

## V 600 Series Jasco

We are very pleased to introduce the Book Version of our Special Issue in *Molecules* dedicated to the memory of the late Professor Dr. Charles D. Hufford. The issue has been a huge success, with 22 full-length peer-reviewed papers and a tribute by Professor Alice M. Clark. Authors, reviewers, and collaborators from many countries across the world have contributed to this endeavour, and we are truly grateful to all. This Special Issue is representative of the broad impact that "Charlie" had on the field of bioactive natural products. This Special Issue comprises papers from Professor Hufford's former students, colleagues, and collaborators throughout the world who have utilized a wide array of state-of-the-art techniques to examine diverse natural sources to isolate and identify a variety of natural products with a wide spectrum of biological activities, including some new microbial transformations and insights into bioactive molecules. Many new bioactive compounds are described and reported here for the first time. Bioactivities reported include cytotoxicity, antimicrobial activity, anti-inflammatory activity, antileishmanial activity, antitrypanosomal activity, antimalarial activity, analgesic activity, and beneficial liver activities, just to name a few. This Special Issue will undoubtedly have a lasting impact on the field of bioactive natural products, as exemplified by the career of Dr. Hufford. Lastly, without the timely and outstanding contributions from all of you, this Special Issue would not have been possible. We thank you all very much for your contributions and your time devoted to this Special Issue in memory of a special person. Finally, we express our gratitude and thanks to the journal *Molecules* and their excellent team of expert reviewers for giving us the support and opportunity to make this Special Issue a huge success!

This book constitutes the refereed proceedings of the 14th Conference of the Spanish Association for Artificial Intelligence, CAEPIA 2009, held in La Laguna, Canary Islands, Spain, in November 2011. The 50 revised full papers presented were carefully selected from 149 submissions. The papers are organized in topical sections on agent-based and multi-agent systems; machine learning; knowledge representation, logic, search and planning; multidisciplinary topics and applications; vision and robotics; soft computing; Web intelligence and information retrieval.

The increased attendance required concurrent sessions for the 48 oral presentations and 190 submitted posters (for more details see Website: [www.ct.ornl.gov/symposium](http://www.ct.ornl.gov/symposium)). Attendees came from Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Finland, Germany, Hungary, India, Japan, Korea, Mexico, The Netherlands, Russia, South Korea, Spain, Sweden, Turkey, and Venezuela, as well as from the United States. This international perspective was continued in a Special Topic Session sponsored by the International Energy Agency (IEA) Bioenergy Program on Biofuels and chaired by Jack Saddler and David Gregg from the University of British Columbia. Several of the 10 member countries in this network are approaching Demonstrations of the Biomass-to-Ethanol process and have a range of more fundamental projects that look at various aspects of pretreatment, enzymatic hydrolysis, fermentation, and lignin utilization. Presenters from several of the participating countries described their country's biomass-to-ethanol projects, and differential factors such as the type of biomass available, the maturity of the wood or agricultural processing industry, and the willingness of government to bear the risk/cost of development and demonstration.

This volume includes 28 contributions to the Toyochi Tanaka Memorial Symposium on Gels which took place at Arcadia Ichigaya on September 10th-12th, 2008. The contributions from leading scientists cover a broad spectrum of topics concerning: Structure and Functional Properties of Gels - Swelling of Gels - Industrial and Biomedical Application. The symposium was held in the style of Faraday Discussions, which stimulated the active discussion. After the symposium, each manuscript was rewritten based on the discussion and the critical review. Since the research on gels is becoming more and more important both for academia and industry, this book will be an essential source of information.

This book is a collection of studies focused on the exploitation of enzyme stereoselectivity for the synthesis of relevant chemicals, such as innovative materials, chiral building blocks, natural products, and flavor and fragrance compounds. Different catalytic approaches are reported. The first study describes a resolution-based process for the stereoselective synthesis of the enantiomeric forms of the flavor compound linaloyl oxide, whereas other enantiomeric enriched aroma compounds were obtained through a novel microbial approach based on solid-state fermentation. Two relevant works exploit the potential of the biocatalyzed reduction reactions. The first of these contributions describes the enantioselective synthesis of  $\beta$ -nitroalcohols by enzyme-mediated reduction of  $\beta$ -nitroketones, whereas a second contribution reports the preparation of chiral 1,4-diaryl-1,4-diols through ADH-catalyzed bioreduction of the corresponding diketones. Concerning enantioenriched alcohol derivatives, natural hydroxy fatty acids are prepared by means of the biocatalytic hydration reaction of natural fatty acids using the probiotic bacterium *Lactobacillus rhamnosus* as a whole-cell biocatalyst. Further studies describe the use of modified pullulan polysaccharide for lipase immobilization and the recent advances in synthetic applications of  $\alpha$ -transaminases for the production of chiral amines.

Volume is indexed by Thomson Reuters CPCI-S (WoS). The proceedings of the International Conference on Applied Mechanics and Manufacturing Technology (AMMT'12) focus on applied mechanics and its application to manufacturing technology emphasize the role which these conferences play as a forum where researchers and engineers can exchange results and experiences in these fields.

This Special Issue "Polyphenols in Crops, Medicinal and Wild Edible Plants: From Their Metabolism to Their Benefits for Human Health" presents recent studies dealing with polyphenols isolated from different food sources in terms of nutraceutical, ethnobotanical, and pharmaceutical properties. The most recent techniques of analyses were used, e.g., high throughput metabolomics analyses as well as polyphenol-based fingerprinting to generate metabolic markers. The benefits of polyphenol extracts and isolated phenolic moieties related to human pathologies were also investigated.

The papers included in this issue of *ECS Transactions* were originally presented in the symposium "Nanotechnology General Session", held during the PRIME 2008 joint international meeting of The Electrochemical Society and The Electrochemical Society of Japan, with the technical cosponsorship of the Japan Society of Applied Physics, the Korean Electrochemical Society, the Electrochemistry Division of the Royal Australian Chemical Institute, and the Chinese Society of Electrochemistry. This meeting was held in Honolulu, Hawaii, from October 12 to 17, 2008.

Written by an international panel of professional and academic peers, the book provides the engineer and technologist working in research, development and operations in the food industry with critical and readily accessible information on the art and science of infrared spectroscopy technology. The book should also serve as an essential reference source to undergraduate and postgraduate students and researchers in universities and research institutions. Infrared (IR) Spectroscopy deals with the infrared part of the electromagnetic spectrum. It measures the absorption of different IR frequencies by a sample

positioned in the path of an IR beam. Currently, infrared spectroscopy is one of the most common spectroscopic techniques used in the food industry. With the rapid development in infrared spectroscopic instrumentation software and hardware, the application of this technique has expanded into many areas of food research. It has become a powerful, fast, and non-destructive tool for food quality analysis and control. Infrared Spectroscopy for Food Quality Analysis and Control reflects this rapid technology development. The book is divided into two parts. Part I addresses principles and instruments, including theory, data treatment techniques, and infrared spectroscopy instruments. Part II covers the application of IRS in quality analysis and control for various foods including meat and meat products, fish and related products, and others. \*Explores this rapidly developing, powerful and fast non-destructive tool for food quality analysis and control \*Presented in two Parts -- Principles and Instruments, including theory, data treatment techniques, and instruments, and Application in Quality Analysis and Control for various foods making it valuable for understanding and application \*Fills a need for a comprehensive resource on this area that includes coverage of NIR and MVA

Epileptic patients live with epilepsy-associated complications such as cognitive dysfunction, psychological discomfort, and sexual function decline, and are more likely to experience emotional and mental health issues problems, including depression and anxiety. Many antiepileptic drugs are found to have a role in aggravating psychiatric symptoms. Animal models, which inform translational questions about epilepsy comorbidities, are used to study the relationship between epilepsy and related comorbidities. The aim of this Research Topic was to highlight basic, clinical and interdisciplinary research involved in studying the disease and its comorbid effects. Various experimental models are used to understand the mechanisms of disease and to discover newer antiepileptic drugs. These experimental models combines the input from behavioral, biochemical and molecular level including genetic.

Do you care about your environment and your health? Contamination by hazardous substances in environmental matrices, including landfills, oil fields, and manufacturing and industrial sites, represents a global concern and needs to be remediated since it poses a serious risk to the environment and human health. Particular attention should also be paid to the use of medical devices and recent developments in the use of nanoparticles expressed as drug delivery systems designed to treat a wide variety of diseases. This Special Issue collects a compilation of articles that strongly demonstrate the continuous efforts made in developing advanced and safe nanomaterial-based technologies for nano-remediation and for drug delivery and other biomedical applications. It covers the most recent advances in the safe nanomaterials synthesis field as well as in environmental applications, in the use of restorative materials, drug delivery and other clinical applications, in order to lay the foundations for a cleaner and healthier future.

Antioxidants in food have a dual role; on the one hand, they preserve the quality and shelf life of food products; on the other hand, they function as an external aid, helping to defend our living cells from the threat of oxidative stress. Therefore, foods rich in antioxidants are a useful tool to reduce morbidity and prevent degenerative diseases. Consequently, research related to antioxidants is continually growing. This book brings together 21 articles regarding the latest advances in the most relevant fields of food antioxidant research; from the identification and characterization of new active components, to their molecular mechanisms and the scientific evidence of their clinical use and effectiveness.

BLACK ENTERPRISE is the ultimate source for wealth creation for African American professionals, entrepreneurs and corporate executives. Every month, BLACK ENTERPRISE delivers timely, useful information on careers, small business and personal finance.

The papers included in this issue of ECS Transactions were originally presented in the symposium  $\zeta$ Large Scale Energy Storage for Renewable Energy $\zeta$ , held during the PRiME 2008 joint international meeting of The Electrochemical Society and The Electrochemical Society of Japan, with the technical cosponsorship of the Japan Society of Applied Physics, the Korean Electrochemical Society, the Electrochemistry Division of the Royal Australian Chemical Institute, and the Chinese Society of Electrochemistry. This meeting was held in Honolulu, Hawaii, from October 12 to 17, 2008.

A Laboratory Manual of Analytical Methods of Protein Chemistry, Volume 5 presents the laboratory techniques for protein and polypeptide study. This book discusses the staining procedure for histones, which has a high degree of selectivity for basic proteins and the unique ability to visualize qualitative differences in terms of color changes. Organized into four chapters, this volume begins with an overview of the formalin-mediated ammoniacal-silver staining procedure as a selective stain for basic proteins and its application per cell and per extract. This text then examines the optical rotatory dispersion (ORD), which has advanced into a powerful tool for describing the conformations and conformational changes of biopolymers. Other chapters consider the application of ultrasensitive calorimetry to thermodynamic problems. This book discusses as well the principle of the technique, its instrumentation, and experimental procedures. The final chapter deals with the hydrodynamic densities and preferential hydration values for protein precipitates in concentrated salt solutions. This book is a valuable resource for chemists and biochemists.

Liposomes are cellular structures made up of lipid molecules, which are water insoluble organic molecules and the basis of biological membranes. Important as a cellular model in the study of basic biology, liposomes are also used in clinical applications such as drug delivery and virus studies. Liposomes Part F is a continuation of previous MIE Liposome volumes A through E. \* One of the most highly respected publications in the field of biochemistry since 1955 \* Frequently consulted and praised by researchers and reviewers alike \* Truly an essential publication for anyone in any field of the life sciences

At Yamada Conference LIII, papers on many novel materials and on novel phenomena in condensed matter physics were presented OCo for instance, the achievement of simultaneous creation of excitons and free-electron-hole pairs in rare gas solids, and a low frequency fluctuation of the spectral shift of indirect excitons in GaAs coupled quantum wells. Single molecule spectroscopy is a powerful tool for studying molecules including biological systems; the study of delocalization of excitons in the photosynthetic light harvesting antenna system was also reported. The proceedings thus contain many excellent papers dealing with current research topics on the excitonic processes in bulk, quantum wells, quantum dots and other confined systems. This book will serve as an excellent source of recent references and reviews for a wide range of researchers in physics, chemistry, engineering and biological sciences. The proceedings have been selected for coverage in: . OCo Index to Scientific & Technical Proceedings (ISTP CDROM version / ISI Proceedings). Contents: Dynamical Process of Photoionization in Semiconductor Nanocrystals (M Y Shen et al.); Excitons on a 1D Periodic Conjugated Polymer Chain: Two Electronic Structures of Polydiacetylene Chains (C Lapersonne-Meyer); Anomalous Spectral Shifts of Indirect Excitons in Coupled GaAs Quantum Wells (D W Snoke et al.); Infrared Absorption by Excitons in Cuprous Oxide (M GAppert et al.); Theory of Excitation-Energy Transfer Processes Involving Optically Forbidden Exciton States in Antenna Systems of Photosynthesis (K Mukai et al.); Transient Grating Induced by Excitonic Polaritons in Thin Film Semiconductors (K Akiyama et al.); Excitonic Photoluminescence of Pentacene Single Crystal (T Aoki-Matsumoto et al.); Scanning Near-Field Optical Microspectroscopy of Single Perylene Microcrystals (J Niitsuma et al.); and other papers. Readership: Condensed matter physicists, materials scientists, chemists and biologists."

Impurity profiling is the common name of a group of analytical activities, the aim of which is the detection, identification/structure elucidation and quantitative determination of organic and inorganic impurities, as well as residual solvents in bulk drugs and pharmaceutical formulations. Since this is the best way to characterise the quality and stability of bulk drugs and pharmaceutical formulations, this is the core activity in modern drug analysis. Due to the very rapid development of the analytical methodologies available for this purpose and the similarly rapid increase of the demands as regards the purity of drugs it is an important task to give a summary of the problems and the various possibilities offered by modern analytical chemistry for their solution. That is the aim of this book. The book is methodology-oriented. In

the first chapter some important aspects of the background of impurity-related analytical studies (toxicological, pharmacopoeial aspects, the characterisation of the sources of impurities and the role of impurity profiling in various fields of drug research, production and therapeutic use) are summarised. Chapter two deals with related organic impurities, the strategies for impurity profiling, the use of chromatographic and related separation methods, spectroscopic, and hyphenated techniques. The subject of the third chapter is the identification and determination of residual solvents. The determination of inorganic impurities is discussed in chapter four. The special problems of degradation products as impurities are dealt with in chapter five. A separate chapter has been compiled to deal with one of the most up-to-date problems in contemporary pharmaceutical analysis, the estimation of enantiomeric purity of chiral drugs. Chapter seven is devoted to various approaches to solve the problem of polymorphic modifications as impurities. Since in the broader sense of the word the microbiological purity of drugs and drug products also belongs to this circle, the most important information from this field is summarised in chapter eight. After the mainly methodology-oriented chapters, the final one concentrates on four groups of drugs (peptides, biotechnological products, antibiotics and steroids) in order to demonstrate the use of the methods described earlier.

This book provides an introduction to the important methods of chiroptical spectroscopy in general, and circular dichroism (CD) in particular, which are increasingly important in all areas of chemistry, biochemistry, and structural biology. The book can be used as a text for undergraduate and graduate students and as a reference for researchers in academia and industry, with or without the companion volume in this set. Experimental methods and instrumentation are described with topics ranging from the most widely used methods (electronic and vibrational CD) to frontier areas such as nonlinear spectroscopy and photoelectron CD, as well as the theory of chiroptical methods and techniques for simulating chiroptical properties. Each chapter is written by one or more leading authorities with extensive experience in the field.

American Laboratory Nanotechnology for Environmental and Biomedical Research MDPI

Fleshy Fruits are a late acquisition of plant evolution. In addition of protecting the seeds, these specialized organs unique to plants were developed to promote seed dispersal via the contribution of frugivorous animals. Fruit development and ripening is a complex process and understanding the underlying genetic and molecular program is a very active field of research. Part of the ripening process is directed to build up quality traits such as color, texture and aroma that make the fruit attractive and palatable. As fruit consumers, humans have developed a time long interaction with fruits which contributed to make the fruit ripening attributes conform our needs and preferences. This issue of *Frontiers in Plant Science* is intended to cover the most recent advances in our understanding of different aspects of fleshy fruit biology, including the genetic, molecular and metabolic mechanisms associated to each of the fruit quality traits. It is also of prime importance to consider the effects of environmental cues, cultural practices and postharvest methods, and to decipher the mechanism by which they impact fruit quality traits. Most of our knowledge of fleshy fruit development, ripening and quality traits comes from work done in a reduced number of species that are not only of economic importance but can also benefit from a number of genetic and genomic tools available to their specific research communities. For instance, working with tomato and grape offers several advantages since the genome sequences of these two fleshy fruit species have been deciphered and a wide range of biological and genetic resources have been developed. Ripening mutants are available for tomato which constitutes the main model system for fruit functional genomics. In addition, tomato is used as a reference species for climacteric fruit which ripening is controlled by the phytohormone ethylene. Likewise, grape is a reference species for non-climacteric fruit even though no single master switches controlling ripening initiation have been uncovered yet. In the last period, the genome sequence of an increased number of fruit crop species became available which creates a suitable situation for research communities around crops to get organized and information to be shared through public repositories. On the other hand, the availability of genome-wide expression profiling technologies has enabled an easier study of global transcriptional changes in fruit species where the sequenced genome is not yet available. In this issue authors will present recent progress including original data as well as authoritative reviews on our understanding of fleshy fruit biology focusing on tomato and grape as model species.

This book contains updated reviews and original research work on Down Syndrome focussing on brandnew results in neurobiology, in particular results on gene hunting (subtractive hybridization, differential display) and neurochemistry. The book provides new data such as a subtractive library of Down Syndrome brain showing cDNAs that are overexpressed or downregulated and can be regarded as a source for further research on the preliminary transcriptional data given. A 2D-electrophoretic map of human brain proteins including Down Syndrome brain protein expression established by in-gel-digestion of spots with subsequent MALDI-identification provides the scientific basis for protein work to the neuroscientist. Altogether, the book provides a series of new candidate genes possibly involved in Down Syndrome neurobiology, tools for neuroscience studies on Down Syndrome brain thus serving as a manual and updated views and aspects on Down Syndrome pathobiology.

Since biological tissues are unstable in an oxygen atmosphere, a great deal of effort is expended by organisms to metabolically limit or repair oxidative tissue damage. This volume of *Methods in Enzymology* and its companion Volume 234 present methods developed to investigate the roles of oxygen radicals and antioxidants in disease. Key Features \* Generation, detection, and characterization of oxygen radicals, chemistry, biochemistry, and intermediate states of reductio\* Isolation, characterization, and assay of enzymes or substrates involved in formation or removal of oxygen radical \* Methods for assessing molecular, cell, and tissue damage; assays and repair of oxidative damage

This Special Issue on "Coastal Deposits: Environmental Implications, Mathematical Modeling, and Technological Development" includes seven high-quality, innovative research papers dealing with many scientific aspects regarding the coast, through mathematical modelling and innovative techniques in the study and preservation of the coastline from erosion, such as coastal watch camera installations, remote sensing, the use of biocementation, or analytical techniques, to assess incompatibilities in the sustainable use of the coast, including worrying issues as pollution of the marine environment and ecosystem deterioration.

Photosynthesis is a process on which virtually all life on Earth depends. To answer the basic questions at all levels of complexity, from molecules to ecosystems, and to establish correlations and interactions between these levels, photosynthesis research - perhaps more than any other discipline in biology - requires a multidisciplinary approach.

Congresses probably provide the only forums where progress throughout the whole field can be overviewed. The Congress proceedings give faithful pictures of recent advances in photosynthesis research and outline trends and perspectives in all areas, ranging from molecular events to aspects of photosynthesis on the global scale. The *Proceedings Book*, a set of 4 (or 5) volumes, is traditionally highly recognized and intensely quoted in the literature, and is found on the shelves of most senior scientists in the field and in all major libraries.

This thesis presents new methods for the characterization of vegetable oils, with focus in olive oil, according to geographical and botanical origin, genetic variety and other issues influencing product quality. A wide variety of analytical techniques have been employed, such as various chromatographic techniques (different gas and liquid chromatography

methods), an electronic nose, infrared spectroscopy and expert-panel evaluation. Several families of minor compounds, with interest as adulteration markers, have been used for method development, including tocopherols, sterols, phenolics, alcohols, proteins and others. Most methods have been enhanced by the application of multivariate chemometrics. The proposed analytical techniques are of interest to investigate fraudulent actions and practices which are detrimental to product quality.

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