

## Handbook of Polymer Synthesis, Characterization and Processing

This new handbook presents a general overview of the many-faceted subject of polymer science and technology, aiming to cover the whole polymer production chain from synthesis to applications. It comprises six parts in total, dealing with the basic mechanisms of polymerization, the technical implementation of polymer synthesis and processing, the most important characterization techniques, and selected application areas.

The basic principles of polymerization techniques and mechanisms are a central focus of the handbook, and the corresponding part gives an excellent overview of this area. It includes recent developments that are only now on the way towards wide industrial application. The following parts extend the discussion to cover the important aspects of processing and characterization. However, as these chapters are relatively short, they can only cover the most important principles. Thus, for example, the chapter on molecular weight determination is limited to the technique of gel permeation chromatography, and the important topic of the thermal properties of polymeric materials and their measurement and evaluation is not treated in a separate chapter.

Especially for a handbook such as this, the accessibility and clear presentation of the table of contents and the index are of great importance for easy navigation in the book, as also is the provision of enough cross-references between the chapters. These requirements are well fulfilled in this book. Many of the numerous helpful figures are presented in color in the middle part of the book.

In general, the structure of the chapters follows the well-established pattern of a handbook, by presenting the most important basics of the subject at the beginning of a chapter, followed by more

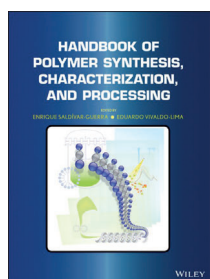
recent developments, and accompanied by relevant literature references. The result is a series of short introductory sections that include the most important polymer physics models. This provides the reader with a quick overview of a sub-area of polymer science, and references for further reading.

Although this approach is, in principle, very effective, there are significant differences between the chapters in its implementation. In some of the 31 chapters, the choice of content has obviously been influenced by the research interests of the respective team of authors. This is the case for the chapter on “Polymer States and Properties”, which is largely concerned with the controversy about the glass transition temperature of selected biopolymers and its investigation by dielectric spectroscopy. The last part of the book, “Polymers for Advanced Technologies”, which is concerned with polymer applications, also fails to fully meet the requirements for a handbook—whereas the other parts of the book emphasize the industrial relevance of the many different aspects, this part focuses on the applications of polymers in a few very specialized areas. This is in contrast to the rest of the book, which emphasizes the wide variety of areas in which polymers are applied.

In summary, *Handbook of Polymer Synthesis, Characterization and Processing* is a valuable reference work for everyone working in the area of polymer science and technology, and for advanced students who wish to get a good insight into specific aspects of this field. However, as a textbook or as a basis for an introductory course on polymers, as suggested by the editors in the foreword, it is less suitable, as it does not provide the broadness of subject coverage that is indicated for a handbook.

Annette Schmidt  
Institut für Physikalische Chemie  
Universität zu Köln (Germany)

DOI: 10.1002/anie.201309282



**Handbook of Polymer  
Synthesis, Characterization  
and Processing**  
Edited by Enrique Saldivar-  
Guerra and Eduardo Vival-  
do-Lima. John Wiley and  
Sons, Hoboken, 2013.  
644 pp., hardcover,  
€ 169.00.—ISBN 978-  
0470630327