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Number 19

Macromolecules

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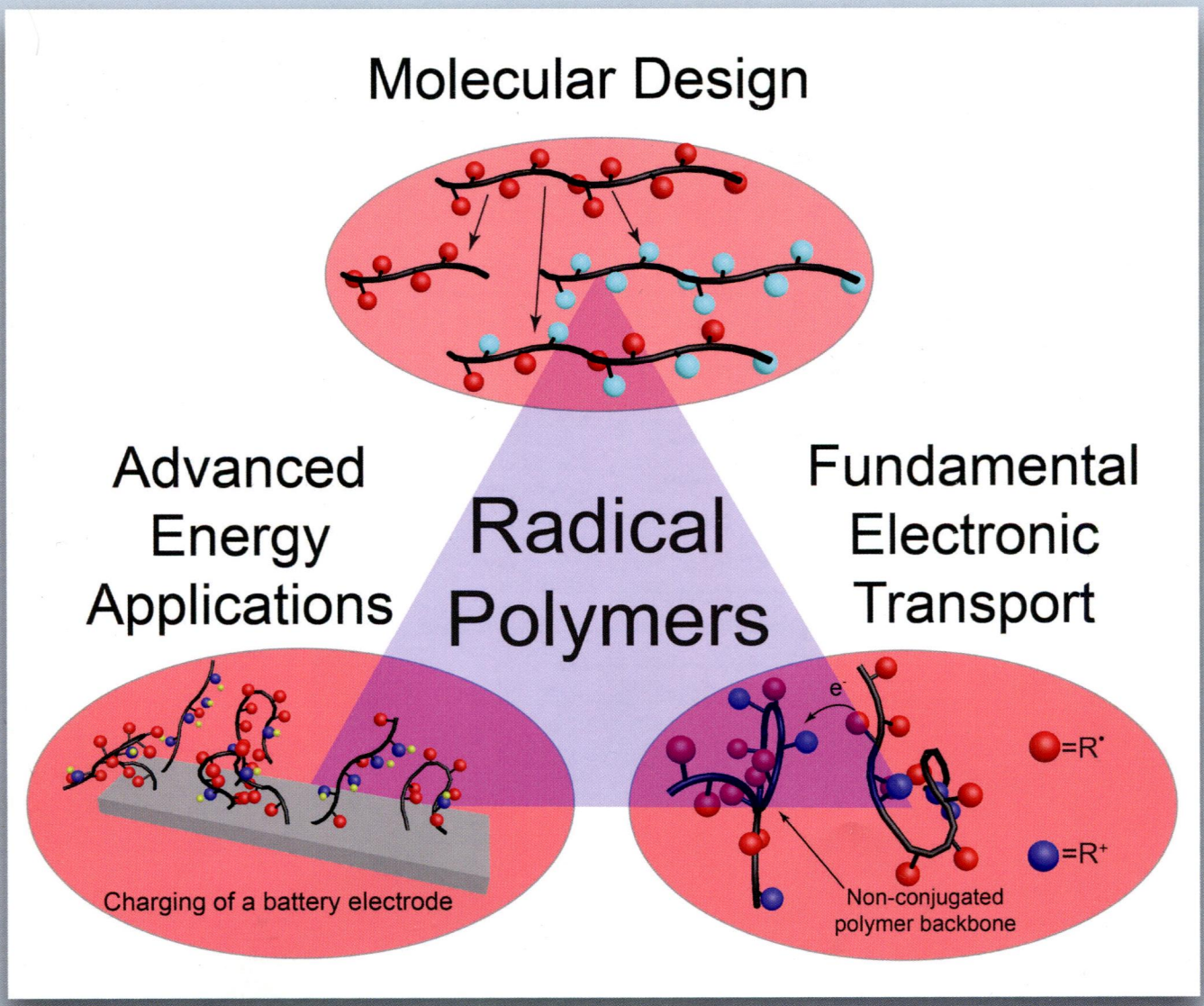

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Macromolecules

OCTOBER 14, 2014

VOLUME 47 ISSUE 19

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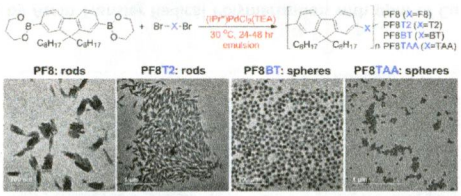
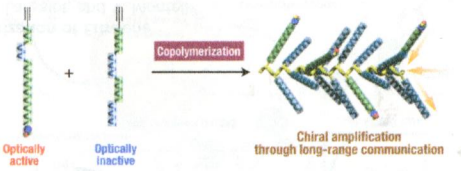
ON THE COVER: Radical polymers are composed of nonconjugated backbones that have stable radical groups pendant to the polymer chain on every repeat unit, and these macromolecules are emerging as promising materials for organic electronic devices due to the large degree of control they afford with respect to their macromolecular architecture. Once synthesized, these materials can pass charge through a simple oxidation–reduction (redox) reaction process between the side chain radical groups. This electronically active behavior has allowed radical polymers to show extreme promise in organic electronic applications ranging from flexible batteries to polymer-based photovoltaic cells. See *Macromolecules* **2014**, *47* (18), 6145–6158.

Articles

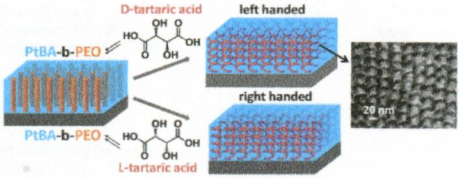




6547 Ⓢ dx.doi.org/10.1021/ma501714g

Formation of Helical Phases in Achiral Block Copolymers by Simple Addition of Small Chiral Additives

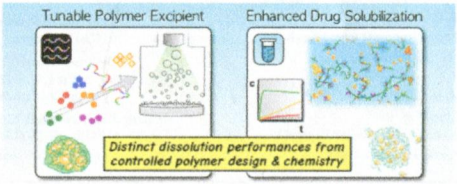
Li Yao, Xuemin Lu, Shuangshuang Chen, and James J. Watkins*



6554 Ⓢ dx.doi.org/10.1021/ma501839s

Design of Tunable Multicomponent Polymers as Modular Vehicles To Solubilize Highly Lipophilic Drugs

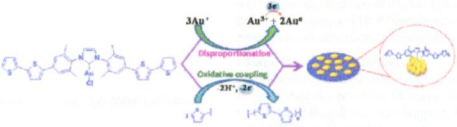
Jeffrey M. Ting, Tushar S. Navale, Frank S. Bates,* and Theresa M. Reineke*



6566 Ⓢ dx.doi.org/10.1021/ma501817n

***N*-Heterocyclic Carbene-Based Conducting Polymer–Gold Nanoparticle Hybrids and Their Catalytic Application**

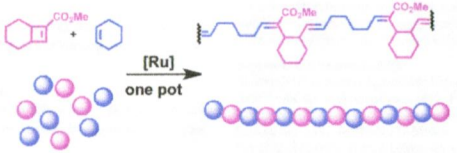
Sun Gu Song, Chinnadurai Satheeshkumar, Jiyoung Park, Jongho Ahn, Thathan Premkumar, Yunmi Lee,* and Changsik Song*



6572 Ⓢ dx.doi.org/10.1021/ma5012039

A Bicyclo[4.2.0]octene-Derived Monomer Provides Completely Linear Alternating Copolymers via Alternating Ring-Opening Metathesis Polymerization (AROMP)

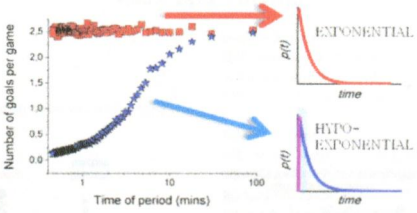
Li Tan, Kathlyn A. Parker,* and Nicole S. Sampson*



6580 Ⓢ dx.doi.org/10.1021/ma501267a

Impact of Competitive Processes on Controlled Radical Polymerization

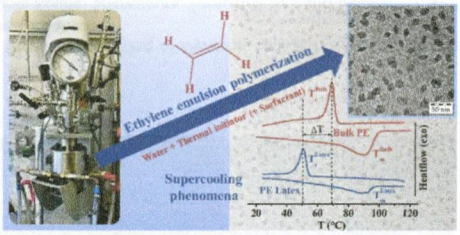
Nicholas Ballard, Simone Rusconi, Elena Akhmatskaya, Dmitri Sokolovski, José C. de la Cal, and José M. Asua*



6591 Ⓢ dx.doi.org/10.1021/ma5012733

Free Radical Emulsion Polymerization of Ethylene

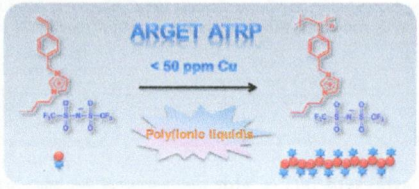
G. Billuart, E. Bourgeat-Lami, M. Lansalot, and V. Monteil*



6601 dx.doi.org/10.1021/ma501487u

Synthesis of Poly(ionic liquid)s by Atom Transfer Radical Polymerization with ppm of Cu Catalyst

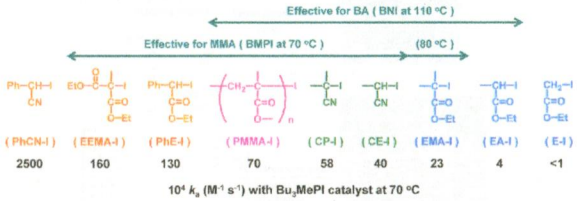
Hongkun He, David Luebke, Hunaid Nulwala,* and Krzysztof Matyjaszewski



6610 S dx.doi.org/10.1021/ma501569j

Systematic Study on Alkyl Iodide Initiators in Living Radical Polymerization with Organic Catalysts

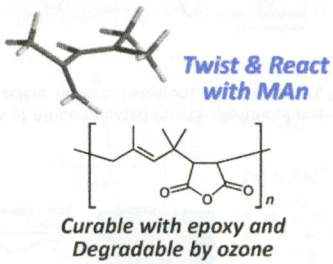
Lin Lei, Miho Tanishima, Atsushi Goto,* Hironori Kaji,* Yu Yamaguchi, Hiroto Komatsu, Takuya Jitsukawa, and Michihiko Miyamoto



6619 S dx.doi.org/10.1021/ma501555n

Radical Alternating Copolymerization of Twisted 1,3-Butadienes with Maleic Anhydride as a New Approach for Degradable Thermosetting Resin

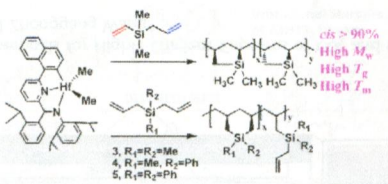
Asuka Tsujii, Mami Namba, Haruyuki Okamura, and Akikazu Matsumoto*



6627 S dx.doi.org/10.1021/ma501460f

Cyclopolymerization of Si-Containing α,ω-Diolefins by a Pyridylamidohafnium Catalyst with High Cyclization Selectivity and Stereoselectivity

Bin Wang, Yong-Xia Wang, Jing Cui, Ying-Yun Long, Yan-Guo Li, Xiao-Yan Yuan,* and Yue-Sheng Li*



6635 S dx.doi.org/10.1021/ma501707a

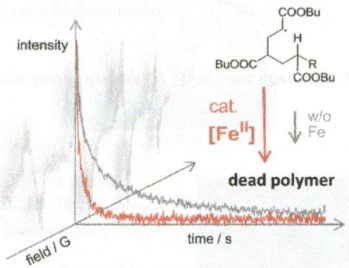
Rational Design of Oxirane Monomers for Efficient Crossover Reactions in Concurrent Cationic Vinyl-Addition and Ring-Opening Copolymerization with Vinyl Ethers

Arihiro Kanazawa, Shokyoku Kanaoka, and Sadahito Aoshima*

6645 S dx.doi.org/10.1021/ma5015963

SP–PLP–EPR Measurement of Iron-Mediated Radical Termination in ATRP

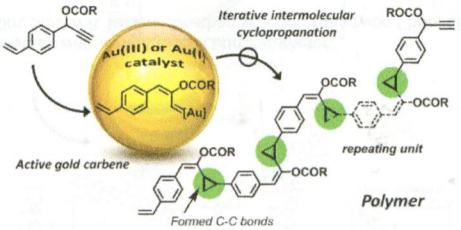
Hendrik Schroeder and Michael Buback*



6652 S dx.doi.org/10.1021/ma501516s

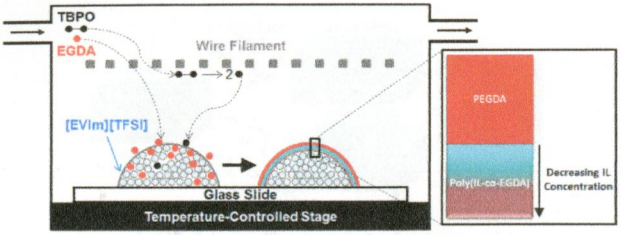
Gold-Catalyzed Polymerization Based on Carbene Polycyclopropanation

Frida Nzulu, Alexis Bontemps, Julien Robert, Marion Barbazanges,* Louis Fensterbank,* Jean-Philippe Goddard,* Max Malacria, Cyril Ollivier, Marc Petit, Jutta Rieger, and François Stoffelbach*



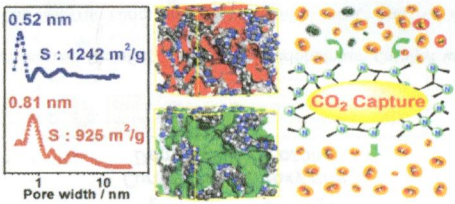
6657 dx.doi.org/10.1021/ma501407q

Copolymerization of 1-Ethyl-3-vinylimidazolium Bis(trifluoromethylsulfonyl)imide via Initiated Chemical Vapor Deposition
Laura C. Bradley and Malancha Gupta*



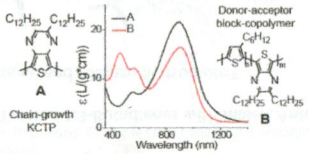
6664 Ⓢ dx.doi.org/10.1021/ma501497c

Tetraphenyladamantane-Based Polyaminals for Highly Efficient Captures of CO_2 and Organic Vapors
Guiyang Li, Biao Zhang, Jun Yan, and Zhonggang Wang*



6671 Ⓢ dx.doi.org/10.1021/ma501757e

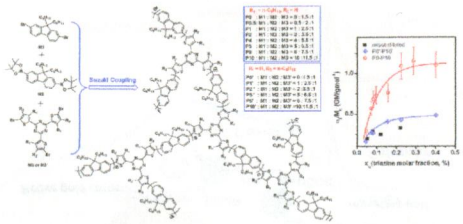
One-Pot Synthesis and Characterization of All-Conjugated Poly(3-alkylthiophene)-*block*-poly(dialkylthieno[3,4-*b*]pyrazine)
Pieter Willot, David Moerman, Philippe Leclère, Roberto Lazzaroni, Yannick Baeten, Mark Van der Auweraer, and Guy Koeckelberghs*



6679 dx.doi.org/10.1021/ma500914v

New Kind of Hyperbranched Conjugated Polymers Containing Alkyl-Modified 2,4,6-Tris(thiophen-2-yl)-1,3,5-triazine Unit for Enhancing Two-Photon Absorption

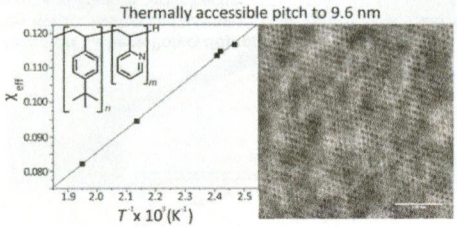
Pengcheng Zhou, Cheng Zhong, Xingguo Chen,* Jingui Qin, Inês Mariz, and Ermelinda Maçôas*



6687 dx.doi.org/10.1021/ma501597g

Rational Design of a Block Copolymer with a High Interaction Parameter

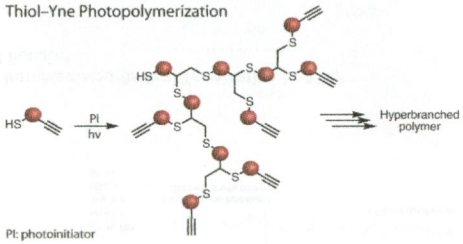
Daniel P. Sweat, Myungwoong Kim, Steven R. Larson, Jonathan W. Choi, Youngwoo Choo, Chinedum O. Osuji, and Padma Gopalan*



6697 dx.doi.org/10.1021/ma500702c

Synthesis of Polystyrene-Based Hyperbranched Polymers by Thiol–Yne Chemistry: A Detailed Investigation

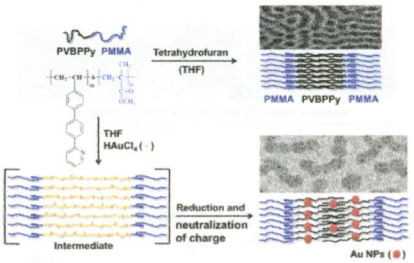
Raphael Barbey and Sébastien Perrier*



6706 Ⓢ dx.doi.org/10.1021/ma500974m

Effect of Biphenyl Spacers on the Anionic Polymerization of 2-(4′-Vinylbiphenyl-4-yl)pyridine

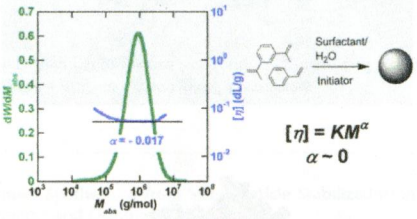
Nam-Goo Kang, Mohammad Changez, Myung-Jin Kim, and Jae-Suk Lee*



6715 Ⓢ dx.doi.org/10.1021/ma501420z

Determination of Particle Size Distributions, Molecular Weight Distributions, Swelling, Conformation, and Morphology of Dilute Suspensions of Cross-Linked Polymeric Nanoparticles via Size-Exclusion Chromatography/Differential Viscometry

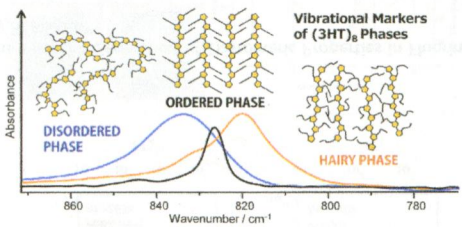
David M. Meunier,* John W. Lyons, Joseph J. Kiefer, Q. Jason Niu, L. Mark DeLong, Yongfu Li, Paul S. Russo, Rafael Cueto, Nadia J. Edwin, Kevin J. Bouck, H. Craig Silvis, Christopher J. Tucker, and Thomas H. Kalantar*



6730 dx.doi.org/10.1021/ma501614c

Regio-Regular Oligo and Poly(3-hexyl thiophene): Precise Structural Markers from the Vibrational Spectra of Oligomer Single Crystals.

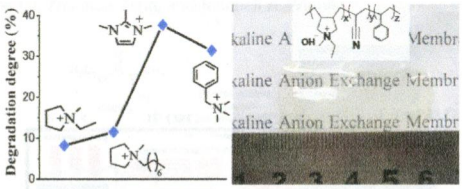
Luigi Brambilla,* Matteo Tommasini, Ioan Botiz, Khosrow Rahimi, John O. Agumba, Natalie Stingelin, and Giuseppe Zerbi*



6740 Ⓢ dx.doi.org/10.1021/ma5015148

Base Stable Pyrrolidinium Cations for Alkaline Anion Exchange Membrane Applications

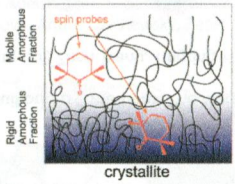
Fenglou Gu, Huilong Dong, Youyong Li, Zhe Sun, and Feng Yan*



6748 dx.doi.org/10.1021/ma501565z

Constrained and Heterogeneous Dynamics in the Mobile and the Rigid Amorphous Fractions of Poly(dimethylsiloxane): A Multifrequency High-Field Electron Paramagnetic Resonance Study

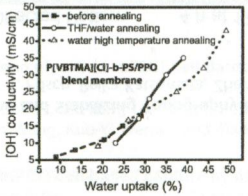
Carlo Andrea Massa, Silvia Pizzanelli, Vasile Bercu, Luca Pardi, and Dino Leporini*



6757 dx.doi.org/10.1021/ma500993s

Poly(2,6-dimethyl-1,4-phenylene oxide) Blended with Poly(vinylbenzyl chloride)-*b*-polystyrene for the Formation of Anion Exchange Membranes

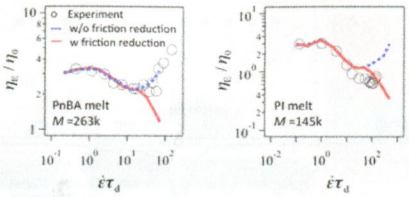
Yifan Li, Aaron C. Jackson, Frederick L. Beyer, and Daniel M. Knauss*



6768 dx.doi.org/10.1021/ma5016165

Test of Orientation/Stretch-Induced Reduction of Friction via Primitive Chain Network Simulations for Polystyrene, Polyisoprene, and Poly(*n*-butyl acrylate)

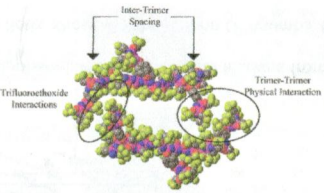
Yuichi Masubuchi,* Yumi Matsumiya, and Hiroshi Watanabe



6776 (S) dx.doi.org/10.1021/ma501927u

An Unusual Polymer Architecture for the Generation of Elastomeric Properties in Fluorinated Polyphosphazenes

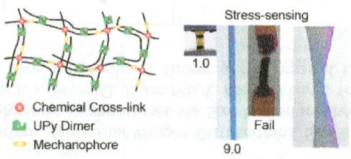
Tomasz Modzelewski and Harry R. Allcock*



6783 (S) dx.doi.org/10.1021/ma500760p

Spiropyran as a Mechanochromic Probe in Dual Cross-Linked Elastomers

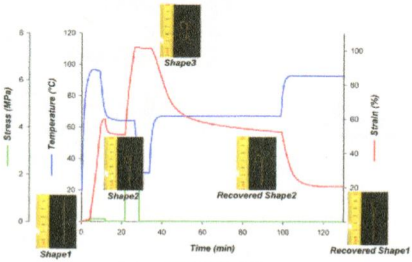
Huan Zhang, Yinjun Chen, Yangju Lin, Xiuli Fang, Yuanze Xu, Yonghong Ruan, and Wengui Weng*



6791 Ⓢ dx.doi.org/10.1021/ma500846x

Designing Multiple-Shape Memory Polymers with Miscible Polymer Blends: Evidence and Origins of a Triple-Shape Memory Effect for Miscible PLLA/PMMA Blends

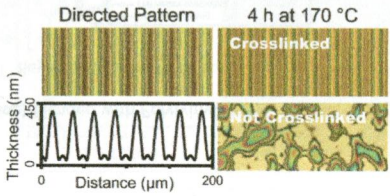
Cédric Samuel,* Sophie Barrau, Jean-Marc Lefebvre, Jean-Marie Raquez, and Philippe Dubois



6804 Ⓢ dx.doi.org/10.1021/ma5010698

A Photochemical Approach to Directing Flow and Stabilizing Topography in Polymer Films

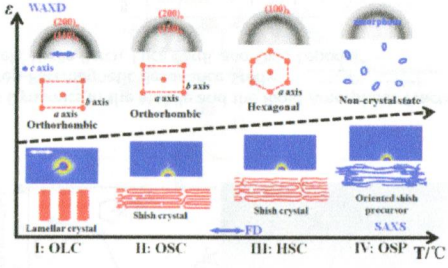
Joshua M. Katzenstein, Chae Bin Kim, Nathan A. Prisco, Reika Katsumata, Zhenpeng Li, Dustin W. Janes, Gregory Blachut, and Christopher J. Ellison*



6813 dx.doi.org/10.1021/ma501482w

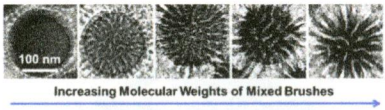
Extension-Induced Nucleation under Near-Equilibrium Conditions: The Mechanism on the Transition from Point Nucleus to Shish

Dong Liu, Nan Tian, Ningdong Huang, Kunpeng Cui, Zhen Wang, Tingting Hu, Haoran Yang, Xiangyang Li, and Liangbin Li*



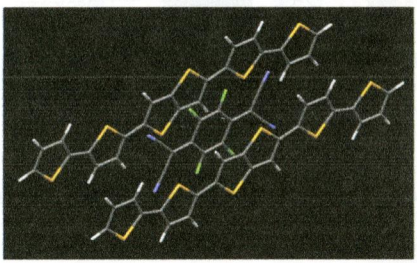
6824 S dx.doi.org/10.1021/ma501474m

Effect of Molecular Weight on Lateral Microphase Separation of Mixed Homopolymer Brushes Grafted on Silica Particles
Chunhui Bao, Saide Tang, Roger A. E. Wright, Ping Tang, Feng Qiu, Lei Zhu,* and Bin Zhao*



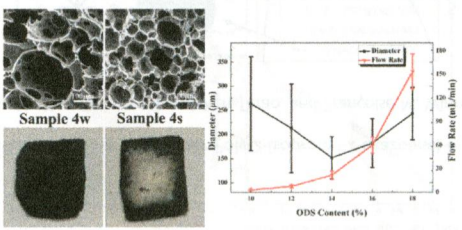
6836 S dx.doi.org/10.1021/ma501547h

Molecular Interactions and Ordering in Electrically Doped Polymers: Blends of PBTTT and F_4TCNQ
Justin E. Cochran, Matthias J. N. Junk, A. M. Glaudell, P. Levi Miller, John S. Cowart, Michael F. Toney, Craig J. Hawker, Bradley F. Chmelka, and Michael L. Chabinyc*



6847 S dx.doi.org/10.1021/ma501253u

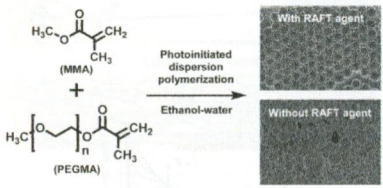
Interconnected Macroporous Polymers Synthesized from Silica Particle Stabilized High Internal Phase Emulsions
Xianhua Zheng, Yi Zhang, Haitao Wang,* and Qiangguo Du



6856 Ⓢ dx.doi.org/10.1021/ma501432s

Synthesis of PMMA Microparticles with a Narrow Size Distribution by Photoinitiated RAFT Dispersion Polymerization with a Macromonomer as the Stabilizer

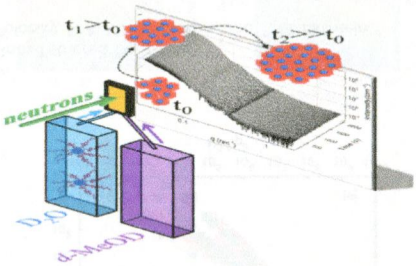
Jianbo Tan, Guangyao Zhao, Yijie Lu, Zhaohua Zeng, and Mitchell A. Winnik*



6867 dx.doi.org/10.1021/ma501434e

Cononsolvency of Water/Methanol Mixtures for PNIPAM and PS-*b*-PNIPAM: Pathway of Aggregate Formation Investigated Using Time-Resolved SANS

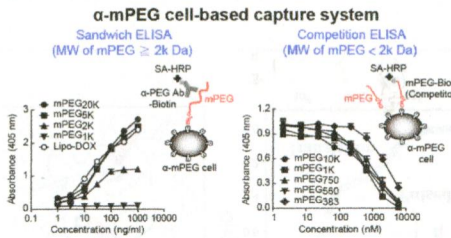
Konstantinos Kyriakos, Martine Philipp, Joseph Adelsberger, Sebastian Jaksch, Anatoly V. Berezkin, Dersy M. Lugo, Walter Richtering, Isabelle Grillo, Anna Miasnikova, André Laschewsky, Peter Müller-Buschbaum, and Christine M. Papadakis*



6880 Ⓢ dx.doi.org/10.1021/ma501156r

Development of an Anti-Methoxy Poly(ethylene glycol) (α-mPEG) Cell-Based Capture System to Measure mPEG and mPEGylated Molecules

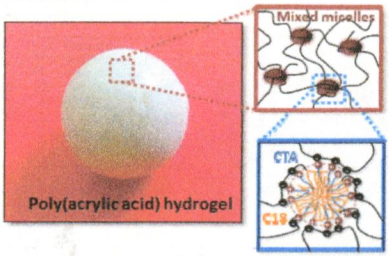
Kuo-Hsiang Chuang, Chien-Han Kao, Steve R. Roffler, Ssu-Jung Lu, Ta-Chun Cheng, Yun-Ming Wang, Chih-Hung Chuang, Yuan-Chin Hsieh, Yeng-Tseng Wang, Jaw-Yuan Wang, Kuo-Yi Weng,* and Tian-Lu Cheng*



6889 S dx.doi.org/10.1021/ma5015116

Self-Healing Poly(acrylic acid) Hydrogels with Shape Memory Behavior of High Mechanical Strength

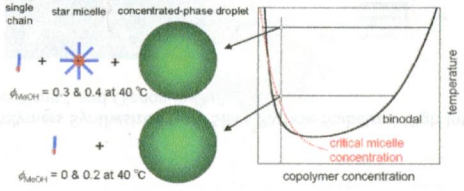
Umit Gulyuz and Oguz Okay*



6900 S dx.doi.org/10.1021/ma501538t

Self-Association of the Thermosensitive Block Copolymer Poly(2-isopropyl-2-oxazoline)-*b*-poly(*N*-isopropylacrylamide) in Water–Methanol Mixtures

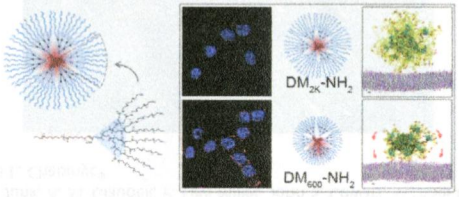
Rintaro Takahashi, Xing-Ping Qiu, Na Xue, Takahiro Sato,* Ken Terao, and Françoise M. Winnik



6911 S dx.doi.org/10.1021/ma501258c

Poly(ethylene glycol) Corona Chain Length Controls End-Group-Dependent Cell Interactions of Dendron Micelles

Hao-jui Hsu, Soumyo Sen, Ryan M. Pearson, Sayam Uddin, Petr Král, and Seungpyo Hong*

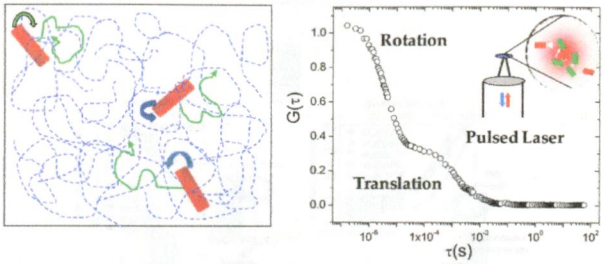


6919 S

dx.doi.org/10.1021/ma5014995

Translational and Rotational Diffusions of Nanorods within Semidilute and Entangled Polymer Solutions

Sharmine Alam and Ashis Mukhopadhyay*

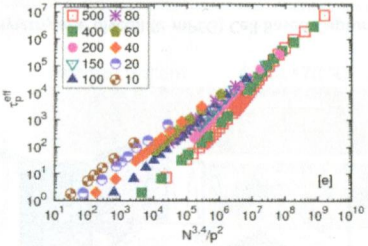


6925

dx.doi.org/10.1021/ma500900b

Rouse Mode Analysis of Chain Relaxation in Homopolymer Melts

Jagannathan T. Kalathi, Sanat K. Kumar,* Michael Rubinstein, and Gary S. Grest

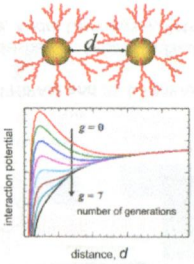


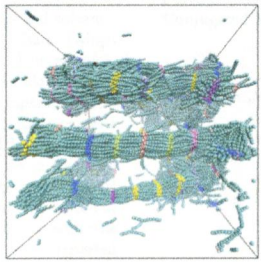
6932

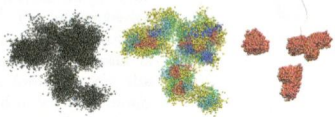
dx.doi.org/10.1021/ma501082p

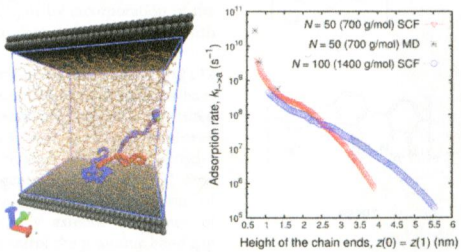
Interactions between Brushes of Root-Tethered Dendrons

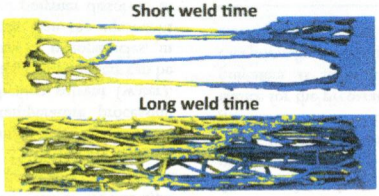
O. V. Borisov,* E. B. Zhulina, A. A. Polotsky, F. A. M. Leermakers, and T. M. Birshtein

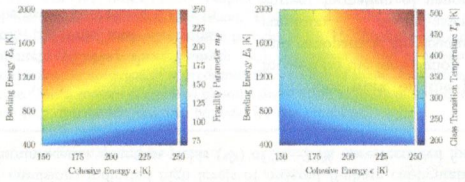












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