that detract from the work. A review of all the references indicate that many of the chapters must have been largely prepared in or around 1993. While the delay in going to print does not diminish the overall quality of the work, it means that some new advances are undoubtedly missing from the chapters. The chapters dealing with the synthesis and chemistry of liquid crystals adequately cover the major classes of liquid crystals, but those dealing with technology focus only on displays and optics and largely ignore the important developments in the field of thermotropic and lyotropic polymers, for example. These new polymers are becoming increasingly important for the microelectronics industry due to their precision molding capabilities (thermotropic), and of course, the high modulus properties of lyotropic polymers are well-known. The area of surfactants which is driving the recent fascinating work on templated growth of silicates and metal nanostructures is not covered here. The broad scope of the book has meant that the editors have had to necessarily focus their topical coverage, but the lack of much discussion of these newer aspects may limit the appeal of this book for these developing communities.

The individual chapters largely focus on work covering a 10−15 year period. While each chapter is quite detailed, it is written in an easy to read way. As an illustration, the chapter on chiral and achiral liquid crystals covers LC structure and function thoroughly without any historical review. Newly synthesized LC molecules are well described, but older compounds are not. A stated goal of the editors was not to be overly comprehensive; thus, to study the earlier work on liquid crystals, even that 20 years old, requires the reader to go to previous references. As another example, the chapter on theory deals largely with the scientifically popular blue phase, computer simulation of liquid crystals, and other developments of recent interest but does not provide much of the more basic theoretical aspects of liquid crystals. To read about Maier-Saupe theory, for example, other sources such as the books by de Gennes and Prost or de Jeu will be required. One last point to note is the tendency of some of the authors to overly focus on their own work. Nevertheless, the editors maintain a generally balanced volume.

As a truly useful reference work for the more advanced reader, both the cited literature and the index must be well executed. In this book the editors have been careful to require detailed citations and even provide a journals abbreviation list. The index appears to be equally thorough although it is surprisingly brief for a work of 600 pages.

In summary, anyone with an interest in the field of LC research and many of the developments in it over the last 10−15 years will want a copy of this excellent volume. However, it should not be the reader's only reference on liquid crystals, nor the reader's first book on liquid crystals, since the handbook is obviously intended for the more advanced reader.

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Advances in Supramolecular Chemistry, Vol. 4. Edited by George W. Gokel (Washington University School of Medicine). JAI Press: Greenwich. 1997. xi + 338 pp. $109.50. ISBN 1-55938-794-7.

This book is the fourth in an excellent series presenting review articles on recent research in supramolecular chemistry. The volume is comprised of 7 diverse chapters by 24 contributing authors, with each chapter dedicated to a specific area in the field. While such a volume cannot cover all important subject areas in supramolecular chemistry, the editor has succeeded in assembling a series of contributions that reveal the breadth of the field. Each chapter contains references that are carefully selected, relevant, and recent (numerous references are from 1996). For the most part, this book is clear and concise, and will appeal to a wide range of scientists interested in supramolecular chemistry.

In the first chapter entitled Supramolecular Photoionic Devices, de Silva et al. provide a comprehensive account of molecular systems that operate via the interconversion of ionic and photonic signals. A well-crafted introduction sets the stage for a logical exploration of the field. Each of the subsequent subsections examines numerous supramolecular systems that are comprised of lumophores and receptors (typically ion receptors). Emphasis is placed on systems with switchable luminescent output and the potential emulation of electronic devices by these systems.

The second chapter by Inoue and Wada focuses on the thermodynamics of molecular recognition in both synthetic and biological systems. A theoretical analysis, based on the compensatory enthalpy−entropy relationship, is shown to apply to a variety of host−guest systems. The authors' theory allows for a quantitative determination of the degree of conformational changes and the extent of desolvation upon molecular association.

The third and seventh chapters deal with synthetic anion receptors. The third chapter by Sessler et al. primarily focuses on research from their laboratory on anion binding by sapphyrins. This interesting chapter demonstrates the range and power that protonated sapphyrins possess as anion binding agents, and offers very extensive references of anion binding in general. The seventh chapter by Holman et al. provides more of a general review of anion receptors and the challenges faced in their design. The chapter emphasizes host systems that exhibit a high degree of affinity or selectivity in anion binding, and provides a fascinating account of the variety of systems that have been investigated recently.

The fourth chapter by Anzai and Osa describes protein-based multilayered systems that are assembled using avidin−biotin complexation. The authors provide an account of their research that illustrates the successful use of their multilayered assemblies as high-performance biosensors. The next chapter by Kobuke discusses progress that has been made in the design of artificial ion channels. Although one of the figures in this chapter is upside-down, the chapter effectively covers a variety of systems that successfully mimic the function of natural ion channels. In addition, Kobuke provides an excellent account of the various methodologies in this area.

The sixth chapter by Odashima et al., which is the longest chapter in the book, details the development of sensing membranes that are based on biomimetic and biological receptors. These authors, in primarily discussing their own research, illustrate the ability to prepare a multitude of sensing membranes by incorporation of synthetic or natural receptors in the membrane material. The chapter demonstrates how functions such as transmembrane signaling, coupled active transport, and ternary complex formation are used for the sensing of target molecules in an amplified manner.

In summary, the fourth volume of this series continues to offer well-written, interesting, and up-to-date accounts of important topics in supramolecular chemistry. It is highly recommended for research libraries and personal collections.

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