

Carbocationic Polymerization

JE Gale



Carbocationic Polymerization:

Carbocationic Polymerization Joseph P. Kennedy, Ernest Maréchal, 1982-02-22 Presents a new and unified view of carbocationic polymers demonstrating the prodigious promise and unexploited possibilities in the field Clarifies the tremendous advances made in the past decade in the elucidation of cationic polymerization and the exploitation of new mechanistic information in terms of new products and processes in the laboratory

Initiation Via Haloboration in Living Carbocationic Polymerization Linfu Wang, 1994

Ionic Polymerizations and Related Processes Judit E. Puskas, Armin Michel, Shahzad Barghi, 2012-12-06 In Ionic Polymerization and Related Processes internationally recognised academic and industrial researchers discuss and debate the latest developments in the field The major focus is on cationic polymerizations but related anionic and controlled radical processes are also discussed

Macromolecular Design of Polymeric Materials Hatada, 1997-01-02 Providing a range of information on polymers and polymerization techniques this text covers the gamut of polymer science from synthesis structure and properties to function and applications It analyzes speciality polymers including acrylics fluoropolymers polysilanes polyphosphazenes and inorganic and conducting polymers The book examines the stereochemistry of polymerization and the stereoregularity of polymers

Synthetic Applications of Non Homopolymerizable Monomers in Living Carbocationic Polymerization Savvas E. Hadjikyriacou, 1995

Cationic Polymerizations Krzysztof Matyjaszewski, 1996-04-26 This unified presentation of cationic polymerization discusses initiation propagation transfer and termination in cationic polymerizations of alkenes and heterocycles It also elucidates the mechanisms of the reactions involved in all carbocationic and ring opening polymerizations It is written by internationally acclaimed experts in their respective fields

Cationic Polymerization Rudolf Faust, Timothy Daniel Shaffer, 1997 Cationic Polymerization covers the essential practices and latest procedures for working with carbocationic and ring opening polymerization It presents the kinetic rates of individual steps of cationic polymerization using laser flash photolysis and competitive experimental techniques It examines several new catalyst systems including a water resistant recoverable Lewis acid for ring polymerization It also highlights the use of living carbocationic techniques to prepare amphiphilic block copolymers multiarm star polymers and coupled copolymers of isobutylene and it compares the similarities and differences of living radical and carbocationic techniques Essential for chemists working with cationic polymerization the volume is also useful for researchers new to the field

Controlled and Living Polymerizations Krzysztof Matyjaszewski, Axel H. E. Müller, 2009-12-23 Written by a highly prestigious and knowledgeable team of top scientists in the field this book provides an overview of the current status of controlled living polymerization combining the synthetic mechanistic and application oriented aspects From the contents Anionic Vinyl Polymerization Carbocationic Polymerization Radical Polymerization Coordinative Polymerization of Olefins Ring Opening Polymerization of Heterocycles Ring Opening Metathesis Polymerization Macromolecular Architectures Complex Functional Macromolecules Synthesis of Block and Graft Copolymers

Bulk and Solution Structures of Block Copolymers Industrial Applications While some of the material is based on chapters taken from the four volume work Macromolecular Engineering it is completely updated and rewritten to reflect the focus of this monograph Must have knowledge for polymer and organic chemists plastics technologists materials scientists and chemical engineers **Carbocationic Polymerization in the Presence of Sterically Hindered Bases**, 1982

Designed Polymers by Carbocationic Macromolecular Engineering Joseph Paul Kennedy, Béla Iván, 1992 The first comprehensive treatment of its subject this book is for polymer professionals interested in producing polymeric materials designed for specific applications Carbocationic macromolecular engineering is one of the most powerful techniques for this purpose Its appeal has been heightened by the recent discovery of living cationic polymerizations The book is divided into sections on theory and practice with the first part consisting of a general introduction to carbocationic polymerization fundamentals and mechanisms including the latest views on living carbocationic polymerizations The second part is a comprehensive examination of specific products and processes The emphasis is on new products and the strategies used to create them with descriptions of their ease practicality and economy For all those involved with the designed assembly of polymers and macromolecular engineering this work represents a vital source of up to date information on a rapidly expanding new field

Quasiliving Carbocationic Polymerization Joseph Paul Kennedy, 1982 *Encyclopedia of Polymer Science and Technology, Concise* Herman F. Mark, 2013-10-16 The compact affordable reference revised and updated The Encyclopedia of Polymer Science and Technology Concise Third Edition provides the key information from the complete twelve volume Mark s Encyclopedia in an affordable condensed format Completely revised and updated this user friendly desk reference offers quick access to all areas of polymer science including important advances in nanotechnology imaging and analytical techniques controlled polymer architecture biomimetics and more all in one volume Like the twelve volume full edition the Encyclopedia of Polymer Science and Technology Concise Third Edition provides both SI and common units carefully selected key references for each article and hundreds of tables charts figures and graphs

[The Effect of Reaction Conditions on Quasiliving Carbocationic Polymerization of Isobutylene](#) Werner Groh Péter, 2005 [Synthesis of Arborescent Model Polymer Structures by Living Carbocationic Polymerization for Structure-property Studies](#) Lucas Dos Santos Freire, 2009 Polyisobutylene is fully saturated therefore exhibits outstanding chemical oxidative and thermal stability which makes it ideally suitable as a model to study mechanical and viscoelastic properties of elastomers and to correlate properties with structure The main objective of this dissertation was to develop a fundamental understanding of the mechanism of the synthesis of arborescent hyperbranched polyisobutylene arbPIB by inimer type initiator monomer living carbocationic polymerization The strategy for the effective synthesis of arbPIBs consists of copolymerizing the 4,2-methoxyisopropyl styrene inimer MeOIM and isobutylene IB via controlled living carbocationic polymerization using TiCl₄ coiniciator In situ FTIR monitoring showed that the self condensing vinyl polymerization SCVP of MeOIM is possible and that

when copolymerizing MeOIM and IB a nearly alternating structure and multiple end groups are obtained arbPIB was synthesized and the repeatability of the polymerization was demonstrated It was found that higher branching was obtained with increasing MeOIM and that branching did not further increase if additional IB was added after the MeOIM had reacted completely No evident changes were observed when switching solvents from Hx MeCl to a MeCHx MeCl mixture Branching parameters showed that arbPIBs have a behavior between polydisperse stars and polycondensates with the number of branches increasing linearly with molecular weight Novel arbPIB based block copolymers TPEs were synthesized and it was found that copolymers with low Tg short end blocks and less than 5 mol% of a second monomer exhibit thermoplastic elastomeric properties The materials were strongly reinforced when compounded with carbon black arbPIB b PS are prospective biomaterials and the establishment of reliable methods for evaluating their short and long term properties is a subject of great importance A dynamic fatigue testing methodology was developed for small soft rubbery specimens that can be implanted into small animals and re tested after explantation Higher ultimate tensile strength and lower elongation at break were measured on microdumbbells than on standard dumbbells Fatigue testing microdumbbells induced higher stresses at the same strain rate thus presenting the worst case scenario and being appropriate for fatigue tests The fatigue limit of linear polystyrene b polyisobutylene b polystyrene SIBS and analogous arbPIB b PS samples were determined by using stepwise increasing strain tests developed for fatigue analysis The presence of branching and a broader molecular weight distribution arbPIB b PS led to better mechanical stability and higher fatigue limit than in analogous linear SIBS samples Abstract

Isomerization Polymerization of 3-methyl-1-butene Under Living Carbocationic

Polymerization Conditions Justin Poelma, University of Southern Mississippi. School of Polymers and High Performance Materials, University of Southern Mississippi. Honors College, 2009 [Living Carbocationic Polymerization of Isobutylene by Epoxide/Lewis Acid Systems](#) Serap Hayat Soytaş, 2009 The objective of the work presented in this dissertation was to generate a fundamental understanding of the synthesis of star branched polyisobutylenes PIBs arising from hexaepoxysqualene HES Lewis acid LA initiating systems using BCl₃ and TiCl₄ as LAs The understanding of initiation and propagation mechanisms by HES is crucial to control the number of arms and arm lengths of star PIBs expected from this initiator The initiation by monofunctional epoxides such as alpha methylstyrene epoxide MSE 1 2 epoxy 2 4 4 trimethylpentane TMPO 1 and 2 3 epoxy 2 4 4 trimethylpentane TMPO 2 was investigated In situ FTIR spectroscopy which was highly utilized in this research provided valuable information Most importantly the ability to identify the head group by in situ FTIR of growing PIB chains initiated by an epoxide i e the C O LA complex contributed significantly to the understanding of initiation of IB polymerization This technique allowed the monitoring of the rate of initiation with the multifunctional epoxy initiator Previous research showed that TiCl₄ gave 40% initiating efficiency in conjunction with the aromatic epoxy initiator MSE whereas the aliphatic initiators TMPO 1 and TMPO 2 gave only 3 and 10% efficiency

respectively In this research it was found that BCl₃ is more efficient with the aliphatic initiator TMPO 1 yielding an asymmetric telechelic PIB carrying an alpha primary OH and an omega tertiary Cl functional group with 70% initiator efficiency while MSE gave only 1.4% efficiency The TMPO 2 BCl₃ system gave 20% initiator efficiency The various initiation mechanisms were discussed IB polymerization was successfully initiated by HES in the presence of excess BCl₃ and monitored by in situ FTIR spectroscopy The gradual increase of the IR band assigned to the C-O-BCl₂ group demonstrated that slow initiation was occurring Chain extension with the HES BCl₃ initiated PIB was achieved leading to high molecular weight PIBs in the presence of TiCl₄ It was also demonstrated for the first time that BCl₃ invariably leads to beta proton expulsion leading to chain transfer in IB polymerization In addition 1,2-epoxycyclohexane and epoxycyclohexyl functional siloxanes i.e. epoxycyclohexylisobutyl polyhedral oligomeric silsesquioxane POSS and bis(3,4-epoxycyclohexyl)ethyl tetramethyldisiloxane were found to be initiators for the polymerization of IB 1,2-epoxycyclohexane TiCl₄ was an efficient initiating system for the IB polymerization yielding up to 45% initiator efficiency It was proposed that initiation of IB polymerization involves an S_N2 reaction between IB and TiCl₄ coordinated epoxide Abstract *From Living Carbocationic to Living Radical Polymerization*, 1994 Living carbocationic polymerization is compared to living radical process Similarities and differences are discussed Living radical polymerization of vinyl acetate and methyl methacrylate to provide polymers with controlled molecular weights and narrow molecular weight distribution M_w/M_n **Comprehensive Polymer Science: Chain polymerization I**, 1989 Step Polymerization Geoffrey Allen, J. C. Bevington, Geoffrey C. Eastmond, 1989 Hardbound Volume 5 discusses step polymerization and includes 16 chapters covering general characteristics of step polymerization followed by 23 chapters describing the synthesis of specific polymer types by step polymerization Synthesis of Hybrid Polyisobutylene-polypeptide Blocks Via Carbocationic Polymerization Donna Teresa Padavan, 2003

The Enigmatic Realm of **Carbocationic Polymerization**: Unleashing the Language is Inner Magic

In a fast-paced digital era where connections and knowledge intertwine, the enigmatic realm of language reveals its inherent magic. Its capacity to stir emotions, ignite contemplation, and catalyze profound transformations is nothing in short supply of extraordinary. Within the captivating pages of **Carbocationic Polymerization** a literary masterpiece penned by a renowned author, readers embark on a transformative journey, unlocking the secrets and untapped potential embedded within each word. In this evaluation, we shall explore the book's core themes, assess its distinct writing style, and delve into its lasting affect the hearts and minds of those who partake in its reading experience.

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