



## Polymer Synthesis: Theory and Practice: Fundamentals, Methods, Experiments

*By Dietrich Braun, Harald Cherdrón, Matthias Rehahn, Helmut Ritter, Brigitte Voit*

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Emphasis is on a broad description of the general methods and processes for the synthesis, modification and characterization of macromolecules. These more fundamental chapters will be supplemented by selected and detailed experiments. In addition to the preparative aspects, the book also gives the reader an impression on the relation of chemical constitution and morphology of Polymers to their properties, as well as on their application areas. Thus, an additional textbook will not be needed in order to understand the experiments.

The 5th edition contains numerous changes: In recent years, so-called functional polymers which have special electrical, electronic, optical and biological properties, have gained more and more in interest. This textbook was therefore supplemented by recipes which describe the synthesis of these materials in a new chapter "Functional polymers". Together with new experiments in chapter 3,4 and 5 the book now contains more than 120 recipes that describe a wide range of macromolecules.

From the reviews of recent editions:

"This is an excellent book for all polymer chemists engaged in synthesis research studies and education. It is educationally sound and has excellent laboratory synthetic examples. The fundamentals are well done for the teaching of students and references are reasonably up-to-date. As in previous issues, there are sections dealing with an introduction; structure and nomenclature; methods and techniques for synthesis, characterization, processing and modification of polymers.

...The authors have noted the following changes from previous editions- a new section on correlations of structure, morphology and properties; revision and enlargement of other property and characterization procedures; additional new experiments such as controlled radical polymerization; enzymatic

polymerizations; microemulsions; and electrical conducting polymers.

This is a high quality textbook at a reasonable price and should be considered as a suitable reference for all engaged in synthetic areas of polymer research." (Eli M. Pearce, Polytechnic University, Brooklyn, NY, USA)

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## **Editorial Review**

### Review

From the reviews of the fourth edition:

"The basic concept of the new edition ... remains unchanged: Emphasis is again ... on a broader description of the general methods and processes for the synthesis, modification and characterisation of macromolecules. ... In addition to the preparative aspects the book also gives the reader an impression on the relation of chemical constitution and morphology of polymers to their properties, as well as on their application areas." (KGK-Kautschuk Gummi Kunststoffe, Issue no. 5, 2005)

"The book, I found, covers a wide range of topics, all of value to a technologist seeking further knowledge of polymer structures, their creation and subsequent accreditation ... it is a goldmine of information on the various processes for generating known polymer structures – again, well presented ... . If I have one criticism it is that perhaps the book attempts to cover too much - it is certainly not a text that can be reviewed in one sitting! To give it full justice, I needed to go back to it several times. Nevertheless, it is a book that I will certainly return to again, not only to gain a better understanding of the topic of polymers, but to dip into a fascinating presentation of what has been achieved with the chemistry of macropolymers." (Jan Czerski, Materials World, Vol. 14 (4), April, 2006)

"This improved and updated 4th edition of the 1971 original has been written by a group of qualified authors who have put together coherent and detailed material comprising a well-balanced mixture of theoretical descriptions with over 100 well-selected experiments. ... Overall, the book is an eclectic combination of polymer topics geared towards the industrial chemist. However, it is also a good student laboratory manual and it would certainly be a useful companion in a polymer synthesis class." (AD Asandei, Polymer International, Vol. 55 (1), 2005)

"The original edition had, as does the new fourth edition, detailed methods for many polymerisation reactions using all types of polymerisation conditions. ... Polymer Synthesis: Theory and Practice can be a useful and comprehensive book for finding starting-point experimental conditions for most polymerisations. It should be considered for library acquisition, where it will serve many users." (R.A. Shanks, Magazine of the Royal Australian Chemical Institute, June, 2005)

### From the Back Cover

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textbook was therefore supplemented by recipes which describe the synthesis of these materials in a new chapter "Functional polymers". Together with new experiments in chapter 3,4 and 5 the book now contains more than 120 recipes that describe a wide range of macromolecules.

#### About the Author

**Prof. Dr. Dietrich Braun** was the leader of the German Institute for Synthetic Materials in Darmstadt (Deutsches Kunststoff-Institut (DKI)) until his retirement in 2000. He is the author of numerous textbooks and research books.

**Prof. Dr. Harald Cherdronek** was the director of the Department of Polymer Materials and Central Research in Höchst and Professor at the University Marburg until his retirement in 1994.

Since 1999 **Prof. Dr. Matthias Rehahn** holds a professorship at the Ernst-Berl-Institute for Technical and Macromolecular Chemistry at the Technical University Darmstadt, and he is the leader of the German Institute for Synthetic Materials in Darmstadt.

Since 2001 Prof. Dr. Dr. h. c. Helmut Ritter is head of the Institute of Organic Chemistry and Macromolecular Chemistry at the University Düsseldorf.

**Prof. Dr. Brigitte Voit** is Managing Director/Chief Scientific Officer (CSO) of the "Leibniz-Institut für Polymerforschung Dresden e.V." (IPF) and head of the IPF Institute Macromolecular Chemistry.

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##### James Stover:

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