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Autore	Koltzenburg Sebastian
Titolo	Polymer Chemistry / / by Sebastian Koltzenburg, Michael Maskos, Oskar Nuyken
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2023
ISBN	3-662-64929-2
Edizione	[2nd ed. 2023.]
Descrizione fisica	1 online resource (641 pages)
Altri autori (Persone)	MaskosMichael NuykenO PaskStephen D MatyjaszewskiK (Krzysztof) MülhauptRolf
Disciplina	547.7
Soggetti	Polymers Chemistry, Organic Chemistry, Inorganic Organic Chemistry Inorganic Chemistry
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Nota di contenuto	Introduction and Basic Concepts -- Polymers in Solution -- Polymer Analysis: Molar Mass Determination -- Polymers in Solid State -- Partially Crystalline Polymers -- Amorphous Polymers -- Polymers as Materials -- Step-Growth Polymerization -- Radical Polymerization -- Ionic Polymerization -- Catalytic Polymerization -- Ring-Opening Polymerization -- Copolymerization -- Important Polymers Produced by Chain-Growth Polymerization -- Chemistry with Polymers -- Industrially Relevant Polymerization Processes -- The Basics of Plastics Processing -- Elastomers -- Functional Polymers -- Liquid Crystalline Polymers -- Polymers and the Environment -- Selected Developments in Polymer Science.
Sommario/riassunto	Awarded the Literature Prize of the VCI This comprehensive textbook describes the synthesis, characterization and technical and engineering applications of polymers. Polymers are unique molecules and have properties different from any other class of materials. We encounter them in everyday life, not only in the form of the well-known, large-volume plastics such as PE or PP or the many other special polymers, some of which are very specifically modified but also in nature as polymeric biomolecules, such as DNA. Our life, as we know it, would not only be completely different without macromolecules but it would also be biologically impossible. This textbook provides a broad knowledge of the basic concepts of macromolecular chemistry and the unique properties of this class of materials. Environmentally relevant topics, such as biopolymers and microplastic, which should not be missing in a contemporary textbook are also covered. Building on basic knowledge of organic chemistry and thermodynamics, the book presents an easy-to-understand yet in-depth picture of this very dynamic and increasingly important interdisciplinary science that involves elements of chemistry, physics, engineering, and the life sciences. Readers of this work can confirm their understanding of the text at the end of each chapter by working through a selection of exercises. In writing the book, great importance was attached to good readability despite the necessary depth of detail. It is a book that is just as suitable for students of chemistry and related courses as it is for the applied scientist in an industrial environment. The first edition of this work is so far the only textbook on polymer chemistry to be awarded the Literature Prize of the Fund of the German Chemical Industry Association in 2015.