

Macromolecules

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ON THE COVER: Molecular nanoparticles are unique elements for macromolecular science. From the library of molecular nanoparticles, giant molecules of precise primary structures can be designed and synthesized in a modular fashion. They are able to further assemble into diverse hierarchical structures. What would the properties of this class of materials be? See page 1221.

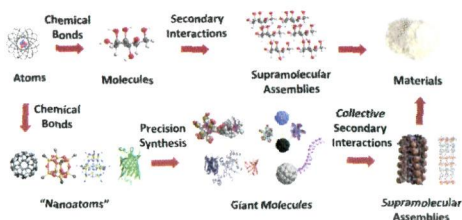
Perspective

1221

[dx.doi.org/10.1021/ma401724p](https://doi.org/10.1021/ma401724p)

Molecular Nanoparticles Are Unique Elements for Macromolecular Science: From "Nanotoms" to Giant Molecules

Wen-Bin Zhang, Xinfei Yu, Chien-Lung Wang, Hao-Jan Sun, I-Fan Hsieh, Yiwen Li, Xue-Hui Dong, Kan Yue, Ryan Van Horn, and Stephen Z. D. Cheng*



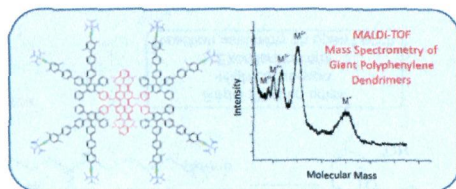
Articles

1240

[dx.doi.org/10.1021/ma402347y](https://doi.org/10.1021/ma402347y)

MALDI-TOF Mass Spectrometry of Polyphenylene Dendrimers up to the Megadalton Range. Elucidating Structural Integrity of Macromolecules at Unrivalled High Molecular Weights

Hans Joachim Räder,* Thi-Thanh-Tam Nguyen, and Klaus Müllen*



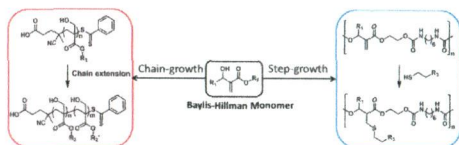
Single Component Iron Catalysts for Atom Transfer and Organometallic Mediated Radical Polymerizations: Mechanistic Studies and Reaction Scope

Laura E. N. Allan, Jarret P. MacDonald, Gary S. Nichol, and Michael P. Shaver*



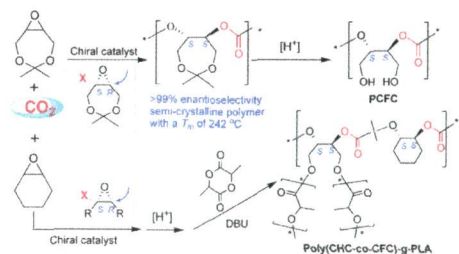
Baylis–Hillman Reaction as a Versatile Platform for the Synthesis of Diverse Functionalized Polymers by Chain and Step Polymerization

Chao Peng and Abraham Joy*



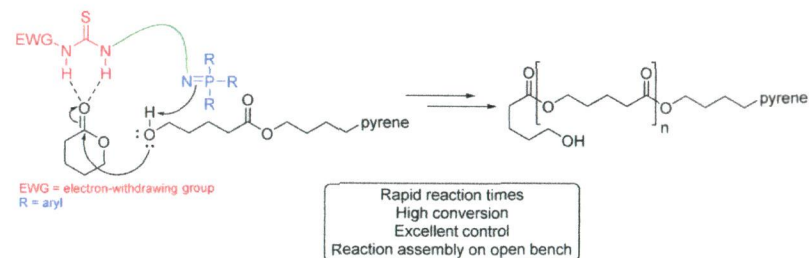
Stereospecific CO₂ Copolymers from 3,5-Dioxaeptides: Crystallization and Functionalization

Ye Liu, Meng Wang, Wei-Min Ren, Ke-Ke He, Yue-Chao Xu, Jie Liu, and Xiao-Bing Lu*



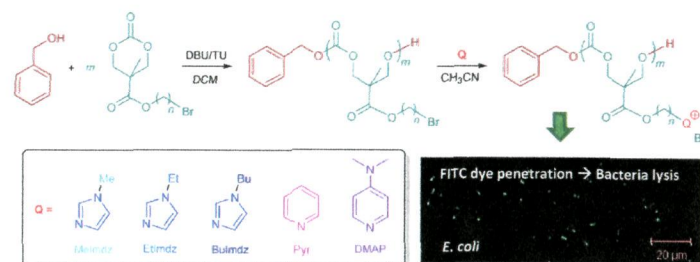
Organocatalytic Ring-Opening Polymerization of Cyclic Esters Mediated by Highly Active Bifunctional Iminophosphorane Catalysts

Anna M. Goldys and Darren J. Dixon*



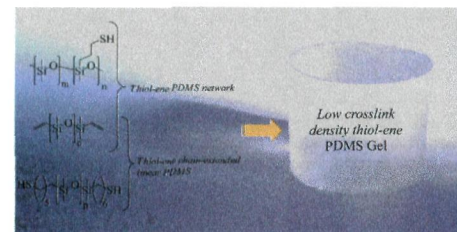
Antimicrobial Polycarbonates: Investigating the Impact of Nitrogen-Containing Heterocycles as Quaternizing Agents


Victor Wee Lin Ng, Jeremy Pang Kern Tan, Jiayu Leong, Zhi Xiang Voo, James L. Hedrick, and Yi Yan Yang*



Low Modulus Dry Silicone-Gel Materials by Photoinduced Thiol–Ene Chemistry

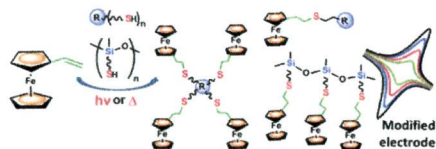
Otto van den Berg, Le-Thu T. Nguyen, Roberto F. A. Teixeira, Fabienne Goethals, Ceren Özdilek, Stephane Berghmans, and Filip E. Du Prez*



1301  dx.doi.org/10.1021/ma402520Z

Thiol–Ene Chemistry of Vinylferrocene: A Simple and Versatile Access Route to Novel Electroactive Sulfur- and Ferrocene-Containing Model Compounds and Polysiloxanes

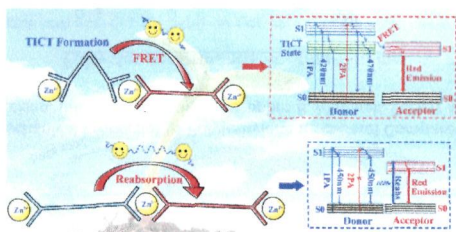
Ignacio Martínez-Montero, Sonia Bruña, Ana M^a González-Vadillo, and Isabel Cuadrado*



1316  dx.doi.org/10.1021/ma402623z

Multiphoton Harvesting in an Angular Carbazole-Containing Zn(II)-Coordinated Random Copolymer Mediated by Twisted Intramolecular Charge Transfer State

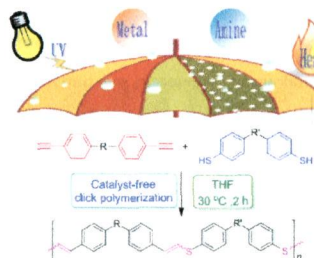
Tingchao He, Yang Gao, Rui Chen, Lin Ma, Deepa Rajwar, Yue Wang, Andrew C. Grimsdale,* and Handong Sun*



1325  dx.doi.org/10.1021/ma402559a

Catalyst-Free Thiol–Yne Click Polymerization: A Powerful and Facile Tool for Preparation of Functional Poly(vinylene sulfide)s

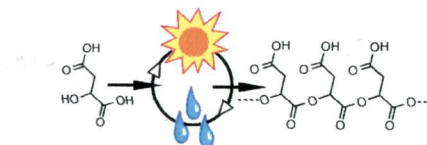
Bicheng Yao, Ju Mei, Jie Li, Jian Wang, Haiqiang Wu, Jing Zhi Sun, Anjun Qin,* and Ben Zhong Tang*



1334  dx.doi.org/10.1021/ma402256d

Ester Formation and Hydrolysis during Wet–Dry Cycles: Generation of Far-from-Equilibrium Polymers in a Model Prebiotic Reaction

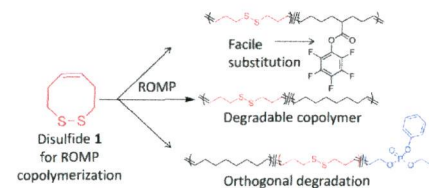
Irena Mamajanov, Patrick J. MacDonald, Jingya Ying, Daniel M. Duncanson, Garrett R. Dowdy, Chelsea A. Walker, Aaron E. Engelhart, Facundo M. Fernández, Martha A. Grover, Nicholas V. Hud,* and F. Joseph Schork



1344  dx.doi.org/10.1021/ma500121a

Functional Polyolefins Containing Disulfide and Phosphoester Groups: Synthesis and Orthogonal Degradation

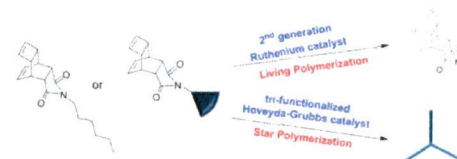
Chia-Chih Chang and Todd Emrick*



1351  dx.doi.org/10.1021/ma5000333

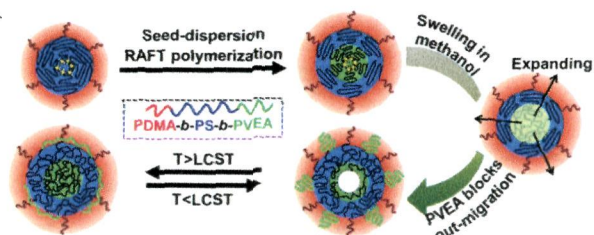
Living Polymerization of Monomers Containing *endo*-Tricyclo[4.2.2.0^{2,5}]deca-3,9-diene Using Second Generation Grubbs and Hoveyda–Grubbs Catalysts: Approach to Synthesis of Well-Defined Star Polymers

Kyung Oh Kim, Suyong Shin, Junyong Kim, and Tae-Lim Choi*



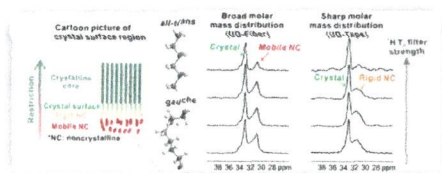
Temperature-Sensitive Nanoparticle-to-Vesicle Transition of ABC Triblock Copolymer Corona-Shell-Core Nanoparticles Synthesized by Seeded Dispersion RAFT Polymerization

Meihan Dan, Fei Huo, Xin Xiao, Yang Su, and Wangqing Zhang*



¹³C Solid State NMR Characterization of Structure and Orientation Development in the Narrow and Broad Molar Mass Disentangled UHMWPE

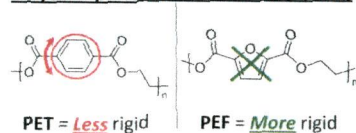
Yefeng Yao,* Songzi Jiang, and Sanjay Rastogi*



Chain Mobility, Thermal, and Mechanical Properties of Poly(ethylene furanoate) Compared to Poly(ethylene terephthalate)

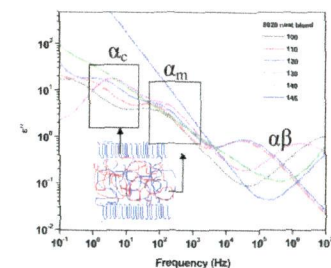
Steven K. Burgess, Johannes E. Leisen, Brian E. Kraftschik, Christopher R. Mubarak, Robert M. Kriegel, and William J. Koros*

Polyester performance \propto ring-flipping



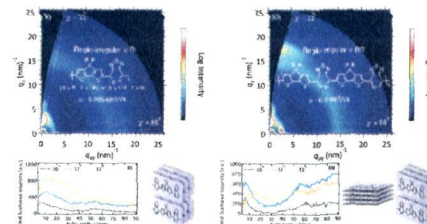
Cooperativity and Structural Relaxations in PVDF/PMMA Blends in the Presence of MWNTs: An Assessment through SAXS and Dielectric Spectroscopy

Maya Sharma, Giridhar Madras, and Suryasarathi Bose*



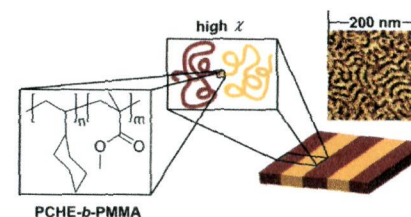
Effect of Backbone Regioregularity on the Structure and Orientation of a Donor-Acceptor Semiconducting Copolymer

Louis A. Perez, Peter Zalar, Lei Ying, Kristin Schmidt, Michael F. Toney, Thuc-Quyen Nguyen, Guillermo C. Bazan,* and Edward J. Kramer*



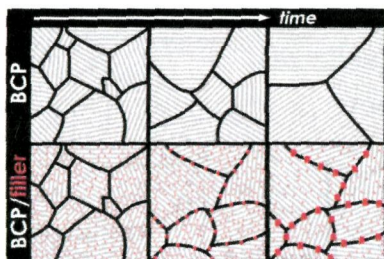
Sub-5 nm Domains in Ordered Poly(cyclohexylethylene)-block-poly(methyl methacrylate) Block Polymers for Lithography

Justin G. Kennemur, Li Yao, Frank S. Bates,* and Marc A. Hillmyer*

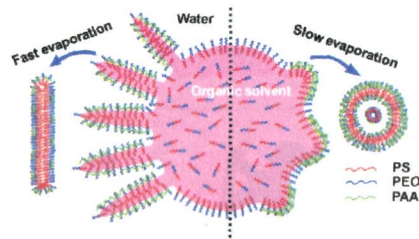


Retardation of Grain Growth and Grain Boundary Pinning in Athermal Block Copolymer Blend Systems

Hyung Ju Ryu, Jane Sun, Apostolos Avgeropoulos, and Michael R. Bockstaller*

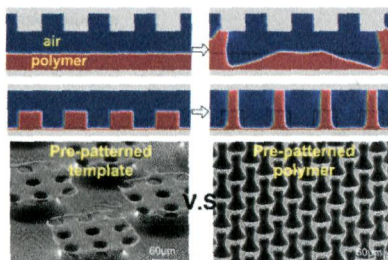
Effects of Solvent Evaporation Rate and Poly(acrylic acid) on Formation of Poly(ethylene oxide)-*block*-polystyrene Micelles from Emulsion

Mei Su and Zhaohui Su*



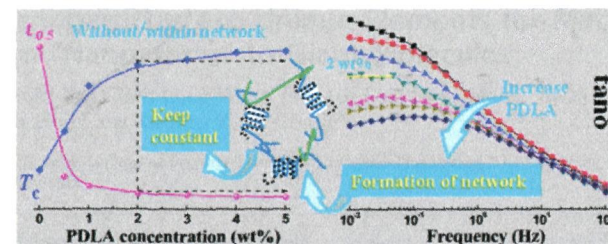
Electrohydrodynamic Micro-/Nanostructuring Processes Based on Prepatterned Polymer and Prepatterned Template

Hongmiao Tian, Jinyou Shao,* Yucheng Ding,* Xiangming Li, and Hong Hu



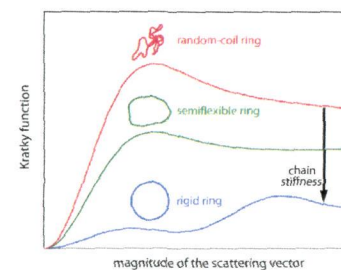
Stereocomplex Crystallite Network in Asymmetric PLLA/PDLA Blends: Formation, Structure, and Confining Effect on the Crystallization Rate of Homocrystallites

Xin-Feng Wei, Rui-Ying Bao, Zhi-Qiang Cao, Wei Yang,* Bang-Hu Xie, and Ming-Bo Yang

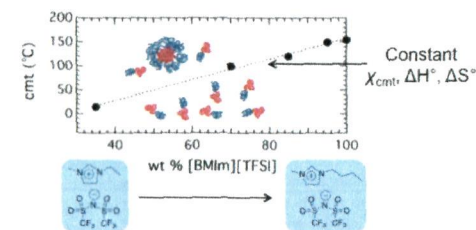


Scattering Function of Wormlike Rings

Ryutarō Tsubouchi, Daichi Ida, Takenao Yoshizaki,* and Hiromi Yamakawa

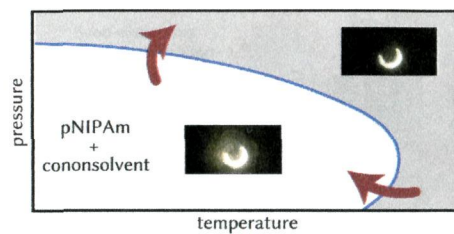
Effects of Solvent Quality and Degree of Polymerization on the Critical Micelle Temperature of Poly(ethylene oxide-*b*-*n*-butyl methacrylate) in Ionic Liquids

Megan L. Hoarfrost and Timothy P. Lodge*



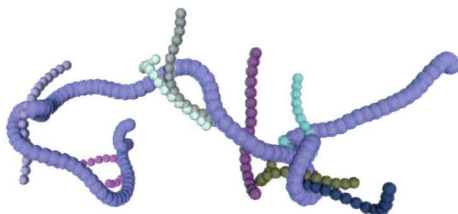
Flipping the Pressure- and Temperature-Dependent Cloud-Point Behavior in the Conosolvency System of Poly(*N*-isopropylacrylamide) in Water and Ethanol

Bastian Ebeling, Steffen Eggers, Michael Hendrich, Annika Nitschke, and Philipp Vana*



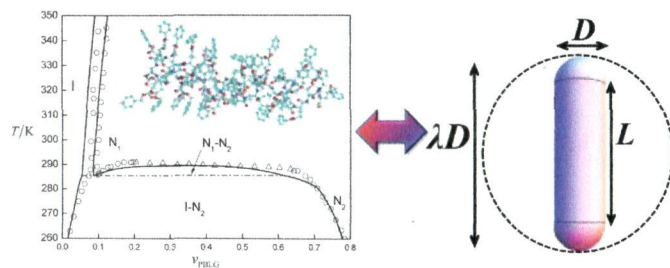
Microscopic Definition of Polymer Entanglements

Alexei E. Likhtman* and M. Ponmurugan



Understanding and Describing the Liquid-Crystalline States of Polypeptide Solutions: A Coarse-Grained Model of PBLG in DMF

Liang Wu, Erich A. Müller, and George Jackson*



Systematic Coarse-Graining of the Dynamics of Self-Attractive Semiflexible Polymers

Miqiu Kong, Indranil Saha Dalal, Guangxian Li, and Ronald G. Larson*

