

Supramolecular Polymer Chemistry

Supramolecular chemistry, an interdisciplinary and highly active research field, deals with the self-organization of single molecules into hierarchically ordered superstructures. Apart from investigating intermolecular interactions to establish a deep understanding of the fundamental principles involved, a further goal is to realize novel systems and materials with tailored properties.

In this context, Akira Harada presents a comprehensive collection of contributions from diverse authors from the field in the book *Supramolecular Polymer Chemistry*. This collection is intended in particular for researchers that are already active in this topic, but also for up-and-coming scientists and students.

The first part, which consists of five chapters, deals with the formation of supramolecular polymer systems that are assembled by multiple hydrogen bonds and presents supramolecular polymers that are based on cyclodextrins. Further chapters deal with the interaction of small molecules with macro- and supramolecules and the formation of supramolecular polymers by interactions of ditopic cavitands.

The second part, with three chapters, presents examples of supramolecular polymer systems that have been selected for their special structures. Polymers with both covalently and supramolecularly bound cyclodextrins in their side chains and also dendrimers based on antibody interactions, DNA-based catenanes, and poly(pseudo)rotaxanes based on crown ethers are presented.

In the third part, the properties and functions of selected supramolecular polymer systems are illustrated in nine chapters. The focus lies in poly(pseudo)rotaxane systems that comprise interesting examples of rotaxane-based catalysts, biomimetic systems, and “slide-ring” materials. Further-

more, in this part of the book chapters can be found on the theory and application of the topology of polymer ring systems, articles on physicochemical aspects of supramolecular polymer systems, a comprehensive chapter on stimuli-responsive systems, and an article on molecular machines.

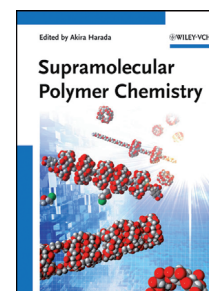
Overall, this book contains both basic aspects of the research topic as well as theoretical and also practical approaches. The student that this book (according to the foreword) addresses may however be overwhelmed by the sheer amount of detail in a number of the articles. As an attempt is made to present an as comprehensive and actual state of the art of the research area as possible, some of the articles suffer from the basic ideas and concepts being lost in the mass of information. The title *Supramolecular Polymer Chemistry* is perhaps chosen somewhat too general, as the book clearly has a focus on poly(pseudo)rotaxanes.

Consequently, this book is best suited to scientists that are already active in one of the therein emphasized topics of supramolecular polymer chemistry. Novices at this field will find much basic information in numerous articles, but the richness of detail, which is in some cases extreme, will no doubt overwhelm the unprepared reader. A reduction in the content and instead an accentuated, comprehensible presentation of the underlying ideas and concepts, including comprehensive introductions and concluding sections, would have been more useful particularly for novices than experimental details and excessive listings of literature examples. However, it can be said that useful information is presented that is suitable both for experts and for novices and that the book is a valuable contribution to the field of supramolecular polymer chemistry.

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