August 12, 2014
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Number 15

Macromolecules

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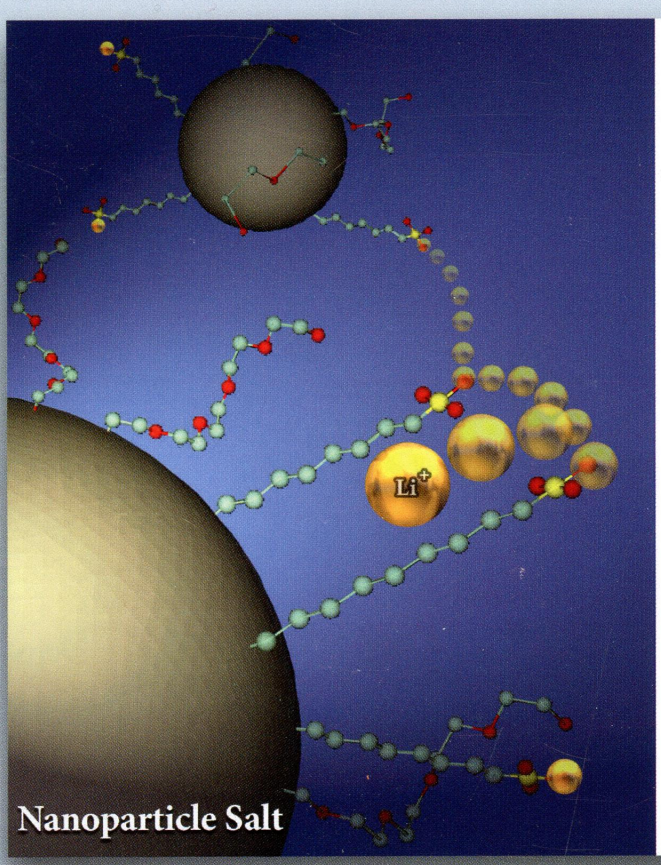

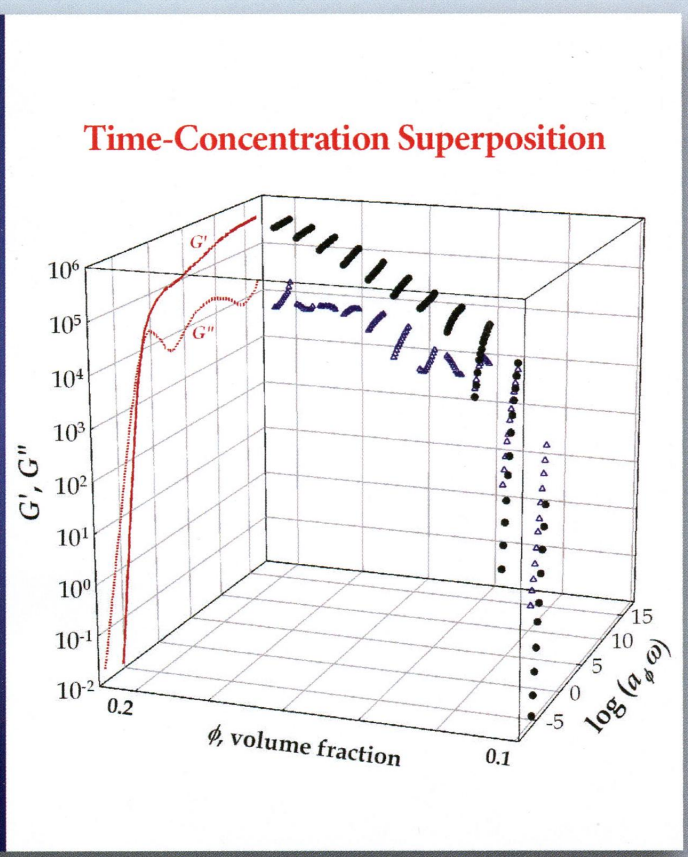

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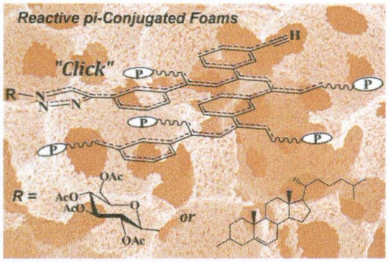
ON THE COVER: Dispersion of cofunctionalized ionic nanoparticles into medium and high dielectric constant liquids yields novel single-ion conducting electrolytes with unique soft glassy rheology, high ionic conductivity, and tunable ion transport features. See *Macromolecules* **2014**, *47* (13), 4479–4492.

Articles

4864 S dx.doi.org/10.1021/ma501142d

Chain-Growth Insertion Polymerization of 1,3-Diethynylbenzene High Internal Phase Emulsions into Reactive π-Conjugated Foams

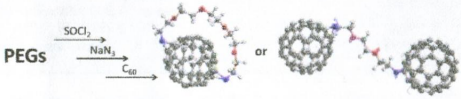
Eva Slováková, Marjan Ješelnik, Ema Žagar, Jiří Zedník, Jan Sedláček,* and Sebastijan Kovačič*



4870 S dx.doi.org/10.1021/ma501200e

Diamond Rings or Dumbbells: Controlling the Structure of Poly(ethylene glycol)–Fullerene [60] Adducts by Varying Linking Chain Length

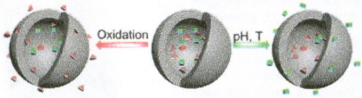
Hin Chun Yau, Mustafa K. Bayazit, Joachim H. G. Steinke, and Milo S. P. Shaffer*



4876 S dx.doi.org/10.1021/ma501233y

Hydrophobic Nanocontainers for Stimulus-Selective Release in Aqueous Environments

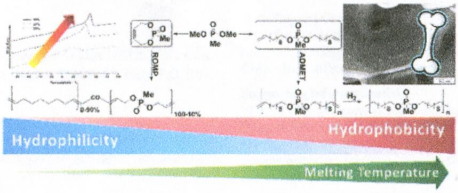
Roland H. Staff, Markus Gallei,* Katharina Landfester, and Daniel Crespy*



4884 S dx.doi.org/10.1021/ma5013286

Poly(phosphonate)s via Olefin Metathesis: Adjusting Hydrophobicity and Morphology

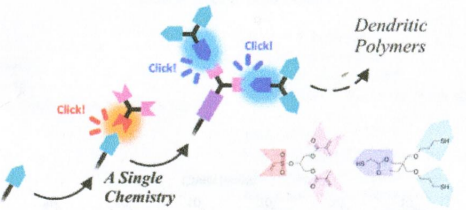
Tobias Steinbach, Evandro M. Alexandrino, Christian Wahlen, Katharina Landfester, and Frederik R. Wurm*



4894 Ⓢ dx.doi.org/10.1021/ma501418r

Facile and Efficient Synthesis of Dendrimers and One-Pot Preparation of Dendritic–Linear Polymer Conjugates via a Single Chemistry: Utilization of Kinetically Selective Thiol–Michael Addition Reactions

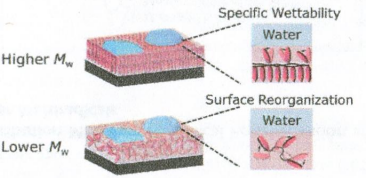
Shunsuke Chatani, Maciej Podgórski, Chen Wang, and Christopher N. Bowman*



4901 dx.doi.org/10.1021/ma5010265

Precise Synthesis and Surface Wettability of a Polymer with Liquid Crystalline Side Chains

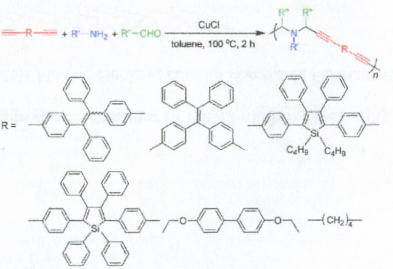
Tomoyasu Hirai,* Shota Osumi, Hiroki Ogawa, Teruaki Hayakawa, Atsushi Takahara, and Keiji Tanaka*



4908 dx.doi.org/10.1021/ma501477w

Copper-Catalyzed Polycoupling of Diynes, Primary Amines, and Aldehydes: A New One-Pot Multicomponent Polymerization Tool to Functional Polymers

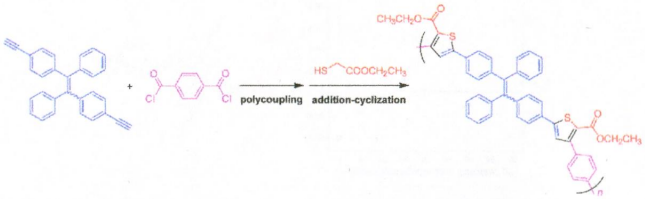
Yajing Liu, Meng Gao, Jacky W. Y. Lam,* Rongrong Hu, and Ben Zhong Tang*



4920 Ⓢ dx.doi.org/10.1021/ma501190g

One-Pot Three-Component Tandem Polymerization Toward Functional Poly(arylene thiophenylene) with Aggregation-Enhanced Emission Characteristics

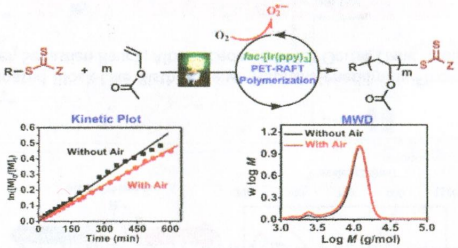
Haiqin Deng, Rongrong Hu, Engui Zhao, Carrie Y. K. Chan, Jacky W. Y. Lam,* and Ben Zhong Tang*



4930 Ⓢ dx.doi.org/10.1021/ma500842u

Photoinduced Electron Transfer–Reversible Addition–Fragmentation Chain Transfer (PET-RAFT) Polymerization of Vinyl Acetate and *N*-Vinylpyrrolidinone: Kinetic and Oxygen Tolerance Study

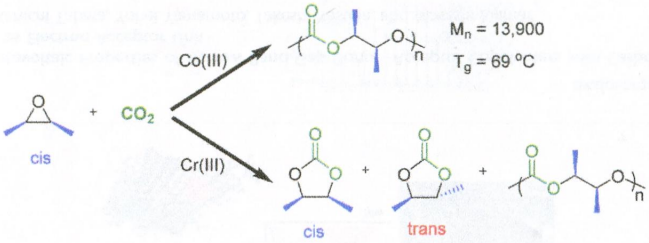
Sivaprakash Shanmugam, Jiangtao Xu,* and Cyrille Boyer*



4943 Ⓢ dx.doi.org/10.1021/ma501004w

Availability of Other Aliphatic Polycarbonates Derived from Geometric Isomers of Butene Oxide and Carbon Dioxide Coupling Reactions

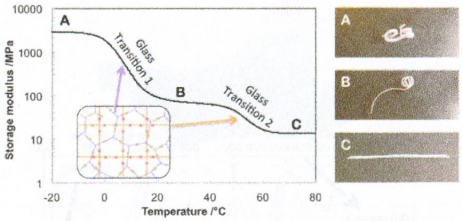
Donald J. Darensbourg* and Wan-Chun Chung



4949 Ⓢ dx.doi.org/10.1021/ma501028a

Triple Shape Memory Materials Incorporating Two Distinct Polymer Networks Formed by Selective Thiol–Michael Addition Reactions

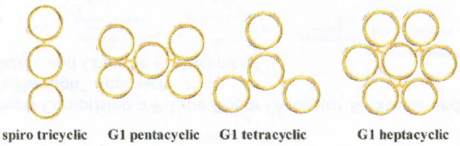
Shunsuke Chatani, Chen Wang, Maciej Podgórski, and Christopher N. Bowman*



4955 Ⓢ dx.doi.org/10.1021/ma501049n

Complex Polymer Topologies Built from Tailored Multifunctional Cyclic Polymers

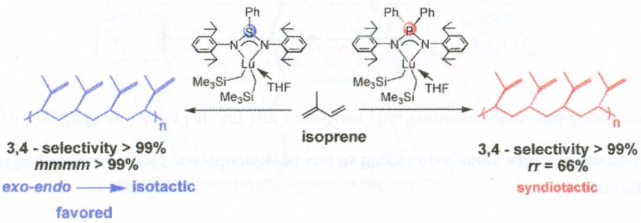
Md. D. Hossain, Zhongfan Jia, and Michael J. Monteiro*



4971 Ⓢ dx.doi.org/10.1021/ma501085c

3,4-Polymerization of Isoprene by Using NSN- and NPN-Ligated Rare Earth Metal Precursors: Switching of Stereo Selectivity and Mechanism

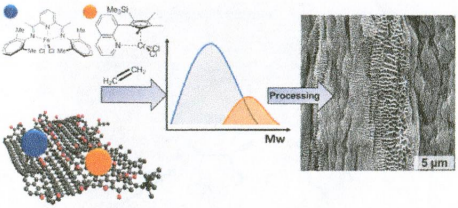
Bo Liu, Lei Li, Guangping Sun, Jingyao Liu, Meiyan Wang,* Shihui Li,* and Dongmei Cui*



4979 Ⓢ dx.doi.org/10.1021/ma500769g

Graphene-Supported Dual-Site Catalysts for Preparing Self-Reinforcing Polyethylene Reactor Blends Containing UHMWPE Nanoplatelets and in Situ UHMWPE Shish-Kebab Nanofibers

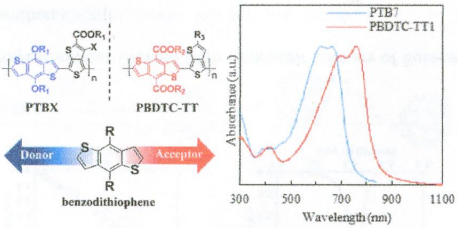
Markus Stürzel, Yi Thomann, Markus Enders, and Rolf Mülhaupt*



4987 Ⓢ dx.doi.org/10.1021/ma501078e

Syntheses and Photovoltaic Properties of Narrow Band Gap Donor−Acceptor Copolymers with Carboxylate-Substituted Benzodithiophene as Electron Acceptor Unit

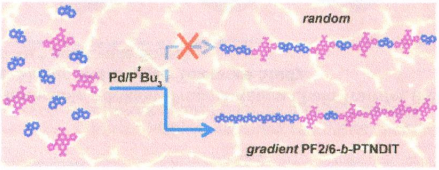
Kosuke Shibasaki, Kenichi Tabata, Yohei Yamamoto, Takeshi Yasuda, and Masashi Kijima*



4994 Ⓢ dx.doi.org/10.1021/ma5006588

One-Pot Synthesis of All-Conjugated Block-Like Bisthiophene−Naphthalenediimide/Fluorene Copolymer

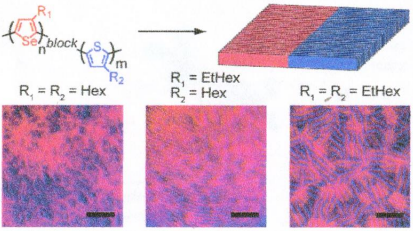
Roman Tkachov, Hartmut Komber, Sebastian Rauch, Albena Lederer, Ulrich Oertel, Liane Häußler, Brigitte Voit, and Anton Kiriy*



5002 Ⓢ dx.doi.org/10.1021/ma501231d

Morphology Control of Selenophene–Thiophene Block Copolymers through Side Chain Engineering

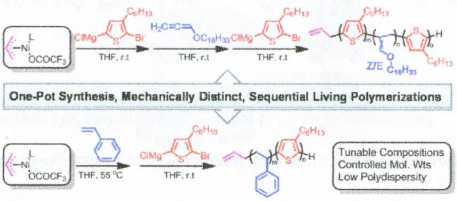
Jon Hollinger and Dwight S. Seferos*



5010 Ⓢ dx.doi.org/10.1021/ma5013539

Facile Preparation of Regioregular Poly(3-hexylthiophene) and Its Block Copolymers with π-Allylnickel Complex as External Initiator

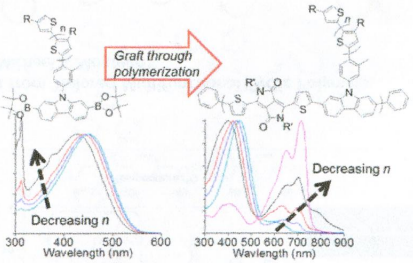
Long-Mei Gao, Yan-Yu Hu, Zhi-Peng Yu, Na Liu, Jun Yin, Yuan-Yuan Zhu, Yunsheng Ding, and Zong-Quan Wu*



5019 Ⓢ dx.doi.org/10.1021/ma5009435

Fully Conjugated Graft Copolymers Comprising a P-Type Donor–Acceptor Backbone and Poly(3-hexylthiophene) Side Chains Synthesized Via a "Graft Through" Approach

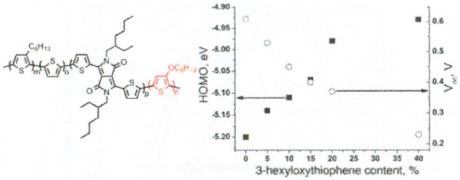
David F. Zeigler, Katherine A. Mazzio, and Christine K. Luscombe*



5029 Ⓢ dx.doi.org/10.1021/ma5012107

Fine Tuning of Polymer Properties by Incorporating Strongly Electron-Donating 3-Hexyloxythiophene Units into Random and Semi-random Copolymers

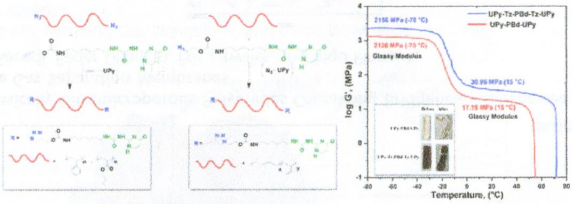
Bing Xu, Sangtaik Noh, and Barry C. Thompson*



5040 Ⓢ dx.doi.org/10.1021/ma5007705

Synthesis and Characterization of Ureidopyrimidone Telechelics by CuAAC "Click" Reaction: Effect of T_g and Polarity

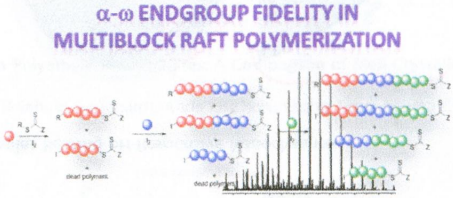
Sachin Bobade, Yangyang Wang, Jimmy Mays, and Durairaj Baskaran*



5051 Ⓢ dx.doi.org/10.1021/ma500803k

Alpha and Omega: Importance of the Nonliving Chain End in RAFT Multiblock Copolymerization

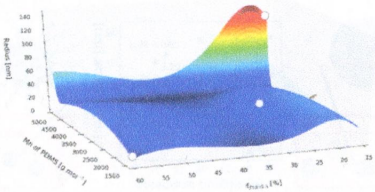
Joke Vandenbergh and Thomas Junkers*



5060 Ⓢ dx.doi.org/10.1021/ma500511r

Effect of Molecular Parameters on the Architecture and Membrane Properties of 3D Assemblies of Amphiphilic Copolymers

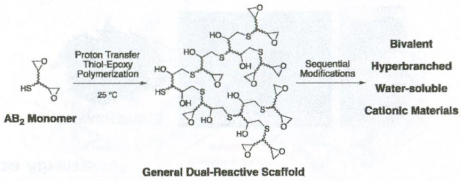
Dalin Wu, Mariana Spulber, Fabian Itel, Mohamed Chami, Thomas Pfohl, Cornelia G. Palivan,* and Wolfgang Meier*



5070 Ⓢ dx.doi.org/10.1021/ma500920z

Dual-Reactive Hyperbranched Polymer Synthesis through Proton Transfer Polymerization of Thiol and Epoxide Groups

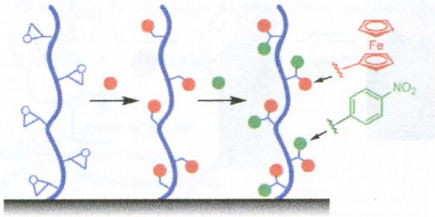
Ikhlas Gadwal, Selmar Binder, Mihaiela C. Stuparu, and Anzar Khan*



5081 Ⓢ dx.doi.org/10.1021/ma500872b

Surface-Attached Poly(glycidyl methacrylate) as a Versatile Platform for Creating Dual-Functional Polymer Brushes

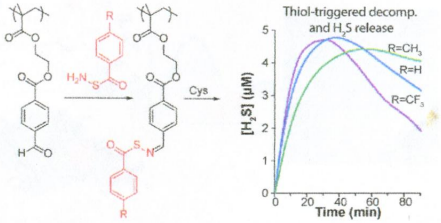
Mie Lillethorup, Kyoko Shimizu, Nicolas Plumeré,* Steen U. Pedersen,* and Kim Daasbjerg*



5089 Ⓢ dx.doi.org/10.1021/ma501044b

Functionalization of Methacrylate Polymers with Thiooximes: A Robust Postpolymerization Modification Reaction and a Method for the Preparation of H_2S-Releasing Polymers

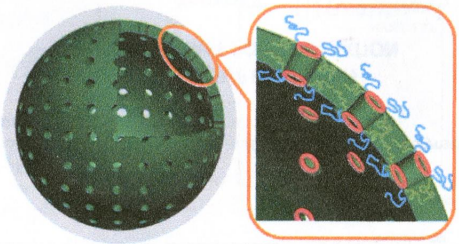
Jeffrey C. Foster and John B. Matson*



5096 Ⓢ dx.doi.org/10.1021/ma501099f

Miktoarm Star Copolymer Capsules Bearing pH-Responsive Nanochannels

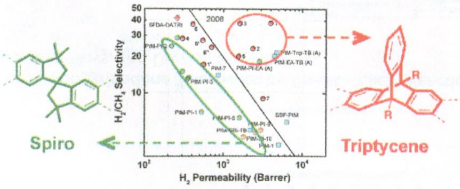
Heng Hu and Guojun Liu*



5104 Ⓢ dx.doi.org/10.1021/ma5009226

Rational Design of Intrinsically Ultramicroporous Polyimides Containing Bridgehead-Substituted Triptycene for Highly Selective and Permeable Gas Separation Membranes

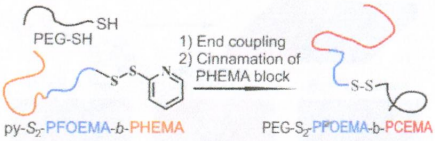
Raja Swaidan, Majed Al-Saeedi, Bader Ghanem, Eric Litwiller, and Ingo Pinnau*



5115 Ⓢ dx.doi.org/10.1021/ma501219h

Triblock Terpolymers Bearing a Redox-Cleavable Junction and a Photo-Cross-Linkable Block

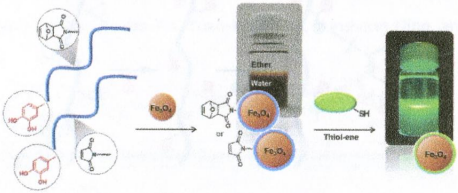
Muhammad Rabnawaz and Guojun Liu*



5124 Ⓢ dx.doi.org/10.1021/ma500693f

Bioinspired Anchorable Thiol-Reactive Polymers: Synthesis and Applications Toward Surface Functionalization of Magnetic Nanoparticles

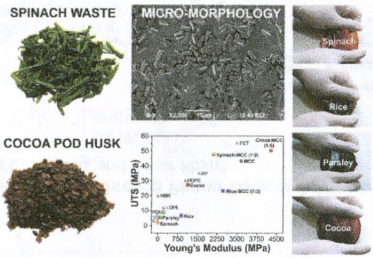
Mehmet Arslan, Tugce Nihal Gevrek, Joel Lyskawa, Sabine Szunerits, Rabah Boukherroub, Rana Sanyal, Patrice Woisel,* and Amitav Sanyal*



5135 Ⓢ dx.doi.org/10.1021/ma5008557

Direct Transformation of Edible Vegetable Waste into Bioplastics

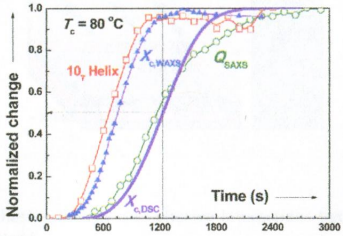
Ilker S. Bayer,* Susana Guzman-Puyol, José Alejandro Heredia-Guerrero, Luca Ceseracciu, Francesca Pignatelli, Roberta Ruffilli, Roberto Cingolani, and Athanassia Athanassiou*



5144 dx.doi.org/10.1021/ma501167e

Intrinsic Metastability of the α' Phase and Its Partial Transformation into α Crystals during Isothermal Cold-Crystallization of Poly(L-lactide)

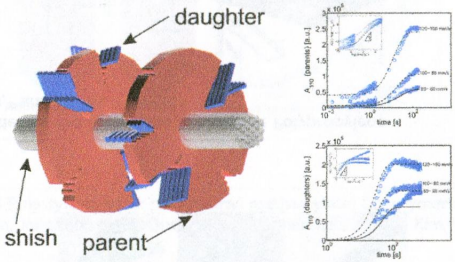
Chia-Ying Chen, Ching-Feng Yang, U-Ser Jeng, and An-Chung Su*



5152 dx.doi.org/10.1021/ma501108c

Multimorphological Crystallization of Shish-Kebab Structures in Isotactic Polypropylene: Quantitative Modeling of Parent–Daughter Crystallization Kinetics

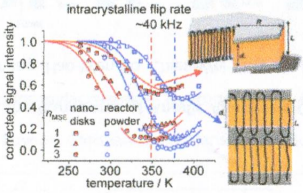
Peter C. Roozemond, Zhe Ma, Kunpeng Cui, Liangbin Li, and Gerrit W. M. Peters*



5163 dx.doi.org/10.1021/ma500691k

Local Flips and Chain Motion in Polyethylene Crystallites: A Comparison of Melt-Crystallized Samples, Reactor Powders, and Nanocrystals

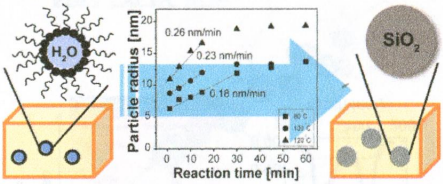
Ruth Bärenwald, Sylvia Goerlitz, Reinhold Godehardt, Anna Osichow, Qiong Tong, Marina Krumova, Stefan Mecking, and Kay Saalwächter*



5174 dx.doi.org/10.1021/ma500594a

***In Situ* Silica Nanoparticle Formation in a Rubber Matrix Monitored via Real-Time SAXS and Solid-State NMR Spectroscopy**

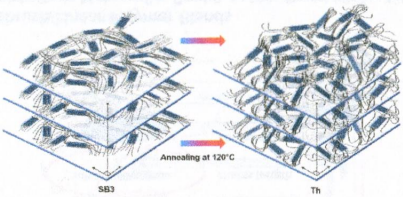
Elena Miloskovska,* Michael Ryan Hansen, Cornelius Friedrich, Denka Hristova-Bogaerds, Martin van Duin, and Gijsbertus de With



5186 Ⓢ dx.doi.org/10.1021/ma500839p

Structural Dependence of the Molecular Mobility in the Amorphous Fractions of Polylactide

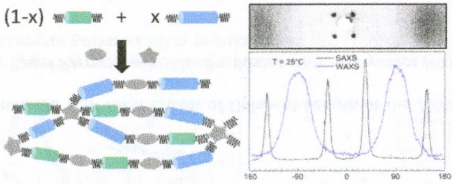
Nicolas Delpouve,* Laurent Delbreilh, Grégory Stoclet, Allisson Saiter, and Eric Dargent



5198 Ⓢ dx.doi.org/10.1021/ma501164u

Mesomorphism and Shape-Memory Behavior of Main-Chain Liquid-Crystalline Co-Elastomers: Modulation by the Chemical Composition

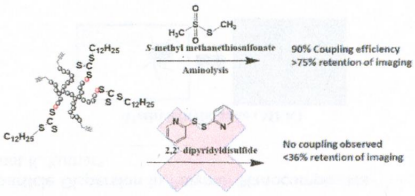
Alfonso Ramon García-Márquez, Benoît Heinrich, Nicolas Beyer, Daniel Guillon, and Bertrand Donnio*



5211 Ⓢ dx.doi.org/10.1021/ma501196h

PEG-Based Hyperbranched Polymer Theranostics: Optimizing Chemistries for Improved Bioconjugation

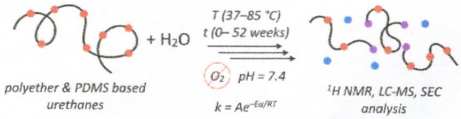
Aditya Ardana, Andrew K Whittaker, and Kristofer J. Thurecht*



5220 Ⓢ dx.doi.org/10.1021/ma500904d

Polyether Urethane Hydrolytic Stability after Exposure to Deoxygenated Water

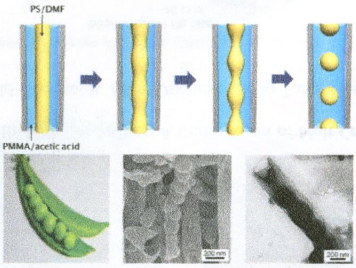
Kimberly A. Chaffin, Xiangji Chen, Lori McNamara, Frank S. Bates, and Marc A. Hillmyer*



5227 Ⓢ dx.doi.org/10.1021/ma500568j

Fabrication of Polymer Nanopeapods in the Nanopores of Anodic Aluminum Oxide Templates Using a Double-Solution Wetting Method

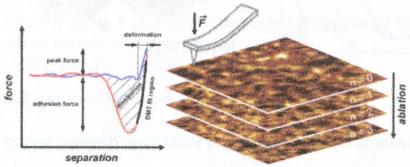
Jiun-Tai Chen,* Tzu-Hui Wei, Chun-Wei Chang, Hao-Wen Ko, Chien-Wei Chu, Mu-Huan Chi, and Chia-Chan Tsai



5236 Ⓢ dx.doi.org/10.1021/ma500578e

Surface versus Volume Properties on the Nanoscale: Elastomeric Polypropylene

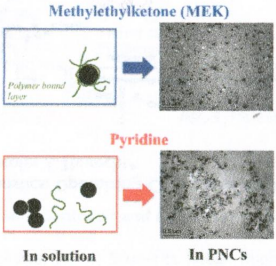
Agnieszka Voss, Robert W. Stark,* and Christian Dietz*



5246 Ⓢ dx.doi.org/10.1021/ma500619g

Role of Casting Solvent on Nanoparticle Dispersion in Polymer Nanocomposites

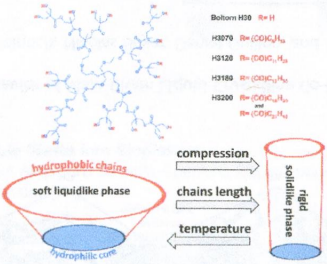
Nicolas Jouault, Dan Zhao, and Sanat K. Kumar*



5256 Ⓢ dx.doi.org/10.1021/ma500941c

Hyperbranched Polyesters Terminated with Alkyl Chains of Different Length at the Air/Water Interface and on Solid Substrates

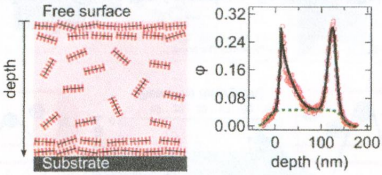
Anna Brzozowska, Jan Paczesny, Paweł Parzuchowski, Monika Kusznerczuk, Kostyantyn Nikiforov, Gabriel Rokicki, and Jacek Gregorowicz*



5269 Ⓢ dx.doi.org/10.1021/ma501070w

Thin Film Phase Behavior of Bottlebrush/Linear Polymer Blends

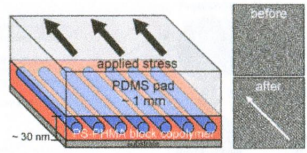
Indranil Mitra, Xianyu Li, Stacy L. Pesek, Boris Makarenko, Brad S. Lokitz, David Uhrig, John F. Ankner, Rafael Verduzco,* and Gila E. Stein*



5277 Ⓢ dx.doi.org/10.1021/ma5012705

Cylinder Orientation and Shear Alignment in Thin Films of Polystyrene–Poly(*n*-hexyl methacrylate) Diblock Copolymers

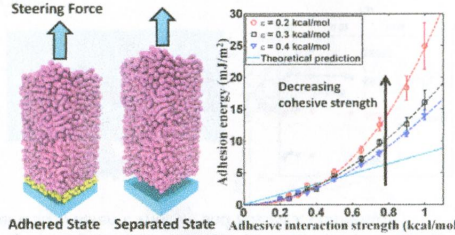
Raleigh L. Davis, Paul M. Chaikin, and Richard A. Register*



5286 dx.doi.org/10.1021/ma5006974

Dependence of Polymer Thin Film Adhesion Energy on Cohesive Interactions between Chains

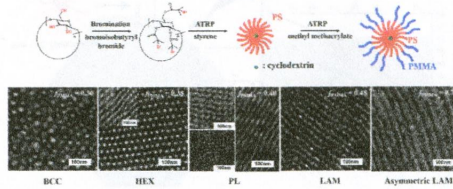
Wenjie Xia, David D. Hsu, and Sinan Keten*



5295 Ⓢ dx.doi.org/10.1021/ma500584x

Phase Behavior of Star-Shaped Polystyrene-*block*-poly(methyl methacrylate) Copolymers

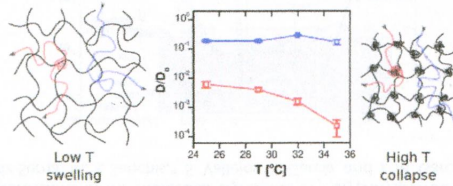
Sangshin Jang, Hong Chul Moon, Jongheon Kwak, Dusik Bae, Youngmin Lee, Jin Kon Kim,* and Won Bo Lee



5303 Ⓢ dx.doi.org/10.1021/ma500928p

Dynamics in Stimuli-Responsive Poly(*N*-isopropylacrylamide) Hydrogel Layers As Revealed by Fluorescence Correlation Spectroscopy

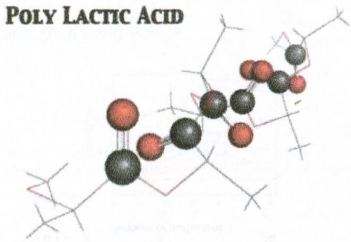
Apostolos Vagias, Peter Košovan, Kaloian Koynov, Christian Holm, Hans-Jürgen Butt, and George Fytas*



5313 S dx.doi.org/10.1021/ma501020s

In Depth Study on Solution-State Structure of Poly(lactic acid) by Vibrational Circular Dichroism

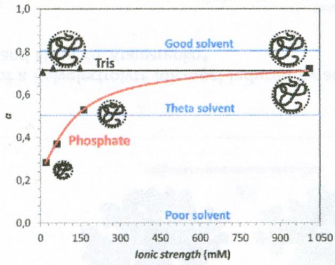
Takahiro Hongen, Tohru Taniguchi,* Shintaro Nomura, Jun-ichi Kadokawa, and Kenji Monde*



5320 S dx.doi.org/10.1021/ma501058v

Investigating the Influence of Phosphate Ions on Poly(L-lysine) Conformations by Taylor Dispersion Analysis

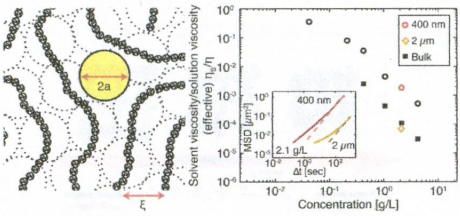
Xiaoyun Jin, Laurent Leclercq, Nicolas Sisavath, and Hervé Cottet*



5328 S dx.doi.org/10.1021/ma501248u

Mobility of Nanoparticles in Semidilute Polyelectrolyte Solutions

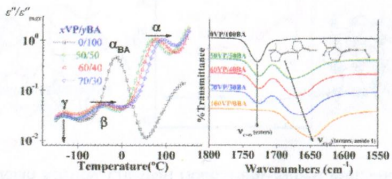
Firoozeh Babaye Khorasani, Ryan Poling-Skutvik, Ramanan Krishnamoorti,* and Jacinta C. Conrad*



5334 dx.doi.org/10.1021/ma500800a

Effect of the Dipole–Dipole Interactions in the Molecular Dynamics of Poly(vinylpyrrolidone)-Based Copolymers

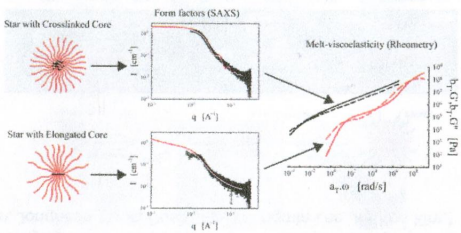
B. Redondo-Foj, M. Carsí, P. Ortiz-Serna, M. J. Sanchis,* S. Vallejos, F. García, and J. M. García



5347 dx.doi.org/10.1021/ma5008336

Effects of Core Microstructure on Structure and Dynamics of Star Polymer Melts: From Polymeric to Colloidal Response

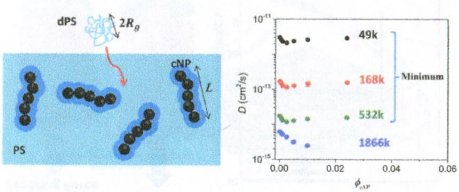
Frank Snijkers, Hong Y. Cho, Alper Nese, Krzysztof Matyjaszewski, Wim Pyckhout-Hintzen, and Dimitris Vlassopoulos*



5357 dx.doi.org/10.1021/ma501113c

Macromolecular Diffusion through a Polymer Matrix with Polymer-Grafted Chained Nanoparticles

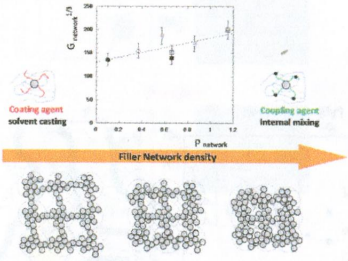
Chia-Chun Lin, Kohji Ohno, Nigel Clarke, Karen I. Winey,* and Russell J. Composto*



5365 dx.doi.org/10.1021/ma500582p

Nanofiller Structure and Reinforcement in Model Silica/Rubber Composites: A Quantitative Correlation Driven by Interfacial Agents

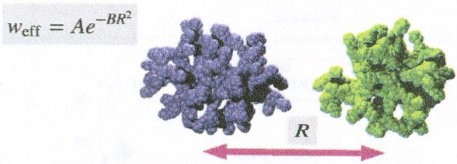
Adrien Bouty, Laurent Petitjean, Christophe Degrandcourt, Jeremie Gummel, Paweł Kwaśniewski, Florian Meneau, François Boué, Marc Couty, and Jacques Jestin*



5379 dx.doi.org/10.1021/ma501127f

Binary Interactions between Dendrimer Molecules. A Simulation Study

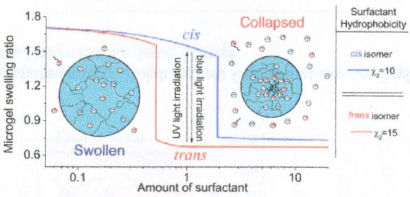
Ana M. Rubio, Carl McBride, and Juan J. Freire*



5388 dx.doi.org/10.1021/ma500637d

Theory of Collapse and Overcharging of a Polyelectrolyte Microgel Induced by an Oppositely Charged Surfactant

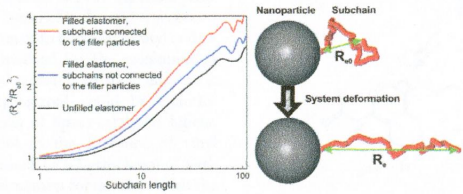
Artem M. Rumyantsev, Svetlana Santer, and Elena Yu. Kramarenko*



5400 dx.doi.org/10.1021/ma500947g

Study of the Mechanisms of Filler Reinforcement in Elastomer Nanocomposites

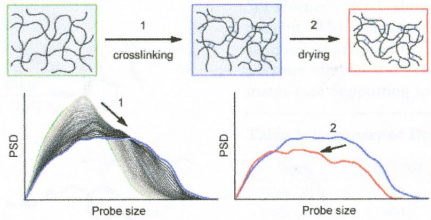
Alexey A. Gavrilov,* Alexander V. Chertovich, Pavel G. Khalatur, and Alexei R. Khokhlov



5409 (S) dx.doi.org/10.1021/ma500579x

Formation of Microporosity in Hyper-Cross-Linked Polymers

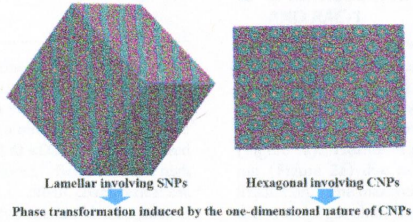
Lauren J. Abbott and Coray M. Colina*



5416 dx.doi.org/10.1021/ma500690g

Mesoscale Simulations of Cylindrical Nanoparticle-Driven Assembly of Diblock Copolymers in Concentrated Solutions

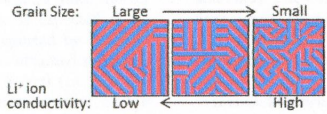
Zunmin Zhang, Ting Li, and Erik Nies*



5424 (S) dx.doi.org/10.1021/ma501202c

Effect of Grain Size on the Ionic Conductivity of a Block Copolymer Electrolyte

Mahati Chintapalli, X. Chelsea Chen, Jacob L. Thelen, Alexander A. Teran, Xin Wang, Bruce A. Garetz, and Nitash P. Balsara*

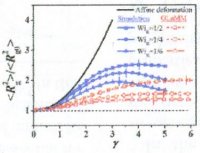


Notes

5432 dx.doi.org/10.1021/ma500131f

Coupled Effect of Orientation, Stretching and Retraction on the Dimension of Entangled Polymer Chains during Startup Shear

Yuyuan Lu, Lijia An,* Shi-Qing Wang,* and Zhen-Gang Wang*



Additions and Corrections

5436 dx.doi.org/10.1021/ma501363g

Correction to Controlled RAFT Polymerization and Zinc Binding Performance of Catechol-Inspired Homopolymers

Anna Isakova, Paul D. Topham,* and Andrew J. Sutherland

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