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Photodynamic Therapy: From Theory to Application brings attention to this exceptional treatment strategy, which until now has not achieved the recognition and breadth of applications it deserves. The authors, all experts and pioneers in their field, discuss the history and basic principles of PDT, as well as the fundamentals of the theory, methods, and instrumentation of clinical diagnosis and treatment of cancer. Non-oncological applications such as the control of parasites and noxious insects are also discussed. This book serves as a standard reference for researchers and students at all levels, as well as clinical specialists interested in the topic and those in industry exploring[...]

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The emergence of nanotechnology has had a profound effect on almost every aspect of the 21st century’s daily life. It has had a revolutionary impact from stain-resistant clothing and cosmetics to environmental issues, including energy and medicine and even aerospace engineering. In Oxidative Stress and Nanotechnology: Methods and Protocols, expert researchers in the field detail various aspects of nanotechnology from the oxidative stress point of view. Focusing on synthesis of different antioxidant nanoparticles and antioxidant-loaded nanoparticles, as well as their in vitro/in vivo mechanisms of action along with their clinical relevance. Written in the highly successful Methods[...]

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M.H. Abdel-Kader, German University of Cairo, New Cairo City, Egypt (Ed.)

Functionalized Polymeric Materials in Agriculture and the Food Industry
The purpose of this book will be to demonstrate 1) the newly developed method of using reactive functionalized materials in agriculture to solve the economic and public health problems associated with using conventional agrochemicals; and 2) new technology aimed at achieving the greening of chemistry to meet appropriate environmental standards in both agriculture and industrial foodstuffs production. More specifically, the book will accomplish this goal by addressing 3 key issues in the field: 1) the production of reactive functionalized materials with enhanced properties that offer a major opportunity to overcome...
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M. Bertau, Institut für Technische Chemie, Freiberg, Germany; H. Offermanns, H.-J. Wernicke, Süd-Chemie AG, Munich, Germany; L. Plass, Air Liquide Deutschland, Kronberg, Germany; F. Schmidt, Clariant GmbH Deutschland, Rosenheim, Germany (Eds.)

Methanol: The Basic Chemical and Energy Feedstock of the Future Asinger’s Vision Today

Methanol - The Chemical and Energy Feedstock of the Future offers a visionary yet unbiased view of methanol technology. Based on the groundbreaking 1986 publication “Methanol” by Friedrich Asinger, this book includes contributions by more than 40 experts from industry and academia. The authors and editors provide a comprehensive exposition of methanol chemistry and technology which is useful for a wide variety of scientists working in chemistry and energy related industries as well as academic researchers and even decision-makers and organizations concerned with the future of chemical and energy feedstocks.

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P.G. Born, DLR Institute of Materials Physics, Köln, Germany

Crystallization of Nanoscaled Colloids

This thesis deals with the processes that create ordered assemblies from disordered nanoparticles. Ordered packings of nanoscale particles can exhibit unusual properties. This work investigates the self-assembly of such particles, a process widely employed for the generation of ordered structures, but not yet well understood. In situ methods are used to observe the assembly of sub-micron polymer lattices and sub-10 nm gold particles into crystalline monolayers and aggregates. On the basis of these results, the book develops new models that describe the competition between different influences, such as thermal agitation and directional forces. It suggests necessary criteria that lead [...] More on www.springer.com/978-3-642-40189-3

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L.K. Blusch, University of British Columbia, Vancouver, Canada

The Siamese-Twin Porphyrin and Its Copper and Nickel Complexes: A Non-Innocent Twist

This thesis describes the first and long-sought successful synthesis of a new pyrazole-expanded porphyrin, a higher analog of porphyrin. This “Siamese-Twin Porphyrin” provides two conjoined porphyrin-like coordination spheres, thus being able to accommodate two metal ions within the same ligand. In her thesis, Lina Blusch not only explains the challenging synthesis and characterization of the ligand system, but also its application to the synthesis of homo- and hetero-bimetallic Ni and Cu complexes. She observes interesting metal-metal-interactions in the complexes, that lead to a non-innocent multistep redox chemistry. The ligand system and its complexes show an intriguing twisted [...] More on www.springer.com/978-3-319-01673-3

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S. Brøndsted Nielsen, Aarhus University, Aarhus, Denmark; J.A. Wyer, Aarhus University, Aarhus C, Denmark (Eds.)

Photophysics of Ionic Biochromophores

This book provides a concise overview of the photophysics and spectroscopy of bio chromophore ions. The book “Photophysics of Ionic Biochromophores” summarizes important recent advances in the spectroscopy of isolated biomolecular ions in vacuo, which has within the last decade become a highly active research field. Advanced instrumental apparatus and the steady increase in more and more powerful computers have made this development possible, both for experimentalists and theoreticians. Applied techniques described here include absorption and fluorescence spectroscopy, which are excellent indicators of environmental effects and can thus shed light on the intrinsic electronic [...] More on www.springer.com/978-3-642-40189-3

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P.G. Born, DLR Institute of Materials Physics, Köln, Germany
Phase Transformation of Kaolinite Clay

The book depicts comprehensive studies on thermal decomposition of Kaolinite by different physicochemical methods carried out by various scientists in last 100 years and results of the studies conducted by author in past 33 years. It also provides a critical analysis of different views on Kaolinite–Mullite reaction series, characterization of controversial spinel phase in Kaolinite–Mullite reaction series and explanation of DTA events of Kaolinite. The book helps both researchers and students to realise the new mechanism of transformation of Kaolinite to Mullite. The new reaction processes discussed in the book also help ceramic experts to synthesize Mullite grains in commercial way. [...] More on www.springer.com/978-81-322-1153-2

Ionic Liquid Bulk and Interface Properties

Electronic Interaction, Molecular Orientation and Growth Characteristics

In this thesis, Till Cremer investigates the bulk properties of ionic liquids (IL), the IL/vacuum interface and the IL/solid interface. For these studies the author primarily uses angle-resolved X-ray photoelectron spectroscopy under ultrahigh vacuum conditions. ILs represent a class of materials with unique physicochemical properties. Many applications take advantage of the extremely low vapor pressure of aprotic ILs to fabricate permanent, non-volatile liquid coatings on solid materials. The author focuses on issues related to thin IL coatings, in particular concerning new catalytic concepts such as the supported ionic liquid phase (SILP) and solid catalyst with ionic liquid layer. [...] More on www.springer.com/978-3-319-00379-5

Characterization of Protein Therapeutics using Mass Spectrometry

This book highlights current approaches and future trends in the use of mass spectrometry to characterize protein therapies. As one of the most frequently utilized analytical techniques in pharmaceutical research and development, mass spectrometry has been widely used in the characterization of protein therapeutics due to its analytical sensitivity, selectivity, and specificity. This book begins with an overview of mass spectrometry techniques as related to the analysis of protein therapeutics, structural identification strategies, quantitative approaches, followed by studies involving characterization of process related protein drug impurities/degradants, metabolites, higher order [...] More on www.springer.com/978-1-4419-7861-5

Containment Technology

Progress in the Pharmaceutical and Food Processing Industry

This book covers all aspects of containment technology in depth and the latest developments in this exciting field are introduced. This book is a key publication to planning engineers, production managers and those interested in getting a picture of the different applications of the isolator technology. References on literature, laws, norms and guidelines will support the reader to become acquainted with the containment technology. More on www.springer.com/978-3-642-39291-7

Packaging for Food Preservation

The book will be focused on the three most important aspects of food packaging: Modeling, Materials and Packaging Strategies. The modeling section will provide a complete overview of mass transport phenomena in polymers intended for food packaging applications. The materials section will cover the most interesting problem-solving solutions in the field of food packaging, i.e., low environmental impact active films with antimicrobial activity. Lastly, the packaging section will provide an overview of the most recent approaches used to prolong the shelf life of several food products. More on www.springer.com/978-1-4614-7683-2
New Gold-Catalyzed Reactions and Applications for the Synthesis of Alkaloids

Ana Escribano Cuesta’s thesis presents a detailed study of the inter- and intramolecular reactions of carbonyl compounds with 1,6-enynes using gold (I) complexes. An important part of the work involved streamlining the variables that allow the selective synthesis of different products such as tricyclic compounds, dihydropyrans, 1,3-dienes or cyclobutenes. The second chapter highlights the importance and difficulties in synthesising a cyclobutene subunit and the author includes a detailed description of how the products were prepared. The final chapter outlines the synthesis of lundurines using methodology developed by the author’s research group for intramolecular gold-catalyzed reactions.

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Biosensors: Essentials

Today, biosensors are broadly applied in research, clinical diagnosis and monitoring, as well as in pharmaceutical, environmental or food analysis. In this work, the author presents the essentials that advanced students and researchers need to know in order to make full use of this technology. This includes a description of biochemical recognition elements, such as enzymes, antibodies, aptamers or even whole cells. Various signal transducers such as electrochemical and optical transducers, luminescence devices and advanced techniques such as quartz crystal microbalances and MEMS systems are covered as well. Current applications are introduced through various case studies, rounded out.[…]

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Food Bites

The Science of the Foods We Eat

Food Bites is an easy-to-read, often humorous book on the scientific basis of the foods we eat, and answers those pesky, niggling questions such as: Is the quality of beer really affected by the type of water used? and Processed foods: good or bad? Readers will be captivated by this superbly written book, especially so as their guides are Richard Hartel, professor of Food Engineering at UW-Madison, and his daughter, AnnaKate Hartel. Professor Hartel has for the last four years penned a witty and illuminating column on all aspects of food science for the Capital Times…
of Madison, and his weekly wisdom has now been collected into a single publication. With a huge and growing interest in [...] More on www.springer.com/978-1-4614-7563-7

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K. Hiraoka, University of Yamanashi, Kofu, Japan (Ed.)

**Fundamentals of Mass Spectrometry**

Most research and all publications in mass spectrometry address either applications or practical questions of procedure. This book, in contrast, discusses the fundamentals of mass spectrometry. Since these basics (physics, chemistry, kinetics, and thermodynamics) were worked out in the 20th century, they are rarely addressed nowadays and young scientists have no opportunity to learn them. This book reviews a number of useful methods in mass spectrometry and explains not only the details of the methods but the theoretical underpinning.


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E.M. Huber, Technische Universität München, Garching, Germany

**Structural and Functional Characterization of the Immunoproteasome**

In this acclaimed thesis, Eva Maria Huber reveals ground-breaking results by elucidating the crystal structure of the murine immunoproteasome in complex with a selective inhibitor. Huber does this by performing multidisciplinary methodologies including X-ray crystallography, fluorescence spectroscopy and mutagenesis experiments. Her exceptional results explore the immunoproteasome complex structures and are of outstanding importance for future scientific research especially in the pharmaceutical industry. These results will enable the functional analysis of individual proteasome subunits and support the development of novel drugs for autoimmune diseases such as multiple sclerosis or [...] More on www.springer.com/978-3-319-01555-2

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M. Irie, Rikkyo University, Tokyo, Japan; Y. Yokoyama, Yokohama National University, Yokohama, Japan; T. Seki, Nagoya University, Nagoya, Japan (Eds.)

**New Frontiers in Photochromism**

Photochromism is the reversible phototransformation of a chemical species between two forms having different absorption spectra. During the phototransformation not only the absorption spectra but also various physicochemical properties change, such as the refractive index, dielectric constant, oxidation/reduction potential, and geometrical structure. The property changes can be applied to photonic equipment such as erasable memory media, photoptical switch components, and display devices. This book compiles the accomplishments of the research project titled “New Frontiers in Photochromism” supported by the Ministry of Education, Culture, Sports, Science and Technology of Japan. The [...] More on www.springer.com/978-4-431-54290-2

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G. Inzelt, Eötvös Loránd University, Budapest, Hungary; A. Levenstam, Åbo Akademi University, Abo, Finland; F. Scholz, Universität Greifswald, Greifswald, Germany (Eds.)

**Handbook of Reference Electrodes**

Reference Electrodes are a crucial part of any electrochemical system, yet an up-to-date and comprehensive handbook is long overdue. Here, an experienced team of electrochemists provides an in-depth source of information and data for the proper choice and construction of reference electrodes. This includes all kinds of applications such as aqueous and non-aqueous solutions, ionic liquids, glass melts, solid electrolyte systems, and membrane electrodes. Advanced technologies such as miniaturized, conducting-polymer-based, screen-printed or disposable reference electrodes are also covered. Essential know-how is clearly presented and illustrated with almost 200 figures.

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Acid-Base Diagrams

Understanding acid-base equilibria made easy for students in chemistry, biochemistry, biology, environmental and earth sciences. Solving chemical problems, be it in education or in real life, often requires the understanding of the acid-base equilibria behind them. Based on many years of teaching experience, Heike Kahlert and Fritz Scholz present a powerful tool to meet such challenges. They provide a simple guide to the fundamentals and applications of acid-base diagrams, avoiding complex mathematics. This textbook is richly illustrated and has full color throughout. It offers learning features such as boxed results and a collection of formulae.

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Polysaccharide Based Graft Copolymers

Renowned experts give all essential aspects of the techniques and applications of graft copolymers based on polysaccharides. Polysaccharides are the most abundant natural organic materials and polysaccharide based graft copolymers are of great importance and widely used in various fields. Natural polysaccharides have recently received more attention due to their advantages over synthetic polymers by being non-toxic, biodegradable and available at low cost. Modification of polysaccharides through graft copolymerization improves the properties of polysaccharides. Grafting is known to improve the characteristic properties of the backbones. Such properties include water repellency, [...]
designers will find a treasure trove of material in these two books.

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The two volumes of Handbook of Gas Sensor Materials provide a detailed and comprehensive account of materials for gas sensors, including the properties and relative advantages of various materials. Since these sensors can be applied for the automation of myriad industrial processes, as well as for everyday monitoring of such activities as public safety, engine performance, medical therapeutics, and in many other situations, this handbook is of great value. Gas sensor designers will find a treasure trove of material in these two books.


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Polycondensation History and New Results

This book reports on origin and history of polycondensation chemistry beginning in the first half of the 19th century. Furthermore, history and inventors of the most important polycondensates, such as Nylons, PET or polycarbonates, are described. The classical theory of step-growth polymerizations is discussed in the light of the latest experimental and theoretical results. Particular emphasis is laid on the role of cyclization reactions. Special categories of polycondensation processes are discussed in more detail: syntheses of hyperbranched and multicyclic polymers, non-stoichiometric polycondensations, interfacial polycondensations, solid state polycondensations, condensative chain...

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Erscheinungstermin: September 30, 2013

Biotechnology for Environmental Management and Resource Recovery

Various types of secondary agriculture and forestry wastes represent valuable resource materials for developing alternate energy as biofuels and other value added products such as sugars, phenols, furans, organic acids, enzymes and digestible animal feed etc. However, if not managed properly, waste material and environmental contaminants generated by various industries such as food and feed, pulp and paper and textile may lead to severe environmental pollution. The energy, food and feed demand necessitate developing simple and economically viable technologies for environmental management and resource recovery. Microorganisms and their enzymes contribute significantly in utilization...

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2013. XIV, 313 p. 49 illus., 34 illus. in color. (Springer Theses)
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Erscheinungstermin: September 30, 2013

Development of New Radical Cascades and Multi-Component Reactions Application to the Synthesis of Nitrogen-Containing Heterocycles

In this dissertation, Marie-Hélène Larraufie develops original radical and pallado-catalyzed methodologies to enable the synthesis of several classes of bioactive nitrogen-containing heterocycles. New radical cascades employing the N-acylcyanamide moiety offer straightforward routes to quinazolinones and guanidines, as well as new insights into the mechanism of homolytic aromatic substitutions. In parallel, Larraufie expands the scope of visible light photoredox catalysis to the ring opening of epoxides and aziridines, thus providing new sustainable alternatives for the generation of radicals. Furthermore, in a collaborative effort with the Catellani group, the author investigates...

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Erscheinungstermin: September 30, 2013

Towards Dual and Targeted Cancer Therapy with Novel Phthalocyanine-based Photosensitizers

Janet Lau’s thesis describes her studies into the use of phthalocyanine-based photosensitizers in combined chemo- and photodynamic therapy (PDT) and targeted PDT. In order to carry out this study, Lau uses several approaches: conjugation with a...

and bio-products are... milling and refining for the production of biofuels. The environmental impact assessment of oil palm plantation, from oil palm biomass. The environmental issues sustainabilty of biofuel and bio-product production. This is followed by the key factors defining the sus-
tabilization. The simultaneous production of these bio-
products for sustainable development is discussed. Overall the studies included are original[...]

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Gewöhnlich versandfertig in 3-5 Werktagen.

Sustainability of Biofuel Production from Oil Palm Biomass

This book evaluates and discusses the main sustain-
ability challenges encountered in the production of biofuel and bio-products from oil palm biomass. It
starts off with the emphasis on oil palm production, oil palm products recovery and oil palm wastes util-
ization. The simultaneous production of these bio-
products for sustainable development is discussed. This is followed by the key factors defining the sus-
tainability of biofuel and bio-product production from oil palm biomass. The environmental issues including ecological, life cycle assessment and environ-
mental impact assessment of oil palm plantation, milling and refining for the production of biofuels and bio-products are[...]


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Organotrifluoroborate Preparation, Coupling and Hydrolysis

Alistair Lennox’s thesis reports on the reactivity of organotrifluoroborates, which are becoming increasingly important reagents in synthesis. The thesis is divided into three sections. The first section describes a method for preparing organotrifluoroborates. The second section reports on a mechanistic investiga-
tion into the main application of RBF3K reagents as coupling partners in Suzuki-Miyaura coupling, phe-
omena identified as arising from organotrifluorobo-
rate hydrolysis and fluoride release. The final section reports on a detailed investigation into the hydrolysis mechanism, a prerequisite for their Suzuki-Miyaura coupling, and how it may be predicted and controlled. This[...]

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Erscheinungstermin: August 31, 2013

Computational Characterisation of Gold Nanocluster Structures

In this thesis, Andrew Logsdail demonstrates that computational chemistry is a powerful tool in con-
temporary nanoscience, complementing experimental observations and helping guide future experiments. The aim of this particular PhD is to further our understanding of structural and compositional prefer-
ences in gold nanoparticles, as well as the composi-
tional and chemical ordering preferences in bimetallic nanoalloys formed with other noble metals, such as palladium and platinum. Highlights include: calculations of the structural preferences and optical-response of gold nanoparticles and gold-contain-
ing nanoalloys; the design and implementation of novel numerical algorithms for the[...]

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Erscheinungstermin: September 30, 2013

Percutaneous Absorption of UV Filters Contained in Sunscreen Cosmetic Products Development of Analytical Methods

Zacaráis León’s thesis describes the development and validation of analytical methods to estimate the processes set in motion by percutaneous absorption of UV filters in sunscreen cosmetic products. León describes these methods in both in vitro and non-
invasive in vivo methodologies. Currently derma-
tologists recommend the use of sunscreen products not only under conditions of extreme exposure to the

sun but also in daily situations. However the chemi-
ical compounds in these products contain may lead to undesired processes and cause induced toxicity, estro-
genic effects and endocrine activity. León establishes methods to investigate these effects and provides valu-
able information on the[...]

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Disruption of Protein-Protein Interfaces
In Search of New Inhibitors

"Disruption of Protein-Protein Interfaces" reviews the latest developments and future perspectives in drug discovery at protein-protein interfaces. The authors detail experimental and computational tools to tackle the subject and highlight the contribution of the Italian research community to the field. Evidence shows that blocking or modulating protein-protein interactions might lead to the development of useful new drugs. Consequently, in recent years great effort has been dedicated to unveiling the molecular details of protein-protein interfaces by structural techniques e.g. X-ray diffraction, NMR spectroscopy. This book, written and edited by leaders in the field, provides...

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Erscheinungstermin: July 31, 2013

Primary Explosives

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...

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Erscheinungstermin: July 31, 2013

Biomimetic Dye Aggregate Solar Cells

This thesis describes a new approach to the construction of solar cells. Following nature’s example, this approach has the goal to find a biomimetic self-assembling dye, whose aggregates can mimic the natural light-harvesting system of special photosynthetic active bacteria. The thesis investigates methods to control the self-assembly such that suitable dye aggregates are formed with high internal order and size-confinement. The dye aggregates can be implemented into a new type of solar cells, designed to combine the advantages of hybrid solar cells and solid-state dye-sensitized solar cells (ss-DSSCs): dye aggregate solar cells (DASCs). This book describes the construction and first[...]

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Ion-Selective Electrodes

Ion-selective electrodes (ISEs) have a wide range of applications in clinical, environmental, food and pharmaceutical analysis as well as further uses in chemistry and life sciences. Based on his profound experience as a researcher in ISEs and a course instructor, the author summarizes current knowledge for advanced teaching and training purposes with a particular focus on ionophore-based ISEs. Coverage includes the basics of measuring with ISEs, essential membrane potential theory and a comprehensive overview of the various classes of ion-selec-
The principles of constructing ISEs are outlined, and the transfer of methods into routine analysis is considered. Advanced[...]

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Forthcoming
M. Miljkovic, Pennsylvania State University, Hershey, USA

Electrostatic and Stereoelectronic Effects in Carbohydrate Chemistry
The book ideals with polar effects in carbohydrates and how these effects control the stereochemistry of carbohydrate reactions. This is important for understanding the mechanisms of certain carbohydrate reactions, including also some enzymatic reactions such as glycosidases, a very important group of enzymes in living matter. It is also very useful for a synthetic carbohydrate chemist who would like to synthesize stereoselectively certain classes of carbohydrates.


Hardcover
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Erscheinungstermin: September 18, 2013

G.G. Moy, Food Safety Consultants Int'l, Vandoeuvres, Switzerland; R.W. Vannoort, Inst of Environmental Science & Research, Christchurch, New Zealand (Eds.)

Total Diet Studies
Total Diet Studies introduces the TDS concept to a wider audience and presents the various steps in the planning and implementation of a TDS. It illustrates how TDSs are being used to protect public health from chemicals in the food supply in many developed and developing countries. The book also examines some of the applications of TDSs to specific chemicals, including contaminants and nutrients. The goal of a total diet study is to provide basic information on the levels and trends of exposure to chemicals in foods as consumed by the population. In other words, foods are processed and prepared as typical for a country before they are analyzed in order to better represent actual[...]

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Erscheinungstermin: September 30, 2013

A. Naimpally, California State University, Long Beach, USA; K. Rosselot, Process Profiles, Calabasas, USA

Environmental Engineering: Review for the Professional Engineering Examination
This book will help the reader expand further into chemical engineering and become a licensed professional engineer (PE), which can offer a tremendous boost to one’s career, as there are certain career opportunities available only to licensed engineers. Licensure demonstrates high standards of professionalism, knowledge, and ability. Because of the work experience requirement, PE examinees have generally been out of school for some time. This book summarizes the theoretical background of topics covered in the exam, which will help potential examinees refresh their memories on subjects they may not have been exposed to since their undergraduate classes. Another advantage of using this[...]

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Erscheinungstermin: September 30, 2013

T. Nakano, Hokkaido University, Sapporo, Japan (Ed.)

π-Stacked Polymers and Molecules
Theory, Synthesis, and Properties
This book covers broad aspects of the chemistry of π-stacked polymers and low-molecular-weight molecules, from synthesis through theory. It is intended for graduate students and researchers in academia and industry and consists of chapters written by renowned scientists who have made significant contributions to this field in the past decade. π-Stacked polymers and low-molecular-weight molecules are expected to replace main-chain conjugated polymers such as polyacetylenes and polythiophenes as organic conducting and energy-transferring substances that are important as materials for photo-electronic applications. π-Stacked polymers and molecules have significant advantages over[...]

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Erscheinungstermin: October 31, 2013

T. Osaka, Waseda University, Tokyo, Japan; Z. Ogumi, Kyoto University, Kyoto, Japan (Eds.)

Nanoscale Technology for Advanced Lithium Batteries
The unfortunate and serious accident at the nuclear power plants in Fukushima, Japan caused by the earthquake and tsunami in March 2011 left Japan with a serious blow. Japan was deprived of electric power. This problem further accelerated the introduction of renewable energies. This book surveys the new materials and technologies needed to welcome the next generation of energy conversion and stor-
age devices, such as lithium secondary batteries on the basis of nanotechnology. Most of the contributors for this book are from institutions researching lithium batteries. This book provides an overview of nanotechnology for lithium batteries from basic to applied research in selected high[...]


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Current Trends of Surface Science and Catalysis

This unique book covers the latest surface science studies on model catalysts, including single crystals, non-colloidal nanocatalysts, and nanoparticles in various forms with the control of size, shape and composition. This book addresses the issue of bridging “materials and pressure gaps” and also discusses the important issue of metal-oxide interface and hot electron flows in heterogeneous catalysis. The current development of in-situ surface techniques that is relevant to bridging “pressure gaps” is also highlighted.

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Erscheinungstermin: October 31, 2013

Laser Photodissociation and Spectroscopy of Mass-separated Biomolecular Ions

This lecture notes book presents how enhanced structural information of biomolecular ions can be obtained from interaction with photons of specific frequency - laser light. The methods described in the book "Laser photodissociation and spectroscopy of mass-separated biomolecular ions" make use of the fact that the discrete energy and fast time scale of photodissociation can provide more control in ion activation. This activation is the crucial process producing structure-informative product ions that cannot be generated with more conventional heating methods, such as collisional activation. The book describes how the powerful separation capabilities and sensitivity of mass spectrometry[...]

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Erscheinungstermin: September 30, 2013

Molecular Computing Origins and Promises

The question whether molecular primitives can prove to be real alternatives to contemporary semiconductor means or effective supplements extending greatly possibilities of information technologies is addressed. Molecular primitives and circuitry for information processing devices are also discussed. Investigations in molecular based computing devices were initiated in the early 1970s in the hopes for an increase in the integration level and processing speed. Real progress proved unfeasible into the 1980’s. However, recently, important and promising results were achieved. The elaboration of operational 160-kilobit molecular electronic memory patterned 1011 bits per square centimeter in[...]

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Z. Ren, Peking University, Beijing, China (P.R.)

**State-to-State Dynamical Research in the F+H2 Reaction System**

This thesis addresses two important and also challenging issues in the research of chemical reaction dynamics of F+H2 system. One is to probe the reaction resonance and the other is to determine the extent of the breakdown of the Born-Oppenheimer approximation (BOA) experimentally. The author introduces a state-of-the-art crossed molecular beam-scattering apparatus using a hydrogen atom Rydberg “tagging” time-of-flight method, and presents thorough state-to-state experimental studies to address the above issues. The author also describes the observation of the Feshbach resonance in the F+H2 reaction, a precise measurement of the differential cross section in the F+HD reaction, and [...] More on www.springer.com/978-3-642-39755-4

**Minerals and Lipids Profiles in Cardiovascular Disorders in South Asia**

Cu, Mg, Se, Zn and Lipid Serum Profiles for the Example of Patients in Pakistan

This book correlates different minerals and lipids serum profiles with the prevalence of cardiovascular disorders in South Asian countries with special emphasis on Pakistan. Cardiovascular disorders (CVD, e.g. coronary heart diseases, hypertension, rheumatic heart disease, angina, heart failure and deep vein thrombosis) show significantly increasing rates in South Asian countries like Pakistan and have become a major health problem. Nevertheless, the data on any aspect of cardiovascular problems still is scanty. The serum profiles of different minerals (copper, magnesium, zinc, selenium) and lipids are analyzed in detail. The presented data will thus lead to a better understanding of [...] More on www.springer.com/978-3-642-34248-6

S. Rimdust, Chulalongkorn University, Bangkok, Thailand; C. Jubasil, Sirnakharinwiro University, Nakhon Nayok, Thailand; S. Tiptipakorn, Kasetsart University, Nakorn Pathom, Thailand

**Alloys and Composites of Polybenzoxazines**

Properties and Applications

This book provides an introduction to the unique and fascinating properties of alloys and composites from novel commercialized thermosetting resins based on polybenzoxazines. Their outstanding properties such as processability, thermal, mechanical, electrical properties as well as ballistic impact properties of polybenzoxazine alloys and composites make them attractive for various applications in electronic pack-
vides valuable content for all researchers in theoretical chemistry.
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Th. Scheby Kuhlman, Technical University of Denmark, Kgs. Lyngby, Denmark

The Non-Ergodic Nature of Internal Conversion
An Experimental and Theoretical Approach
This thesis investigates the transitions from one electronically excited state to another. Such processes - the fastest of events in chemistry - can be studied with femtosecond resolution, and Thomas S. Kuhlman approaches the question both with experimental and theoretical methods. His approach contributes to explain processes of high importance to all scientific fields concerned with the interaction between light and matter: the deactivation of the electronically excited states after excitation. Thomas S. Kuhlman concludes in this thesis that the electronic transition proceeds before the entire set of available degrees of freedom are active - 'It is as simple as that'!
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Erscheinungstermin: September 30, 2013

C. Schirwitz, German Cancer Research Center (DKFZ), Heidelberg, Germany

Purification of Peptides in High-Complexity Arrays
A New Method for the Specific Surface Exchange and Purification of Entire Peptide Libraries
Christopher Schirwitz's thesis focuses on improving the quality of in situ synthesized high-complexity peptide micro arrays. Micro arrays containing proteins or small protein fragments in the form of peptides have become of great interest in proteomic research. With the help of these microarrays a large number of potential target molecules can be screened for interaction with a probe in a short timeframe. However, protein and peptide micro arrays are still lagging behind oligonucleotide arrays in terms of density, quality and manufacturing costs. A new approach developed at the German Cancer Research Center (DKFZ) has improved the synthesis of high-density peptide arrays. The current[...]
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Erscheinungstermin: August 31, 2013

F.F. Schweinberger, Technische Universität München, Garching, Germany

Catalysis with Supported Size-selected Pt Clusters
Fundamental UHV and Applied Ambient Experiments
In his thesis, Florian Schweinberger investigates the influence of the precise size of catalytically active species on reactivity. In order to do this he carries out studies both in UHV and under ambient conditions for supported, size-selected Platinum clusters (8-68 atoms). Schweinberger probed the electronic structure, adsorption properties and reactivity of two olefins on surfaces and Pt clusters in the submonolayer range. With adsorbed trichloroethylene (TCE) a possible cluster-adsorbate induced change in the electronic structure, and for ethene a low-temperature, size-dependent self-/hydrogenation was observed. In a collaborative approach, Schweinberger and colleagues investigated Pt[...]
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M. Schädel, GSI Helmholtzzentrum, Darmstadt, Germany; D. Shaughnessy, Lawrence Livermore National Laboratory, Livermore, USA (Eds.)

The Chemistry of Superheavy Elements
The second edition of "The Chemistry of the Superheavy Elements" provides a complete coverage of the chemistry of a series of elements beginning with atomic number 104 – the transactinides or superheavy elements – including their nuclear properties and production in nuclear reactions at heavy-ion accelerators. The contributors to this work include many renowned scientists who, during the last decades, have made vast contributions towards understanding the physics and chemistry of these elusive elements, both experimentally and theoretically. The main emphasis here is on demonstrating the fascinating studies involved in probing the architecture of the Periodic Table at its uppermost[...]
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Atomic Layer Deposition for Semiconductors

This edited volume discusses atomic layer deposition (ALD) for all modern semiconductor devices, moving from the basic chemistry of ALD and modeling of ALD processes to sections on ALD for memories, logic devices, and machines. The section on ALD for memories covers both mass-produced memories, such as DRAM and Flash, and emerging memories, such as PCRAM and FeRAM. The section on ALD for logic devices covers both front-end of the line processes and back-end of the line processes. The final section on ALD for machines looks at toolsets and systems hardware. Each chapter provides the history, operating principles, and a full explanation of ALD processes for each device.


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Principles of Polymer Design and Synthesis

How can a scientist or engineer synthesize and utilize polymers to solve our daily problems? This introductory text, aimed at the advanced undergraduate or graduate student, provides future scientists and engineers with the fundamental knowledge of polymer design and synthesis to achieve specific properties required in everyday applications. In the first five chapters, this book discusses the properties and characterization of polymers, since designing a polymer initially requires us to understand the effects of chemical structure on physical and chemical characteristics. Six further chapters discuss the principles of polymerization reactions including step, radical chain, ionic [...] More on www.springer.com/978-3-642-38729-6

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Erscheinungstermin: August 31, 2013

Modified Cyclodextrins for Chiral Separation

Modified Cyclodextrins for Chiral Separation offers a review of the latest advances in developing modified cyclodextrins as chiral selectors for various chromatographic and electromigration techniques. Over the years, many descriptions of chiral separation have appeared in academic journals and books, but most of them have been devoted to either the development of analytical methods and protocols or the summary of different chiral selectors, including cyclodextrins for chiral separation applications. This is in marked contrast to this volume which focuses on the research endeavors concerning the development of cyclodextrin derivatives specifically as either chiral mobile phases for [...] More on www.springer.com/978-3-642-37647-4

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Organic Chemistry in Confining Media

Zory Vlad Todres' monograph offers a fresh insight into an important and developed area of organic chemistry. Calixarenes, cyclodextrins, and cucurbiturils as host molecules are well known, but the corresponding new and demonstrative publications deserve new exposition. This book principally widens our consideration of organic reactivity in confining media. Topics discussed include: effects of micellization, porous effects, effects of solvent cages, complexation to organometallic compounds, hydrogen-bond or charge-transfer complexation, sorption effects, effects of solvents, and stereochemical changes upon confinement. Organic Chemistry in Confining Media is useful for experienced [...] More on www.springer.com/978-3-319-00157-9

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Synthesis of Heterocycles via Metal-Catalyzed Reactions that Generate One or More Carbon-Heteroatom Bonds

Synthesis of Saturated Heterocycles via Metal-Catalyzed Alkene Carboamination or Carboxalkylation Reactions, by John P. Wolfe

Synthesis of Saturated Heterocycles via Metal-Catalyzed Alkene Diaamination, Aminosalkylation, or Dialkylation Reactions, by Sherry R. Chemler

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Synthesis of Heterocycles via Metal-Catalyzed Alkene Carboamination or Carboalkoxylation Reactions, by Chaoyong James Yang

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How Free Cationic Polymer Chains Promote Gene Transfection

In this PhD thesis, Yue Yanan addresses a long-overlooked and critical question in the development of non-viral vectors for gene delivery. The author determines that those uncomplexed and cationic polymer chains free in the solution mixture of polymer and DNA facilitate and promote gene transfection. Furthermore, by using a combination of synthetic chemistry, polymer physics and molecular biology, Yue confirms that it is those cationic polymer chains free in the solution mixture, rather than those bound to DNA chains, that play a decisive role in intracellular trafficking. Instead of the previously proposed and widely accepted "proton sponge" model, the author’s group propose a new[...]

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Molecular Beacons

Molecular Beacons explains working principle of molecular beacons, discusses their design, synthesis, purification and characterization, explores their thermodynamic and kinetic properties, and more importantly, reviews their in vivo and in vitro applications with the emphasis on the design and modification of molecular beacons for in vivo mRNA imaging applications. This book is designed to bring together in a single resource an organized and comprehensive view of molecular beacons and will be a valuable resource for academic, clinical and industrial scientists and graduate students who may consider exploring molecular beacons in their research or practice. Chaoyong James Yang is the Lu[...]

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Erscheinungstermin: August 31, 2013

Advances in Food Process Engineering Research and Applications

This is the second publication stemming from the International Congress on Engineering in Food, the first being Food Engineering Interfaces, based on the last ICEF10. The theme of ICEF 11, held in Athens, Greece in May 2011, is “Food Process Engineering in a Changing World.” The conference explored the ways food engineering contributes to the solutions of vital problems in a world of increasing population and complexity that is under the severe constraints of limited resources of raw materials, energy, and environment. The book, comprised of 32 chapters, features an interdisciplinary focus, including food materials science, engineering properties of foods, advances in food process[...]


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