

Marc Andrew Hillmyer

ELMORE H. NORTHEY PROFESSOR OF CHEMISTRY

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EDUCATION

Ph.D. in Chemistry, California Institute of Technology (Advisor: R. H. Grubbs) 1994
B.S. in Chemistry, University of Florida (Advisor: K. B. Wagener) 1989

PROFESSIONAL POSITIONS

Department of Chemistry – University of Minnesota
Elmore H. Northey Professor 2007–present
Elmore H. Northey Associate Professor 2004–2007
Associate Professor 2002–2004
Graduate Faculty Member in Chemical Engineering and Materials Science 1999–present
Assistant Professor 1997–2002
Department of Chemical Engineering and Materials Science – University of Minnesota 1994–1997
Postdoctoral Research Associate (Advisor: F. S. Bates)

SELECTED HONORS AND AWARDS

Visiting Professor, Université d'Orléans, France - 2008
Arthur K. Doolittle Award (jointly awarded, PMSE division of the ACS) - 2007
George Taylor Distinguished Research Award (UMN) - 2007
Leverhulme Visiting Professor, University of Cambridge - 2005–2006
Best Chemistry Instructor Award (UMN Institute of Technology Student Board) - 2005
Elmore H. Northey Professorship (UMN) - 2004–2009
George Taylor Career Development Award (UMN) - 2002
National Science Foundation CAREER Award - 2001–2005
Packard Fellowship for Science and Engineering - 2000–2005
Schlumberger Limited Foundation Award - 2000, 2001
Camille Dreyfus Teacher-Scholar Award - 2000–2005
McKnight Land-Grant Professorship (UMN) - 2000–2002
DuPont Young Professor Grant - 1999, 2000, 2001
Research Corporation Research Innovation Award - 1998–2001
3M Company Non-tenured Faculty Award - 1998, 1999, 2000, 2001, 2002
IBM Graduate Research Fellowship - 1992
American Institute of Chemists Student Award - 1989
President's Recognition Award and the College Scholar Award (UF) - 1989
Summerville Fellowship in Chemistry (UF) - 1989

SELECTED PROFESSIONAL ACTIVITIES

Associate Editor for *Macromolecules* (2008–present)
International Advisory Board for *Macromolecular Chemistry and Physics* (2007–present)
Co-editor for "Biorenewable Polymers" special issue of *Polymer Reviews* (2007)
Co-organizer of "Polymers from Renewable Resources" an ACS Symposium (2007)
Co-organizer of "Multicompartment Micelles" an ACS Symposium (2006)
International Advisory Committee for the RSC conference *Materials Chemistry 8* (2006–2007)
Los Alamos National Lab Center for Integrated Nanotechnologies proposal review panel (2005–present)
Editorial Advisory Board for *Polymer* (2005–present)
Editorial Advisory Board for *Polymer Reviews* (2005–present)
Editorial Advisory Board for *Macromolecules* (2004–2006)
Co-organizer of "Polymer Chemistry for Physicists" short course, Amer. Phys. Soc. Meeting (2003)
Co-editor for "Materials for the 21st Century Special Issue" of *J. Phys. Org. Chem.* (2000)
Co-organizer "Macromolecular Synthesis by Selective Chemical Modification" an ACS Symposium (2000)
ACS Division of Polymer Chemistry co-rep. to the ACS Macromolecular Secretariat (1998–2007)

RECENT PUBLICATIONS

- (151) Kubo, T.; Wang, R.; Olson, D.; Rodwogin, M.; Hillmyer, M. A.; Leighton, C. – Spontaneous alignment of self-assembled ABC triblock terpolymers for large-area nanolithography – *Appl. Phys. Lett.*, in press.
- (150) Meuler, A. J.; Ellison, C. J.; Hillmyer, M. A.; Bates, F. S. – Polydispersity-Induced Stabilization of the Core-Shell Gyroid – *Macromolecules*, in press.
- (149) Lynd, N. A.; Meuler, A. J.; Hillmyer, M. A. – Polydispersity and Block Copolymer Self-Assembly – *Prog. Polym. Sci.*, in press.
- (148) Castillo, V.; Müller, A. J.; Lin, M. -C.; Chen, H. -L.; Jeng, U. -S.; Hillmyer, M. A. – Confined crystallization and morphology of melt-segregated PLLA-*b*-PE and PLDA-*b*-PE diblock copolymers – *Macromolecules*, in press.
- (147) Hamilton, B. D.; Hillmyer, M. A.; Ward, M. D. – Glycine Polymorphism in Nanoscale Crystallization Chambers – *Crystal Growth and Design*, in press.
- (146) Mao, H.; Hillmyer, M. A. – Morphological Behavior of Polystyrene-*b*-Polylactide / Polystyrene-*b*-Poly(ethylene oxide) Blends – *Macromol. Chem. Phys.*, in press.
- (145) Chen, C.; Zhang, H.; Li, S.; Hillmyer, M. A.; Guo, S. – Readily Loading Metal Ions in the Nanopores of Polymer Thin Films and In Situ Generation of Metal Sulfide Nanoparticle Arrays – *Nanotechnology* **2008**, *19*, 365304.
- (144) Meuler, A. J.; Fleury, G.; Hillmyer, M. A.; Bates, F. S. – Structure and Mechanical Properties of an Orthorhombic Fddd Network-Forming Pentablock Terpolymer – *Macromolecules* **2008**, *41*, 5809–5817.
- (143) Qin, Y.; Kim, J. -Y.; Frisbie, C. D.; Hillmyer, M. A. – Distannylated Isothianaphthene: A Versatile Building Block for Low Bandgap Conjugated Polymers – *Macromolecules* **2008**, *41*, 5563–5570.
- (142) Lynd, N. A.; Hillmyer, M. A.; Matsen, M. W. – Theory of Polydisperse Block Copolymer Melts: Beyond the Schulz-Zimm Distribution – *Macromolecules* **2008**, *41*, 4131–4133.
- (141) Mahanthappa, M. K.; Hillmyer, M. A.; Bates, F. S. – Mechanical consequences of molecular composition on failure in polyolefin composites containing glassy, elastomeric, and semicrystalline components – *Macromolecules* **2008**, *41*, 1341–1351.
- (140) Olson, D. A.; Chen, L.; Hillmyer, M. A. – Templating Nanoporous Polymers with Ordered Block Copolymers – *Chem. Mater.* **2008**, *20*, 869–890.
- (139) Anderson, K. S.; Schreck, K. M.; Hillmyer, M. A. – Toughening Polylactide – *Polymer Reviews*, **2008**, *45*, 85–108.
- (138) Boudouris, B. W.; Frisbie, C. D.; Hillmyer, M. A. – Nanoporous poly(3-alkylthiophene) thin films generated from block copolymer templates – *Macromolecules* **2008**, *41*, 67–75.
- (137) Lynd, N. A.; Hamilton, B. D.; Hillmyer, M. A. – The Role of Polydispersity in the Lamellar Mesophase of Model Diblock Copolymers – *J. Poly. Sci. Polym. Phys.* **2007**, *45*, 3386–3393.
- (136) Chen, L.; Phillip, W. A.; Cussler, E. L.; Hillmyer, M. A. – Robust Nanoporous Membranes Templated by a Doubly Reactive Block Copolymer – *J. Am. Chem. Soc.* **2007**, *129*, 13786–13787.
- (135) Wanamaker, C. L.; O’Leary, L. E.; Lynd, N. A.; Hillmyer, M. A.; Tolman, W. B. – Renewable Resource Thermoplastic Elastomers based on Polylactide and Polymethide – *Biomacromolecules* **2007**, *8*, 3634–3640.
- (134) Wells, N. P.; Boudouris, B. W.; Hillmyer, M. A.; Blank, D. A. – Intramolecular Excitation Relaxation and Migration Dynamics in Poly(3-Hexylthiophene) – *J. Phys. Chem. B* **2007**, *111*, 15404–15414.
- (133) Schreck, K. M.; Hillmyer, M. A. – Block copolymers and melt blends of polylactide with Nodax™ microbial polyesters: preparation and mechanical properties – *J. Biotechnology* **2007**, *132*, 287–295.
- (132) Lynd, N. A.; Hillmyer, M. A. – Effects of Polydispersity on the Order–Disorder Transition in Block Copolymer Melts – *Macromolecules* **2007**, *40*, 8050–8055.

- (131) Meuler, A. J.; Ellison, C. J.; Evans, C. M.; Hillmyer, M. A.; Bates, F. S. – Polydispersity-Driven Transition from the Orthorhombic Fddd Network to Lamellae in Poly(isoprene-*b*-styrene-*b*-ethylene oxide) Triblock Terpolymers – *Macromolecules* **2007**, *40*, 7072–7074.
- (130) Silvernail, C. M.; Yao, L. J.; Hill, L. M. R.; Hillmyer, M. A.; Tolman, W. B. – Structural and Mechanistic Studies of Bis(phenolato)amine Zinc(II) Catalysts for the Polymerization of ϵ -Caprolactone – *Inorg. Chem.* **2007**, *46*, 6565–6574.
- (129) Edmonds, W. F.; Hillmyer, M. A.; Lodge, T. P. – Block Copolymer Vesicles in Liquid CO₂ – *Macromolecules* **2007**, *40*, 4917–4923.
- (128) Lodge, T. P.; Taribagil, R.; Yoshida, T.; Hillmyer, M. A. – SANS Evidence for the Crosslinking of Wormlike Micelles by a Model Hydrophobically Modified Polymer – *Macromolecules* **2007**, *40*, 4728–4731.
- (127) Kubo, T.; Parker, J. S.; Hillmyer, M. A.; Leighton, C. – Characterization of pattern transfer in the fabrication of magnetic nanostructure arrays by block copolymer lithography – *Appl. Phys. Lett.*, **2007**, *90*, 233113–1–233113–3.
- (126) Yoshida, T.; Taribagil, R.; Hillmyer, M. A.; Lodge, T. P. – Viscoelastic synergy in aqueous mixtures of wormlike micelles and model amphiphilic triblock copolymers – *Macromolecules* **2007**, *40*, 1615–1623.
- (125) Mahanthappa, M. K.; Lim, L. S.; Hillmyer, M. A.; Bates, F. S. – Control of Mechanical Behavior in Polyolefin Composites: Integration of Glassy, Rubbery and Semicrystalline Components – *Macromolecules* **2007**, *40*, 1585–1593.
- (124) Meuler, A. J.; Mahanthappa, M. K.; Hillmyer, M. A.; Bates, F. S. – Synthesis of Monodisperse α -Hydroxy-Polystyrene in Hydrocarbon Media Using a Functional Organolithium – *Macromolecules* **2007**, *40*, 760–762.
- (123) Switek, K. A.; Chang, K.; Bates, F. S.; Hillmyer, M. A. – ABA Triblock Copolymers using a Ring-Opening Metathesis Polymerization / Macromolecular Chain Transfer Agent Approach – *J. Polym. Sci. Polym. Chem.* **2007**, *45*, 361–373.
- (122) Crossland, E. J. W.; Ludwigs, S.; Hillmyer, M. A.; Steiner, U. – Freestanding nanowire arrays from soft-etch block copolymer templates – *Soft Matter* **2007**, *3*, 94–98.
- (121) Müller, A. J.; Castillo, R. V.; Hillmyer, M. A. – Nucleation and Crystallization of PLDA-*b*-PE and PLLA-*b*-PE diblock copolymers – *Macromol. Symp.* **2006**, *242*, 174 – 181.
- (120) Phillip, W.A.; Rzayev, J.; Hillmyer, M. A.; Cussler, E. L. – Gas and water liquid transport through nanoporous block copolymer membranes – *J. Membrane Sci.* **2006**, *286*, 144–152.
- (119) Bailey, T. S.; Rzayev, J.; Hillmyer, M. A. – Routes to Alkene and Epoxide Functionalized Nanoporous Materials from Poly(styrene-*b*-isoprene-*b*-lactide) Triblock Copolymers – *Macromolecules* **2006**, *39*, 8772–8781.
- (118) Li, Z.; Hillmyer, M. A.; Lodge, T. P. – Morphologies of Multicompartment Micelles Formed by ABC Miktoarm Star Terpolymers – *Langmuir* **2006**, *22*, 9409–9417.
- (117) Cooney, D. T.; Hillmyer, M. A.; Cussler, E. L.; Moggridge, G. D. – Diffusion in nanoporous materials made from block copolymers – *Cryst. Rev.* **2006**, *12*, 13–24.
- (116) Edmonds, W. F.; Li, Z.; Hillmyer, M. A.; Lodge, T. P. – Disk Micelles from Nonionic Coil-Coil Diblock Copolymers – *Macromolecules* **2006**, *39*, 4526–4530.
- (115) Zupancich, J. A.; Bates, F. S.; Hillmyer, M. A. – Aqueous Dispersions of Poly(ethylene oxide)-*b*-poly(γ -methyl- ϵ -caprolactone) Block Copolymers – *Macromolecules* **2006**, *39*, 4286–4288.
- (114) Li, Z.; Hillmyer, M. A.; Lodge, T. P. – Laterally Nanostructured Vesicles, Polygonal Bilayer Sheets, and Segmented Wormlike Micelles – *Nano Letters* **2006**, *6*, 1245–1249.
- (113) Guo, S.; Rzayev, J.; Bailey, T. S.; Zalusky, A. S.; Olayo-Valles, R.; Hillmyer, M. A. – Nanopore and nanobushing arrays from ABC triblock thin films containing two etchable blocks – *Chem. Mater.* **2006**, *18*, 1719–1721.
- (112) Anderson, K. A.; Hillmyer, M. A. – Melt Preparation and Nucleation Efficiency of Polylactide Stereocomplex Crystallites – *Polymer* **2006**, *47*, 2030–2035.