Living Anionic Polymerization

Functional Monomers

NH$_2$ (N(SiMe$_3$)$_2$)  OH (OSiR$_3$)  COOH (COOBu')

R  O
C-(OCH$_2$CH$_2$)$_m$OH  (OSiR$_2$, OCH=CH$_2$)

Special Living Polymers

F: OH, NH$_2$, SH, CHO, COOH, Si-H, Si-OH, CH=CH$_2$, etc

Macromolecular Architectures

Future Materials
ON THE COVER: In recent advances in living anionic polymerization, the functional polymers with well-defined structures and various elaborate complex macromolecular architectures can be synthesized. In this Perspective, we highlight the living anionic polymerization of novel attractive functional monomers, discuss the possibility and limit for controlling the regio- and stereoselective polymerization, and provide the effective methodology for synthesis of various structurally complex macromolecules as promising nanomaterials. See page 1883.

Perspective

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Advances in Living Anionic Polymerization: From Functional Monomers, Polymerization Systems, to Macromolecular Architectures
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Articles

1906 dx.doi.org/10.1021/ma402437q

Effect of Oxygen Inhibition on the Kinetic Constants of the UV-Radical Photopolymerization of Diurethane Dimethacrylate/Photoinitiator Systems
Kentaro Taki,* Yoshihito Watanabe, Hiroshi Ito, and Masahiro Ohshima

![Graph showing log k_p, k_i vs. Conversion of the methacrylate group]
Synthesis of Phosphate Buffered Saline- and Ascorbic Acid-Responsive Polymeric Nanocapsules with Cross-Linked Poly(2-hydroxyethyl methacrylate) and Polystyrene Blocks
Bing Huang, Shuxue Zhou, Min Chen, and Limin Wu

Kinetics and Cure Mechanism in Aromatic Polybenzoxazines Modified Using Thermoplastic Oligomers and Telechelics
Ian Hamerton, Lisa T. McNamara, Brendan J. Howlin, Paul A. Smith, Paul Cross, and Steven Ward

Synthesis of Cinchona Alkaloid-Derived Chiral Polymers by Mizoroki–Heck Polymerization and Their Application to Asymmetric Catalysis
Md. Masud Parvez, Naoki Haraguchi, and Shinichi Itsuno

Toughening Mechanisms in Aromatic Polybenzoxazines Using Thermoplastic Oligomers and Telechelics
Ian Hamerton, Lisa T. McNamara, Brendan J. Howlin, Paul A. Smith, Paul Cross, and Steven Ward

Synthesis of Highly Reactive Polysobutylene Catalyzed by EtAlCl$_2$Bis(2-chloroethyl) Ether Soluble Complex in Hexanes
Rajeev Kumar, Bin Zheng, Kuo-Wei Huang, Jack Emert, and Rudolf Faust

Dual Roles of a Xanthate as a Radical Source and Chain Transfer Agent in the Photoinitiated RAFT Polymerization of Vinyl Acetate
Mohd Yusuf Khan, Min-Soo Cho, and Young-Je Kwak
Mechanistic Aspects of Initiation and Deactivation in N-Heterocyclic Olefin Mediated Polymerization of Acrylates with Alane as Activator
Yin-Bao Xia, Yan-Bo Wang, Wei-Min Ren, Tieqi Xu, Jing Wang, and Xiao-Bing Lu

Anion Exchange Fuel Cell Membranes Prepared from C–H Borylation and Suzuki Coupling Reactions
Angela D. Mohanty, Yeong-Beom Lee, Liang Zhu, Michael A. Hickner, and Chulsung Bae

Best of Both Worlds: Conjugated Polymers Exhibiting Good Photovoltaic Behavior and High Tensile Elasticity
Suchol Savagatrup, Adam D. Printz, Daniel Rodriguez, and Darren J. Lipomi

Isomeric Dicyclic Polymers via Atom Transfer Radical Polymerization and Atom Transfer Radical Coupling Cyclization
Shuangshuang Wang, Ke Zhang, Yongming Chen, and Fu Xi

Construction of Multifunctionalizable, Core-Cross-Linked Polymeric Nanoparticles via Dynamic Covalent Bond
Xiaobei Wang, Lin Wang, Shixia Yang, MingMing Zhang, Qingqing Xiong, Hanying Zhao, and Li Liu

One-Pot Thermo-Remendable Shape Memory Polyurethanes
Guadalupe Rivero, Le-Thuy T. Nguyen, Xander K. D. Hillerwaare, and Filip E. Du Prez
2019

Synthesis, Characterization, and Aqueous Lubricating Properties of Amphiphilic Graft Copolymers Comprising 2-Methoxyethyl Acrylate
Iraki Javakhishvili, Tiorels Ran, Katja Jankova, Søren Hvidsten, and Seunghwan Lee

dx.doi.org/10.1021/ma4024747

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3D Dispersion of Spherical Silica Nanoparticles in Polymer Nanocomposites: A Quantitative Study by Electron Tomography
Florent Dalmas, Nicolas Genevaz, Matthias Roth, Jacques Jestin, and Eric Leroy

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Effect of Ionic Groups on Polymer-Grafted Magnetic Nanoparticle Assemblies
Yang Jiao, Javier Parra, and Pinar Akcora

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2052

Hierarchical Structural Change in the Stress-Induced Phase Transition of Poly(tetramethylene terephthalate) As Studied by the Simultaneous Measurement of FTIR Spectra and 2D Synchrotron Undulator WAXD/SAXS Data
Kohji Tashiro, Hiroko Yamamoto, Taiyo Yoshikawa, Tran Hai Ninh, Masaumi Tasaki, Shigeru Shimada, Takeshi Nakatani, Hiroyuki Iwamoto, Noboru Ohta, and Hiroayu Masunaga

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Toward Strong Thermoplastic Elastomers with Asymmetric Miktoarm Block Copolymer Architectures
Weichao Shi, Nathaniel A. Lynd, Damien Montarnal, Yingbing Luo, Glenn H. Fredrickson, Edward J. Kramer, Christos Ntaras, Apostolos Avgereopoulos, and Alexander Hexemer

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Multihydroxyl End Functional Polyethylenes: Synthesis, Bulk and Interfacial Properties of Polymer Surfactants

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2080 Molecular Orientation at the Near-Surface of Photoaligned Films Determined by NEXAFS
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2088 Fabrication of Poly(π-phenylenebenzobisoxazole) Film Using a Soluble Poly(α-alkoxyphenylamide) as the Precursor
Takahiro Fukumaru, Yusuke Sagaya, Tsuyoshi Fujigaya,* and Naotoshi Nakashima*

2096 Thermodynamic Description of the LCST of Charged Thermoresponsive Copolymers
Jan Heyda, Sebastian Soll, Jiyin Yuan, and Joachim Dzubiella*

2103 Influence of Hydrophobic Anion on Solution Properties of PDMAEMA
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2112 Thermo-Induced Limited Aggregation of Responsive Star Polyelectrolytes
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