

Applications of Supramolecular Chemistry

For the book *Applications of Supramolecular Chemistry*, Hans-Jörg Schneider convinced chemists from different areas to summarize various applications of supramolecular chemistry in 17 chapters. More than 30 years after the Nobel Prize, the question is justified: what can supramolecular chemistry achieve today, which applications are possible and where?

The result is a heterogeneous book. The book is already heterogeneous in the respect, that “application” can be understood quite differently. Thus, the gadolinium complexes described in chapter 16 are well established as contrast agents in medical imaging (MRI). Chapter 4, potentiometric ion sensors, describes established receptors for selective ion analysis. In chapter 17, applications in food and textile industries, also well-established processes such as odor absorption by cyclodextrins are presented. But to a large part, these chapters already discuss, as many others exclusively, areas of application of supramolecular chemistry which still have to be developed.

The removal of heavy metals, especially when radioactive, by means of supramolecular interactions has been investigated since decades. This and newer developments are discussed in chapter 7, industrial and environmental applications, and the chapter also concentrates on potential applications. Chapter 12, supramolecular polymers, is on the border between fundamental research with potential for a commercial application and first products. The other chapters deal with aspects from the full spectrum of supramolecular chemistry and its potential applications, starting with sensors for inorganic analytes (chapter 2), for organic and biological analytes (chapter 3) as well as for proteins and nucleic acids (chapter 15), or supramolecular chromatography (chapter 6). Other chapters discuss, sometimes broader, sometime more narrow, the supramolecular aspects of molecular imprinting of polymers (chapter 5), chemomechanical materials (chapter 8), organic materials for electronics (chapter 9), crystal engineering (chapter 10), drug delivery (chapter 14), hydrogels (chapter 13), and supramolecular architectures for

photodynamic therapy and photocatalysis (chapter 11).

Breadth and depth of the discussions within the different chapters is also quite heterogeneous. In a collection of articles, it is understandable that not every chapter has the same timeliness (in comparison, especially those chapter whose authors probably met the deadlines seem less up to date). But it is disappointing to find, in a book from 2012, some chapters that only contain very few references which are newer than 2008. Positive with respect to timeliness are the chapters on inorganic analytes, organic and biological analytes, proteins and nucleic acids, chemomechanical materials, supramolecular complexes for photodynamic therapy, as well as supramolecular polymers. They all cover substantially year 2010 and partially early 2011. The chapters chromatography, industrial and environmental applications, ion sensors, drug delivery, and applications in textile and food industries offer both, extensively well-known older literature but also new developments.

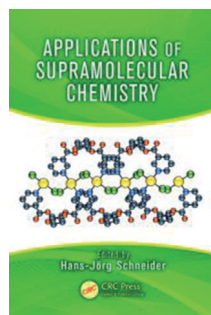
Also the breadth of the reviews is heterogeneous. The chapters on molecular tectonics, photodynamic therapy, and applications in textile and food industry concentrate primarily on the work of the authors while other chapters highlight their topics much broader. Broad in another respect is the chapter on supramolecular structures in organic electronics which predominantly presents the electroactive substances, their processing and their orientation in the devices. Supramolecular chemistry is only present in the packing phenomena and liquid crystals.

With this diversity, an evaluation of this book is difficult especially against the background of electronic media. An added value comes from the collection of the different fields of supramolecular chemistry. Where will supramolecular chemistry head to in the next 30 years? The suggestions given in this book are divers, they are varying in their timeliness, their—also sometimes quite personal—point of view, and their view for potential applications.

Ulrich Lüning

Otto-Diels-Institut für Organische Chemie
Christian-Albrechts-Universität zu Kiel (Germany)

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