution in the synthesis of dendrimers and other complex dendritic architectures. Systems covered range from dendritic polyesters and naturally occurring monomers to novel dendritic families. Each chapter starts with an introduction to the dendrimer family and its important features followed by information on the building blocks used to generate the dendrimers, their synthetic strategies and the resulting architectures. Chapters also cover the characterization and structural analysis, commercial availability and cutting-edge applications. Including forewords from leaders in the field, this will be a useful reference for postgraduate students and researchers in organic chemistry, polymer chemistry, materials science and macromolecular chemistry.

Studies in Natural Products Chemistry CRC Press

Biopolymers are becoming an increasingly important area of research as traditional chemical feedstocks run low and concerns about environmental impacts increase. One area of particular interest is their use for more sustainable development of metal nanoparticles. *Biopolymer-Based Metal Nanoparticle Chemistry for Sustainability Applications, Volume 2* reviews key uses of biopolymers and biopolymer-based metal nanoparticles for a range of key sustainability-focused applications. After providing contextual examples of applications across the fields of food science,

biomedicine and biochemistry, the book goes on to explore further sustainability-focused applications of Biopolymer-Based Metal Nanoparticles in such important areas as catalysis, environmental science, biosensing, and energy. Provides an overview of biopolymer-based metal nanoparticles for a wide range of applications Provides technological details on the synthesis of natural polymer-based metal nanoparticles Explores the role of biopolymer-based metal nanoparticles for more sustainable catalytic processes

Graphene Science Handbook Issues in Medical Chemistry: 2012 Edition

Explore the Practical Applications and Promising Developments of Graphene The *Graphene Science Handbook* is a six-volume set that describes graphene's special structural, electrical, and chemical properties. The book considers how these properties can be used in different applications (including the development of batteries, fuel cells, photovoltaic cells, and supercapacitors based on graphene) and produced on a massive and global scale. Volume One: Fabrication Methods Volume Two: Nanostructure and Atomic Arrangement Volume Three: Electrical and Optical Properties Volume Four: Mechanical and Chemical Properties Volume Five: Size-Dependent Properties Volume Six: Applications and Industrialization This handbook describes the fabrication methods of graphene; the nanostructure and atomic arrangement of graphene; graphene's electrical and optical properties; the mechanical and chemical properties of graphene; the size effects in graphene, characterization, and applications based on size-affected properties; and the application and industrialization of graphene. Volume six is dedicated to the application and industrialization of graphene and covers: The design of graphene- and biomolecule-based nanosensors and nanodevices The use of graphene-based field-effect-transistor (GFET)-like structures as sensing substrates and DNA aptamers as sensing elements Recent advances in graphene-based DNA sensors The antibacterial properties of graphene-based nanomaterial (NM) The chemical and physical properties of graphene and its current uses The development of sensitive and selective field-effect transistors (FET) biosensors based on graphene The unique properties of ordered graphene (G) Various methods currently employed for the production of graphene nanocomposites The supramolecular chemistry of graphene derivatives, and more

Green Chemistry for Sustainable Biofuel Production CRC Press

Since the industrial revolution, chlorine remains an iconic molecule even though its production by the electrolysis of sodium chloride is extremely energy intensive. The rationale behind this book is to present useful and industrially relevant examples for alternatives to chlorine in synthesis. This multi-authored volume presents numerous contributions from an international spectrum of authors that demonstrate how to facilitate the development of industrially relevant and implementable breakthrough technologies. This volume will interest individuals working in organic synthesis in industry and academia who are working in Green Chemistry and Sustainable Technologies.

Chemical Abstracts CRC Press

Chemistry/Forensic Science Forensic chemistry is a subdiscipline of forensic science, its principles guide the analyses performed in modern forensic laboratories. Forensic chemistry's roots lie in medico-legal investigation, toxicology and microscopy and have since led the development of modern forensic analytic techniques and practices for use in a variety of applications. *Introduction to Forensic Chemistry* is the perfect balance of testing methods and application. Unlike other competing books on the market, coverage is neither too simplistic, nor overly advanced making the book ideal for use in both undergraduate and graduate courses. The book introduces chemical tests, spectroscopy, advanced spectroscopy, and chromatography to students. The second half of the book addresses applications and methods to analyze and interpret controlled substances, trace evidence, questioned documents, firearms, explosives, environmental contaminants, toxins, and other topics. The book looks at innovations in the field over time including the latest development of new discernible chemical reactions, instrumental tools, methods, and more. Key features: Nearly 300 full-color figures illustrating key concepts and over 20 case studies Addresses all the essential topics without extraneous or overly advanced coverage Includes full pedagogy of chapter objectives, key terms, lab problems, end of chapter questions, and additional readings to emphasize key learning points Includes chemical structures and useful spectra as examples Fulfills the forensic chemistry course requirement in FEPAC-accredited programs Includes a chapter on Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) materials Comprehensive and accessible, without being overly technical, *Introduction to Forensic Chemistry* will be a welcome addition to the field and an ideal text designed for both the student user and professor in mind. Course ancillaries including an Instructor's Manual with Test Bank and chapter PowerPoint® lecture slides are available with qualified course adoption.

CRC Concise Encyclopedia of Nanotechnology Elsevier Inc. Chapters

The series *Topics in Current Chemistry Collections* presents critical reviews from the journal *Topics in Current Chemistry* organized in topical volumes. The scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology, medicine and materials science. The goal of each thematic volume is to give the non-specialist reader, whether in academia or industry, a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience. Each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed. The coverage is not intended to be an exhaustive summary of the field or include large quantities of data, but should rather be conceptual, concentrating on the methodological thinking that will allow the non-specialist reader to understand the information presented. Contributions also offer an outlook on potential future developments in the field./div Chapters "Sonocatalysis: A Potential Sustainable Pathway for the Valorization of Lignocellulosic Biomass and Derivatives", "Valorisation of Biowastes for the Production of Green Materials Using Chemical Methods" and "Green and Sustainable Separation of Natural Products from Agro-Industrial Waste: Challenges, Potentialities, and Perspectives on Emerging Approaches" are available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.