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NELSON COOLEY

Advances in color chemistry series Springer Science & Business Media

In this brief, Mary Virginia Orna details the history of color from the chemical point of view. Beginning with the first recorded uses of color and ending in the development of our modern chemical industry, this rich, yet concise exposition shows us how color pervades every aspect of our lives. Our consciousness, our perceptions, our useful appliances and tools, our playthings, our entertainment, our health, and our diagnostic apparatus - all involve color and are based in no small part on chemistry.

Fundamentals of the Chemistry and Application of Dyes Royal Society of Chemistry

Chromic or colour related phenomena are produced in response to a chemical or physical stimulus. This new edition will update the information on all those areas where chemicals or materials interact with light to produce colour, a colour change, or luminescence especially in the imaging, analysis, lighting and display areas. The book has been restructured to show greater emphasis on applications where 'coloured' compounds are used to transfer energy or manipulate light in some way therefore reducing the details on classical dyes and pigments. In the past eight years, since the previous edition, there has been a remarkable increase in the number of papers and reviews being produced reflecting the growth of interest in this area. This ongoing research interest is matched by a large number of new technological applications gaining commercial value covering e.g. biomedical areas, energy, data storage, physical colour, bio-inspired materials and photonics. This book appeals to industrial chemists, professionals, postgraduates and as high level recommended reading for colour technology courses.

Physico-Chemical Principles of Color Chemistry John Wiley & Sons

The foundations of the chemical dyestuffs industry were laid in 1856 when W. H. Perkin discovered the dye Mauveine. At approximately the same time modern chemistry was establishing itself as a major science. Thus, the chemistry of dyes became that branch of organic chemistry in which the early scientific theories were first used. This early eminence has now been largely lost. In fact, many of our academic and teaching institutions pay little attention to this vitally important branch of organic chemistry. We believe that this book will help to rectify this unfortunate situation. The majority of books that have been published on the subject of dyes have been technologically biased and, in our opinion, do not appeal to the mainstream organic chemist. We have, therefore, aimed at producing a book which emphasises the role of organic chemistry in dyestuffs and we have included appropriate modern theories, especially the modern molecular orbital approaches. We have assumed that the reader possesses a knowledge of the basic principles of organic chemistry;* the only other requirement is a general interest in organic chemistry.** The book should interest the newcomer to chemistry, the established academic, and the dyestuffs chemist himself.

Colour Chemistry de Gruyter

Students embarking upon a colour chemistry course usually approach it by way of a general introduction and proceed to more detailed treatment of the subject when they have acquired some knowledge of its character and scope. This book has been written with the twofold purpose of serving as a guide to such students during the introductory part of their course and of supplying the needs in this field of others whose main interest is in a related branch of technology or pure chemistry. An attempt has been made to present the main features of the subject in an easily assimilable form. The great amount of published information renders the choice of material for a short book somewhat difficult, and I am keenly conscious of topics that might be thought worthy of more extensive treatment. However, a concise account cannot be comprehensive, and suggestions for further reading are provided at the end of the book. The chemistry of colouring matters can be regarded as a branch of pure chemistry, but the development of knowledge in this field has followed a course determined chiefly by the applications of dyes and pigments. It has therefore appeared appropriate to treat the subject here as a branch of technology.

Organic Chemistry in Colour Discovery Publishing House

It is particularly appropriate that a volume concerned with dye chemistry should be included in the series Topics in Applied Chemistry. The development of the dye industry has been inexorably linked not only with the development of the chemical industry but also with organic chemistry itself since the middle of the last century. The position of dye chemistry at the forefront of chemical 1945 and more markedly so during the last advance has declined somewhat since 15 years, with pharmaceutical and medicinal chemistry assuming an increasingly prominent position. Nevertheless, dye production still accounts for a significant portion of the business of most major chemical companies. The field of dye chemistry has stimulated the publication of many books over the years but surprisingly few have concentrated on or even included the practical aspects of dye synthesis and application. Thus, the present volume is designed to fulfill that need and provide the reader with an account of advances in dye chemistry, concentrating on more recent work and giving, in a single volume, synthetic detail and methods of application of the most important classes, information which will be invaluable to both student and research chemist alike.

Science And Human Behavior Springer

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.

Color Chemistry Simon and Schuster

Students embarking upon a colour chemistry course usually approach it by way of a general introduction and proceed to more detailed treatment of the subject when they have acquired some knowledge of its character and scope. This book has been written with the twofold purpose of serving as a guide to such students during the introductory part of their course and of supplying the needs in this field of others whose main interest is in a related branch of technology or pure chemistry. An attempt has been made to present the main features of the subject in an easily

assimilable form. The great amount of published information renders the choice of material for a short book somewhat difficult, and I am keenly conscious of topics that might be thought worthy of more extensive treatment. However, a concise account cannot be comprehensive, and suggestions for further reading are provided at the end of the book. The chemistry of colouring matters can be regarded as a branch of pure chemistry, but the development of knowledge in this field has followed a course determined chiefly by the applications of dyes and pigments. It has therefore appeared appropriate to treat the subject here as a branch of technology.

Chemistry and Artists' Colors Wiley-VCH

More than one and a half decades have passed since the last book was published describing developments in the analytical chemistry of synthetic colorants. In the intervening period, the scope and technical capabilities of instrumentation for analysing dyes and pigments has significantly expanded. It is now possible to rapidly resolve a number of problems whose solutions were previously either unattainable or very difficult to achieve. For instance, the unambiguous assignment of all the signals in the proton NMR spectrum of a trisazo direct dye, and the confirmation of the molecular weight of involatile, and, in particular, sulphonated dyes, without derivatisation, are now routine analytical techniques in many laboratories today. In addition, it is now possible to record the NMR spectrum of a dye molecule on less than 1 mg of material, and we are no longer limited to solution spectra, since solid samples can now be routinely analysed in NMR experiments. Whilst not attempting to be all encompassing, this volume is intended to bridge the gap between what was covered in the earlier work edited by Professor Venkataraman and the developments which have since ensued in some key areas. It provides important updates in X-ray crystallography, proton NMR, IR spectroscopy and mass spectrometry, and additionally covers topics such as ESR, micro spectrophotometry and emission spectroscopy.

The Physics and Chemistry of Color Springer

This encyclopedia comprehensively summarizes fundamental and applied chemistry of dyes and pigments. The set consists of three volumes that discuss fundamentals and techniques of colorant science (ISBN 978-3-11-058588-9), organic and inorganic pigments (ISBN 978-3-11-058684-8) as well as a detailed overview of dye chemistry (ISBN 978-3-11-058686-2).

Color Chemistry Springer

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.

Advances in Colour Chemistry Series John Wiley & Sons

The psychology classic—a detailed study of scientific theories of human nature and the possible ways in which human behavior can be predicted and controlled—from one of the most influential

behaviorists of the twentieth century and the author of *Walden Two*. "This is an important book, exceptionally well written, and logically consistent with the basic premise of the unitary nature of science. Many students of society and culture would take violent issue with most of the things that Skinner has to say, but even those who disagree most will find this a stimulating book." —Samuel M. Strong, *The American Journal of Sociology* "This is a remarkable book—remarkable in that it presents a strong, consistent, and all but exhaustive case for a natural science of human behavior...It ought to be...valuable for those whose preferences lie with, as well as those whose preferences stand against, a behavioristic approach to human activity." —Harry Prosch, *Ethics [Set Encyclopedia of Color, Dyes, Pigments]* Springer Science & Business Media Taking a generalized historical viewpoint of the field of chemistry and chemical technology which can be broadly defined as colour chemistry, it could be concluded that at least four distinct developments have made a significant impact on the progression and expansion of this subject area. The initiation was, of course, the discovery of the first synthetic dye, mauveine, by W. H. Perkin in 1856. This historic event ultimately resulted in the commercial development of a vast range of synthetic colorants both for textile and non-textile applications, and which possessed a more favourable cost versus benefit ratio compared to the hitherto used naturally occurring colorants. The second factor was the development over the years of synthetic fibres, an innovation which led to vigorous new research and the addition of the disperse dyes and improved cationic dyes to the extensive volume of synthetic dyestuffs enjoying successful industrial exploitation. The introduction of the fibre reactive dyes, whilst presenting innovative ideas in both the chemistry and application of colorants, may be considered as a natural development from the first event. The third development can be related to the recognition of the potential adverse effects of certain synthetic dye intermediates on human health.

Organic Chemistry in Colour Springer Science & Business Media

This is a laboratory text for the mainstream organic chemistry course taught at both two and four year schools, featuring both microscale experiments and options for scaling up appropriate experiments for use in the macroscale lab. It provides complete coverage of organic laboratory experiments and techniques with a strong emphasis on modern laboratory instrumentation, a sharp focus on safety in the lab, excellent pre- and post-lab exercises, and multi-step experiments. Notable enhancements to this new edition include inquiry-driven experimentation, validation of the purification process, and the implementation of greener processes (including microwave use) to perform traditional experimentation.

The Chemical History of Color John Wiley & Sons

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 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

Color chemistry Springer Science & Business Media

Colour has fascinated man ever since he was able to see a coloured object. When Perkin manufactured the first synthetic dye in 1857, little was known of the chemistry of dyes and about dependence of colour on structure. The principles concerning this relationship emerged over the next two decades. The principles are now fully described using the molecular orbital theory. This book deals with all aspects of the chemistry of colour.

The Chemistry and Application of Dyes Chemical Heritage Foundation

SOIL BIOREMEDIATION A practical guide to the environmentally sustainable bioremediation of soil
Soil Bioremediation: An Approach Towards Sustainable Technology provides the first comprehensive discussion of sustainable and effective techniques for soil bioremediation involving microbes. Presenting established and updated research on emerging trends in bioremediation, this book provides contributions from both experimental and numerical researchers who provide reports on significant field trials. Soil Bioremediation instructs the reader on several different environmentally friendly bioremediation techniques, including: Bio-sorption Bio-augmentation Bio-stimulation Emphasizing molecular approaches and biosynthetic pathways of microbes, this one-of-a-kind reference focuses heavily on the role of microbes in the degradation and removal of xenobiotic substances from the environment and presents a unique management and conservation perspective in the field of environmental microbiology. Soil Bioremediation is perfect for undergraduate students in the fields of environmental science, microbiology, limnology, freshwater ecology and microbial biotechnology. It is also invaluable for researchers and scientists working in the areas of environmental science, environmental microbiology, and waste management.

Color Chemistry John Wiley & Sons

A textbook that discusses the broad chemical principles underlying the application of dyes and pigments to a wide variety of substrates: textiles, surface coatings, plastics etc. It also discusses non-substrate uses of dyes and pigments and the use of colour measurement.

The Chemistry of Colour Application Springer

In this book the authors go back to basics to describe the structural differences between dyes and pigments, their mechanisms of action, properties and applications. They set the scene by explaining

the reasons behind these differences and show how dyes are predominately organic compounds that dissolve or react with substrates, whereas pigments are (predominantly) finely ground inorganic substances that are insoluble and therefore have a different mode of coloring. They also describe the role of functional groups and their effect on dyeing ability, contrasting this with the way in which pigments cause surface reflection (or light absorption) depending on their chemical and crystalline structure and relative particle size. The book explores the environmental impact of dyes in a section that covers the physical, chemical, toxicological, and ecological properties of dyes and how these are used to assess their effect on the environment and to estimate whether a given product presents a potential hazard. Lastly, it assesses how, in addition to their traditional uses in the textile, leather, paper, paint and varnish industries, dyes and pigments are indispensable in other fields such as microelectronics, medical diagnostics, and in information recording techniques.

Colour Chemistry Royal Society of Chemistry

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 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.

A Series of Monographs on Color: Color chemistry Springer Science & Business Media

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