

14. MRSEC-SUPPORTED PUBLICATIONS AND PATENTS (March 1, 2013 – February 28, 2014)

IRG-1 ENGINEERED MULTIBLOCK POLYMERS

IRG-1 Publications resulting from PRIMARY MRSEC Support

Declet-Perez, C.; Francis, L. F.; Bates, F. S. *Cavitation in Block Copolymer Modified Epoxy Revealed by In Situ Small-Angle X-Ray Scattering*. ACS Macro Letters, **2013**, 2, 939-943. DOI: 10.1021/mz4004419.

Petersen, M. A.; Hillmyer, M. A.; Kokkoli, E. *Bioresorbable Polymersomes for Targeted Delivery of Cisplatin*. Bioconjug. Chem., **2013**, 24, 533-543. DOI: 10.1021/bc3003259.

Koonar, I.; Zhou, C.; Hillmyer, M. A.; Lodge, T. P.; Siegel, R. A. *ABC Triblock Terpolymers Exhibiting Both Temperature- and pH-Sensitive Micellar Aggregation and Gelation in Aqueous Solution*. Langmuir, **2012**, 28, 17785-17794. DOI: 10.1021/la303712b.

Kim, J. C.; Seo, M.; Hillmyer, M. A.; Francis, L. F. *Magnetic Microrheology of Block Copolymer Solutions*. ACS Appl. Mater. Interfaces, **2013**, 2, 11877-11883 DOI: 10.1021/am403569f.

Moughton, A. O.; Sagawa, T.; Gramlich, W. M.; Seo, M.; Lodge, T. P.; Hillmyer, M. A. *Synthesis of block polymer miktobrushes*. Polym. Chem., **2013**, 4, 166-173. DOI: 10.1039/c2py20656k.

Hoarfrost, M. L.; He, Y.; Lodge, T. P. *Lower Critical Solution Temperature Phase Behavior of Poly(*n*-butyl methacrylate) in Ionic Liquid Mixtures*. Macromolecules, **2013**, 46, 9464-9474. DOI: 10.1021/ma401450w

Hoarfrost, M. L.; Lodge, T. P. *Effects of Solvent Quality and Degree of Polymerization on the Critical Micelle Temperature of Poly(ethylene oxide-*b*-*n*-butyl methacrylate) in Ionic Liquids*. Macromolecules, **2014**, 47, 1455-1461. DOI: 10.1021/ma402598r

IRG-1 Publications resulting from PARTIAL MRSEC Support

Lee, I.; Panthani, T. R.; Bates, F. S. *Sustainable Poly(lactide-*b*-butadiene) Multiblock Copolymers with Enhanced Mechanical Properties*. Macromolecules, **2013**, 46, 7387-7398. DOI: 10.1021/ma401508b.

Gu, Y.; Zhang, S.; Martinetti, L.; Lee, K. H.; McIntosh, L. D.; Frisbie, C. D.; Lodge, T. P. *High Toughness, High Conductivity Ion Gels by Sequential Triblock Copolymer Self-Assembly and Chemical Cross-Linking*. J. Am. Chem. Soc., **2013**, 135, 9652-9655. DOI: 10.1021/ja4051394. (Cross-Referenced with IRG-2)

Lee, K. H.; Zhang, S.; Gu, Y.; Lodge, T. P.; Frisbie, C. D. *Transfer Printing of Thermoreversible Ion Gels for Flexible Electronics*. ACS Appl. Mater. Interfaces, **2013**, 5, 9522-9527. DOI: 10.1021/am402200n. (Cross-Referenced with IRG-2)

Xu, Y.; Thurber, C. M.; Lodge, T. P.; Hillmyer, M. A. *Synthesis and Remarkable Efficacy of Model Polyethylene-graft-poly(methyl methacrylate) Copolymers as Compatibilizers in Polyethylene/Poly(methyl methacrylate) Blends*. Macromolecules, **2012**, 45, 9604-9610. DOI: 10.1021/ma302187b.

Kim, S. H.; Hong, K.; Xie, W.; Lee, K. H.; Zhang, S.; Lodge, T. P.; Frisbie, C. D. *Electrolyte-Gated Transistors for Organic and Printed Electronics*. *Adv. Mater.*, **2013**, *25*, 1822-1846. DOI: 10.1002/adma.201202790. (Cross-Referenced with IRG-2)

IRG-2 ORGANIC OPTOELECTRONIC INTERFACES

IRG-2 Publications resulting from PRIMARY MRSEC Support

Coropceanu, V.; Li, H.; Winget, P.; Zhu, L.; Brédas, J. *Electronic-Structure Theory of Organic Semiconductors: Charge-Transport Parameters and Metal/Organic Interfaces*. *Annu. Rev. Mater. Res.*, Vol 43, **2013**, *43*, 63-87. DOI: 10.1146/annurev-matsci-071312-121630.

Li, Y.; Coropceanu, V.; Brédas, J. *Nonlocal electron-phonon coupling in organic semiconductor crystals: The role of acoustic lattice vibrations*. *J. Chem. Phys.*, **2013**, *138*, 204713. DOI: 10.1063/1.4807886.

da Silva Filho, D. A.; Coropceanu, V.; Gruhn, N. E.; de Oliveira Neto, P. H.; Brédas, J. *Intramolecular reorganization energy in zinc phthalocyanine and its fluorinated derivatives: a joint experimental and theoretical study*. *Chem. Commun.*, **2013**, *49*, 6069-6071. DOI: 10.1039/c3cc42003e.

McGarry, K. A.; Xie, W.; Sutton, C.; Risko, C.; Wu, Y.; Young, V. G., Jr.; Brédas, J.; Frisbie, C. D.; Douglas, C. J. *Rubrene-Based Single-Crystal Organic Semiconductors: Synthesis, Electronic Structure, and Charge-Transport Properties*. *Chem. Mater.*, **2013**, *25*, 2254-2263. DOI: 10.1021/cm400736s.

Sutton, C.; Sears, J. S.; Coropceanu, V.; Brédas, J. *Understanding the Density Functional Dependence of DFT-Calculated Electronic Couplings in Organic Semiconductors*. *J. Phys. Chem. Lett.*, **2013**, *4*, 919-924. DOI: 10.1021/jz3021292.

Mullenbach, T. K.; McGarry, K. A.; Luhman, W. A.; Douglas, C. J.; Holmes, R. J. *Connecting Molecular Structure and Exciton Diffusion Length in Rubrene Derivatives*. *Adv. Mater.*, **2013**, *25*, 3689-3693. DOI: 10.1002/adma.201300641.

Xie, W.; Prabhumirashi, P. L.; Nakayama, Y.; McGarry, K. A.; Geier, M. L.; Uragami, Y.; Mase, K.; Douglas, C. J.; Ishii, H.; Hersam, M. C.; Frisbie, C. D. *Utilizing Carbon Nanotube Electrodes to Improve Charge Injection and Transport in Bis(trifluoromethyl)-dimethyl-rubrene Ambipolar Single Crystal Transistors*. *ACS Nano*, **2013**, *7*, 10245-10256. DOI: 10.1021/nn4045694.

Healy, A. T.; Boudouris, B. W.; Frisbie, C. D.; Hillmyer, M. A.; Blank, D. A. *Intramolecular Exciton Diffusion in Poly(3-hexylthiophene)*. *J. Phys. Chem. Lett.*, **2013**, *4*, 3445-3449. DOI: 10.1021/jz401694j. (Cross-Referenced with IRG-1)

Kang, M. S.; Frisbie, C. D. *A Pedagogical Perspective on Ambipolar FETs*. *Chemphyschem*, **2013**, *14*, 1547-1552. DOI: 10.1002/cphc.201300014.

Liu, F.; Xie, W.; Shi, S.; Frisbie, C. D.; Ruden, P. P. *Coupling of channel conductance and gate-to-channel capacitance in electric double layer transistors*. *Appl. Phys. Lett.*, **2013**, *103*, 193304. DOI: <http://dx.doi.org/10.1063/1.4829139>.

Xie, W.; Frisbie, C. D. *Electrolyte gated single-crystal organic transistors to examine transport in the high carrier density regime*. *MRS Bull.*, **2013**, *38*, 43-50. DOI: 10.1557/mrs.2012.310.

Xie, W.; Willa, K.; Wu, Y.; Haeusermann, R.; Takimiya, K.; Batlogg, B.; Frisbie, C. D. *Temperature-Independent Transport in High-Mobility Dinaphtho-Thieno-Thiophene (DNNT) Single Crystal Transistors*. *Adv. Mater.*, **2013**, *25*, 3478-3484. DOI: 10.1002/adma.201300886.

Erickson, N. C.; **Holmes, R. J.** *Investigating the Role of Emissive Layer Architecture on the Exciton Recombination Zone in Organic Light-Emitting Devices*. *Adv. Funct. Mater.*, **2013**, *23*, 5190-5198. DOI: 10.1002/adfm.201300101.

Pandey, R.; Kerner, R. A.; Menke, S. M.; Holst, J.; Josyula, K. V. B.; **Holmes, R. J.** *Tin naphthalocyanine complexes for infrared absorption in organic photovoltaic cells*. *Org. Electron.*, **2013**, *14*, 804-808. DOI: 10.1016/j.orgel.2012.12.032.

Zou, Y.; **Holmes, R. J.** *Influence of a MoO_x interlayer on the open-circuit voltage in organic photovoltaic cells*. *Appl. Phys. Lett.*, **2013**, *103*, 053302. DOI: 10.1063/1.4817075.

Liu, F.; Crone, B. K.; **Ruden, P. P.**; Smith, D. L. *Control of interface microscopic processes in organic bilayer structures and their effect on photovoltaic device performance*. *J. Appl. Phys.*, **2013**, *113*, 044516. DOI: 10.1063/1.4789622.

Liu, F.; Crone, B. K.; **Ruden, P. P.**; Smith, D. L. *Improving the Efficiency of Organic Photovoltaic Devices through Interface Engineering*. *MRS Online Proceedings Library*, **2013**, *1537*, DOI: 10.1557/opl.2013.911.

Liu, F.; Liu, Y.; Hu, J.; Smith, D. L.; **Ruden, P. P.** *Rashba-induced spin scattering at graphene edges*. *J. Appl. Phys.*, **2013**, *114*, 093708. DOI: 10.1063/1.4820463.

Xie, W.; McGarry, K. A.; Liu, F.; Wu, Y.; **Ruden, P. P.**; **Douglas, C. J.**; **Frisbie, C. D.** *High-Mobility Transistors Based on Single Crystals of Isotopically Substituted Rubrene-d(28)*. *J. Phys. Chem. C*, **2013**, *117*, 11522-11529. DOI: 10.1021/jp402250v.

IRG-2 Publications resulting from PARTIAL MRSEC Support

Hinke, J. A.; Pundsack, T. J.; Luhman, W. A.; **Holmes, R. J.**; **Blank, D. A.** *Communication: Trapping upconverted energy in neat platinum porphyrin films via an unexpected fusion mechanism*. *J. Chem. Phys.*, **2013**, *139*, 101102. DOI: 10.1063/1.4821164.

Menke, S. M.; **Holmes, R. J.** *Exciton diffusion in organic photovoltaic cells*. *Energy Environ. Sci.*, **2014**, DOI: 10.1039/C3EE42444H. Published Online.

Menke, S. M.; Luhman, W. A.; **Holmes, R. J.** *Tailored exciton diffusion in organic photovoltaic cells for enhanced power conversion efficiency*. *Nature Mater.*, **2013**, *12*, 152-157. DOI: 10.1038/NMAT3467.

IRG-3 MAGNETIC HETEROSTRUCTURES

IRG-3 Publications resulting from PRIMARY MRSEC Support

Lee, Y.; Frydman, A.; Chen, T.; Skinner, B.; **Goldman, A. M.** *Electrostatic tuning of the properties of disordered indium-oxide films near the superconductor-insulator transition*. *Phys. Rev. B*, **2013**, *88*, 024509. DOI: 10.1103/PhysRevB.88.024509.

Estrine, E. C.; Robbins, W. P.; Maqableh, M. M.; **Stadler, B. J. H.** *Electrodeposition and characterization of magnetostrictive galferol (FeGa) thin films for use in microelectromechanical systems*. *J. Appl. Phys.*, **2013**, *113*, 17A937. DOI: 10.1063/1.4799775.

IRG-3 Publications resulting from PARTIAL MRSEC Support

Guo, F.; McKusky, G.; **Dahlberg, E. D.** *Absence of magnetic state dependent low-frequency noise in spin-valve systems*. *Phys. Rev. B*, **2013**, *88*, 014409. DOI: 10.1103/PhysRevB.88.014409.

Zhang, S.; Gilbert, I.; Nisoli, C.; Chern, G.; Erickson, M. J.; O'Brien, L.; **Leighton, C.**; Lammert, P. E.; Crespi, V. H.; Schiffer, P. *Crystallites of magnetic charges in artificial spin ice*. Nature, **2013**, *500*, 553-557. DOI: 10.1038/nature12399.

Endean, D. E.; Weigelt, C. T.; **Victoria, R. H.**; **Dahlberg, E. D.** *Measurements of configurational anisotropy in isolated sub-micron square permalloy dots*. Appl. Phys. Lett., **2013**, *103*, 042409. DOI: 10.1063/1.4816510.

Chun, K. C.; Zhao, H.; Harms, J. D.; Kim, T.; **Wang, J.**; Kim, C. H. *A Scaling Roadmap and Performance Evaluation of In-Plane and Perpendicular MTJ Based STT-MRAMs for High-Density Cache Memory*. IEEE J. Solid State Circuits, **2013**, *48*, 598-610. DOI: 10.1109/JSSC.2012.2224256.

Ji, N.; Lauter, V.; Zhang, X.; Ambaye, H.; **Wang, J.** *Strain induced giant magnetism in epitaxial Fe16N2 thin film*. Appl. Phys. Lett., **2013**, *102*, 072411. DOI: 10.1063/1.4792706.

Jing, Y.; He, S.; **Wang, J.** *Magnetic nanoparticles of core-shell structure for recoverable photocatalysts*. Appl. Phys. Lett., **2013**, *102*, 253102. DOI: 10.1063/1.4811764.

Wentcovitch, R. M.; Hsu, H.; Umemoto, K. *First-principles studies of spin-state crossovers of iron in perovskite*. Eur. J. Mineral., **2012**, *24*, 851-862. DOI: 10.1127/0935-1221/2012/0024-2249.

Current MRSEC supported publication not previously reported

Chen, Z.; Ellis, J.; **Dahlberg, E. D.** *A simple technique to measure the magnetic susceptibility of liquids*. Rev. Sci. Instrum., **2012**, *83*, 095112. DOI: 10.1063/1.4749847.

IRG-4 NANOPARTICLE-BASED MATERIALS

IRG-4 Publications resulting from PRIMARY MRSEC Support

Pundsack, T. J.; Chernomordik, B. D.; Beland, A. E.; **Aydil, E. S.**; **Blank, D. A.** *Excited-State Dynamics in CZTS Nanocrystals*. J. Phys. Chem. Lett., **2013**, *4*, 2711-2714. DOI: 10.1021/jz4013245. (*Cross-Referenced with IRG-2*)

Yu, D.; Liptak, R. W.; Aggarwal, G.; Cheng, A. J.; **Campbell, S. A.** *Tunneling conduction in dense silicon quantum dot/poly (methyl methacrylate) composites*. Thin Solid Films, **2013**, *527*, 261-266. DOI: 10.1016/j.tsf.2012.11.056.

Rastgar, N.; Rowe, D. J.; Anthony, R. J.; Merritt, B. A.; **Kortshagen, U. R.**; **Aydil, E. S.** *Effects of Water Adsorption and Surface Oxidation on the Electrical Conductivity of Silicon Nanocrystal Films*. J. Phys. Chem. C, **2013**, *117*, 4211-4218. DOI: 10.1021/jp308279m.

Van Sickle, A. R.; Miller, J. B.; Moore, C.; Anthony, R. J.; **Kortshagen, U. R.**; Hobbie, E. K. *Temperature Dependent Photoluminescence of Size-Purified Silicon Nanocrystals*. ACS Appl. Mater. Interfaces, **2013**, *5*, 4233-4238. DOI: 10.1021/am400411a.

Rowe, D. J.; Jeong, J. S.; **Mkhoyan, K. A.**; **Kortshagen, U. R.** *Phosphorus-Doped Silicon Nanocrystals Exhibiting Mid-Infrared Localized Surface Plasmon Resonance*. Nano Lett., **2013**, *13*, 1317-1322. DOI: 10.1021/nl4001184.

Tosun, B. S.; Chernomordik, B. D.; Gunawan, A. A.; Williams, B.; **Mkhoyan, K. A.**; **Francis, L. F.**; **Aydil, E. S.** *Cu₂ZnSnS₄ nanocrystal dispersions in polar liquids*. Chem. Commun., **2013**, *49*, 3549-3551. DOI: 10.1039/c3cc40388b. (*Cross-Referenced with IRG-1*)

Wagner, A. J.; Anderson, C. M.; Trask, J. N.; Cui, L.; Chov, A.; **Mkhoyan, K. A.**; **Kortshagen, U. R.** *Propagating nanocavity-enhanced rapid crystallization of silicon thin films*. Nano Letters, **2013**, *13*, 5735. DOI: 10.1021/nl4035913

Skinner, B.; Chen, T.; **Shklovskii, B. I.** *Effects of bulk charged impurities on the bulk and surface transport in three-dimensional topological insulators.* Jo. of Exper. Theor. Phys., **2013**, *117*, 579-592. DOI: 10.1134/S1063776113110150.

Skinner, B.; **Shklovskii, B. I.** *Theory of the random potential and conductivity at the surface of a topological insulator.* Phys. Rev. B, **2013**, *87*, 075454. DOI: 10.1103/PhysRevB.87.075454.

Skinner, B.; **Shklovskii, B. I.** *Giant capacitance of a plane capacitor with a two-dimensional electron gas in a magnetic field.* Phys. Rev. B, **2013**, *87*, 035409. DOI: 10.1103/PhysRevB.87.035409.

Skinner, B.; Yu, G. L.; Kretinin, A. V.; Geim, A. K.; Novoselov, K. S.; **Shklovskii, B. I.** *The effect of electron dielectric response on the quantum capacitance of graphene in a strong magnetic field.* Phys. Rev. B, **2013**, *88*, 155417. DOI: 10.1103/PhysRevB.88.155417

IRG-4 Publications resulting from PARTIAL MRSEC Support

Zhang, X.; Manno, M.; Baruth, A.; Johnson, M.; **Aydil, E. S.; Leighton, C.** *Crossover From Nanoscopic Intergranular Hopping to Conventional Charge Transport in Pyrite Thin Films.* ACS Nano, **2013**, *7*, 2781-2789. DOI: 10.1021/nn4003264. (*Cross-Referenced with IRG-3*)

Kumar, B.; **Campbell, S. A.; Ruden, P. P.** *Modeling charge transport in quantum dot light emitting devices with NiO and ZnO transport layers and Si quantum dots.* J. Appl. Phys., **2013**, *114*, 044507. DOI: 10.1063/1.4816680. (*Cross-Referenced with IRG-2*)

Wheeler, L. M.; Neale, N. R.; Chen, T.; **Kortshagen, U. R.** *Hypervalent surface interactions for colloidal stability and doping of silicon nanocrystals.* Nature Commun., **2013**, *4*, 2197. DOI: 10.1038/ncomms3197.

Kim, H.; Mattevi, C.; Kim, H. J.; Mittal, A.; **Mkhoyan, K. A.; Riman, R. E.; Chhowalla, M.** *Optoelectronic properties of graphene thin films deposited by a Langmuir-Blodgett assembly.* Nanoscale, **2013**, *5*, 12365-12374. DOI: 10.1039/C3NR02907G

MRSEC SEED

Seed Publications resulting from PRIMARY MRSEC Support

Jeong, J. S.; Ambwani, P.; **Jalan, B.; Leighton, C.; Mkhoyan, K. A.** *Observation of Electrically-Inactive Interstitials in Nb-Doped SrTiO₃.* ACS Nano, **2013**, *7*, 4487-4494. DOI: 10.1021/nn401101y. (*Cross-Referenced with IRG-4*)

Smolensky, E. D.; Park, H.-Y. E.; Zhou, Y.; Rolla, G. A.; Marjanska, M.; Botta, M.; **Pierre, V. C.** *Scaling Laws at the Nano Size: the Effect of Particle Size and Shape on the Magnetism and Relaxivity of Iron Oxide Nanoparticle Contrast Agents.* J. Mat. Chem. B, **2013**, *1*, 2818-2828. DOI: 10.1039/C3TB00369H

Smolensky, E. D.; Peterson, K. L.; Weitz, E. A.; Lewandowski, C.; **Pierre, V. C.** *Magnetoluminescent Light-Switches: Dual Modality in DNA Detection.* J. Am. Chem. Soc., **2013**, *135*, 8966-8972. DOI: 10.1021/ja402107x

Weitz, E. A.; Lewandowski, C.; Smolensky, E. D.; Marjanska, M.; **Pierre, V. C.** *A Magnetoplasmonic Imaging Agent for Copper(I) with dual Response by MRI and Dark Field Microscopy.* ACS Nano, **2013**, *7*, 5842-5849. DOI: 10.1021/nn400928z

Seed Publications resulting from PARTIAL MRSEC Support

Weaver, M. N.; Merz, K. M.; Ma, D.; Kim, H. J.; **Gagliardi, L.** *Calculation of Heats of Formation for Zn Complexes: Comparison of Density Functional Theory, Second Order Perturbation Theory, Coupled-Cluster and Complete Active Space Methods.* J. Chem. Theory Comput., **2013**, *9*, 5277-5285. DOI: 10.1021/ct400856g.

Li Manni, G.; Ma, D.; Aquilante, F.; Olsen, J.; **Gagliardi, L.** *SplitGAS Method for Strong Correlation and the Challenging Case of Cr 2.* J. Chem. Theory Comput., **2013**, *9*, 3375-3384. DOI: 10.2174/138920111796117328.

Abe, M.; Furunaga, H.; Ma, D.; **Gagliardi, L.**; Bodwell, G. J. *Stretch effects induced by molecular strain on weakening σ -bonds: molecular design of long-lived diradicals (biradicals).* J. Org. Chem., **2012**, *77*, 7612. DOI: 10.1021/jo3016105.

Gagliardi, L.; Vlasisavljevich, B.; Miro, P.; Ma, D.; Sigmon, G. E.; Burns, P. C.; Cramer, C. J. *Synthesis and Characterization of the First 2D Neptunyl Structure Stabilized by Side-on Cation-Cation Interactions.* Chem. Eur. J., **2013**, *19*, 2937. DOI: 10.1002/chem.201204149

Wang, T.; Ganguly, K.; Marshall, P.; Xu, P.; **Jalan, B.** *Critical Thickness and Strain Relaxation in Molecular Beam Epitaxy-grown SrTiO₃ Films,* Appl. Phys. Lett., **2013**, *103*, 212904. DOI: 10.1063/1.4833248

Barton, A.; **Mayboroda, S.** *The Dirichlet problem for higher order equations in composition form.* J. Funct. Anal. , **2013**, *265*, 49-107. DOI: 10.1016/j.jfa.2013.03.013.

Barton, A.; **Mayboroda, S.** *Boundary-Value Problems for Higher-Order Elliptic Equations in Non-Smooth Domains.* Oper. Th. Adv. Appl., **2014**, *236*, 53 – 93. DOI: 10.1007/978-3-0348-0648-0_4

Hofmann, S.; Martell, J. M.; **Mayboroda, S.** *Uniform Rectifiability and Harmonic Measure III: Riesz transform bounds imply uniform rectifiability of boundaries of 1-sided NTA domains.* Internat. Math. Res. Notices, **2013**. DOI: 10.1093/imrn/rnt002

Mayboroda, S.; Maz'ya, V. *Regularity of solutions to the polyharmonic equation in general domains.* Invent. Math., **2013**, *222*, DOI: 10.1007/s00222-013-0464-1.

IRG-1 Publications resulting from the USE OF SHARED FACILITIES

- Kim, S.; Nealey, P. F.; **Bates, F. S.** *Directed Assembly of Lamellae Forming Block Copolymer Thin Films near the Order-Disorder Transition*. Nano Lett., **2013**, DOI: 10.1021/nl403628d.
- Lee, I.; **Bates, F. S.** *Synthesis, Structure, and Properties of Alternating and Random Poly(styrene-*b*-butadiene) Multiblock Copolymers*. Macromolecules, **2013**, *46*, 4529-4539. DOI: 10.1021/ma400479b.
- Lee, S.; Gillard, T. M.; **Bates, F. S.** *Fluctuations, Order, and Disorder in Short Diblock Copolymers*. AIChE J., **2013**, *59*, 3502-3513. DOI: 10.1002/aic.14023.
- Lott, J. R.; McAllister, J. W.; Arvidson, S. A.; **Bates, F. S.**; **Lodge, T. P.** *Fibrillar Structure of Methylcellulose Hydrogels*. Biomacromolecules, **2013**, *14*, 2484-2488. DOI: 10.1021/bm400694r.
- Lu, J.; **Bates, F. S.**; **Lodge, T. P.** *Chain Exchange in Binary Copolymer Micelles at Equilibrium: Confirmation of the Independent Chain Hypothesis*. ACS Macro Lett., **2013**, *2*, 451-455. DOI: 10.1021/mz400167x.
- Agrawal, K. V.; Topuz, B.; Jiang, Z.; Nguenkam, K.; Elyassi, B.; **Francis, L. F.**; Tsapatsis, M.; Navarro, M. *Solution-processable exfoliated zeolite nanosheets purified by density gradient centrifugation*. AIChE J., **2013**, *59*, 3458-3467. DOI: 10.1002/aic.14099.
- Kalpathy, S. K.; **Francis, L. F.**; Kumar, S. *Thermally induced delay and reversal of liquid film dewetting on chemically patterned surfaces*. J. Colloid Interface Sci., **2013**, *408*, 212-219. DOI: <http://dx.doi.org/10.1016/j.jcis.2013.06.035>.
- Jackson, E. A.; Lee, Y.; **Hillmyer, M. A.** *ABAC Tetrablock Terpolymers for Tough Nanoporous Filtration Membranes*. Macromolecules, **2013**, *46*, 1484-1491. DOI: 10.1021/ma302414w.
- Kato, T.; **Hillmyer, M. A.** *Functionalized Nanoporous Polyethylene Derived from Miscible Block Polymer Blends*. ACS Appl. Mater. Interfaces, **2013**, *5*, 291-300. DOI: 10.1021/am3020907.
- Kennemur, J. G.; **Hillmyer, M. A.**; **Bates, F. S.** *Rheological Evidence of Composition Fluctuations in an Unentangled Diblock Copolymer Melt near the Order-Disorder Transition*. ACS Macro Lett., **2013**, *2*, 496-500. DOI: 10.1021/mz4001892.
- Pitet, L. M.; Zhang, J.; **Hillmyer, M. A.** *Sequential ROMP of cyclooctenes as a route to linear polyethylene block copolymers*. Dalton Trans., **2013**, *42*, 9079-9088. DOI: 10.1039/c2dt32695g.
- Seo, M.; Murphy, C. J.; **Hillmyer, M. A.** *One-Step Synthesis of Cross-Linked Block Polymer Precursor to a Nanoporous Thermoset*. ACS Macro Lett., **2013**, *2*, 617-620. DOI: 10.1021/mz400192f.
- Chaffin, K. A.; Buckalew, A. J.; Schley, J. L.; Chen, X.; Jolly, M.; Alkatout, J. A.; Miller, J. P.; Untereker, D. F.; **Hillmyer, M. A.**; **Bates, F. S.** *Influence of Water on the Structure and Properties of PDMS-Containing Multiblock Polyurethanes*. Macromolecules, **2012**, *45*, 9110-9120. DOI: 10.1021/ma301965y.
- Bertrand, A.; **Hillmyer, M. A.** *Nanoporous Poly(lactide) by Olefin Metathesis Degradation*. J. Am. Chem. Soc., **2013**, *135*, 10918-10921. DOI: 10.1021/ja4050532.
- Zhang, J.; Matta, M. E.; Martinez, H.; **Hillmyer, M. A.** *Precision Vinyl Acetate/Ethylene (VAE) Copolymers by ROMP of Acetoxy-Substituted Cyclic Alkenes*. Macromolecules, **2013**, *46*, 2535-2543. DOI: 10.1021/ma400092z.
- Shin, J.; Lee, Y.; Tolman, W. B.; **Hillmyer, M. A.** *Thermoplastic Elastomers Derived from Menthane and Tulipalin A*. Biomacromolecules, **2012**, *13*, 3833-3840. DOI: 10.1021/bm3012852.

Yin, L.; Lodge, T. P.; Hillmyer, M. A. *A Stepwise "Micellization-Crystallization" Route to Oblate Ellipsoidal, Cylindrical, and Bilayer Micelles with Polyethylene Cores in Water*. *Macromolecules*, **2012**, *45*, 9460-9467. DOI: 10.1021/ma302069s.

Imperiali, L.; Clasen, C.; Fransaeer, J.; Macosko, C. W.; Vermant, J. *A Simple Route to Graphene Oxide Frameworks*. *Mater. Horiz.*, **2014**, *1*, 139-145. DOI: 10.1039/C3MH00047H.

Kobayashi, S.; Kim, H.; Macosko, C. W.; Hillmyer, M. A. *Functionalized linear low-density polyethylene by ring-opening metathesis polymerization*. *Polym. Chem.*, **2013**, *4*, 1193-1198. DOI: 10.1039/c2py20883k.

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MRSEC-SUPPORTED PATENTS

The following patents were based on work related to MRSEC programs, but the personnel performing work that directly produced these patents were supported by other sources. These patents, however, benefited from the general intellectual environment of the MRSEC and the access to Shared Facilities, with user fees charged according to University and Federal guidelines.

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15. BIOGRAPHIC INFORMATION FOR NEW INVESTIGATORS

No new investigators.