



## Molecular Crystals and Liquid Crystals

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### BOOK REVIEW

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*Color Chemistry*, 3rd rev. ed., by Heinrich Zollinger, Verlag Helvetica Chimica Acta; Wiley-VCH, Weinheim, 2003; ISBN 3-906390-23-3, 620 pp., \$150.

The 3rd edition of the Heinrich Zollinger's, well-known book, *Color Chemistry*, covers practically every aspect related to the various classes of organic materials that are presently in use as main constituents of dyes and pigments in traditional and advanced technologies.

This 3rd edition reads as well as older editions and is a must-read for all chemists who are working in the field of organic dyes and pigments.

Zollinger's text has great breadth of coverage and intelligent organization of the content. Three main parts can be singled out from the book. The first one deals with the general concepts of color, color perception, and the necessary structural features of an organic molecule for displaying a colored appearance (chapters 1 and 2). These two chapters are well written in the sense that synthetic organic chemists, who sometimes develop reservations toward the theory necessary to understand the basic principles of color, can enjoy an easy and understandable introduction into these topics.

The second part deals with the synthesis and main absorption properties of all the classes of colored organic materials (from polyenes to sulfur dyes), which are grouped and presented according to a criterion based on chemical structure (chapters 3–9). The recent literature is considered in all chapters; even the referees who are involved in phthalocyanine chemistry for a long time could gain something from Chapter 5 on azaannulenes.

The third part deals with the application of dyes and pigments in modern technologies (chapters 10–16). The third part is not a mere list of applications, but also reports quite well on the various chemical–physical processes that are involved in the utilization of a colored organic material for a given application. The author paid particular attention to the analysis of the processes that lead to the controlled alteration of the color of an organic material. Such an analysis is interesting because it stresses the importance of the dynamic aspect in the colored organic material for applications or technologies like optical storage, data-recording systems, photography, electrophotography, liquid crystal displays, NLO applications,

and photochromism, all of which involve interactions between a luminous radiation and the colored organic material with strict temporal requirements.

When compared with the penultimate 2nd edition of 1991, the 3rd edition of *Color Chemistry* presents many updates and more extended chapters, taking well into account the various achievements of materials science of organic colored compounds that have occurred in the last 10–15 years. Chapter 14 on colorants for imaging and data-recording systems is especially interesting to read because it covers the most recent developments of materials and technologies related with the exploitation of colored organic materials.

Clear efforts have been spent also in the updating of the previously available bibliographic material, especially in the chapters on PPVs and polythiophenes (chapter 3), and sulfur-based black colorants (chapter 9).

A few critical remarks: The text is certainly a comprehensive one, although it is not exhaustive in all aspects it covers. In the second part of the book, concerning the applications and uses of transformation processes of colored organic compounds, the aspect of electrochromism has been relatively neglected; no description of electrochromic processes is given or summarized in an introductory fashion.

In conclusion, the 3rd edition of this book certainly represents an indispensable text for all those researchers who are somehow involved with the materials science of organic colored compounds. In particular, this edition is useful for audiences such as synthetic and physical chemists, materials scientists, and all researchers who are active in the fields of colorant synthesis and testing. The clear style and completeness of the information render this book useful also for those scientists who wish to get a solid background in the fields of chemistry and applications of organic colorants.

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