

Color Chemistry Syntheses Properties And Applications Of Organic Dyes And Pigments

Nothing provided

An overview of the current state of nanotechnology-based devices with applications in environmental science, focusing on nanomaterials and polymer nanocomposites. The handbook pays special attention to those nanotechnology-based approaches that promise easier, faster and cheaper processes in environmental monitoring and remediation. Furthermore, it presents up-to-date information on the economics, toxicity and regulations related to nanotechnology in detail. The book closes with a look at the role of nanotechnology for a green and sustainable future. With its coverage of existing and soon-to-be-realized devices this is an indispensable reference for both academic and corporate R&D.

This book explores functional polymers containing aromatic azo chromophores in side-chain, main-chain and other parts of their structures, known as azo polymers and which share common photoresponsive properties. It focuses on the molecular architecture of azo polymers, the synthetic methods and their most important functions, such as photoinduced birefringence and dichroism, surface-relief-grating (SRG) formation, and light-driven deformation of liquid crystal elastomers. It combines a general survey of the subject and in-depth discussions of each topic, including numerous

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illustrations, figures, and photographs. Offering a balance between an introduction to the core concepts and a snapshot of hot and emerging topics, it is of interest to graduate students and researchers working in this and related fields. Xiaogong Wang is a Professor at the Department of Chemical Engineering, Tsinghua University, China.

This cutting-edge lab manual takes a multiscale approach, presenting both micro, semi-micro, and macroscale techniques. The manual is easy to navigate with all relevant techniques found as they are needed. Cutting-edge subjects such as HPLC, bioorganic chemistry, multistep synthesis, and more are presented in a clear and engaging fashion.

This is an easily-accessible two-volume encyclopedia summarizing all the articles in the main volumes Kirk-Othmer Encyclopedia of Chemical Technology, Fifth Edition organized alphabetically. Written by prominent scholars from industry, academia, and research institutions, the Encyclopedia presents a wide scope of articles on chemical substances, properties, manufacturing, and uses; on industrial processes, unit operations in chemical engineering; and on fundamentals and scientific subjects related to the field. This edited book has been designed to serve as a natural resources engineering reference book as well as a supplemental textbook. This volume is part of the Handbook of Environmental Engineering series, an incredible collection of methodologies that study the effects of pollution and waste in their three basic forms: gas, solid, and liquid. It complements two other books in

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the series including Environmental and Natural Resources Engineering and Integrated Natural Resources Management that serve as a basis for advanced study or specialized investigation of the theory and analysis of various natural resources systems. This book covers the management of many waste sources including those from agricultural livestock, deep-wells, industries manufacturing dyes, and municipal solid waste incinerators. The purpose of this book is to thoroughly prepare the reader for understanding the sources, treatment and control methods of toxic wastes shown to have harmful effects on the environment. Chapters provide information on some of the most innovative and ground-breaking advances in waste characterization, control, treatment and management from a panel of esteemed experts.

Azo dyes play an important role as coloring agents in the textile, food, and pharmaceutical industry. Due to the toxicity, mutagenicity and carcinogenicity of azo dyes and their breakdown products, their removal from industrial wastewaters has been an urgent challenge. Promising and cost-effective methods are based on their biodegradation, which is treated in this volume. The topics presented by experts in the field include: the classification of azo dyes; toxicity caused by azo dyes; aerobic and anaerobic azo dye biodegradation mechanisms; the role of bacteria, fungi, algae and their enzymes in biodegradation; the impact of redox mediators on azo dye reduction; the integration of biological with physical and chemical processes; the biotransformation of aromatic amines; reactor modelling

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for azo dye conversion; the biodegradation of azo dyes by immobilized bacteria and fungi; and factors affecting the complete mineralization of azo dyes.

Fluorescence Microscopy is a precise and widely employed technique in many research and clinical areas nowadays. Fluorescence Microscopy In Life Sciences introduces readers to both the fundamentals and the applications of fluorescence microscopy in the biomedical field as well as biological research. Readers will learn about physical and chemical mechanisms giving rise to the phenomenon of luminescence and fluorescence in a comprehensive way. Also, the different processes that modulate fluorescence efficiency and fluorescence features are explored and explained.

While biomedical investigation has greatly advanced, investigators have lost touch with and inadvertently corrupted significant nomenclature at the foundation of their science. Nowadays, one has to be an insider to even understand the titles of journals, as modern biochemists have a tendency to invent new terms to describe old phenomena and apply a

A comprehensive history and A-Z bibliography of books on colour published in European languages between 1495 and 2015 on all branches the arts, sciences, education, design and technology. An invaluable reference for locating information and research into colour theory and practice.

This book features complete and original labs for the integrated laboratory. All materials, protocols, and equipment are spelled out. Each lab is customizable

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for your department. The book introduces and explains a wide range of lab techniques, and is geared to various ability levels. This volume is intended for chemistry instructors seeking to provide engaging and challenging labs that combine all the features and benefits of the integrated laboratory. Written by educators from around the country, each chapter of the book contains a fully detailed and explained experiment, with guidance for student questions and possible customization. The book offers students and instructors a wealth of learning opportunities in experiment preparation, measurement, recording and analysis from disciplines extending from biology and microbiology to geology, nanotechnology, and microelectronics. All experiments have been classroom tested, with safety and monitoring issues given precedence. Many of the experiments contain modules that permit the instructor to make the lab more challenging as time and student ability dictate. At the beginning of this series of volumes on Color Chemistry, the editors pointed to a number of events that have served as stimuli for technological advances in the field, thus preventing dyestuff manufacturing from becoming what might otherwise be viewed by now as a 'sunset industry'. The volumes which followed have provided ample evidence for our belief that the field of colour chemistry is very much alive, though arguably in

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need of further stimulus. For instance, a viable approach to the design of new chromophores and to the design of metal-free acid, direct, and reactive dyes having fastness properties comparable to their metallized counterparts represent the kind of breakthroughs that would help ensure the continued success of this important field. While it must be acknowledged that serendipity 'smiled' on our discipline at its inception and has repeated the favor from time to time since then, few would argue against the proposition that most of the significant advances in the technology associated with any scientific discipline result from research designed to enhance our understanding of the fundamental causes for experimental observations, many of which are pursued because they are unexpected, intriguing and intellectually stimulating. Little reflection is required for one who knows the history of the dyestuff industry to realize that this is certainly true in the colour chemistry arena, as it was basic research that led to fiber-reactive dyes, dyes for high technology, and modern synthetic organic pigments. Progress in Heterocyclic Chemistry (PHC) is an annual review series commissioned by the International Society of Heterocyclic Chemistry (ISHC). Volumes in the series contain both highlights of the previous year's literature on heterocyclic chemistry and articles on emerging topics of particular interest to heterocyclic chemists. The

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chapters in Volume 22 constitute a systematic survey of the important original material reported in the literature of heterocyclic chemistry in 2009. *

Covers the heterocyclic literature published in 2009 *

Includes specialized reviews * Features contributions from leading researchers in their fields

This volume is the ideal companion to Wiley's trilogy: The Pigments Handbook (1988), Industrial Organic Pigments (1997), and Industrial Inorganic Pigments (1998). High Performance Pigments have become increasingly important in recent years, with a growth rate well in advance of the more classical types of pigments. The book offers both producers and users of High Performance Pigments the opportunity to review and update their understanding of latest technologies and market issues impacting both inorganic and organic High Performance Pigments, together with assessing key regulatory affairs, in this specialty niche of the chemical industry. The manufacture of High Performance Pigments is today a global industry. This is reflected in the multinational expertise of the over twenty experts, drawn from Europe, North America and Asia, who have authored chapters in this book. No professional today can afford to waste time on unfocussed research. This book will effectively help chemists, physicists, engineers, applications and regulatory specialists, and materials scientists to stay ahead in this fast-changing field.

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"This comprehensive guide illustrates the effects of dispersions in applications, the means necessary to achieve these effects with optical results, and how to overcome or avoid the difficulties encountered emphasizing the dispersions of solid particles in liquid or solid media."

Science of Synthesis provides a critical review of the synthetic methodology developed from the early 1800s to date for the entire field of organic and organometallic chemistry. As the only resource providing full-text descriptions of organic transformations and synthetic methods as well as experimental procedures, Science of Synthesis is therefore a unique chemical information tool. Over 1000 world-renowned experts have chosen the most important molecular transformations for a class of organic compounds and elaborated on their scope and limitations. The systematic, logical and consistent organization of the synthetic methods for each functional group enables users to quickly find out which methods are useful for a particular synthesis and which are not. Effective and practical experimental procedures can be implemented quickly and easily in the lab.// The content of this e-book was originally published in August 2007.

Chemistry for Sustainable Development is a collection of selected papers by the participants of the International Conference on Pure and Applied Chemistry (ICPAC 2010) on the theme of "Chemistry for Sustainable Development" held

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in Mauritius in July 2010. In light of the significant progresses and challenges in the development and implementation of green and sustainable chemistry, this volume reviews the recent results generated by a more efficient use of resources to minimize carbon footprints, to foster the eradication or minimisation of solvent use in chemistry, and to deliver processes which lead to increased harmony between chemistry and the environment. Chemistry for Sustainable Development is written for graduates, postgraduates, researchers in industry and academia who have an interest in the fields ranging from fundamental to applied chemistry. The treatment of textile wet processing effluent to meet stringent governmental regulations is a complex and continually evolving process. Treatment methods that were perfectly acceptable in the past may not be suitable today or in the future. This book provides new ideas and processes to assist the textile industry in meeting the challenging requirements of treating textile effluent.

Heterocyclic chemistry is the biggest branch of chemistry covering two-thirds of the chemical literature and this book covers the hot topics of frontier research summarized by reputed scientists in the field.

The impact of light on works of art and archival materials has long been an issue of concern to conservators and other museum professionals, yet the literature on this subject has never been systematically reviewed. This volume fills that gap by providing a survey of the impact of exposure to light with an emphasis on photoflash and reprographic sources. The information provided will assist the professional audience, especially conservators and collections managers, in assessing the risk to art and archival objects of such exposures. The text surveys relevant photophysical and photochemical principles, photometric and radiometric measurement, and the spectral outputs of several light

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sources. Materials discussed include colorants and natural fibers; pulp, paper, and wood; natural and synthetic polymers; fluorescent whitening agents; photographic and reprographic materials; and objects containing combinations of materials. Approximations and assumptions used in the evaluation process are discussed in some detail, with examples of the different types of calculations. The Research in Conservation reference series presents the findings of research conducted by the Getty Conservation Institute and its individual and institutional research partners, as well as state-of-the-art reviews of conservation literature. Each volume covers a topic of current interest to conservators and conservation scientists.

In the ten years since publication of the second edition of Heinrich Zollinger's "Color Chemistry", significant trends in colorant research and application have become important. Particular emphasis is given to the discussion of the synthesis, properties, and application of pigments.

Chromic phenomena, or those produced by materials which exhibit colour in response to a chemical or physical stimulus, have increasingly been at the heart of 'high-tec' developments in a variety of fields in the last decade. Many of the newer technologies, which are at the cutting edge of research, are multi-disciplinary, involving researchers from areas as diverse as physics, biology, materials science and electronic engineering. Chromic Phenomena covers five main areas: Colour change materials, such as photochromic, thermochromic and electrochromic materials; Materials which absorb and reflect light - the classical dyes and pigments; Luminescent phenomena, including phosphorescence, fluorescence and electroluminescence; Materials which absorb light and transfer energy, eg photosensitisers, infra-red absorbers and laser-addressable compounds; Phenomena involving the manipulation of light by chemicals,

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such as liquid crystals, lustre pigments, optoelectronics and photonics Providing an entry point both for new researchers and for established ones, this book, with its emphasis on the technological applications of these chromic phenomena, develops and investigates new applications for colour chemistry. It will be of interest to industrialists and professionals in the biological, medicinal, electronics/telecommunications and colorant industries, as well as academics in these fields.

Human genetics is the medical field with the most rapid progress. This book aims to provide an overview on some of the latest developments in several genetic diseases. It contains 14 chapters focused on various genetic disorders addressing epidemiology, etiology, molecular basis and novel treatment options for these diseases. The chapters were written by 41 collaborators, from 8 different countries in Europe, Asia, and America, with great expertise in their field. Chapters are heterogeneous, offering a welcomed personalized view on each particular subject. The book does not offer a systematic overview of human genetic disorders. However, they are a valuable resource for medical practitioners, researchers, biologists and students in various medical sciences.

Highlighting its broad, multidisciplinary nature, this volume presents new research and applications in the field of archaeological chemistry, which focuses on the application of chemical techniques to the study of the material remains of the cultures of historical or prehistorical peoples. Consisting of 18 chapters written by a diverse collection of international authors, this volume highlights new research in archaeological chemistry, and shows how the field combines aspects of analytical chemistry, history, archaeology, and materials science. Current efforts to include archaeological chemistry in science education are also presented. As this

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book utilizes current scientific advances to better understand our past, it will be of broad general interest to the chemical, archaeological, and historical communities.

This volume explores developments in techniques in diagnostics, DNA sequencing, bioanalysis of immunoassays, and single-molecule detection. It promotes the measurement, identification, monitoring, analysis, and application of near-infrared spectroscopy (NIR) to medical and pharmaceutical advances. The text also considers noninvasive methods of NIR for successful, cost-effective, and prompt diagnoses of diseases.

This book provides an up-to-date insight into the chemistry behind the colour of the dyes and pigments that make our world so colourful. The impressive breadth of coverage starts with a dip into the history of colour science. Colour Chemistry then goes on to look at the structure and synthesis of the various dyes and pigments, along with their applications in the traditional areas of textiles, coatings and plastics, and also the ever-expanding range of "high-tech" applications. Also discussed are some of the environmental issues associated with the manufacture and use of colour. The broad and balanced coverage presented in this book makes it ideal for students and graduates. In addition, many specialists in industry or academia will also benefit from the overview of the subject that is provided.

With contributions from experts and pioneers, this set provides readers with the tools they need to answer the need for sustainable development faced by the industry. The six volumes constitute a shift from the traditional, mostly theoretical focus of most resources to the practical application of advances in research and development. With con
The well-received monograph Color Chemistry, now revised and updated in its 2nd edition, provides a thorough treatment of the synthesis, properties, and industrial applications of

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organic dyes and pigments. This is what the reviewers had to say about Color Chemistry: 'Recommended as essential reading not only to color chemists in all stages of their careers, but to chemists unilaterally. They will find it interesting, informative, stimulating and very readable.' Dyes and Pigments 'By confining the discussion to topics of current technical importance and using a mechanistic organic approach, an informative overall balance is achieved...' Chemistry in Britain 'This book will stand as the definitive treatment of the subject for years to come...Professor Zollinger's important contribution to the scientific literature belongs in every serious collection.' Textile Research Journal Advances in Heterocyclic Chemistry

During the dyeing process, losses of colorants to the water sources can be toxic and mutagenic and also decreases light penetration and photosynthesis activity. In recent years, since textile industry can generate large volumes of effluents, textile wastewater treatments have received considerable attention. The aim of this book is to look into textile wastewater treatments shortly. It is designed for readers who study on textile dyeing effluent. I would like to record my sincere thanks to authors for their contributions.

Color Chemistry Syntheses, Properties and Applications of Organic Dyes and Pigments Wiley-VCH

This book provides a wide-ranging overview of the current state-of-the-art and new trends in photodetector design and research. Written by a team of internationally renowned experts, with contributions from universities, research institutes and industries, this work is suitable for students and professionals interested in studying and dealing with photodetector design and technology, as well as the wide gamut of related applications. Its coverage includes: physics and fundamentals of photodetectors; physical models of photodetector operation; new materials, design, processing

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and function of photodetectors in related applications; testing, monitoring and calibration; and research progress in photodetector-related areas. Theoretical aspects, design and simulation principles, and important experimental results are thoroughly addressed, embodying a comprehensive account of current activity in this important field of research and industry.

This book aims to present the different aspects of electrospinning for designing and fabricating high performing materials for sensors applied in gaseous and liquid environments. Since electrospinning is a versatile and inexpensive manufacturing technology, the book emphasizes the industrial applications perspective. The volume is an edited collection of the most recent and encouraging results concerning advanced nanostructured (bio) sensors. The feats achieved by these sensors range from high sensitivity to extreme operating conditions and satisfy a wide range of requirements. Most of the contributions in this book come from First International Workshop on Electrospinning for High Performance Sensing (EHPS2014) that was held in Rome in 2014, as part of the European COST Action MP1206 Electrospun Nanofibres for bio inspired composite materials and innovative industrial applications.

The understanding of functional groups is the key to understanding organic chemistry. In the tradition of Patai's Chemistry of Functional Groups each volume treats all aspects of functional groups, touching on theoretical, analytical, synthetic, biological, and industrial aspects. Hypervalent halogen compounds, in particular

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iodine compounds, are very efficient and selective oxidants which tolerate a wide range of functional groups. The electrophilic properties of these reagents can also be used to introduce other functionalizations.

The present volume is the first in the series to survey the properties and chemical behaviour of hypervalent iodine and bromine, their use in organic synthesis, as well as their industrial application. As with all new volumes, the chapters are first published online in Patai's Chemistry of Functional Groups. Once a volume is completed online, it is then published in print format. The printed book offers the traditional quality of the Patai Book Series, complete with an extensive index.

This book presents a picture of the advances in the research of theoretical and practical frameworks of wastewater problems and solutions. The book deals with a basic concept and principles of modern biological, chemical and technical approaches to remediate various hazardous pollutants from wastewater. The latest empirical research findings in wastewater treatment are comprehensively discussed. Examples of low-cost technologies are also included. The book is written for professionals, researchers, academics and students wanting to improve their understanding of the strategic role of environmental protection and advanced applied technologies.

Plant endophytes are a potential source for the production of bioactive compounds that can fight against devastating diseases in both plants and humans. Among these endophytic microorganisms, endophytic fungi are one of the dominant group of microorganisms with a

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potential role in plant growth promotion and the discovery of noble bioactive natural products. Endophytic fungi possess several bioactivities like anticancer, antimicrobial, insecticidal, plant growth stimulants, crop protection, phytoremediation, etc. Presence of modular biosynthetic genes clusters like PKS and NRPS in several endophytic fungi underscores the need to understand and explore such organisms. This volume presents and demonstrates the applied aspects of endophytic fungi. Practical applications of such endophytes are discussed in detail, including studies in pharmaceutical development and agricultural management of important microbial diseases. The beneficial effects that endophytic fungi provide to host plants—enhancing growth, increasing fitness, strengthening tolerance to abiotic and biotic stresses through secondary metabolites—are also discussed. The reader is provided with a comprehensive and detailed understanding of such relationships between endophytic fungi and their host.

The intensification of agriculture and food production in recent years has led to an increase in the production of food co-products and wastes. Their disposal by incineration or landfill is often expensive as well as environmentally sensitive. Methods to valorise unused co-products and improve the management of wastes that cannot be reused, as well as techniques to reduce the quantity of waste produced in the first place, are increasingly important to the food industry. With its distinguished editor and array of international contributors, Waste management and co-product

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recovery in food processing reviews the latest developments in this area and describes how they can be used to reduce waste. The first section of the book provides a concise introduction to the field with a particular focus on legislation and consumer interests, principle drivers of waste management. Part two addresses the minimisation of biowaste and the optimisation of water and energy use in food processing. The third section covers key technologies for co-product separation and recovery, such as supercritical fluid extraction and membrane filtration, as well as important issues to consider when recovering co-products, such as waste stabilisation and microbiological risk assessment. Part four offers specific examples of waste management and co-product exploitation in particular sectors such as the red meat, poultry, dairy, fish and fruit and vegetable industries. The final part of the book summarises advanced techniques, to dispose of waste products that cannot be reused, and reviews state of the art technologies for wastewater treatment. Waste management and co-product recovery in food processing is a vital reference to all those in the food processing industry concerned with waste minimisation, co-product valorisation and end waste management. Looks at the optimisation of manufacturing procedures to decrease waste, energy and water use Explores methods to valorise waste by co-product recovery Considers best practice in different sectors of the food industry This second edition of the well-established bestseller is completely updated and revised with approximately 30 % additional material, including two new chapters on

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applications, which has seen the most significant developments. The comprehensive overview written at an introductory level covers fundamental aspects, principles of instrumentation and practical applications, while providing many valuable tips. For photochemists and photophysicists, physical chemists, molecular physicists, biophysicists, biochemists and biologists, lecturers and students of chemistry, physics, and biology.

Intended as a textbook for courses involving preparative solid-state chemistry, this book offers clear and detailed descriptions on how to prepare a selection of inorganic materials that exhibit important optical, magnetic and electrical properties, on a laboratory scale. The text covers a wide range of preparative methods and can be read as separate, independent chapters or as a unified coherent body of work. Discussions of various chemical systems reveal how the properties of a material can often be influenced by modifications to the preparative procedure, and vice versa. References to mineralogy are made throughout the book since knowledge of naturally occurring inorganic substances is helpful in devising many of the syntheses and in characterizing the product materials. A set of questions at the end of each chapter helps to connect theory with practice, and an accompanying solutions manual is available to instructors. This book is also of appeal to postgraduate students, post-doctoral researchers and those working in industry requiring knowledge of solid-state synthesis.

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