Dyeing to be Read

High Performance Pigments. Edited by *Hugh M. Smith*. Wiley-VCH, Weinheim 2002. 435 pp., hardcover € 159.00.—ISBN 3-527-30204-2

Anyone seeking up-to-date information about the physical-chemical principles of high performance pigments and their special technical properties will find that this book gives an excellent survey of all relevant aspects. Previous treatments of the broad field of pigments have usually recognized a clear distinction between organic and inorganic materials. Two important monographs on the subject are *Industrial Organic Pigments*, by Willi Herbst and Klaus Hunger, and *Industrial Inorganic Pigments*, by Gunter Buxbaum, both published by Wiley-VCH. In the book reviewed here the wide-ranging subject of pigments is approached from a different and new perspective, with the emphasis on pigments for exceptionally demanding applications that require special properties. Both inorganic and organic pigments are discussed.

The publication of this book follows a series of international conferences under the title "High Performance Pigments" that took place in Chicago, Miami, Barcelona, and Berlin during the last few years. All of these (except that in Berlin) were led by Hugh M. Smith, a renowned expert on the subject with several decades of relevant industrial experience, who is also the editor of the book.

Up to now there has been no universally accepted definition of "high performance" pigments, and much discussion, philosophizing, and argument about possible definitions took place during the above conferences. One definition, proposed by Hugh Smith himself, is that they are organic or inorganic particulate pigments, which are colored, black, or white, pearlescent, have a pearl-like surface sheen, and may be luminescent or fluorescent, with properties that fulfill the highest possible requirements for the intended use. Another suggestion comes from Fritz Brenzikofer who led the Berlin conference. In contrast to Smith's technically oriented definition, Brenzikofer's is firmly based on the pigments market. According to this, a high performance pigment is the correct pigment for a special application, which satisfies precisely defined quality criteria and is produced at optimum cost.

As authors for this book, Hugh Smith has succeeded in recruiting experts in a wide range of specialist areas. All have long experience in the pigments industry, and give thoroughly competent accounts of the latest developments in their fields.

Six chapters are devoted to inorganic pigments, beginning with an introductory overview by Gunter Buxbaum. Some recent developments are covered for the first time, such as the new class of cerium-based pigments. A long and detailed chapter is devoted to the rapidly growing field of effect pigments. These include pigments with angle-dependent color effects, and functional pigments with special electrically conducting, magnetic, IR-reflective, or laser-sensitive properties. The chapter on "Crystal Design" describes how the suitability of pigments for different technological applications is affected by their crystalline properties, so that by tailoring these properties one can optimize a pigment for a specific application.

A further 12 chapters describe the different classes of organic pigments, introduced by an article discussing the world market for these products. A knowledge and understanding of the regulations that govern the registration of new pigments is increasingly important, since this aspect has a decisive influence on the economic success of a new product. Two chapters are devoted to this topic, with emphasis on the USA and Europe, respectively. The book concludes with chapters on the analysis of pigments and on toxicological aspects.

The Color Index International (CI) system is used throughout the book to identify pigments. The detailed list of contents and the subject index enable the reader to easily find information on topics of interest such as individual pigments or classes of pigments.

The reader should not expect to find every conceivable application of high performance pigments described in minute detail here, and that would hardly be possible in the space of a single book. Nevertheless, the book gives a very good survey of the current technical situation in this field, and also provides many literature references for the reader who wishes to delve more deeply into specific aspects.

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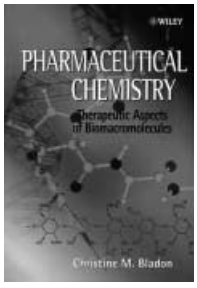
Pharmaceutical Chemistry. Therapeutic Aspects of Biomacromolecules. By *Christine M. Bladon.* John Wiley & Sons, New York 2002. xii + 221 pp., softcover £ 24.95.—ISBN 0-471-49637-5



This book evolved from a course given to undergraduate pharmaceutical chemistry students focusing on the therapeutic aspects of biopolymers. Although directed towards pharmaceutical chemistry students, it would also be useful

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reading for advanced chemistry and biology students, or for other scientists interested in this aspect of pharmaceutical chemistry. The book is divided into six chapters, an appendix, a glossary, and an index.

Chapter 1 is more motivational than introductory, describing interesting medical and therapeutic challenges. For the novice, it might be best to follow the reading of this chapter with the appendix, which offers a useful refresher on the monomeric building blocks of the biopolymers discussed in detail in the text. The book is organized into a grouping of the three major classes: biopolymers, proteins, and nucleic acids and polysaccharides. A second level of organization is imposed within these major topics, covering gene cloning, protein engineering, and immunology, which makes the treatment somewhat disjointed. For example, vaccination is covered before cell-mediated immune response, chimeric and humanized antibodies are described before hybridoma technology, HIV is covered before T helper cells, and capsular polysaccharides are covered long after vaccines. This organization makes it an easy read for one familiar with the field, but may pose difficulties for the novice. Also, there are wide variations in the depth of treatment. For example, a very detailed description of immunosuppression is given, yet no mention is made of the different classes of immunoglobulins, and ribozymes are discussed but no mention is made of abzymes. Some important topics that should have been included are missing, such as how the ability to recognize self from non-self develops, and the concept of a provirus is never directly addressed. Some important aspects of pharmaceutical technology, such as the use of controlled release formulations for the delivery of biopolymers, and challenges in the formulation, stabilization, and analysis of biopolymeric drugs, are not discussed.

Despite these shortcomings, the author should be commended for putting together a nearly error-free text, covering a multiplicity of disciplines, that is readable and interesting. The figures and structures are of high quality, well reproduced, and with detailed legends. References to textbooks, review articles, and research publications are given at the end of each chapter. The text is up-to-date, it was written in May 2001, and it includes references to research articles published in the same year. Although the book contains no information about the background of the author, it appears that she is trained as a chemist but has acquired an excellent grasp of biology and pharmaceutical science. I recommend this book to those with an interest in the therapeutic aspects of biomacromolecules.

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Nationalizing Science. Adolphe Wurtz and the Battle for French Chemistry. by *Alan J. Rocke.* MIT Press, Cambridge 2001, 443 pp, hardcover $ 39.95.—ISBN 0-262-18204-1

A. J. Rocke describes in his book the development of chemistry in France in the 19th century. He often draws parallels between the state of chemistry in Germany, France, and partly England. The book describes quite accurately the status of chemistry in the 19th century. Adolphe Wurtz's life is used as a guideline in this book. A. J. Rocke has added biographies of Justus Liebig and Jean-Baptiste Dumas in the first two chapters. Liebig stayed several times in Paris and was strongly influenced by Gay-Lussac. Although Dumas and Liebig were competitors, they did exchange co-workers and ideas, so that decisive improvements in elementary analysis of organic chemistry could be achieved, which led to a rapid development in synthetic organic chemistry. French and German university systems were extensively compared in these chapters. It is shown that chemistry in France was losing competitiveness compared to Germany in the years from 1810 until 1865. Decentralization of scientific development in Germany allowed the establishment of first-class centers at several universities such as Giessen, Marburg, Heidelberg, and Göttingen. A. J. Rocke shows how centralistic administative organization as well as the need of cumulating positions for scientists had on obstructive effect on the development of research in Paris and France in general. This scientific behavior resulted in constantly less international exchange of French scientists. Moderate financial support of research in France, too, had a detrimental effect on French chemistry. Fortunately, Adolphe Wurtz and his co-workers had a positive influence on this situation. In the third chapter. A. J. Rocke describes Wurtz's scientific background. He was born close to Strasbourg, then studied chemistry in this city and stayed as a post-doctoral researcher with Liebig at Giessen. This stimulating experience influenced his whole life. He moved to Paris and became the successor to Dumas. Wurtz and his co-workers (300 spread over the years) represent the most important French chemistry school in the 19th century. A. J. Rocke then describes in chapter 8 the career of Marcellin Berthelot, who was not very supportive of German science. He gained reputation through the publication of books such as "La Chimie Organique fondée sur la Synthèse" rather than through personal scientific publications. Dumas had doubts about the Atomic Theory. Similarly, Berthelot did not support this theory. He changed his opinion only 12 years after Wurtz's death (1896). On the other hand, Wurtz and his students, influenced by international contacts, defended the Atomic Theory in France, although with little success. Under the influence of Wurtz and his co-workers important educational changes (additional practical training, mixing of research and teaching activities) took place. He was successful in persuading the French Government that it would be useful to let more money flow into chemistry. This investment led to a noticeable improvement in French sciences at the end of the 19th century. In the last chapter A. J. Rocke tries to explain how Wurtz's personality (modesty, provincialism) made it difficult for him to defend the Atomic Theory in France efficiently.

This book of A. J. Rocke contains an important set of historical data, which allows a better understanding of French, German, and English science in the 19th century. The book is highly suitable for

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