

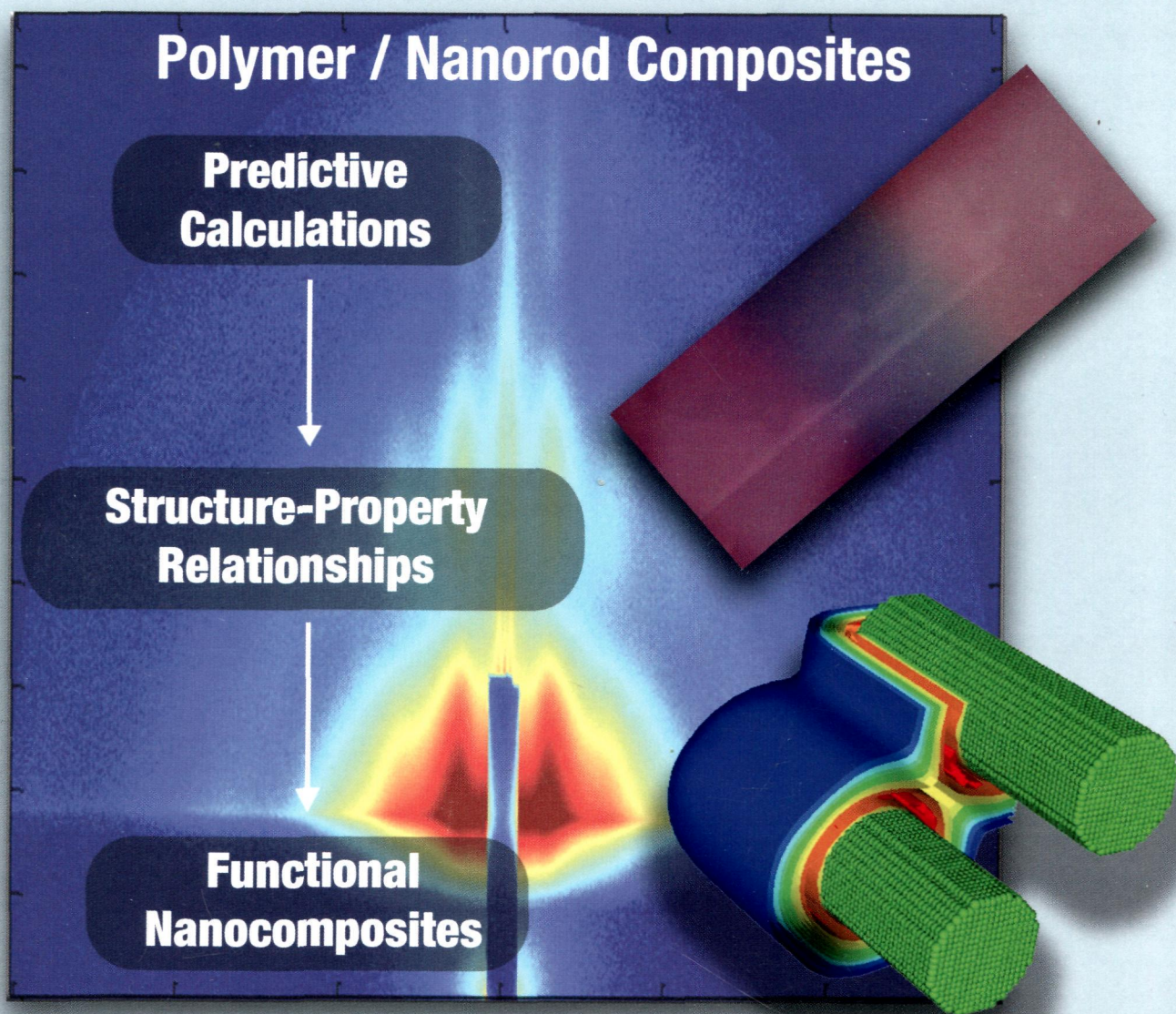
February 11, 2014

Volume 47

Number 3

Macromolecules

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ON THE COVER: Polymer nanocomposites containing nanorods possess enhanced physical and functional properties that depend on several factors, including nanorod type, nanorod dimension, and nanorod dispersion and/or alignment within the matrix. By combining structural tools such as X-ray and neutron scattering, modeling tools including theory and simulation, and measurements of physical properties such as electrical conductivity or optical extinction, predictive structure–property relationships can be developed for designing novel, functional polymer nanocomposites. A perspective by Hore and Composto presents progress in creating nanorod/polymer composites and enhancing physical properties by incorporating nanorods and the challenges and opportunities for future work. See page 875.

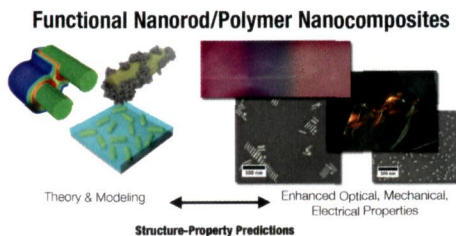
Perspective

875

[dx.doi.org/10.1021/ma402179w](https://doi.org/10.1021/ma402179w)

Functional Polymer Nanocomposites Enhanced by Nanorods

Michael J. A. Hore and Russell J. Composto*



Articles

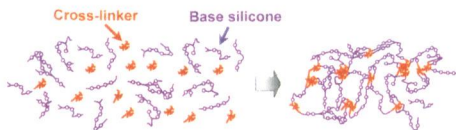
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[dx.doi.org/10.1021/ma402291e](https://doi.org/10.1021/ma402291e)

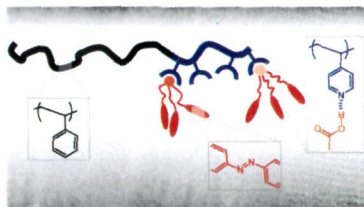
In Situ NMR Measurement of Novel Silicone Elastomer Obtained by Cross-Linking of Silicones Having Phenylene Backbone and Hyperbranched Molecular Architectures

Hiroki Uehara,* Masazumi Saitoh, Ryosuke Morita, Eiichi Akiyama, and Takeshi Yamanobe



Self-Assembly and Photoinduced Optical Anisotropy in Dendronized Supramolecular Azopolymers

Jesús del Barrio,* Eva Blasco, Chris Toprakcioglu, Alexandros Koutsoubas, Oren A. Scherman, Luis Oriol,* and Carlos Sánchez-Somolinos*

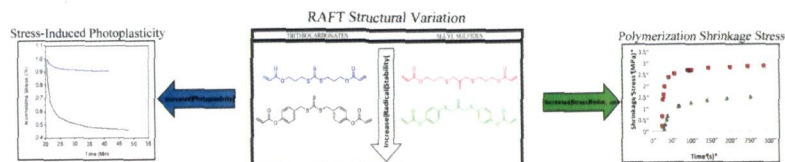


907

dx.doi.org/10.1021/ma402548e

Controllable Reversible Addition–Fragmentation Termination Monomers for Advances in Photochemically Controlled Covalent Adaptable Networks

Christopher R. Fenoli,* James W. Wydra, and Christopher N. Bowman

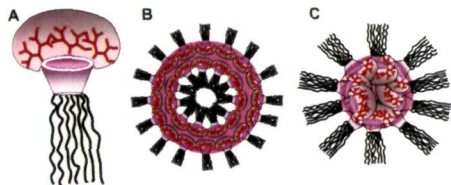


916

dx.doi.org/10.1021/ma4025619

Jellyfish-Shaped Amphiphilic Dendrimers: Synthesis and Formation of Extremely Uniform Aggregates

Shiqun Shao, Jingxing Si, Jianbin Tang, Meihua Sui,* and Youqing Shen*

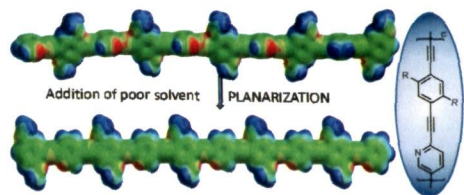


922

dx.doi.org/10.1021/ma402615q

Aggregation, Acidochromicity, and Metallochromicity of a Pyridine-Based Poly(aryleneethynylene)

Kai Seehafer, Markus Bender, and Uwe H. F. Bunz*

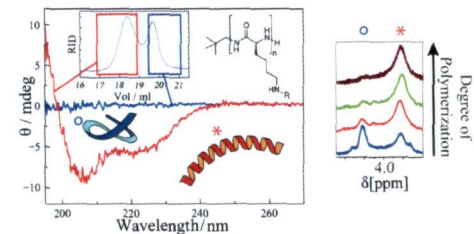


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Revisiting Secondary Structures in NCA Polymerization: Influences on the Analysis of Protected Polylysines

David Huesmann, Alexander Birke, Kristina Klinker, Stephan Türk, Hans Joachim Räder, and Matthias Barz*

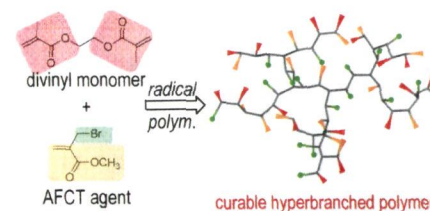


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dx.doi.org/10.1021/ma402300z

One-Step Synthesis of Thermally Curable Hyperbranched Polymers by Addition–Fragmentation Chain Transfer Using Divinyl Monomers

Eriko Sato,* Izumi Uehara, Hideo Horibe, and Akikazu Matsumoto

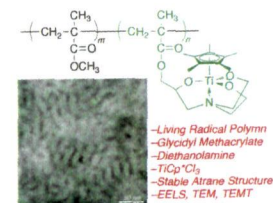


944

dx.doi.org/10.1021/ma402332g

Synthesis of Titanium-Containing Block, Random, End-Functionalized, and Junction-Functionalized Polymers via Ruthenium-Catalyzed Living Radical Polymerization and Direct Observation of Titanium Domains by Electron Microscopy

Yasutaka Tsujimoto, Kotaro Satoh,* Hidekazu Sugimori, Hiroshi Jinnai,* and Masami Kamigaito*

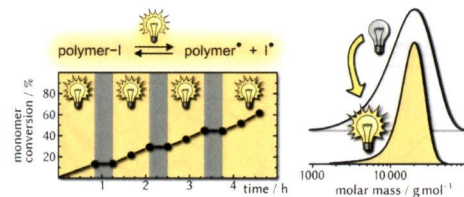


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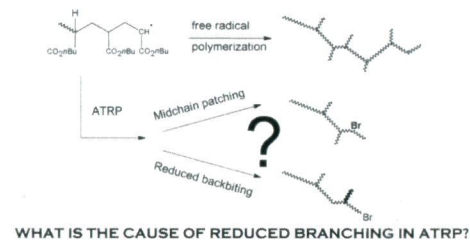
UV Light as External Switch and Boost of Molar-Mass Control in Iodine-Mediated Polymerization

Arne Wolpers and Philipp Vana*



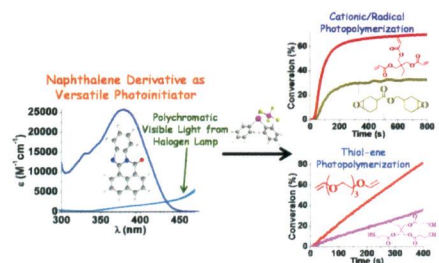
Experimental Evidence Shedding Light on the Origin of the Reduction of Branching of Acrylates in ATRP

Nicholas Ballard, Maitane Salsamendi, José Ignacio Santos, Fernando Ruipérez, Jose R. Leiza, and Jose M. Asua*



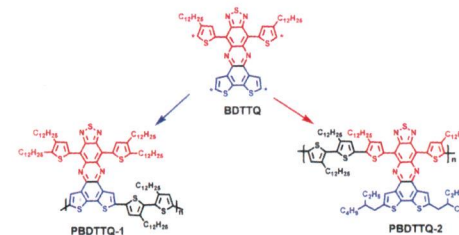
Design of High Performance Photoinitiators at 385–405 nm: Search around the Naphthalene Scaffold

Pu Xiao, Frédéric Dumur, Bernadette Graff, Fabrice Morlet-Savary, Didier Gigmes,* Jean Pierre Fouassier, and Jacques Lalevée*



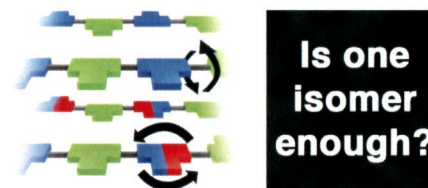
Benzodithiophene–Thiadiazoloquinoxaline as an Acceptor for Ambipolar Copolymers with Deep LUMO Level and Distinct Linkage Pattern

Cunbin An, Sreenivasa Reddy Puniredd, Xin Guo, Timea Stelzig, Yanfei Zhao, Wojciech Pisula, and Martin Baumgarten*



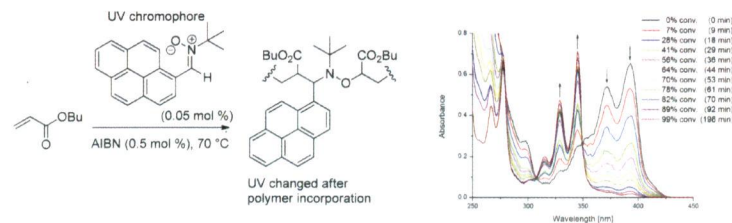
Structural and Conformational Dispersion in the Rational Design of Conjugated Polymers

Nicholas E. Jackson,* Brett M. Savoie, Kevin L. Kohlstedt, Tobin J. Marks, Lin X. Chen, and Mark A. Ratner



UV–Vis Monitoring of Radical Polymerizations by Spin Trapping with Chromophoric Nitrones

Ralph Husmann, Sebastian Wertz, Constantin G. Daniliuc, Sascha W. Schäfer, Ciarán B. McArdle, and Armido Studer*



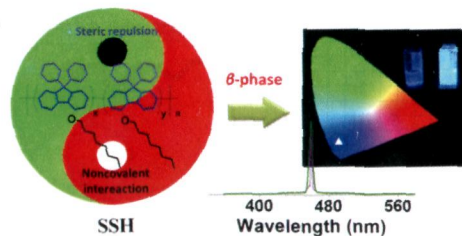
1001

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dx.doi.org/10.1021/ma402585n

A Rational Molecular Design of β -Phase Polydiarylfuorenes: Synthesis, Morphology, and Organic Lasers

Jin-Yi Lin,* Wen-Sai Zhu, Feng Liu, Ling-Hai Xie,* Long Zhang, Ruidong Xia,* Gui-Chuan Xing, and Wei Huang*



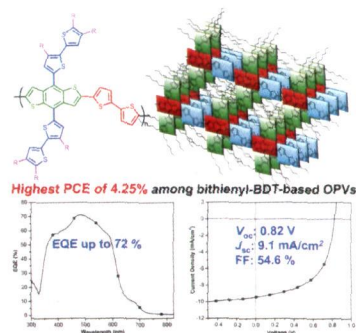
1008

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dx.doi.org/10.1021/ma401846n

Structural Design of Benzo[1,2-*b*:4,5-*b'*]dithiophene-Based 2D Conjugated Polymers with Bithienyl and Terthienyl Substituents toward Photovoltaic Applications

Cheng-Yu Kuo, Wanyi Nie, Hsinhan Tsai, Hung-Ju Yen, Adytia D. Mohite, Gautam Gupta, Andrew M. Dattelbaum, Darrick J. William, Kitty C. Cha, Yang Yang, Leeyih Wang, and Hsing-Lin Wang*



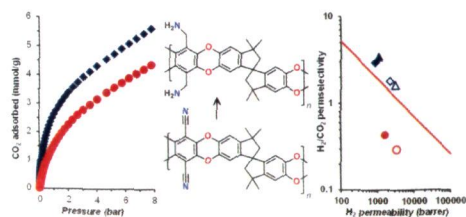
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Enhancement of CO₂ Affinity in a Polymer of Intrinsic Microporosity by Amine Modification

Christopher R. Mason, Louise Maynard-Atem, Kane W. J. Heard, Bekir Satilmis, Peter M. Budd,* Karel Friess, Marek Lanč, Paola Bernardo, Gabriele Clarizia, and Johannes C. Jansen*



1030

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dx.doi.org/10.1021/ma401893g

A Facile Route toward Structured Hybrid Particles Based on Liquid-Solid Assembly

Yang Zhang, Katharina Landfester, and Andreas Taden*



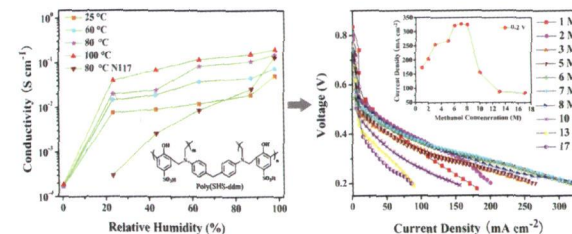
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dx.doi.org/10.1021/ma4020214

Synthesis of Sulfonic Acid-Containing Polybenzoxazine for Proton Exchange Membrane in Direct Methanol Fuel Cells

Bingjian Yao, Xiuling Yan, Yi Ding, Zaijun Lu,* Daxuan Dong, Hatsuo Ishida, Morton Litt, and Lei Zhu*



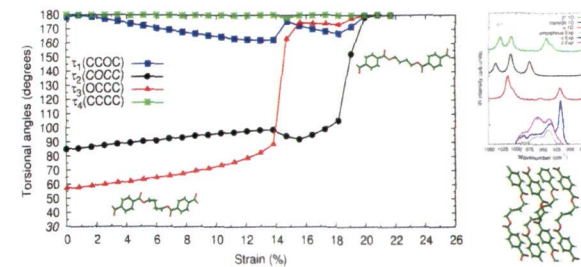
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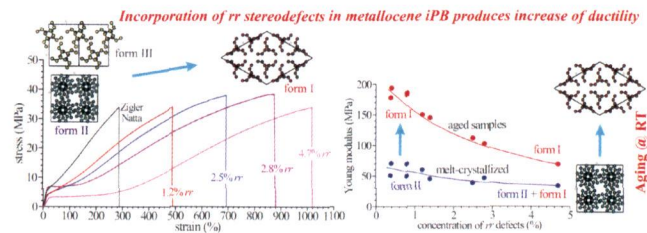
Polymorphism of Poly(butylene terephthalate) Investigated by Means of Periodic Density Functional Theory Calculations

Alberto Milani* and Daria Galimberti



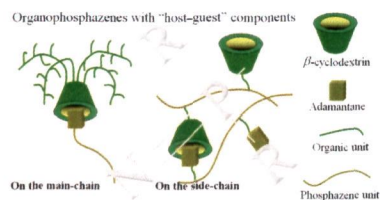
Mechanical Properties and Stress-Induced Phase Transformations of Metallocene Isotactic Poly(1-butene): The Influence of Stereodefects

Claudio De Rosa,* Finizia Auriemma, Maurizio Villani, Odda Ruiz de Ballesteros, Rocco Di Girolamo, Oreste Tarallo, and Anna Malafronte



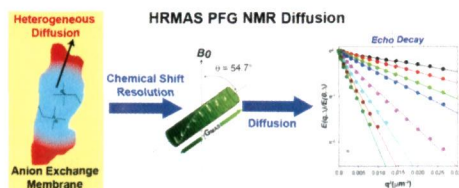
Synthesis and Assembly of Novel Poly(organophosphazene) Structures Based on Noncovalent "Host-Guest" Inclusion Complexation

Zhicheng Tian, Chen Chen, and Harry R. Allcock*



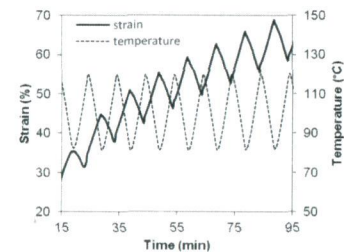
Characterization of Heterogeneous Solvent Diffusion Environments in Anion Exchange Membranes

Todd M. Alam* and Michael R. Hibbs



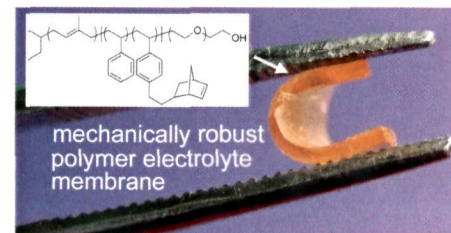
Hidden Thermoreversible Actuation Behavior of Nafion and Its Morphological Origin

Tao Xie,* Junjun Li, and Qian Zhao



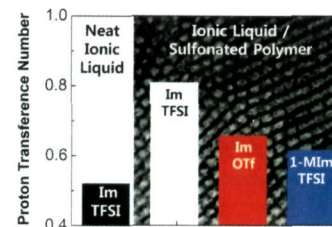
Morphology, Modulus, and Conductivity of a Triblock Terpolymer/Ionic Liquid Electrolyte Membrane

Lucas D. McIntosh, Tomohiro Kubo, and Timothy P. Lodge*

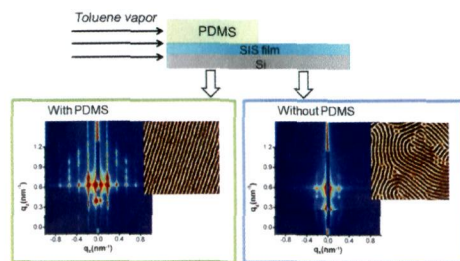


Proton Hopping and Diffusion Behavior of Sulfonated Block Copolymers Containing Ionic Liquids

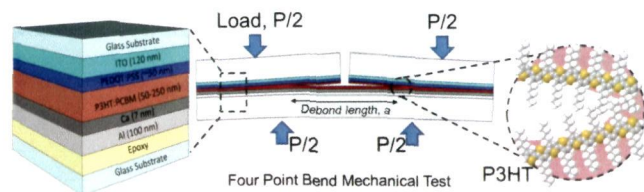
Sung Yeon Kim, Joungphil Lee, and Moon Jeong Park*



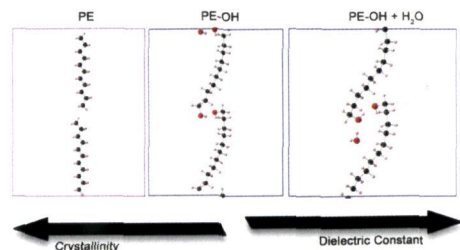
1109 **5** dx.doi.org/10.1021/ma402131j
Unidirectional Alignment of Block Copolymer Films Induced by Expansion of a Permeable Elastomer during Solvent Vapor Annealing
 Zhe Qiang, Longhe Zhang, Gila E. Stein, Kevin A. Cavicchi, and Bryan D. Vogt*



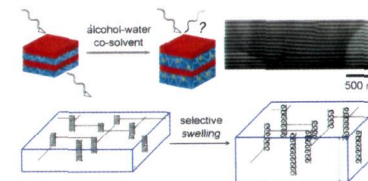
1117 **5** dx.doi.org/10.1021/ma402215j
Role of Molecular Weight on the Mechanical Device Properties of Organic Polymer Solar Cells
 Christopher Bruner and Reinhold Dauskardt*



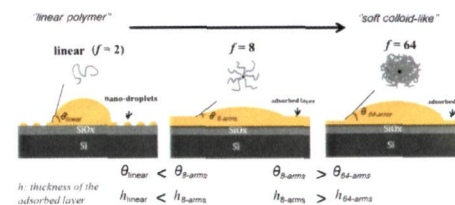
1122 **5** dx.doi.org/10.1021/ma402220j
Enhanced Polymeric Dielectrics through Incorporation of Hydroxyl Groups
 Mayank Misra, Manish Agarwal, Daniel W. Sinkovits, Sanat K. Kumar,* Chenchen Wang, Ghanshyam Piliya, Ramamurthy Ramprasada, Robert A. Weiss, Xuepei Yuan, and T. C. Mike Chung



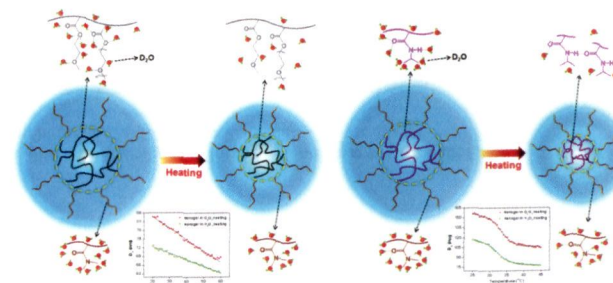
1130 **5** dx.doi.org/10.1021/ma402287x
Defects, Solvent Quality, and Photonic Response in Lamellar Block Copolymer Gels
 Yin Fan,* Joseph J. Walsh, Shengchang Tang, Bradley D. Olsen, and Edwin L. Thomas*



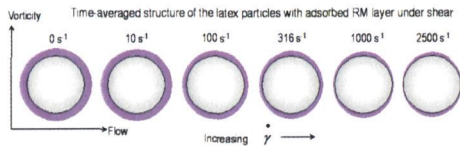
1137 **5** dx.doi.org/10.1021/ma4024119
Wetting of Macromolecules: From Linear Chain to Soft Colloid-Like Behavior
 Emmanouil Glynos, Alexandros Chremos, Bradley Frieberg, Georgios Sakellariou, and Peter F. Green*



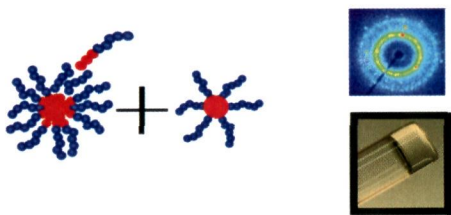
1144 **5** dx.doi.org/10.1021/ma4021906
Exploring the Volume Phase Transition Behavior of POEGA- and PNIPAM-Based Core-Shell Nanogels from Infrared-Spectral Insights
 Lei Hou, Kai Ma, Zesheng An,* and Peiyi Wu*



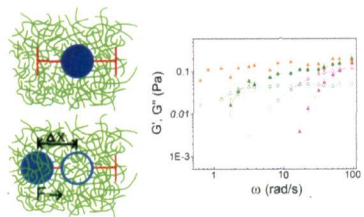
1155  [dx.doi.org/10.1021/ma401566k](https://doi.org/10.1021/ma401566k)
Shear-Dependent Interactions in Hydrophobically Modified Ethylene Oxide Urethane (HEUR) Based Rheology Modifier–Latex Suspensions: Part 1. Molecular Microstructure
 Tirtha Chatterjee,* Alan I. Nakatani, and Antony K. Van Dyk



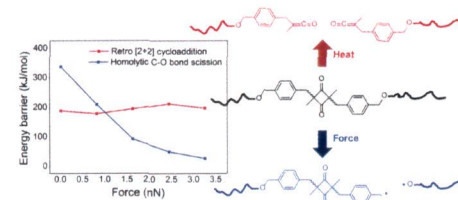
1175 [dx.doi.org/10.1021/ma402342z](https://doi.org/10.1021/ma402342z)
Liquid–Solid Transition and Crystallization of Mixtures of Frozen and Dynamic Star-Like Polymers
 Fanny Puaud, Erwan Nicol, Guillaume Brotons, Taco Nicolai,* and Lazhar Benyahia



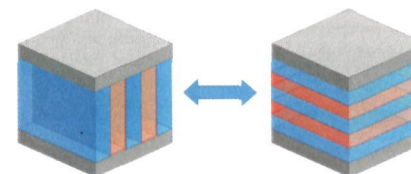
1181 [dx.doi.org/10.1021/ma401615m](https://doi.org/10.1021/ma401615m)
Onset of Non-Continuum Effects in Microrheology of Entangled Polymer Solutions
 Cole D. Chapman,* Kent Lee, Dean Henze, Douglas E. Smith, and Rae M. Robertson-Anderson



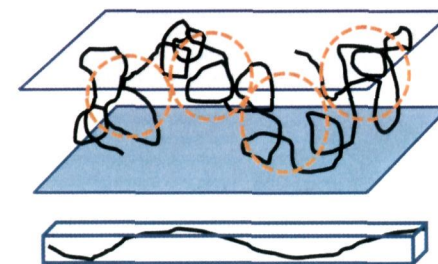
1187  [dx.doi.org/10.1021/ma4022339](https://doi.org/10.1021/ma4022339)
Strain-Induced Strengthening of the Weakest Link: The Importance of Intermediate Geometry for the Outcome of Mechanochemical Reactions
 Ramon Groote, Bartłomiej M. Szyja, Frank A. Leibfarth, Craig J. Hawker,* Nikos L. Doltsinis, and Rint P. Sijbesma*



1193 [dx.doi.org/10.1021/ma402526q](https://doi.org/10.1021/ma402526q)
Sequential Domain Realignment Driven by Conformational Asymmetry in Block Copolymer Thin Films
 Arash Nikoubashman, Richard A. Register, and Athanassios Z. Panagiotopoulos*



1199 [dx.doi.org/10.1021/ma401923t](https://doi.org/10.1021/ma401923t)
Dynamics and Conformation of Semiflexible Polymers in Strong Quasi-1D and -2D Confinement
 Yeng-Long Chen,* Yu-Hui Lin, Jen-Fang Chang, and Po-keng Lin



Conformational Properties of Semiflexible Chains at Nematic Ordering Transitions in Thin Films: A Monte Carlo Simulation

Victor A. Ivanov,* Alexandra S. Rodionova, Julia A. Martemyanova, Mikhail R. Stukan, Marcus Müller, Wolfgang Paul, and Kurt Binder

