

Reversible Chain Transfer Catalyzed Polymerization Rtcp

Magnetic Nanoparticle-Based Hybrid Materials: Fundamentals and Applications introduces the principles, properties, and emerging applications of this important materials system. The hybridization of magnetic nanoparticles with metals, metal oxides and semiconducting nanoparticles may result in superior properties. The book reviews the most relevant hybrid materials, their mechanisms and properties. Then, the book focuses on the rational design, controlled synthesis, advanced characterizations and in-depth understanding of structure-property relationships. The last part addresses the promising applications of hybrid nanomaterials in the real world such as in the environment, energy, medicine fields. Magnetic Nanoparticle-Based Hybrid Materials: Fundamentals and Applications comprehensively reviews both the theoretical and experimental approaches used to rapidly advance nanomaterials that could result in new technologies that impact day-to-day life and society in key areas such as health and the environment. It is suitable for researchers and practitioners who are materials scientists and engineers, chemists or physicists in academia and R&D. Provides in-depth information on the basic principles of magnetic nanoparticles-based hybrid materials such as synthesis, characterization, properties, and magnon interactions Discusses the most relevant hybrid materials systems including integration of metals, metal oxides, polymers, carbon and more Addresses the emerging applications in medicine, the environment, energy, sensing, and computing enabled by magnetic nanoparticles-based hybrid materials

Functionalized polymers are macromolecules to which chemically bound functional groups are attached which can be used as catalysts, reagents, protective groups, etc. Functionalized polymers have low cost, ease of processing and attractive features for functional organic molecules. Chemical reactions for the introduction of functional groups in polymers and the conversion of functional groups in polymers depend on different properties. Such properties are of great importance for functionalization reactions for possible applications of reactive polymers. This book deals with the synthesis and design of various functional polymers, the modification of preformed polymer backbones and their various applications.

The series Advances in Polymer Science presents critical reviews of the present and future trends in polymer and biopolymer science. It covers all areas of research in polymer and biopolymer science including chemistry, physical chemistry, physics, material science. The thematic volumes are addressed to scientists, whether at universities or in industry, who wish to keep abreast of the important advances in the covered topics. Advances in Polymer Science enjoys a longstanding tradition and good reputation in its community. Each volume is dedicated to a current topic, and each review critically surveys one aspect of that topic, to place it within the context of the volume. The volumes typically summarize the significant developments of the last 5 to 10 years and discuss them critically, presenting selected examples, explaining and illustrating the important principles, and bringing together many important references of primary literature. On that basis, future research directions in the area can be discussed. Advances in Polymer Science volumes thus are important references for every polymer scientist, as well as for other scientists interested in polymer science - as an introduction to a neighboring field, or as a compilation of detailed information for the specialist. Review articles for the individual volumes are invited by the volume editors. Single contributions can be specially commissioned. Readership: Polymer scientists, or scientists in related fields interested in polymer and biopolymer science, at universities or in industry, graduate students

This book discusses synthesis and characterization of sustainable polymers. The book covers opportunities and challenges of using sustainable polymers to replace existing petroleum based feedstock. This volume provides insights into the chemistry of polymerization, and discusses tailoring the properties of the polymers at the source in order fit requirements of specific applications. The book also covers processing of these polymers and their critical assessment. The book will be of use to chemists and engineers in the industry and academia working on sustainable polymers and their commercialization to replace dependence on petroleum-based polymers.

Methods, Synthesis, and Applications

Issues in Materials and Manufacturing Research: 2013 Edition

Ullmann's Polymers and Plastics

Smart Polymer Catalysts and Tunable Catalysis

Gases: Advances in Research and Application: 2011 Edition

Edited by foremost leaders in chemical research together with a number of distinguished international authors, this fourth volume summarizes the most important and promising recent developments in synthesis, polymer chemistry and supramolecular chemistry. Interdisciplinary and application-oriented, this ready reference focuses on innovative methods, covering new developments in catalysis, synthesis, polymers and more. Edited by foremost leaders in chemical research together with a number of distinguished international authors, this fourth volume summarizes the most important and promising recent developments in synthesis, polymer chemistry and supramolecular chemistry. Interdisciplinary and application-oriented, this ready reference focuses on innovative methods, covering new developments in catalysis, synthesis, polymers and more.

Fluoropolymers are very unique materials. Since the middle of the twentieth century fluoropolymers have been used in applications where a wide temperature range, a high resistance to aggressive media, excellent tribological characteristics, and specific low adhesion are required. Today, researchers turn to fluoropolymers to solve new challenges and to develop materials with previously unattainable properties. Opportunities for Fluoropolymers: Synthesis, Characterization, Processing, Simulation and Recycling covers recent developments in fluoropolymers, including synthesis of new copolymers, strategies for radical polymerization of fluoromonomers (conventional or controlled; RDRP), and the modification of fluoropolymers to achieve desired material characteristics. This volume in the Progress in Fluorine Science series is ideal for researchers and engineers who want to learn about the synthetic strategies, properties, and recycling of these special polymers, as well as industrial manufacturers who are interested in achieving new product characteristics in their respective industries. Written by a global team of fluoropolymer experts Includes conventional techniques of radical polymerization and more modern controlled polymerization techniques Covers nanocomposites, which are of interest to researchers and industrial manufacturers of fluoropolymers

This book presents an overview of research on advanced synthesis polymers over the past decade. This special issue, contributed by various authors, focuses on recent advances of the field, which handle the cutting-edge aspects of the advanced technology. The contributions in these twelve chapters summarise some major efforts in this area.

Halogens—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Halogens. The editors have built Halogens—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Halogens in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Halogens—Advances in Research and Application: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Molecular Technology, Volume 4

The Chemistry of Polymers

Australian Journal of Chemistry

Kinetics and Mechanism

Substrates, Technologies, and Properties

Functionalized Polymers

Highlighting dynamic developments in polymer synthesis, this book focuses on the chemical techniques to synthesize and characterize biomedically relevant polymers and macromolecules. • Aids researchers developing polymers and materials for biomedical applications • Describes biopolymers from a synthetic perspective, which other similar books do not do • Covers areas that include: cationically-charged macromolecules, pseudo-peptides, polydrugs and prodrugs, controlled radical polymerization, self-assembly, polycondensates, and polymers for surface modification
Controlled/living radical polymerization (CRP) has revolutionized and revitalized the field of synthetic polymer chemistry over the last twenty years as it is now possible to prepare a wide variety of previously inaccessible macromolecules under relatively mild conditions. Fundamentals of Controlled/Living Radical Polymerization provides an in-depth coverage of the essential chemical principles that enable and govern each of the CRP methods. The book starts with a brief historical overview of the major findings in polymer science which eventually led to the development of living ionic and living radical systems. It then goes on to introduce the main CRP techniques including their mechanistic understanding. The book also provides the information needed to select the appropriate reagents and conditions to conduct various CRP methods in a practical setting. Therefore, in addition to a newcomer gaining an appreciation for what has already been accomplished, the reader will be armed with the tools needed to begin independent research. Fundamentals of Controlled/Living Radical Polymerization provides essential insight into a rapidly growing field that goes beyond a simple literature review of the area. Written by leading experts in the field, the book is an indispensable resource for all researchers, instructors, and students in polymer chemistry. Spanning the entire field from fundamentals to applications in material science, this one-stop source is the first comprehensive reference for polymer, physical and surface chemists, materials scientists, chemical engineers, and those chemists working in industry. From the contents: * Introduction: Living Free Radical Polymerization and the RAFT Process * Fundamental Structure-Reactivity Correlations Governing the RAFT Process * Mechanism and Kinetics * The RAFT Process as a Kinetic Tool * Theory and Practice in Technical Applications * RAFT Polymerization in Bulk and Organic Solvents, as well as Homogeneous Aqueous Systems * Emulsion and Mini-Emulsion Polymerization * Complex Architecture Design * Macromolecular Design via the Interchange of Xanthates * Surface Modification * Stability and Physical Properties of RAFT Polymers * Novel Materials: From Drug Delivery to Opto-Electronics * Outlook and Future Developments
This book commences with a general introduction outlining the basic concepts of radical polymerization. This is followed by a chapter on radical reactions that is intended to lay the theoretical groundwork for the succeeding chapters on initiation, propagation and termination.

Supercritical Carbon Dioxide As Green Solvent

Polymers for Biomedicine

Synthesis, Fabrication and Characterization

Handbook of RAFT Polymerization

Polymer Brushes

Fundamentals and Applications

This book describes strategies and mechanism of reversible deactivation radical polymerization (RDRP) to synthesize functional polymers. Several approaches such as atom transfer radical polymerization and the combination of click chemistry and RDRP are summarized. Contributors from interdisciplinary fields highlight applications in nanotechnology, self-healing materials, oil and water resistant coatings and controlled drug delivery systems.

The Chemistry of Polymers, fourth edition, is a fully updated new edition of the well established and highly readable introductory text book on polymer science, ideal for those requiring a broad overview of the subject.

Synthetic Methods in Step-Growth Polymers provides a concise source of information on synthetic techniques, purification, and characterization methods for step-growth polymers and also addresses future synthetic trends.

Stimuli Responsive Polymeric Membranes: Smart Polymeric Membranes explains the fundamentals and advances in topics relating to the field of membrane science. It elaborately explains concepts relating to stimuli responsive membranes, with special importance given down to minute details. Material selection, preparation, characterization and applications of various stimuli responsive membranes are extensively addressed, and their relevance (including examples) is included. The book covers history and development, merits and demerits, mechanisms of transport and fouling, applicability of membranes to various diverse areas, and preparation and characterization techniques of membranes. Next, the concept of fouling and its remedial actions is discussed. Finally, promising fields of research in the membrane science and future perspectives of membrane science field are explored. Provides basic and advanced knowledge of smart membranes, considering their morphological, physicochemical and separation characteristics Written in a clear and lucid style, keeping a diverse audience in mind Based on the state-of-art research of the authors

Nitroxide Mediated Polymerization

Synthesis and Applications of Functional Polymers

Stable Radicals

Halogens—Advances in Research and Application: 2012 Edition

Fundamentals of Controlled/Living Radical Polymerization

Chemistry and Technology of Emulsion Polymerisation

In recent years polymerisation using organocatalysts has become an appealing alternative to more traditional metal-based catalysts. Conferring numerous advantages including low cost and ease of use, as well as the ability to precisely control the synthesis of advanced polymer structures, organocatalysts are increasingly used in polymer synthesis. Organic Catalysis for Polymerisation provides a holistic overview of the field, covering all process in the polymer synthesis pathway that are catalysed by organic catalysts. Sub-divided into two key sections for ease of use, the first focuses on recent developments in catalysis and the applications of catalysts to the full range of polymerisations that they have been utilised in; the second concerning monomers, arranges the field by monomer type and polymerisation mechanism. The book will therefore, provide a complimentary view of the field, providing both an overview of state-of-the-art catalyst development and also the best methodologies available to create specific polymer types. Edited by leading figures in the field and featuring contributions from researchers across the globe, this title will serve as an excellent reference for postgraduate students and researchers in both academia and industry interested in polymer chemistry, organic chemistry, catalysis and materials science.

Acrylates—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Acrylates. The editors have built Acrylates—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Acrylates in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Acrylates—Advances in Research and Application: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Smart Polymer Catalysts and Tunable Catalysis describes the latest advances in smart polymer catalysts and tunable catalysis. This book will serve as an ideal reference for scientists, students and researchers working in the fields of catalysis, chemical engineering, chemistry, materials science, biotechnology and nanotechnology. Users will find this to be a distinct, systematic and comprehensive body of knowledge on the field with its compilation of essential knowledge and discussions of extensive potential in both social and commercial impacts. Provides a single-source summary of the emerging frontiers in scientific research in smart polymer catalysts and tunable catalysis Includes very well-organized chapters that are illustrated with over 130 illustrations and figures Written by scientists from prestigious universities and industries across the world Edited by veteran researchers in the field of smart polymers and catalysis

This thesis is organized in three chapters and is based on three published papers, and two manuscripts about to be submitted. Molecularly imprinted polymers (MIPs) are tailor-made synthetic receptors that are obtained by polymerization in the presence of a molecular template. The first paper describes the use of Raman spectroscopy to detect and quantify the presence of the imprinting template in single molecularly imprinted polymer microspheres. The polymers were imprinted with the Beta-blocking drugs propranolol and atenolol, and precipitation polymerization was used to obtain spherical particles. The nanoparticles were used for bulk detection whereas with micrometer-sized particles, quantitative measurements on single particles were possible. Relatively low detection limits down to 1?M have been reached for the detection of S-propranolol through bulk measurements on MIP nanoparticles. The second paper describes chemical nanosensors with a submicron core-shell composite design, based on a polymer core, a molecularly imprinted polymer (MIP) shell for selective analyte recognition, and an interlayer of gold nanoparticles for signal amplification. SERS measurements on single nanosensors yielded a detection limit of 10-7 M for the Beta-blocker propranolol, several orders of magnitude lower than on plain MIP spheres. These particles were also used as sensor materials with localized surface plasmon resonance measurements as the transduction method (Paper III), for the determination of the Beta-blocking drug propranolol. The sensors were used in suspension and were measured using a standard UV-Vis spectrophotometer. In order to solve general problems associated with MIPs, in particular their heterogeneity in terms of inner morphology and distribution of binding site affinities, it has been suggested to use modern methods of controlled/living radical polymerization for their synthesis. This also facilitates their generation in the form of nanomaterials, nanocomposites, and thin films, a strong recent trend in the field. The fourth paper reviews recent advances in the molecular imprinting area, with special emphasis on the use of controlled polymerization methods, their benefits, and current limitations. In the last paper, we have for the first time used a recently developed CRP method based on iodide mediated polymerization, reversible chain transfer catalyzed polymerization (RTCP), for the synthesis of MIPs. We show on the example of MIPs specific for the Beta-blocking drug propranolol that RTCP is compatible with MIP synthesis, both for the synthesis of bulk polymers and nanospheres, and that it yields polymers with the same binding capacity as the standard FRP method used for comparison. Solid-state NMR measurements revealed that the conversion of pendant vinyl groups was higher with RTCP than with polymers synthesized by FRP, in particular at higher initiator concentrations.

Products and Processes

Reversible Deactivation Radical Polymerization

Macromolecular Building Blocks Via Catalytic Chain Transfer and Reversible Addition-fragmentation Chain Transfer Polymerisation

Synthesis Innovation

Renewable Starting Materials, Catalysis and Waste Reduction

Polymer Synthesis

Catalysis, the basic principle for overcoming the Kinetic inhibition of chemical reactions, is fundamental in chemistry. In particular, organometallic catalysis plays an overwhelming role in both research and industry. It opens the way to entirely novel synthetic methods and finds widespread applications ranging from mass-production of everyday polymers to stereocontrolled synthesis of bioactive chemicals used as pharmaceuticals and agrochemicals. The targeted development of improved and novel catalysts demands understanding of the relationships between their structures and catalytic properties. Accordingly, this textbook offers the reader a fundamental understanding of the course of organometallic-catalyzed reactions, starting at the molecular level. The initial chapters explain the principles of catalysis and the elementary steps in organometallic catalysis. The book then explores important organometallic-catalyzed reactions, with a focus on mechanism. Current developments are emphasized throughout. Asymmetric synthesis is covered in depth. Finally, the book examines the catalytic behavior of particular metalloenzymes. A look at nitrogen fixation offers a comparative examination of the three major areas of catalysis - homogeneous, heterogeneous, and enzymatic. In addition to problems, the textbook offers solutions, making the book an invaluable learning tool. It is a must-have for advanced students in chemistry and biochemistry, as well as for inorganic and organic chemists, for those working with organometallics, and for those specializing in catalysis.

Including recent advances and historically important catalysts, this book overviews methods for developing and applying polymerization catalysts - dealing with polymerization catalysts that afford commercially acceptable high yields of polymer with respect to catalyst mass or productivity. • Contains the valuable data needed to reproduce syntheses or use the catalyst for new applications • Offers a guide to the design and synthesis of catalysts, and their applications in synthesis of polymers • Includes the information essential for choosing the appropriate reactions to maximize yield of polymer synthesized • Presents new chapters on vanadium catalysts, Ziegler catalysts, laboratory homopolymerization, and copolymerization

Designing polymers and developing polymerization processes that are safe, prevent pollution, and are more efficient in the use of materials and energy is an important topic in modern chemistry. Today, green polymer research can be seen increasingly in academia nd industry. It tackles all aspects of polymers and polymerization - everything from chemical feedstocks, synthetic pathways, and reaction media to the nature of the final polymer as related to its inherent nontoxicity or degradability. This book summarizes and evaluates the latest developments in green polymerization methods. Specifically, new catalytic methods and processes which incorporate renewable resources will be discussed by leading experts in the field of polymer chemistry. This book is a must-have for Polymer Chemists, Chemists Working with/on Organometallics, Biochemists, Physical Chemists, Chemical Engineers, Biotechnologists, Materials Scientists, and Catalytic Chemists.

Gases: Advances in Research and Application: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Gases. The editors have built Gases: Advances in Research and Application: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Gases in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Gases: Advances in Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

The Chemistry of Radical Polymerization

Magnetic Nanoparticle-Based Hybrid Materials

Synthesis, Characterization and Applications

Opportunities for Fluoropolymers

Organophosphorus Compounds—Advances in Research and Application: 2012 Edition

Enzymatic Polymerizations

Organophosphorus Compounds—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Organophosphorus Compounds.

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Polyolefin is a major industry that is important for our economy and impacts every aspect of our lives. The discovery of new transition metal-based catalysts is one of the driving forces for the further advancement of this field. Whereas the classical heterogeneous Ziegler-Natta catalysts and homogeneous early transition metal metallocene catalysts remain the workhorses of the polyolefin industry, in roughly the last decade, tremendous progress has been made in developing non-metallocene-based olefin polymerization catalysts. Particularly, the discovery of late transition metal-based olefin polymerization catalysts heralds a new era for this field. These late transition metal complexes not only exhibit high activities rivaling their early metal counterparts, but more importantly they offer unique properties for polymer architectural control and copolymerization with polar olefins. In this book, the most recent major breakthroughs in the development of new olefin polymerization catalysts, including early metal metallocene and non-metallocene complexes and late transition metal complexes, are discussed by leading experts. The authors highlight the most important discoveries in catalysts and their applications in designing new polyolefin-based functional materials.

*RAFT Polymerization, 2 Volume Set*Methods, Synthesis, and ApplicationsJohn Wiley & Sons

Green Sustainable Processes for Chemical and Environmental Engineering and Science: Supercritical Carbon Dioxide as Green Solvent provides an in-depth review on the area of green processes for the industry, focusing on the separation, purification and extraction of medicinal, biological and bioactive compounds utilizing supercritical carbon dioxide as a green solvent and their applications in pharmaceuticals, polymers, leather, paper, water filtration, textiles and more. Chapters explore polymerization, polymer composite production, polymer blending, particle production, microcellular foaming, polymer processing using supercritical carbon dioxide, and a method for the production of micro- and nano-scale particles using supercritical carbon dioxide that focuses on the pharmaceutical industry. A brief introduction and limitations to the practical use of supercritical carbon dioxide as a reaction medium are also discussed, as are the applications of supercritical carbon dioxide in the semiconductor processing industry for wafer processing and its advantages and obstacles. Reviews available green solvents for extraction, separation, purification and synthesis Outlines environmentally friendly chemical processes in many applications, i.e., organic reactions, metal recovery, etc. Includes numerous, real industrial applications, such as polymers, pharmaceuticals, leather, paper, water filtration, textiles, food, oils and fats, and more Gives detailed accounts of the application of supercritical CO2 in polymer production and processing Provides a process for extraction, separation and purification of compounds of biological medicinal importance Gives methods for nanoparticle production using supercritical carbon dioxide Provides a systematic discussion on the solubility of organic and organometallic compounds

Radical Polymerization

Green Sustainable Processes for Chemical and Environmental Engineering and Science

Advances in Sustainable Polymers

Synthetic Methods in Step-Growth Polymers

Controlled Radical Polymerization at and from Solid Surfaces

Application de Capteurs Optiques

Explore this one-stop resource for reversible addition-fragmentation chain transfer polymerization from a leading voice in chemistry RAFT Polymerization: Methods, Synthesis and Applications delivers a comprehensive and insightful analysis of reversible addition-fragmentation chain transfer polymerization (RAFT) and its applications to fields as diverse as material science, industrial chemistry, and medicine. This one-stop resource offers readers a detailed synopsis of the current state of RAFT polymerization. This text will inspire further research and continue the drive to an ever-increasing range of applications by synthesizing and explaining the more central existing literature on RAFT polymerization. It contains a beginner's guide on how to do a RAFT polymerization before moving on to much more advanced techniques and concepts, like the kinetics and mechanisms of the RAFT process. The distinguished editors have also included resources covering the four major classes of RAFT agents and recent developments in processes for initiating RAFT polymerization. Readers will also benefit from the inclusion of: A thorough introduction to the mechanisms, theory, and mathematical modeling of RAFT Explorations of RAFT agent design and synthesis, dithioesters, dithiobenzoates, trithiocarbonates, xanthates, dithiocarbamates, macromonomer RAFT, and RAFT copolymerization Discussions of a variety of RAFT architectures, including multiblocks, combs, hyperbranched polymers, and stars Treatments of end group transformation, cationic RAFT, high-throughput RAFT, and RAFT in continuous flow An examination of sequence defined polymers by RAFT Perfect for organic chemists, polymer chemists, and materials scientists, RAFT Polymerization: Methods, Synthesis and Applications will also earn a place in the libraries of chemical engineers seeking a one-stop reference for this method of controlled radical polymerization with a wide range of applications in multiple areas.

Enzymatic Polymerizations, Volume 627 in the Methods in Enzymology series, continues the legacy of this premier serial with quality chapters authored by leaders in the field. Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in the Methods in Enzymology series Includes the latest information on Enzymatic Polymerizations

Stable radicals - molecules with odd electrons which are sufficiently long lived to be studied or isolated using conventional techniques - have enjoyed a long history and are of current interest for a broad array of fundamental

and applied reasons, for example to study and drive novel chemical reactions, in the development of rechargeable batteries or the study of free radical reactions in the body. In Stable Radicals: Fundamentals and Applied Aspects of Odd-Electron Compounds a team of international experts provide a broad-based overview of stable radicals, from the fundamental aspects of specific classes of stable neutral radicals to their wide range of applications including synthesis, materials science and chemical biology. Topics covered include: triphenylmethyl and related radicals polychlorinated triphenylmethyl radicals: towards multifunctional molecular materials phenalenyls, cyclopentadienyls, and other carbon-centered radicals the nitrogen oxides: persistent radicals and van der Waals complex dimers nitroxide radicals: properties, synthesis and applications the only stable organic sigma radicals: di-tert-alkyliminoxyls. delocalized radicals containing the hydrazyl [R2N-NR] unit metal-coordinated phenoxyl radicals stable radicals containing the thiazyl unit: synthesis, chemical, and materials properties stable radicals of the heavy p-block elements application of stable radicals as mediators in living-radical polymerization nitroxide-catalyzed alcohol oxidations in organic synthesis metal-nitroxide complexes: synthesis and magneto-structural correlations rechargeable batteries using robust but redox-active organic radicals spin labeling: a modern perspective functional in vivo EPR spectroscopy and imaging using nitroxides and trityl radicals biologically relevant chemistry of nitroxides Stable Free Radicals: Fundamentals and Applied Aspects of Odd-Electron Compounds is an essential guide to this fascinating area of chemistry for researchers and students working in organic and physical chemistry and materials science.

Polymer Brushes: Substrates, Technologies, and Properties covers various aspects of polymer brush technology, including synthesis, properties, performance, and applications. It presents both experimental details and theoretical insights to enable a better understanding of the brush system. After an overview of polymer brush systems, the book discusses methods for grafting organic brushes from the surface of clay platelets and for the covalent grafting of PNIPAm brushes. It then describes ferrocene polymer brushes, nonfouling brushes on poly(ethylene terephthalate) film surfaces, brushes formed on the inner surface of cylindrical pores, and the "zipper brush" approach. The authors examine the use of scanning electrochemical microscopy for analyzing brushes and compare surface-controlled atom transfer radical polymerization and surface-controlled single-electron transfer living radical polymerization. They also explore the application of polymer brushes in the chromatographic separations of viruses and proteins and the suppression of proteins and cell adhesions. The text concludes with a look at how polymer brushes are synthesized by surface-initiated iniferter-mediated polymerization. This book provides a one-stop reference on the various substrates and technologies used to synthesize polymer brushes. The hands-on information in the text will help readers choose the proper synthesis methods and materials for their system.

Metal Catalysts in Olefin Polymerization

Green Polymerization Methods

Fundamentals to Applications

Fundamentals of Organometallic Catalysis

Organic Catalysis for Polymerisation

Handbook of Transition Metal Polymerization Catalysts

Your personal Ullmann's: Chemical and physical characteristics, production processes and production figures, main applications, toxicology and safety information are all to be found here in one single resource - bringing the vast knowledge of the Ullmann's Encyclopedia to the desks of industrial chemists and chemical engineers. The ULLMANN'S perspective on polymers and plastics brings reliable information on more than 1500 compounds and products straight to your desktop Carefully selected "best of" compilation of 61 topical articles from the Encyclopedia of Industrial Chemistry on economically important polymers provide a wealth of chemical, physical and economic data on more than 1000 different polymers and hundreds of modifications Contains a wealth of information on the production and use of all industrially relevant polymers and plastics, including organic and inorganic polymers, fibers, foams and resins Extensively updated: more than 30% of the content has been added or updated since the launch of the 7th edition of the Ullmann's encyclopedia in 2011 and is now available in print for the first time 4 Volumes

The proposed book focusses on metal mediated/catalyzed "controlled/living radical polymerization" (CRP/LRP) methods. It surveys a wide variety of catalyzed polymerization reactions, making it essentially a "one stop" review in the field. A significant contribution to polymer science is "metathesis polymerization" discovered by Grubbs and others. The book will cover various metathesis polymerization methods and implications in polymer industry.

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The IUPAC-sponsored International Symposium on "Radical Polymerization: Kinetics and Mechanism" was held in Il Ciocco (Italia) during the week September 3-8, 2006. It was the fourth within the series of so-called SML conferences, which are the major scientific forum for addressing kinetic and mechanistic aspects of free-radical polymerization and of onrolled radical polymerization. Top international authors like K. Matyjaszewski, T. P. Davis, T. Fukuda and others present their latest research. The five major themes covered were: Fundamentals of Free-Radical Polymerization, Heterogeneous Polymerization, Controlled Radical Polymerization, Polymer Reaction Engineering, and Polymer Characterization. SML IV again marked an important step forward toward the better understanding of the kinetics and mechanism of radical polymerization, which is extremely relevant for both conventional and controlled radical polymerization and for people in academia as well as in industry.

Stimuli Responsive Polymeric Membranes

Synthesis, Characterization, and Applications

Synthesis, Characterization, Processing, Simulation and Recycling

Metal-Catalyzed Polymerization

Fundamentals and Applied Aspects of Odd-Electron Compounds

Smart Polymeric Membranes