

**11. MRSEC Supported Publications and Patents**  
**(May 1, 2002 - April 30, 2003)**

**Publications resulting from PRIMARY MRSEC Support**

**IRG 1 - Microstructured Polymers**

*Critical Phenomena in Binary and Ternary Polymer Blends.* Stepanek, P.; Morkved, T.L.; Krishnan, K.; **Lodge, T.P.; Bates, F.S.** *Physica A* **2002**, 314, 411.

*Crosslinked Polymerisome Membranes: Vesicles with Broadly Adjustable Properties.* Discher, B.M.; Burmudez, H.; Hammer, D.A.; Discher, D.E.; Won, Y.-Y.; **Bates, F.S.** *J. Phys. Chem. B* **2002**, 106, 2848.

*Cryogenic Transmission Electron Microscopy (CryoTEM) of Micelles and Vesicles Formed in Water by Poly(ethyleneoxide)-Based Block Copolymers.* Won, Y.-Y.; Brannan, A.K.; Davis, H.T.; **Bates, F.S.** *J. Phys. Chem. B* **2002**, 106, 3354.

*Extensional Rheology of Polypropylene and its Effect on Foaming of Thermoplastic Elastomers.* Spitael, P.; **Macosko, C.W.**; Sahnoune, A. *Soc. Plast. Eng. Tech. Pap. (ANTEC)* **2002**, 1792.

*Image Analysis for Interfacial Area and Cocontinuity Detection in Polymer Blends.* Galloway, J.A.; Montminy, M.D.; **Macosko, C.W.** *Polymer* **2002**, 43, 4715.

*Linear Viscoelasticity of a Polymeric Bicontinuous Microemulsion.* Burghardt, W.R.; Krishnan, K.; **Bates, F.S.; Lodge, T.P.** *Macromolecules* **2002**, 35, 4210.

*Morphological Behavior of Model Poly(ethylene-alt-propylene)-b-Polylactide Block Copolymers.* Schmidt, S.C.; **Hillmyer, M.A.** *J. Polym. Sci. Part B: Polym. Phys.* **2002**, 40, 2364.

*The Effect of Selective Perfluoroalkylation on the Segregation of Poly(styrene-b-1,2 butadiene) Copolymers.* Ren, Y.; **Lodge, T.P.; Hillmyer, M.A.** *Macromolecules* **2002**, 35, 3889.

*Thermoreversible, Epitaxial, Close-Packed  $\square$  BCC Transitions in Block Copolymer Solutions.* **Lodge, T.P.**; Bang, J.; Wang, X.; Brinker, K.L.; Burghardt, W.R. *Phys. Rev. Lett.* **2002**, 89, 215505.

*The Role of Competitive PEO-Water and Water-Water Hydrogen Bonding in Aqueous Solution PEO Behavior.* Dormidontova, E.E. *Macromolecules* **2002**, 35, 987.

*Time-Resolved SAXS Measurements of a Polymer Bicontinuous Microemulsion Structure Factor under Shear.* Caputo, F.E.; Burghardt, W.R.; Krishnan, K.; **Bates, F.S.; Lodge, T.P.** *Phys. Rev. E.* **2002**, 66, 041401.

*Transient Rheology of a Polymeric Bicontinuous Microemulsion.* Krishnan, K.; Burghardt, W.R.; **Bates, F.S.; Lodge, T.P.** *Langmuir* **2002**, 8, 9676.

*The Origins of Anomalous Micellization in Diblock Copolymer Solutions.* **Lodge, T.P.**; Bang, J.; Hanley, K.J.; Krocak, J.; Dahlquist, S.; Sujan, B.; Ott, J. *Langmuir* **2003**, 19, 2103.

*Adhesion Between Immiscible Polymers Correlated with Interfacial Entanglements.* Cole, P.J.; **Cook, R.; Macosko, C.W.** *Macromolecules*, in press.

*Comparison of Methods for the Detection of Cocontinuity in Polyethylene Oxide/Polystyrene Blends.* Galloway, J.A.; **Macosko, C.W.** *Polym. Engr. Sci.*, in press.

*Linear Elasticity of Cubic Phases in Block Copolymer Melts by Self Consistent Field Theory.* Tyler, C.; **Morse, D.C.** *Macromolecules*, in press.

*Molecular Exchange in PEO-PB Micelles in Water.* Won, Y.-Y.; Davis, H.T.; **Bates, F.S.** *Macromolecules*, in press.

*Molecular Weight Dependence of Polymersome Membrane Structure, Elasticity, and Stability.* Bermudez, H.; Brannon, A.K.; Hammer, D.A.; **Bates, F.S.**; Discher, D.E. *Macromolecules*, in press.

*Reactions at Polymer-Polymer Interfaces for Blend Compatibilization.* Jeon, H.K.; Moon, B.; Hoyer, T.R.; **Macosko, C.W.** *Soc. Plast. Eng. Tech. Pap. (ANTEC)*, in press.

*The Effect of Surfactant on Unilamellar Polymeric Vesicles: Altered Membrane Properties and Stability in the Limit of Weak Surfactant Partitioning.* Santore, M.M.; Hammer, D.A.; Discher, D.E.; **Bates, F.S.**; Won, Y.-Y. *Langmuir*, in press.

## **IRG 2 – Crystalline Organic Semiconductors**

*Tricyanovinyl-Substituted Oligothiophenes.* Bader, M.M.; Custelcean, R.; Ward, M.D., *Chem. Mater.* **2003**, 15, 616.

## **Former IRG 2 - Artificial Tissues**

*Enhanced Fibrin Remodeling in Vitro for Improved Tissue-equivalents.* Neidert, M.R.; Lee, E.S.; **Oegema, Jr., T.R.**; **Tranquillo, R.T.** *Biomaterials* **2002**, 23, 3717.

*Fiber Alignment Imaging During Mechanical Testing of Soft Tissues.* Tower, T.T.; Neidert, M.R.; **Tranquillo, R.T.** *Ann. Biomed. Eng.* **2002**, 30, 1221.

*Interaction Between Bioactive Glasses and Human Dentin.* Efflandt, S.E.; Magne, P.; Douglas, W.H.; **Francis, L.F.** *Journal of Materials Science-Materials in Medicine* **2002**, 13, 557.

*Interfibrillar Collagen Bonding Exists in Matrix Produced by Chondrocytes in Culture: Evidence by Electron Microscopy.* **Lewis, J.L.**; Johnson, S.L.; **Oegema, Jr., T.R.** *Tissue Engineering* **2002**, 8, 989.

*Porous Polymer/Bioactive Glass Composites for Soft-to-Hard Tissue Interfaces.* Zhang, K.; Ma, Y.; **Francis, L.F.** *Journal of Biomedical Materials Research* **2002**, 61, 551.

*The Effects of Displacement Rate and Proteoglycan Digestion on the Fracture Resistance of Tissue Grown from Chondrocyte Culture.* Koop, B.E.; **Lewis, J.L.**; Fedewa, M.M.; **Oegema, Jr., T.R.** *J. Mat. Sci.: Mat. in Med.* **2002**, 13, 823.

*Use of Supported Thin Films of Peptide Amphiphiles as Model Systems of the Extracellular Matrix to Study the Effects of Structure – Function Phenomena on Cell Adhesion.* Ochsenhirt, S.E.; **Tirrell, M.**; Fields, G.B.; Dillow, A.K. in: *Biomimetic Materials and Design. Biointerfacial Strategies, Tissue Engineering, and Targeted Drug Delivery* **2002**, pps. 1-27.

*A Model of Fracture Testing of Soft Viscoelastic Tissues.* Koop, B.E.; **Lewis, J.L.** *J. Biomechanics*, in press.

*Cryopreservation of Collagen-Based Tissue-Equivalents. – Part I: Effect of Freezing in the Absence of Cryoprotective Agents.* Devireddy, R.V.; Neidert, M.R.; **Bischof, J.C.**; **Tranquillo, R.T.** *Tissue Engineering*, in press.

*Cryopreservation of Collagen-Based Tissue-Equivalents. – Part II: Improved Freezing in the Presence of Cryoprotective Agents.* Neidert, M.R.; Devireddy, R.V.; **Tranquillo, R.T.**; **Bischof, J.C.** *Tissue Engineering*, in press.

*Effects of Materials Parameters on Mineralization and Degradation of Sol-Gel Bioactive Glasses with 3D-Ordered Macroporous Structures.* Zhang, K.; Yan, H.; Bell, D.C.; **Stein, A.**; **Francis, L.F.** *Journal of Biomedical Materials Research*, in press.

### **IRG 3 - Magnetic Heterostructures**

*Anomalous Magnetotransport Properties of Epitaxial Full Heusler Alloys.* Lund, M.S.; Dong J.W.; Lu J.; Dong X.; **Palmstrøm C.J.**; **Leighton C.** *Appl. Phys. Lett.* **2002**, *80*, 4798.

*Characterization of Domain States in Submicron Sized Permalloy Particles with Perpendicular Anisotropy.* Eames, P.; **Dahlberg, E.D.** *J. Appl. Phys.* **2002**, *91*, 7986.

*Electronic Structure and Spin Polarization of  $Mn_xGa_{1-x}N$ .* Kronik, L.; Jain, M.; **Chelikowsky, J.R.** *Phys. Rev. B.* **2002**, *66*, 041203-1.

*Ferromagnetic Domain Distribution in Thin Films During Magnetization Reversal.* Lee, W.-T.; te Velthuis, S.G.E.; Felcher, G.P.; Klose, F.; Gredig, T.; **Dahlberg, E.D.** *Phys. Rev. B.* **2002**, *65*, 224417-23.

*Magnetization Reversal in Exchange Biased Co/CoO Probed with Anisotropic Magnetoresistance.* Gredig, T.; Krivorotov, I.N.; **Dahlberg, E.D.** *J. Appl. Phys.* **2002**, *91*, 7760.

*Optically Pumped Transport in Ferromagnet-Semiconductor Schottky Diodes.* Isakovic, A.F.; Carr, D.M.; Strand, J.; Schultz, B.D; **Palmstrøm, C.J.**; **Crowell, P.A.** *J. Appl. Phys.* **2002**, *91*, 7261.

*Quantitative Micromagnetics Simulation of Exchange Bias in the NiFe/NiMn System.* Kilian, K.A.; **Victoria, R.H.** *IEEE Trans. Mag.* **2002**, *38*, 4.

*Relation between Exchange Anisotropy and Magnetization Reversal Asymmetry in Fe/MNF<sub>2</sub> Bilayers.* Krivorotov, I.N.; **Leighton, C.**; Nogues, J.; Schuller, I.K.; **Dahlberg, E.D.** *Phys. Rev. B. Rapid Communication* **2002**, *65*, 100402.

*Role of Magnetic Aftereffect in Coercivity Enhancement of Co/CoO Bilayers.* Krivorotov, N.; Gredig, T.; Nikolaev, K.R.; **Goldman, A.M.**; **Dahlberg, E.D.** *Phys. Rev. B. Rapid Communication* **2002**, *65*, 180406-10.

*Electronic and Crystal Structure of Fully Strained LaNiO<sub>3</sub> Films.* Dobin, A.Y.; Nikolaev, K.R.; Krivorotov, I.N.; **Wentzovitch, R.M.**; **Dahlberg, E.D.**; **Goldman, A.M.** *Phys. Rev. B.*, in press.

*Tunable Magnetization Reversal in Epitaxial bcc Fe<sub>1-x</sub>Co<sub>x</sub> Films on Vicinal Surfaces.* Wolf, J.A.; Anderson, K.K.; **Dahlberg, E.D.**; **Crowell, P.A.**; Chen, L.C.; **Palmstrøm, C.J.** *J. Appl. Phys.*, in press (Wolf - 2001 and 2002 Summer Program faculty participant).

### **Seed**

*Self-assembly of Crystalline Lattices.* **Ward, M.D.**; Pivovar, A.M. *Encyclopedia of Materials: Science and Technology* **2001**, p. 1903.

*Designing Porous Solids over Multiple Pore Size Regimes.* **Stein, A.**; Schroden, R.C.; in: Nanostructured Catalysts (edited by Scott, S.L.; Crudden, C.M.; Jones, C.W.) Kluwer-Plenum Series on Nanostructure Science and Technology (Dordrecht, Netherlands) **2002**, *3*, 257.

*Hybrid Macroporous Materials for Heavy Metal Ion Adsorption.* Schroden, R.C.; Al-Daous, M.; Sokolov, S.; Melde, B.J.; Lytle, J.C.; **Stein, A.**; Carbojo, M.C.; Fernández, J.T.; Rodríguez, E.E. *J. Mater. Chem.* **2002**, *12*, 3261.

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*Optical Properties of Inverse Opal Photonic Crystals.* Schroden, R.C.; Al-Daous, M.; Blanford, C.F.; **Stein, A.** *Chem. Mater.* **2002**, *14*, 3305.

*Probing Vibrational Dynamics of Hydrogen-bonded Inclusion Compounds with Inelastic Neutron Scattering and Ab Initio Calculations.* Pivovar, A.M.; **Ward, M.D.**; Brown, C.M.; Neumann, D.A. *J. Phys. Chem. B.* **2002**, *106*, 4916.

*Ultrafast Solvation Dynamics: A View from the Solvent's Perspective Using a Novel Resonant-pump Non-resonant Probe Technique.* Underwood, D.U.; **Blank, D.A.** *J. Phys. Chem. A.*, in press.

## Publications resulting from PARTIAL MRSEC Support

### IRG 1 - Microstructured Polymers

*Analysis of Matrix Dynamics by Atomic Force Microscopy.* Hansma, H.G.; Clegg, D.O.; Kokkoli, E.; Oroudjev, E.; **Tirrell, M.** *Methods of Cell Biology* **2002**, 69, 163. (Tirrell is a former IRG 1 faculty participant)

*Effect of Molecular Weight of the Reactive Precursors in Melt Reactive Blending.* Yin, Z.; Koulic, C.; Jeon, H.K.; Pagnoulle, C.; **Macosko, C.W.**; Jerome, R. *Macromolecules* **2002**, 35, 8917.

*Ordered Nanoporous Polymers from Polystyrene-Polylactide Block Copolymers.* Zalusky, A.S.; Olayo-Valles, R.; Wolf, J.H.; **Hillmyer, M.A.** *J. Am. Chem. Soc.* **2002**, 124, 12761.

*Reactivity of Common Functional Groups with Urethanes: Models for Reactive Compatibilization of Thermoplastic Polyurethane Blends.* Lu, Q.; **Macosko, C.W.**; Hoye, T.R. *J. Polym. Sci., Part A: Polym. Chem.* **2002**, 40, 2310.

*Recognition by Lipase of  $\omega$ -Hydroxyl Macroinitiators for Diblock Copolymer Synthesis.* Kumar, A.; Gross, R.A.; Wang, Y.; **Hillmyer, M.A.** *Macromolecules* **2002**, 35, 7606.

*Solubility of CF<sub>2</sub>-Modified Polybutadiene and Polyisoprene in Supercritical Carbon Dioxide.* McHugh, M.A.; Park, I.; Reisinger, J.J.; Ren, Y.; **Lodge, T.P.**; **Hillmyer, M.A.** *Macromolecules* **2002**, 35, 4653.

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*The Order-Disorder Transition and the Disordered Micelle Phase for Poly(ethylenepropylene-*b*-dimethylsiloxane) Spheres.* Wang, X.; Dormidontova, E.E.; **Lodge, T.P.** *Macromolecules* **2002**, 35, 9687.

*Block Copolymers: Past Successes and Future Challenges.* **Lodge, T.P.** *Macromol. Chem. Phys.* **2003**, 204, 265.

*High Glass Transition Temperature Polyolefins by the Catalytic Hydrogenation of Polyindene.* Hahn, S.F.; **Hillmyer, M.A.** *Macromolecules* **2003**, 36, 71.

*Phase Behavior of Block Copolymers in a Neutral Solvent.* **Lodge, T.P.**; Hanley, K.J.; Pudil, B.; Alahapperuma, V. *Macromolecules* **2003**, 36, 816.

*Compatibilized Blends of Thermoplastic Polyurethane.* Lu, Q-W.; **Macosko, C.W.**; Horrión, J. *Macromol. Symp.*, in press.

### IRG 2 – Crystalline Organic Semiconductors

*A  $\pi$ -Stacking Terthiophene-Based Quinodimethane is an n-Channel Conductor in a Thin Film Transistor.* Pappenfus, T.M.; Chesterfield, R.; **Frisbie, C.D.**; **Mann, K.R.**; Casado, J.; Raff, J.D.; **Miller, L.L.** *J. Am. Chem. Soc.* **2002**, 124, 4184.

*Dinitro and Quinodimethane Derivatives of Terthiophene that can be both Oxidized and Reduced. Crystal Structures, Spectra and a Method of Analyzing Quinoid Contributions to Structure.* Pappenfus, T.M.; Raff, J.D.; Hukkanen, E.J.; Burney, J.R.; Casado, J.; Drew, S.M.; **Miller, L.L.**; **Mann, K.R.** *J. Org. Chem.* **2002**, 67, 6015.

*Quinonoid Oligothiophenes as Electron-Donor and Electron-Acceptor Materials. A Spectroelectrochemical and Theoretical Study.* Casado, J.; **Miller, L.L.**; **Mann, K.R.**;

Pappenfus, T.M.; Higuchi, H.; Orti, E.; Milian, B.; Pou-Amerigo, R.; Hernandez, V.; Lopez Navarrete, J.T. *J. Am. Chem. Soc.* **2002**, *124*, 12380.

*Nitro-Functionalized Oligothiophenes as a Novel Type of Electroactive Molecular Material: Spectroscopic, Electrochemical and Computational Study.* Casado, J.; Pappenfus, T.M.; **Miller, L.L.**; **Mann, K.R.**; Orti, E.; Viruela, P.M.; Pou-Amerigo, R.; Hernandez, V.; Lopez Navarrete, J.T. *J. Am. Chem. Soc.*, in press.

### **Former IRG 2 - Artificial Tissues**

*Effect of Microscale Transport and Phase Change on Numerical Prediction of Freezing in Biological Tissues.* Devireddy, R.; Smith, D.; **Bischof, J.** *ASME J. Heat Transfer* **2002**, *124*, 365.

*Measurement and Numerical Analysis of Freezing in Solutions Enclosed in a Small Container.* Devireddy, R.V., Leo, P.H., Lowengrub, J.S., **Bischof, J.C.** *Intl. J. Heat Mass Transfer* **2002**, *45*, 1915.

### **IRG 3 - Magnetic Heterostructures**

*Anomalous Magnetotransport Properties of Epitaxial Full Heusler Alloys.* Lund, M.S.; Dong, J.W.; Lu, J.; Dong, X.Y.; **Palmstrøm, C.J.**; **Leighton, C.** *Appl. Phys. Lett.* **2002**, *80*, 4798.

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*Fabrication and Thermal Stability of Arrays of Fe Nanodots.* Liu, K.; Nogues, J.; **Leighton, C.**; Roshchin, I.V.; Masuda, H.; Nishio, K.; Schuller, I.K. *Appl. Phys. Lett.* **2002**, *81*, 4434.

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*Nanostructures and the Proximity Effect.* Montero, M.I.; Liu, K.; Stoll, O.M.; Hoffmann, A.; Schuller, I.K.; Åkerman, J.J.; Martin, J.I.; Vicent, J.L.; Baker, S.M.; Russell, T.P.; **Leighton C.**; Nogues J. *J. Phys. D: Appl. Phys.* **2002**, *35*, 2398.

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*Structure and Interface Composition of Co Layers Grown on As-rich GaAs(001) c(4x4) Surfaces.* Lüdge, K.; Schultz, B.D.; Vogt, P.; Evans, M.M.R.; Braun, W.; **Palmstrøm, C.J.**; Richter, W.; Esser, N. *J. Vac. Sci. Technol. B.* **2002**, *20*, 1591 (Evans - 2000, 2001 and 2002 Summer Program faculty participant).

*Terahertz Emission From Magneto-plasma Oscillations in Semiconductors.* Heyman, J.N.; Wrage, H.; Lind, C.; Hebert, D.; Neocleous, P.; **Crowell, P.A.**; Müller,  $\square$ ; Unterrainer, K. in: *Ultrafast Phenomena in Semiconductors VI*, (edited by Sen; K.-T.F.; Song, J.-J.; Jiang, H.). *Proceedings of SPIE.* **2002**, *4643*, 12 (Heyman/Neocleous - 1999 Summer Program faculty/student team).

*Time-Domain Ferromagnetic Resonance in Epitaxial Thin Films.* Engebretson, D.M.; Berezovsky, J.; Park, J.P.; Chen, L.C.; **Palmstrøm, C.J.**; **Crowell, P.A.** *J. Appl. Phys.* **2002**, *91*, 8040.

*Imaging of Spin Dynamics in Closure Domain and Vortex Structures.* Park, J.P.; Eames, P.; Engebretson, D.M.; Berezovsky, J.; **Crowell, P.A.** *Phys. Rev. B.* **2003**, *67*, 020403R.

### **Seed**

*Design and Analysis of Chain and Network Structures from Organic Derivatives of Polyoxometalate Clusters.* Johnson, B.J.S.; Schroden, R.C.; Zhu, C.; Young Jr., V.G.; **Stein, A.** *Inorg. Chem.* **2002**, *41*, 2213.

*Synthesis of Crystalline Silicon Nanoparticles in Low-Pressure Inductive Plasmas.* Bapat, A.; **Kortshagen, U.**; **Campbell, S.A.**; Perrey, C.R.; Carter, C.B. *Proceedings MRS Fall Meeting, Symposium F*, in press.

## **Publications resulting from the USE OF SHARED FACILITIES**

### **IRG 1 - Microstructured Polymers**

*Network of Ordered Phases in PE-PEE Diblock Copolymers.* Takenouchi, H.; Hajduk, D.A.; **Bates, F.S.** *Fiber Diff. Rev.* **2000**, 9, 12.

*A Non-cubic Triply Periodic Network Morphology in Poly(Isoprene-*b*-Styrene-*b*-Ethyleneoxide) Triblock Copolymers.* Bailey, T.S.; Hardy, C.M.; Epps, T.H.; **Bates, F.S.** *Macromolecules* **2002**, 35, 7007.

*A Note on Transient Stress Calculation via Numerical Simulations.* Cristini, V.; **Macosko, C.W.**; Jansseune, T. *J. of Non-Newtonian Fluid Mech.* **2002**, 105, 177.

*A Numerical and Experimental Investigation of Lamellar Blend Morphologies.* Cristini, V.; Hooper, R.W.; **Macosko, C.W.**; Guido, S.; Simeone, M. *Ind. Eng. Chem. Res.* **2002**, 41, 6305.

*Effect of Tacticity on Coil Dimensions and Thermodynamic Properties of Polypropylene.* Jones, T.D.; Chaffin, K.A.; **Bates, F.S.**; Annis, B.K.; Hagaman, E.W.; Kim, M.-H.; Wignall, G.D.; Fan, W.; Waymouth, R. *Macromolecules* **2002**, 35, 5061.

*Highly Crosslinked Self-Assembled Monolayer Stationary Phases: A New Approach to Greatly Enhancing the Low pH Stability of Silica-Based Stationary Phases.* Trammell, B.C.; Ma, L.; Luo, H.; Jin, D.; **Hillmyer, M.A.**; Carr, P.W. *Anal. Chem.* **2002**, 74, 4634.

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*Mechanistic Comparison of Cyclic Ester Polymerizations by Novel Iron(III)-Alkoxide.* O'Keefe, B.J.; Breyfogle, L.E.; **Hillmyer, M.A.**; Tolman, W.B. *Complexes: Single vs. Multiple Site Catalysts.* *J. Am. Chem. Soc.* **2002**, 124, 4384.

*Melt versus Solvent Coating: Structure and Properties of Block-Copolymer-based-Pressure-Sensitive Adhesives.* O'Connor, A.E.; **Macosko, C.W.** *J. Appl. Polym. Sci.* **2002**, 86, 3355.

*Metalloenzyme Inspired Zinc Catalyst for the Polymerisation of Lactide.* Williams, C.K.; Brooks, N.R.; **Hillmyer, M.A.**; Tolman, W.B. *J. Chem. Soc., Chem. Comm.* **2002**, 18, 2132.

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*Phase Behavior of Lithium Perchlorate-Doped Poly(Styrene-*b*-Isoprene-*b*-Ethyleneoxide) Triblock Copolymers.* Epps, T.H.; Bailey, T.S.; Pham, H.D.; **Bates, F.S.** *Chem. Mater.* **2002**, 14, 1706.

*Rhodium-Catalyzed Regiospecific Functionalization of Polyolefins in the Melt.* Kondo, Y.; Garcia-Cuadrado, D.; Hartwig, J.F.; Boen, N.K.; Wagner, N.B.; **Hillmyer, M.A.** *J. Am. Chem. Soc.* **2002**, 124, 1164.

*Role of Block Copolymers on Suppression of Droplet Coalescence.* Lyu, S.; Jones, T.D.; **Bates, F.S.**; **Macosko, C.W.** *Macromolecules* **2002**, 35, 7845.

*Synthesis and Application of Fluorescently Labeled Phthalic Anhydride (PA) Functionalized Polymers by ATRP.* Moon, B.; Hoye, T.R.; **Macosko, C.W.** *Polymer* **2002**, 43, 5501.

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*Unambiguous Determination of the <sup>13</sup>C and <sup>1</sup>H NMR Stereosequence Assignments of Polylactide using High-Resolution Solution NMR Spectroscopy.* Zell, M.T.; Padden, B.E.; Paterick, A.J.; Thakur, K.A.M.; Kean, R.T.; **Hillmyer, M.A.**; Munson, E.J. *Macromolecules* **2002**, *35*, 7700.

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*Characterization of Polylactide-b-Polyisoprene-b-Polylactide Thermoplastic Elastomers.* Frick, E.M.; Zalusky, A.S.; **Hillmyer, M.A.** *Biomacromolecules*, in press.

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### **IRG 3 – Magnetic Heterostructures**

*Magnetic Domain Observations of Free Standing Single Crystal Patterned Ni<sub>2</sub>MnGa Films.* Pan, Q.; Dong, J.W.; Cui, J.; **Palmstrøm, C.J.**; James, R.D. *J. Appl. Phys.* **2002**, *91*, 7812.

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## MRSEC Supported Patents

The following proposals 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 IRGs and the access to Shared Facilities, with user fees charged according to University and Federal guidelines.

- *Plastic Toughened Plastics*. Chaffin, K.A.; **Bates, F.S.**; Brant, P. *United States Patent 6,225,412*; Issued May 1, 2001. Link to US patent database (<http://www.uspto.gov/patft/index.html>).
- *Fluorinated Polymers and Methods for their Preparation*. **Hillmyer, M.A.** *United States Patent 6,433,101* (awarded 2002).