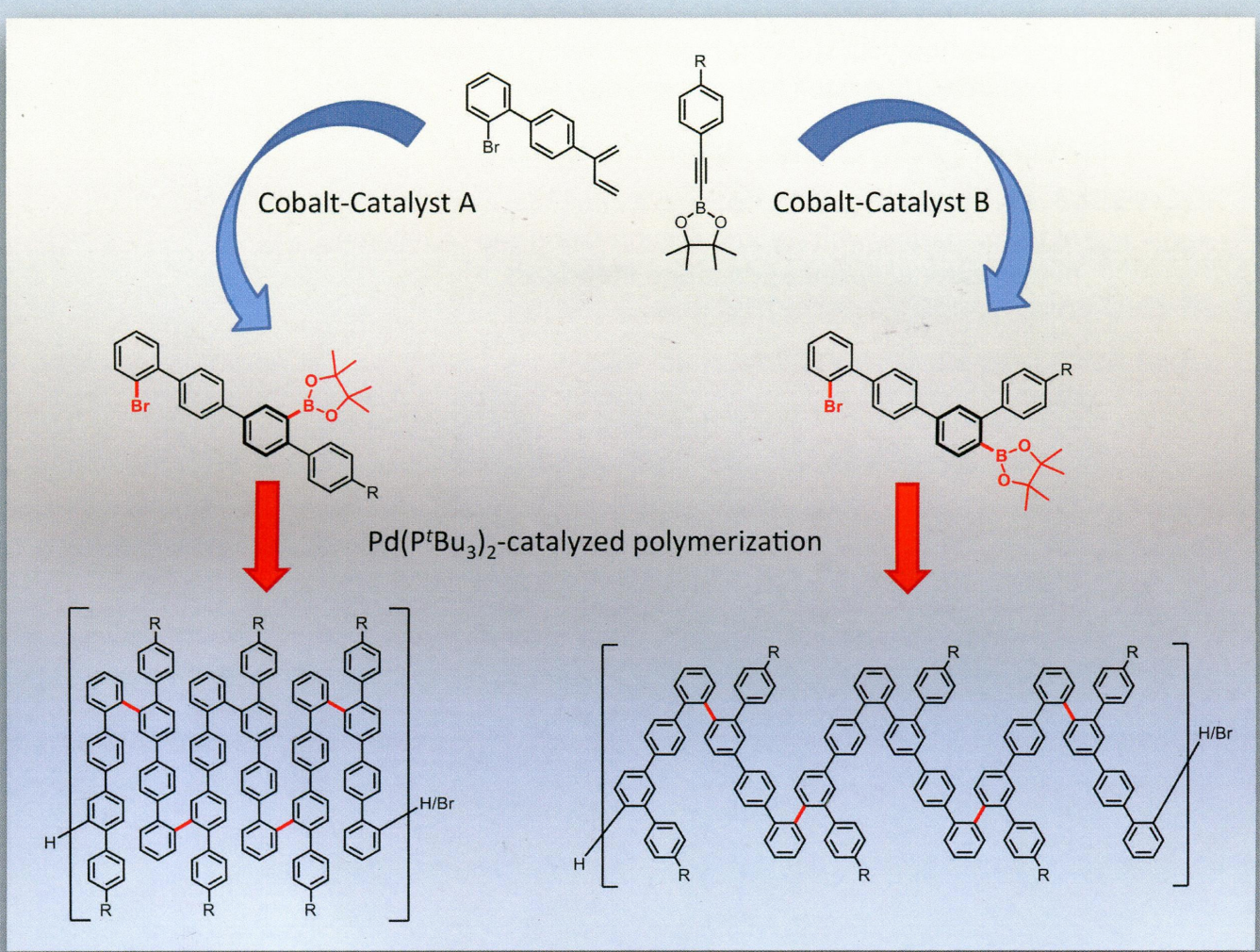
PU
M13/n

September 23, 2014
Volume 47
Number 18

Macromolecules

pubs.acs.org/Macromolecules



ACS Publications
Most Trusted. Most Cited. Most Read.
www.acs.org

Macromolecules

SEPTEMBER 23, 2014

VOLUME 47 ISSUE 18

MAMOBX 47(18) 6145–6530 (2014)

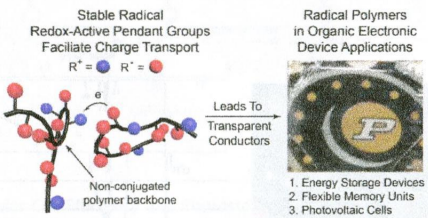
ISSN 0024-9297

Registered in the U.S. Patent and Trademark Office

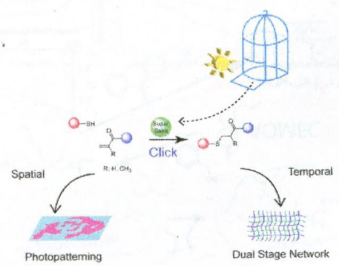
© 2014 by the American Chemical Society

ON THE COVER: The regiodiverse cobalt-catalyzed Diels-Alder reaction was applied to generate complex bifunctional building blocks suitable for Suzuki cross-coupling polymerization. Polycondensation led to high molecular weight kinked poly(phenylene)s as well as *ortho*-poly(phenylene)s which were characterized by NMR, infrared, absorption and photoemission spectroscopy as well as MALDI-TOF mass spectrometry. These novel blue fluorescent polymers can act as potential precursors for the generation of nanomaterials like graphene nanoribbons. See Kuttner, J. R.; Hilt, G. *Macromolecules* **2014**, *47*, 5532−5541.

Perspective



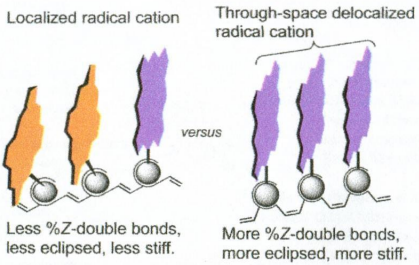
Articles



6166 S dx.doi.org/10.1021/ma5007655

Controlling the Orientation of Pendants in Two-Dimensional Comb-Like Polymers by Varying Stiffness of Polymeric Backbones

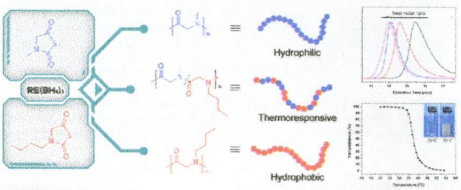
Nai-Ti Lin, Kamani Satyanarayana, Chih-Hsien Chen, Yi-Fang Tsai, Steve Sheng-Fa Yu, Sunney I. Chan, and Tien-Yau Luh*



6173 S dx.doi.org/10.1021/ma501131t

Controlled Polymerization of N-Substituted Glycine *N*-Thiocarboxyanhydrides Initiated by Rare Earth Borohydrides toward Hydrophilic and Hydrophobic Polypeptoids

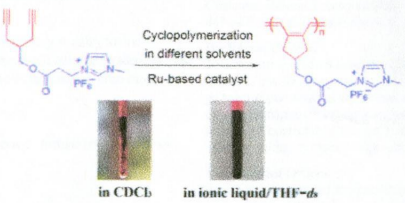
Xinfeng Tao, Yangwei Deng, Zhiquan Shen, and Jun Ling*



6181 S dx.doi.org/10.1021/ma501217b

Metathesis Cyclopolymerization of Imidazolium-Functionalized 1,6-Heptadiyne toward Polyacetylene Ionomer

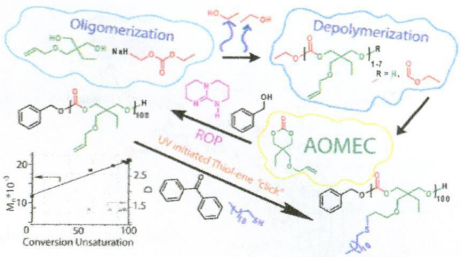
Wei Song, Huijing Han, Xiaojuan Liao, Ruyi Sun, Jianhua Wu, and Meiran Xie*



6189 S dx.doi.org/10.1021/ma5012304

Ring-Closing Depolymerization: A Powerful Tool for Synthesizing the Allyloxy-Functionalized Six-Membered Aliphatic Carbonate Monomer 2-Allyloxymethyl-2-ethyltrimethylene Carbonate

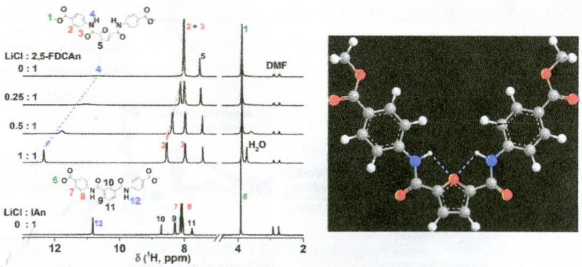
Peter Olsén, Karin Odelius, and Ann-Christine Albertsson*



6196 dx.doi.org/10.1021/ma501310f

Influence of the 2,5-Furandicarboxamide Moiety on Hydrogen Bonding in Aliphatic–Aromatic Poly(ester amide)s

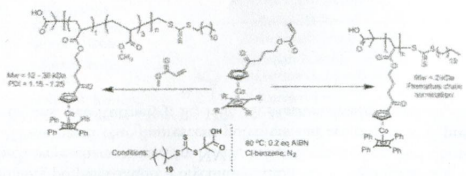
Carolus H. R. M. Wilsens, Yogesh S. Deshmukh, Bart A. J. Noordover, and Sanjay Rastogi*



6207 S dx.doi.org/10.1021/ma501323q

Overcoming a Tight Coil To Give a Random "Co" Polymer Derived from a Mixed Sandwich Cobaltocene

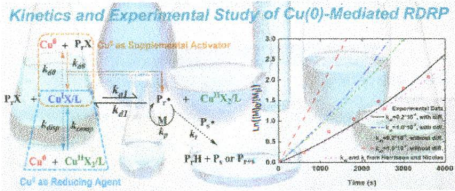
Mahboubeh Hadadpour, Yuqing Liu, Preeti Chadha, and Paul J. Ragogna*



6218 dx.doi.org/10.1021/ma501335j

Copper(0)-Mediated Reversible-Deactivation Radical Polymerization: Kinetics Insight and Experimental Study

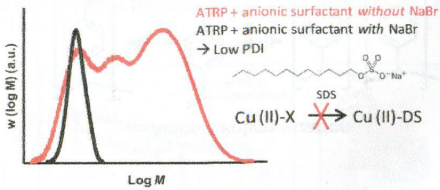
Yin-Ning Zhou and Zheng-Hong Luo*



6230 dx.doi.org/10.1021/ma501379q

Successful Miniemulsion ATRP Using an Anionic Surfactant: Minimization of Deactivator Loss by Addition of a Halide Salt

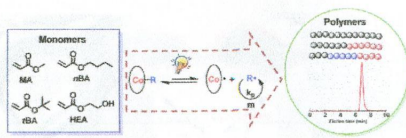
Victoria L. Teo, Brad J. Davis, Nicolay V. Tsarevsky,* and Per B. Zetterlund*



6238 dx.doi.org/10.1021/ma5014385

Visible Light Induced Living/Controlled Radical Polymerization of Acrylates Catalyzed by Cobalt Porphyrins

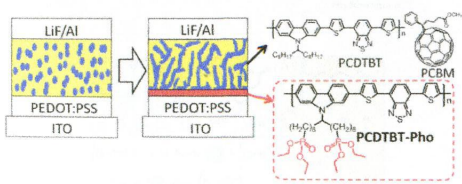
Yaguang Zhao, Mengmeng Yu, Shuailin Zhang, Yuchu Liu, and Xuefeng Fu*



6246 dx.doi.org/10.1021/ma5008754

Phosphonate-Functionalized Donor Polymer as an Underlying Interlayer To Improve Active Layer Morphology in Polymer Solar Cells

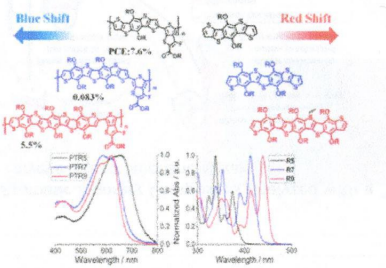
Bin Meng, Yingying Fu, Zhiyuan Xie, Jun Liu,* and Lixiang Wang*



6252 dx.doi.org/10.1021/ma501152v

Roles of Quinoidal Character and Regioregularity in Determining the Optoelectronic and Photovoltaic Properties of Conjugated Copolymers

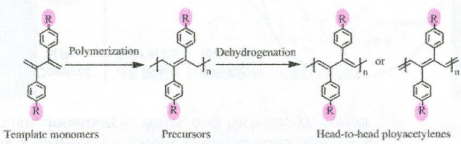
Tianyue Zheng, Luyao Lu, Nicholas E. Jackson, Sylvia J. Lou, Lin X. Chen,* and Luping Yu*



6260 dx.doi.org/10.1021/ma501283b

Regio-Specific Polyacetylenes Synthesized from Anionic Polymerizations of Template Monomers

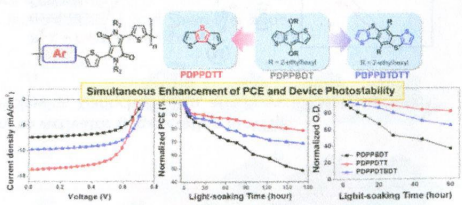
Yang Zhang, Jia Li, Xiaohong Li, and Junpo He*



6270 dx.doi.org/10.1021/ma501300a

Simultaneous Enhancement of Solar Cell Efficiency and Photostability via Chemical Tuning of Electron Donating Units in Diketopyrrolopyrrole-Based Push–Pull Type Polymers

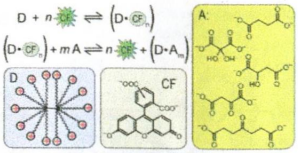
Tae In Ryu, Youngwoon Yoon, Ji-Hoon Kim, Do-Hoon Hwang, Min Jae Ko, Doh-Kwon Lee, Jin Young Kim, Honggon Kim, Nam-Gyu Park,* BongSoo Kim,* and Hae Jung Son*



5281 dx.doi.org/10.1021/ma5014868

ntermolecular Forces Driving Encapsulation of Small Molecules by PAMAM Dendrimers in Water

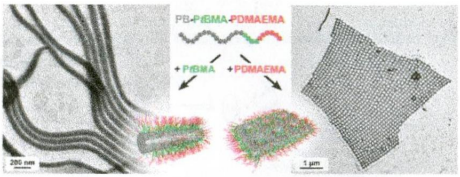
\shley M. Jolly and Marco Bonizzoni*



3289 dx.doi.org/10.1021/ma501003z

lanoporous Sheets and Cylinders via Bulk Templating of Triblock Terpolymer/Homopolymer Blends

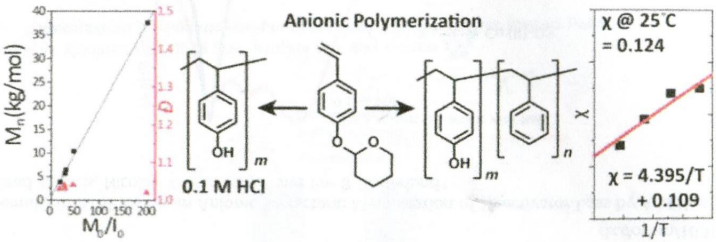
va Betthausen, Martin Dulle, Christoph Hanske, Melanie Müller, Andreas Fery, Stephan Förster, Felix H. Schacher,* and ıxel H. E. Müller*



302 dx.doi.org/10.1021/ma501126t

hase Behavior of Poly(4-hydroxystyrene-*block*-styrene) Synthesized by Living Anionic Polymerization of an Acetal rotected Monomer

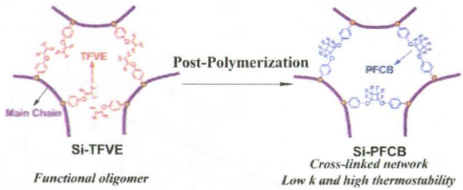
ıaniel P. Sweat, Myungwoong Kim, Adam K. Schmitt, Dominic V. Perroni, Charles G. Fry, Mahesh K. Mahanthappa, and adma Gopalan*



6311 S dx.doi.org/10.1021/ma501263c

Postpolymerization of Functional Organosiloxanes: An Efficient Strategy for Preparation of Low-*k* Material with Enhanced Thermostability and Mechanical Properties

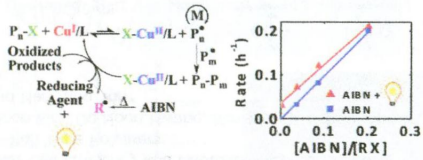
Chao Yuan, Jiajia Wang, Kaikai Jin, Shen Diao, Jing Sun, Jiawei Tong, and Qiang Fang*



6316 S dx.doi.org/10.1021/ma501384q

Contribution of Photochemistry to Activator Regeneration in ATRP

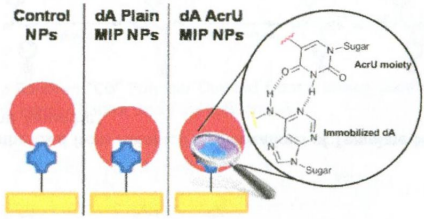
Thomas G. Ribelli, Dominik Konkolewicz, Xiangcheng Pan, and Krzysztof Matyjaszewski*



6322 S dx.doi.org/10.1021/ma501530c

Nucleoside-Tailored Molecularly Imprinted Polymeric Nanoparticles (MIP NPs)

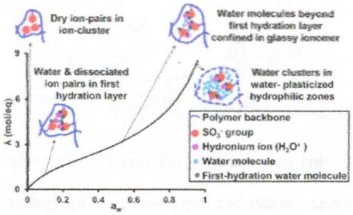
Alessandro Poma,* Heli Brahmbhatt, Jonathan K. Watts, and Nicholas W. Turner



6331 S dx.doi.org/10.1021/ma501097k

Water Sorption Behavior in Different Aromatic Ionomer Composites Analyzed with a "New Dual-Mode Sorption" Model

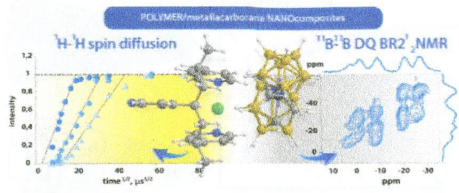
Yongli Li,* Quang T. Nguyen, Kateryna Fatyeyeva, and Stéphane Marais



6343 dx.doi.org/10.1021/ma501117a

Control over the Self-Assembly and Dynamics of Metallacarborane Nanorotors by the Nature of the Polymer Matrix: A Solid-State NMR Study

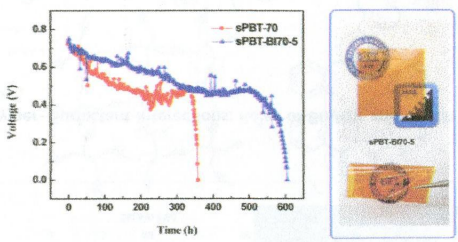
Jiri Brus,* Alexander Zhigunov, Jiří Czernek, Libor Kobera, Mariusz Uchman, and Pavel Matějíček*



6355 dx.doi.org/10.1021/ma501409v

Durable Sulfonated Poly(benzothiazole-*co*-benzimidazole) Proton Exchange Membranes

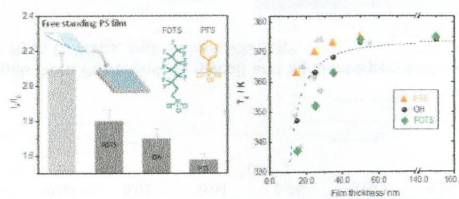
Gang Wang, Kang Hyuck Lee, Won Hyo Lee, Dong Won Shin, Na Rae Kang, Doo Hee Cho, Doo Sung Hwang, Yongbing Zhuang, Young Moo Lee,* and Michael D. Guiver*



6365 dx.doi.org/10.1021/ma500864k

Sensitive Characterization of the Influence of Substrate Interfaces on Supported Thin Films

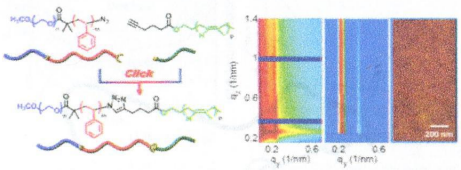
Jie Xu, Lei Ding, Jiao Chen, Siyang Gao, Linling Li, Dongshan Zhou, Xiang Li, and Gi Xue*



6373 Ⓢ dx.doi.org/10.1021/ma501057m

Symmetric Poly(ethylene oxide-*b*-styrene-*b*-isoprene) Triblock Copolymers: Synthesis, Characterization, and Self-Assembly in Bulk and Thin Film

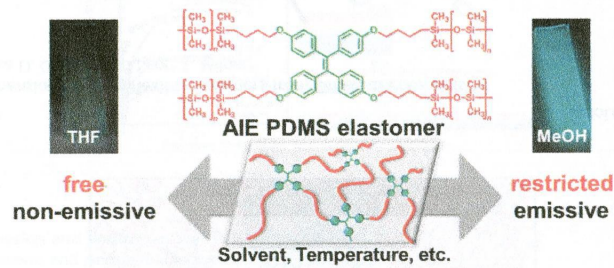
Yali Qiao, Rachel Ferebee, Bongjoon Lee, Indranil Mitra, Nathaniel A. Lynd, Jeffery Hayat, Gila E. Stein,* Michael R. Bockstaller,* and Chuanbing Tang*



6382 Ⓢ dx.doi.org/10.1021/ma501198d

Stimuli-Responsive Fluorescence of AIE Elastomer Based on PDMS and Tetraphenylethene

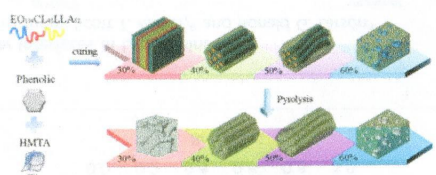
Ryosuke Taniguchi, Taihei Yamada, Kazuki Sada,* and Kenta Kokado*



6389 Ⓢ dx.doi.org/10.1021/ma501246j

Mediated Competitive Hydrogen Bonding Form Mesoporous Phenolic Resins Templated by Poly(ethylene oxide-*b*-ε-caprolactone-*b*-L-lactide) Triblock Copolymers

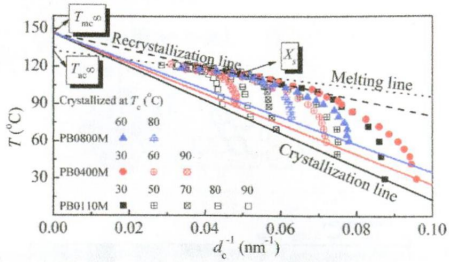
Chu-Chian Liu, Wei-Cheng Chu, Jheng-Guang Li, and Shiao-Wei Kuo*



6401 dx.doi.org/10.1021/ma501272a

Molecular Weight Dependency of Crystallization Line, Recrystallization Line, and Melting Line of Polybutene-1

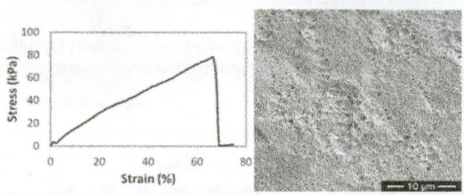
Yaotao Wang, Ying Lu, Zhiyong Jiang, and Yongfeng Men*



6408 S dx.doi.org/10.1021/ma500972y

Robust and Degradable Hydrogels from Poly(ethylene glycol) and Semi-Interpenetrating Collagen

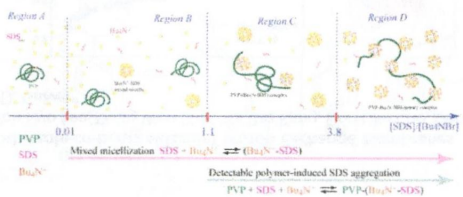
Charles W. Peak, Saumya Nagar, Ryan D. Watts, and Gudrun Schmidt*



6418 S dx.doi.org/10.1021/ma5012232

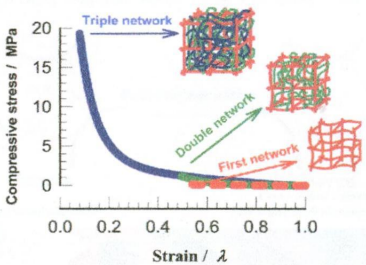
Effects of Organic Salts on Polymer–Surfactant Interactions: Roles of Bu_4NBr and Pr_4NBr in PVP–SDS Complexation

Jia-Hsien Lin and Sheng-Shu Hou*



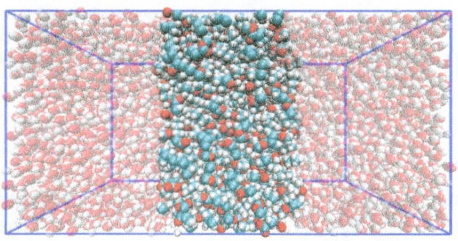
6430 Ⓢ dx.doi.org/10.1021/ma5014176

Nonionic Double and Triple Network Hydrogels of High Mechanical Strength
Aslihan Argun, Volkan Can, Ugur Altun, and Oguz Okay*



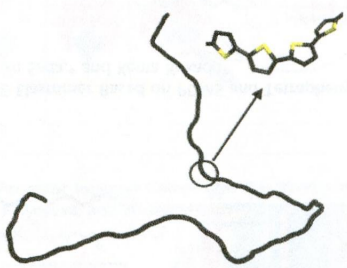
6441 Ⓢ dx.doi.org/10.1021/ma500866f

Molecular View of Polymer/Water Interfaces in Latex Paint
Zifeng Li, Fang Yuan, Kristen A. Fichthorn, Scott T. Milner,* and Ronald G. Larson*



6453 Ⓢ dx.doi.org/10.1021/ma500923r

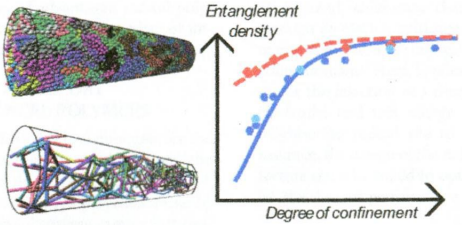
Predicting Chain Dimensions of Semiflexible Polymers from Dihedral Potentials
Wenlin Zhang, Enrique D. Gomez, and Scott T. Milner*



6462 dx.doi.org/10.1021/ma501193f

Entanglement Reduction and Anisotropic Chain and Primitive Path Conformations in Polymer Melts under Thin Film and Cylindrical Confinement

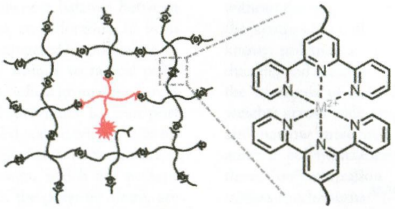
Daniel M. Sussman,* Wei-Shao Tung, Karen I. Winey, Kenneth S. Schweizer, and Robert A. Riggleman*



6473 dx.doi.org/10.1021/ma5013144

Relaxation and Dynamics in Transient Polymer Model Networks

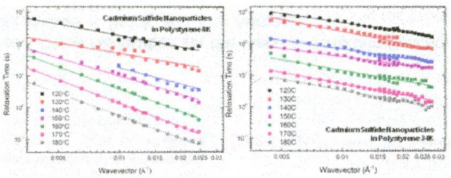
Torsten Rossow, Axel Habicht, and Sebastian Seiffert*



6483 S dx.doi.org/10.1021/ma500956b

Dynamics of Cadmium Sulfide Nanoparticles within Polystyrene Melts

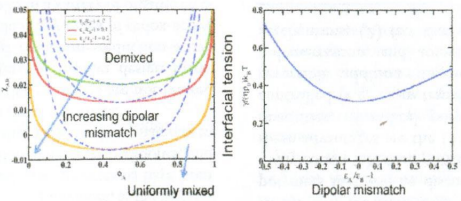
Woo-Sik Jang,* Peter Koo, Kyle Bryson, Suresh Narayanan, Alec Sandy, Thomas P. Russell, and Simon G. Mochrie*



6491 dx.doi.org/10.1021/ma501067r

Enhanced Phase Segregation Induced by Dipolar Interactions in Polymer Blends

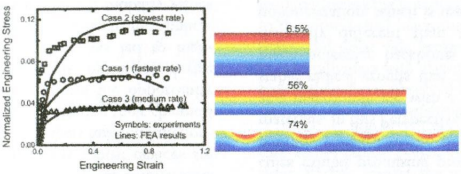
Rajeev Kumar,* Bobby G. Sumpter, and M. Muthukumar



6503 dx.doi.org/10.1021/ma5012599

Surface Ripples of Polymeric Nanofibers under Tension: The Crucial Role of Poisson's Ratio

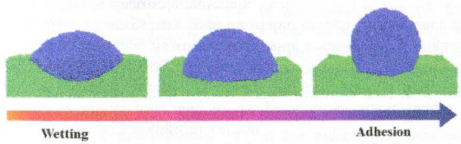
Shan Tang,* Ying Li, Wing Kam Liu, and Xiao Xu Huang



6515 dx.doi.org/10.1021/ma5013978

Elastocapillarity: Adhesion and Wetting in Soft Polymeric Systems

Zhen Cao, Mark J. Stevens, and Andrey V. Dobrynin*

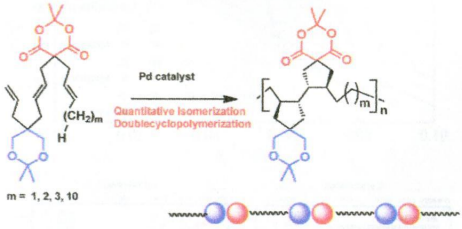


Notes

6522 Ⓢ dx.doi.org/10.1021/ma500871f

Double Cyclopolymerization of Monoterminal Trienes Using Pd Catalysis. Polymers Containing Functionallized Cyclic Groups with a Regulated Sequence

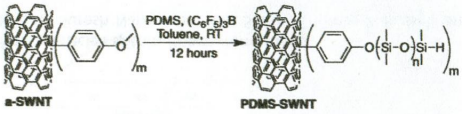
Kenya Motokuni, Daisuke Takeuchi, and Kohtaro Osakada*



6527 Ⓢ dx.doi.org/10.1021/ma501297v

Functionalization of Single-Walled Carbon Nanotubes via the Piers–Rubinsztajn Reaction

Ryan C. Chadwick, John B. Grande, Michael A. Brook, and Alex Adronov*



Ⓢ Supporting Information available via online article