

11. MRSEC Supported Publications and Patents
(May 1, 2006 - April 30, 2007)

IRG 1 - Microstructured Polymers

IRG 1 Publications resulting from PRIMARY MRSEC Support

Jain, S.; Gong, X; Scriven, L.E.; **Bates, F.S.** *Disordered Network State in Hydrated Block Copolymer Surfactants*. Phys. Rev. Lett. **2006**, 96, 138304.

Phatak, A.; Lim, L.; Reaves, C.K.*; **Bates, F.S.** *On the Toughness of Glassy-Semicrystalline Multiblock Copolymers*. Macromolecules, **2006**, 39, 6221. (***2005 Summer REU participant, Florida A&M**)

Zhou, N.; **Bates, F.S.**; **Lodge, T.P.** *Mesoporous Membrane Templated by a Polymeric Bicontinuous Microemulsion*. Nano Letters, **2006**, 6, 2354.

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.

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.

Edmonds, W.F.; Li, Z.; **Hillmyer, M.A.**; **Lodge, T.P.** *Disk Micelles from Nonionic Coil-Coil Diblock Copolymers*. Macromolecules, **2006**, 39, 4526.

Li, Z.; **Hillmyer, M.A.**; **Lodge, T.P.** *Laterally Nanostructured Vesicles, Polygonal Bilayer Sheets, and Segmented Wormlike Micelles*. Nano Letters, **2006**, 6, 1245.

Li, Z.; **Hillmyer, M.A.**; **Lodge, T.P.** *Morphologies of Multicompartment Micelles Formed by ABC Miktoarm Star Terpolymers*. Langmuir, **2006**, 22, 9409.

Abbas, S; **Lodge, T.P.** *Superlattice Formation in a Binary Mixture of Block Copolymer Micelles*. Phys. Rev. Lett. **2006**, 97, 097803.

Bang, J.; Jain, S.; Li, Z.; **Lodge, T.P.**; Pedersen, J.S.; Kesselman, E.; Talmon, Y. *Sphere, Cylinder, and Vesicle Nano-Aggregates in Poly(styrene-*b*-isoprene Diblock Copolymer Solutions*. Macromolecules, **2006**, 39, 1199.

Zhang, J.; Cole, P.J.; Nagpal, U.; **Lodge, T.P.**; **Macosko, C.W.** *Direct Correlation Between Adhesion Promotion and Coupling Reactions at Immiscible Polymer-Polymer Interfaces*. J. Adhesion, **2006**, 82, 887.

Zhou, N.; **Lodge, T.P.**; **Bates, F.S.** *Influence of Conformational Asymmetry on the Phase Behavior of Ternary Homopolymer/Block Copolymer Blends around the Bicontinuous Microemulsion Channel*. J. Phys. Chem. B. **2006**, 110, 3979.

Pyun, A.; Bell, J.R.; Won, K.H.; Weon, B.M.; Seol, S.K.; Je, J.H.; **Macosko, C.W.** *Synchrotron X-ray Microtomography for 3D Imaging of Polymer Blends*. *Macromolecules*, **2007**, *40*, 2029.

Ranjan, A.; **Morse, D.C.** *Landau Theory of the Orthorhombic Fddd Phase*. *Phys. Rev. E*, **2006**, *74*, 011803.

IRG 1 Publications resulting from PARTIAL MRSEC Support

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. Part A: Polym. Chem.* **2007**, *45*, 361.

Ghoroghchian, P.P.; Lin, J.J.; Brannan, A.K.; Frail, P.R.; **Bates, F.S.**; Therien, M.J.; Hammer, D.H. *Quantitative Membrane Loading of Polymer Vesicles*, *Soft Matter*, **2006**, *2*, 1.

Hu, T.; **Grosberg, A.Y.**; Shklovskii, B.I. *How Proteins Search For Their Specific Sites on DNA: The Role of DNA Conformation*. *Biophys. J.* **2006**, *90*, 2731.

Hu, T.; **Grosberg, A.Y.**; Shklovskii, B.I. *The Suspension of Nanowires in a Weakly Conducting Medium*. *Phys. Rev. B*, **2006**, *73*, 155434.

Lua, R.C.; **Grosberg, A.Y.** *Statistics of Knots, Geometry of Conformations, and Evolution of Proteins*. *PLOS Comput. Biol.* **2006**, *2*, e45.

Moore, N.T.; **Grosberg, A.Y.** *Abundance of Trivial Knots in Various Polymer Chain Models*. *J. Phys. A-Math. Gen.* **2006**, *39*, 9081.

Rapaport, S.; Rabin, Y.; **Grosberg, A.Y.** *Worm-Like Polymer Loops and Fourier Knots*. *J. Phys. A-Math. Gen.* **2006**, *39*, L507.

Bailey, T.S.; Rzaev, 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.

Guo, S.; Rzaev, 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.

Liu, Y.; Nie, H.; Bansil, R.; Steinhart, M.; Bang, J.; **Lodge, T.P.** *Kinetics of Disorder to FCC Phase Transition via an Intermediate BCC State*. *Phys. Rev. E*, **2006**, *73*, 06183.

Martin, S.A.; Kjaer, K.; Weygand, M.J.; Weissbuch, I.; **Ward, M.D.** *Hydrogen-Bonded Monolayers and Interdigitated Multilayers at the Air-Water Interface*. *J. Phys. Chem. B*, **2006**, *110*, 14292.

IRG 1 Publications resulting from the USE OF SHARED FACILITIES

Christian, N.A.; Malone, M.C.; Ranka, S.S.; Li, G.; Frail, P.R.; Davis, K.P.; **Bates, F.S.**; Therien, M.J.; Ghoroghchian, P.P.; June, C.H.; Hammer, D.A. *Tat-Functionalized Near Infrared Emissive Polymersomes for Dendritic Cell Labeling*. *Bioconjugate Chem.* **2007**, *18*, 31.

Ahmed, F.; Pakunlu, R.I.; Scrinivas, G.; Brannon, A.; **Bates, F.S.**; Klein, M.L.; Minko, T.; Discher, D.E. *Shrinkage of a Rapidly Growing Tumor by Drug-Loaded Polymersomes: pH-Triggered Release through Copolymer Degradation*. *Mol. Pharmaceutics*, **2006**, *3*, 340.

Epps, III, T.H.; **Bates, F.S.** *Effects of Segregation Strength on Network Formation in Linear ABC Triblock Copolymers*. *Macromolecules*, **2006**, *39*, 2676.

Ghoroghian, P.; Li, G.; Levine, D.H.; Davis, K.P.; **Bates, F.S.**; Hammer, D.H.; Therien, M.J. *Bioresorbable Vesicles Formed Through Spontaneous Self-Assembly of Amphiphilic Poly(ethylene oxide)-block-polycaprolactone*. *Macromolecules*, **2006**, *39*, 1673.

Thio, Y.S.; Wu, J.; **Bates, F.S.** *Epoxy Toughening Using Low Molecular Weight Poly(hexylene oxide)-Poly(ethylene oxide) Diblock Copolymers*. *Macromolecules*, **2006**, *39*, 7187.

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.

Prakash, S.; **Francis, L.F.**; Scriven, L.E. *Microstructure Evolution in Dry Cast Cellulose Acetate Membranes by Cryo-SEM*. *J. Membrane Sci.* **2006**, *238*, 328.

Sanft, P.; **Francis, L.F.**; Davidson, J.H. *Calcium Carbonate Formation on Cross-Linked Polyethylene (PEX) and Polypropylene Random Copolymer (PP-r)*. *J. Solar Energy Engineering*, **2006**, *128*, 251.

Crossland, E.J.W.; Ludwigs, S.; **Hillmyer, M.A.**; Steiner, U. *Freestanding Nanowire Arrays From Soft-Etch Block Copolymer Templates*. *Soft Matter*, **2007**, *1*, 57.

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.

Anderson, K.A.; **Hillmyer, M.A.** *Melt Preparation and Nucleation Efficiency of Polylactide Stereocomplex Crystallites*. *Polymer*, **2006**, *47*, 2030.

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.

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.

Phillip, W.A.; Rzaev, J.; **Hillmyer, M.A.**; Cussler, E.L. *Diffusion Through Nanoporous Block Copolymer Membranes*. *J. Membrane Sci.* **2006**, *286*, 144.

Chastek, T.Q.; **Lodge, T.P.** *Grain Shapes and Growth Kinetics During Self-Assembly of Block Copolymers*. *J. Polym. Sci. Part B: Polym. Phys.* **2006**, *44*, 481.

He, Y.; Li, Z.; Simone, P.M.; **Lodge, T.P.** *Self-Assembly of Block Copolymer Micelles in an Ionic Liquid*. *J. Am. Chem. Soc.* **2006**, *128*, 2745.

He, Y.; **Lodge, T.P.** *The Micellar Shuttle: Thermoreversible, Intact Transfer of Block Copolymer Micelles between an Ionic Liquid and Water*. *J. Am. Chem. Soc.* **2006**, *128*, 12666.

Lodge, T.P.; Wood, E.R.; Haley, J.C. *Two Calorimetric Glass Transitions Do Not Necessarily Indicate Immiscibility: The Case of PEO/PMMA*. J. Polym. Sci. Part B: Polym. Phys. **2006**, *44*, 756.

Park, M.-J.; Char, K.; **Lodge, T.P.;** Kim, J.K. *Transient Solid-Like Behavior Near the Cylinder/Disorder Transition in Block Copolymer Solutions*. J. Phys. Chem. B. **2006**, *110*, 15295.

Simone, P.M.; **Lodge, T.P.** *Micellization of PS-PMMA Diblock Copolymers in an Ionic Liquid*. Macromol. Chem. Physic. **2007**, *208*, 339.

Clasen, C.; Plog, J.P.; Kulicke, W-M.; Owens, M.; **Macosko, C.;** Scriven, L.E.; Verani, M.; McKinley, G.H. *How Dilute are Dilute Solutions in Extensional Flows?* J. Rheol. **2006**, *50*, 849.

Mongondry, P.; **Macosko, C.W.;** Moaddel, T. *Rheology of Highly Concentrated Anionic Surfactants*. Rheol Acta, **2006**, *45*, 891.

Chang, K.; **Morse, D.C.** *Diblock Copolymer Surfactants in Immiscible Homopolymer Blends: Swollen Micelles and Interfacial Tension*. Macromolecules, **2006**, *39*, 7397.

IRG 2 – Crystalline Organic Semiconductors

IRG 2 Publications resulting from PRIMARY MRSEC Support

Burand, M.W.; McGee, K.A.; Cai, X.; Da Silva Filho, D.A.; **Brédas, J.L.**; **Frisbie, C.D.**; **Mann, K.R.** *Synthesis, X-ray, Spectroelectrochemical, and Theoretical Studies of a Tricyanovinyl-capped Quaterthiophene: A Correlation of Semiconductor Performance with Physical Properties.* Chem. Phys. Lett. **2006**, 425, 251.

Cai, X.; Burand, M.W.; Newman, C.R.; Da Silva Filho, D.A.; Pappenfus, T.M.; Bader, M.M.*; **Brédas, J.L.**; **Mann, K.R.**; **Frisbie, C.D.** *N- and P-Channel Transport Behavior in Thin Film Transistors Based on Tricyanovinyl-Capped Oligothiophenes.* J. Phys. Chem. B, **2006**, 110, 14590. (*2001-2004, 2006 Summer Faculty/Student Team Participant, Penn State)

Cai, X.; Gerlach, C.P.; **Frisbie, C.D.** *Current-Voltage Hysteresis and Memory Effects in Ambipolar Organic Thin Film Transistors Based on a Modified Oligothiophene.* J. Phys. Chem. C, **2007**, 111, 452.

Diao L.; **Frisbie C.D.**; Schroeffer D.D.; **Ruden P.P.** *Electrical Characterization of Metal/pentacene Contacts.* J. Appl. Phys. **2007**, 101, 014510.

Fritz, S.E.; Mohapatra, S.; Holmes, B.T.; Anderson, A.M.*; Prendergast, C.F.; **Frisbie, C.D.**; **Ward, M.D.**; Toney, M.F. *Thin Film Transistors Based on Alkylphenyl Quaterthiophenes: Structure and Electrical Transport Properties.* Chem. Mater. **2007**, 19, 1355. (*2003, 2004 Summer REU Participant, Hamline University)

Cai, X.; **Frisbie, C.D.**; **Leighton, C.** *Optimized Dielectric Properties of SrTiO₃:Nb/SrTiO₃ (001) Films for High Field Effect Charge Densities.* Appl. Phys. Lett. **2006**, 89, 242915. (cross-referenced in IRG 3)

Pesavento, P.V.; Puntambekar, K.; **Frisbie, C.D.**; McKeen, J.C.*; **Ruden, P.P.** *Film and Contact Resistance Measurements in Pentacene Thin Film Transistors: Dependence on Film Thickness, Electrode Geometry, and Correlation with Hole Mobility.* J. Appl. Phys. **2006**, 99, 094504/1. (*2002 Summer REU Participant, University of Minnesota)

Puntambekar, K.; Dong, J.; Haugstad, G.; **Frisbie, C.D.** *Structural and Electrostatic Complexity at a Pentacene/Insulator Interface.* Adv. Funct. Mater. **2006**, 16, 879.

Casado, J.; Delgado, M.C.R.; Merchan, M.C.R.; Hernandez, V.; Navarrete, J.T.L.; Pappenfus, T.M.; Williams, N.; Stegner, W.J.; Johnson, J.C.; Edlund, B.A.; Janzen, D.E.; **Mann, K.R.**; Orduna, J.; Villacampa, B. *Optical, Redox, and NLO Properties of Tricyanovinyl Oligothiophenes: Comparisons Between Symmetric and Asymmetric Substitution Patterns.* Chem-Eur J. **2006**, 12, 5458.

Casado, J.; Zgierski, M.Z.; Ewbank, P.C.; Burand, M.W.; Janzen, D.E.; **Mann, K.R.**; Pappenfus, T.M.; Berlin, A.; Perez-Inestrosa, E.; Ortiz, R.P.; Lopez Navarrete, J.T. *Exploration of Ground and Excited Electronic States of Aromatic and Quinoid S,S-Dioxide Terthiophenes. Complementary Systems for Enhanced Electronic Organic Materials.* J. Am. Chem. Soc. **2006**, 128, 10134.

Zhu, X.-Y.; Dutton, G.; Quinn, D.P.; Lindstrom, C.D.; Schultz, N.E.; Truhlar, D.G. *Molecular Quantum Well at the C₆₀/Au(111) Interface*. Phys. Rev. B, **2006**, 74, 241401(R).

Dutton, G; **Zhu, X.-Y.** *Distance-Dependent Electronic Coupling at Molecule-Metal Interfaces: C₆₀/Cu(111)*. J. Phys. Chem. B, **2004**, 108, 7788.

IRG 2 Publications resulting from PARTIAL MRSEC Support

Beljonne, D.; Cornil, J.; Coropceanu, V.; da Silva Filho, D.A.; Geskin, V.; Lazzaroni, R.; Leclere, P.; **Brédas, J.L.** *On the Transport, Optical, and Self-Assembly Properties of Pi-Conjugated Materials: A Combined Theoretical/Experimental Insight*. In Handbook of Conducting Polymers, Skotheim, T.A.; Reynolds, J.R., Eds., M. Dekker: New York, **2006**, 3-46.

Valeev, E.F.; Coropceanu, V.; da Silva, D.A.; Salman, S.; **Brédas, J.L.** *Effect of Electronic Polarization on Charge-transport Parameters in Molecular Organic Semiconductors*. J. Am. Chem. Soc. **2006**, 128, 9882.

Ahn C.H.; Bhattacharya, A.; Di Ventra, M.; Eckstein, J.N.; **Frisbie, C.D.**; Gershenson, M.E.; **Goldman, A.M.**; Inoue, I.H.; Mannhart, J.; Millis, A.; Morpurgo, A.F.; Natelson, D.; Triscone, J.-M. *Electrostatic Modification of Novel Materials*. Rev. Mod. Phys. **2006**, 78, 1185.

Panzer, M.J.; **Frisbie, C.D.** *High Charge Carrier Densities and Conductance Maxima in Single-crystal Organic Field-effect Transistors with a Polymer Electrolyte Gate Dielectric*. Appl. Phys. Lett. **2006**, 88, 203504/1.

Panzer, M.J.; **Frisbie, C.D.** *High Charge Carrier Density and Metallic Conductivity in Poly(3-hexylthiophene) Transistors Employing a Solution-Processed Polymer Electrolyte Gate Dielectric*. Adv. Funct. Mater. **2006**, 16, 1051.

Pivovar, A.M.; Curtis, J.E.; Leao, J.B.; Chesterfield, R.J.; **Frisbie, C.D.** *Structural and Vibrational Characterization of the Organic Semiconductor Tetracene as a Function of Pressure and Temperature*. Chem. Phys. **2006**, 325, 138.

Lindstrom, C.D.; **Zhu, X.-Y.** *Photo-induced Electron Transfer at Metal-molecule Interfaces*. Chem. Rev. **2006**, 106, 4281.

IRG 2 Publications resulting from the USE OF SHARED FACILITIES

NONE

IRG 3 - Magnetic Heterostructures

IRG 3 Publications resulting from PRIMARY MRSEC Support

Parker, J.S.; Wang, L.; Steiner, K.A.; **Crowell, P.A.**; **Leighton, C.** *Exchange Bias as a Probe of the Incommensurate Spin Density Wave in Epitaxial Fe/Cr (001)*. Phys. Rev. Lett. **2006**, 97, 227206.

Gredig, T.; Krivorotov, I.N.; **Dahlberg, E.D.** *Temperature Dependence of Magnetization Reversal and Angular Torque in Co/CoO*. Phys. Rev. B, **2006**, 74, 94431.

Wang, L.; Chen, T.Y.; Chien, C.L.; Checkelsky, J.G.*; Eckert, J.*; **Dahlberg, E.D.**; Umemoto, K.; **Wentzovitch, R.M.**; **Leighton, C.** *Composition Controlled Spin Polarization in $Co_{1-x}Fe_xS_2$: Electronic, Magnetic, and Thermodynamic Properties*. Phys. Rev. B. **2006**, 73, 144402. (***2003 Summer Faculty/Student Team, Harvey Mudd College**)

Goldman, A.M. *Oxide Heterostructures Grown by Molecular Beam Epitaxy: Spin Injection in Superconductors and Magnetic Coupling Phenomena*. Appl. Surf. Sci. **2006**, 252, 3928.

Bolon, B.; Haugen, M.A., Abin-Fuentes, A; Deneen, J; **Carter, C.B.**; **Leighton, C.** *Multiple Antiferromagnet/Ferromagnet Interfaces as a Probe of Grain-Size-Dependent Exchange Bias in Polycrystalline Co/Fe₅₀Mn₅₀*. J. Mag. Mag. Mat. **2007**, 309, 54. (*cross-referenced in proto-IRG*)

Cai, X.; **Frisbie, C.D.**; **Leighton, C.** *Optimized Dielectric Properties of SrTiO₃:Nb/SrTiO₃ (001) Films for High Field Effect Charge Densities*. Appl. Phys. Lett. **2006**, 89, 242915. (*cross-referenced in IRG 2*)

Hoch, M.J.R.; Kuhns, P.L.; Moulton, W.G.; Reyes, A.P.; Lu, J.; Wang, L.; **Leighton, C.** *Spin Dynamics in Highly Spin Polarized $Co_{1-x}Fe_xS_2$* . AIP Conf. Proc.: 24th International Conference on Low Temperature Physics (Eds Takano, Y.; Hershfield, S.P.; Hill, S.O.; Hirschfield, P.J.; **Goldman, A.M.**) **2006**, 850, 1263.

Kuhns, P.L.; Hoch, M.J.R.; Reyes, A.P.; Moulton, W.G.; Wang, L.; **Leighton, C.** *Evolution With Composition of the d-band Density of States at the Fermi Level in Highly Spin-Polarized $Co_{1-x}Fe_xS_2$* . Phys. Rev. Lett. **2006**, 96, 167208.

Wang, L; Chen, T.Y.; Chien, C.L.; **Leighton, C.** *Sulfur Stoichiometry Effects in Highly Spin Polarized CoS₂ Single Crystals*. Appl. Phys. Lett. **2006**, 88, 232509.

Lou, X.; Adelman, C.; Crooker, S.A.; Garlid, E.S.; Zhang, J.; Reddy, K.S.M.; Flexner, S.D.; **Palmstrøm, C.J.**; **Crowell, P.A.** *Electrical Detection of Spin Transport in Lateral Ferromagnet-Semiconductor Devices*. Nat. Phys. **2007**, 3, 197.

Lou, X.; Adelman, C.; Furis, M.; Crooker, S.A.; **Palmstrøm, C.J.**; **Crowell, P.A.** *Electrical Detection of Spin Accumulation at a Ferromagnet-Semiconductor Interface*. Phys. Rev. Lett. **2006**, 96, 176603.

Tan, L.; **Stadler, B.J.H.** *Fabrication and Magnetic Behavior of Co/Cu Multilayered Nanowires*. J. Mat. Res. **2006**, 21, 2870.

Misra A.; **Victoria, R.H.** *Ferromagnetic Relaxation by Magnon-Induced Currents.* Phys. Rev. B, **2006**, 73, 172414.

Saha, J.; **Victoria, R.H.** *Large Scale Micromagnetic Simulation for the Exchange Interaction Between A Polycrystalline Antiferromagnet and a Ferromagnet.* Phys. Rev. B, **2006**, 73, 104433.

Umemoto, K.; **Wentzcovitch, R.M.**; Wang, L.; **Leighton, C.** *Electronic Structure of $Co_{1-x}Fe_xS_2$.* Phys. Stat. Sol. (b), **2006**, 243, 2117.

IRG 3 Publications resulting from PARTIAL MRSEC Support

Tillmans, A.; Oertker, S.; Beschoten, B.; Guntherodt, G.; **Leighton, C.**; Schuller I.K.; Nogues, J. *Magneto-Optical Study of Transverse Magnetization in the Exchange Bias System $Fe/MnF_2(110)$.* Appl. Phys. Lett. **2006**, 89, 202512.

Adelmann, C.; Hilton, J.L.; Schultz, B.D.; McKernan, S.; **Palmstrøm, C.J.**; Lou, X.; Chiang, H.-S.; **Crowell, P.A.** *Spin Injection from Perpendicular Magnetized Ferromagnetic δ -MnGa into (Al,Ga)As Heterostructures.* Appl. Phys. Lett. **2006**, 89, 112511.

McGary, P.D.; Tan, L.; Zou, J.; **Stadler, B.J.H.**; Downey, P.; Flatau, A. *Magnetic Nanowires for Acoustic Sensors. (Invited)* J. Appl. Phys. **2006**, 99, 08B310.

Zou, J.; Qi, X.; Tan, L.; **Stadler, B.J.H.** *Nanoporous Silicon with Long-Range-Order Using Imprinted Anodic Alumina Etch Masks.* Appl. Phys. Lett. **2006**, 89, 093106.

Tsuchiya, T.; **Wentzcovitch, R.M.**; da Silva, C.R.; de Gironcoli, S.; Tsuchiya, J. *Pressure Induced High Spin to Low Spin Transition in Magnesiowüstite.* Phys. Stat. Sol. (b), **2006**, 243, 2111.

Tsuchiya, T.; **Wentzcovitch, R.M.**; de Gironcoli, S. *Spin Transition in Magnesiowüstite in Earth's Lower Mantle.* Phys. Rev. Lett. **2006**, 96, 198501.

IRG 3 Publications resulting from the USE OF SHARED FACILITIES

Compton, R.L.; **Crowell, P.A.** *Dynamics of a Pinned Magnetic Vortex.* Phys. Rev. Lett. **2006**, 97, 137202.

Parendo, K.A.; Tan, K.H. Sarwa B.; Bhattacharya, A.; Eblen-Zayas, M.; Staley, N.; **Goldman, A.M.** *Tuning the 2D Superconductor-Insulator Transition by Use of the Electric Field Effect.* Low Temperature Physics: 24th International Conference on Low Temperature Physics; edited by Takano, Y.; Hershfield, S.P.; Hill, S.O.; Hirschfeld, P.J.; **Goldman, A.M.** AIP Conference Proceedings, **2006**, 850, 949.

Parendo, K.A.; Tan, K.H. Sarwa B.; **Goldman, A. M.** *Electrostatic- and Parallel Magnetic Field- Tuned Two Dimensional Superconductor-Insulator Transitions.* Phys. Rev. B, **2006**, 73, 174527.

Parendo, K.A.; Tan, K.H.; Sarwa B.; **Goldman, A.M.** *Hot Electron Effects in the 2D Superconductor-Insulator Transition.* Phys. Rev. B, **2006**, 74, 134517.

Tan, K.H. Sarwa B.; Parendo, K.A.; **Goldman, A.M.** *Anomalous Insulating State Induced by*

Parallel Magnetic Field in Ultrathin Bismuth Films. Low Temperature Physics: 24th International Conference on Low Temperature Physics; edited by Takano, Y.; Hershfield, S.P.; Hill, S.O.; Hirschfeld, P.J.; **Goldman, A.M.** AIP Conference Proceedings, **2006**, 850, 951.

Aarbogh, H.M.; Wu, J.; Wang, L.; Zheng, H.; Mitchell, J.F.; **Leighton, C.** *Magnetic and Electronic Properties of $La_{1-x}Sr_xCoO_3$ Single Crystals Across the Percolation Metal-Insulator Transition*. Phys. Rev. B. **2006**, 74, 134408.

Farrell, H.H.; Hilton, J.L.; Schultz, B.D.; **Palmstrøm, C.J.** *Nonequilibrium Phases in Epitaxial Mn/GaAs Interfacial Reactions*. J. Vac. Sci. Technol. B, **2006**, 24, 2018.

Schultz, B.D.; Choi, S.G.; **Palmstrøm, C.J.** *Embedded Growth Mode of Thermodynamically Stable Metallic Nanoparticles on III-V Semiconductors*. Appl. Phys. Lett. **2006**, 88, 243117.

Schultz, B.D.; **Palmstrøm, C.J.** *Embedded Assembly Mechanism of Stable Metal Nanocrystals on Semiconductor Surfaces*. Phys. Rev. B (Rapid Communications), **2006**, 73, 241407.

Shih, T.C.; Xie, J.Q.; Dong, J.W.; Dong, X.Y.; Srivastava, S.; Adelman, C.; McKernan, S.; James, R.D.; **Palmstrøm, C.J.** *Epitaxial Growth and Characterization of Single Crystal Ferromagnetic Shape Memory Co_2NiGa Films*. Ferroelectrics, **2006**, 343, 35.

Speetzen, N.; Huang, X.; **Stadler, B.J.H.**; **Victoria, R.H.** *The Effects of Oxygen on Intergranular Exchange and Anisotropy Dispersion in Co/Pd Multilayers for Perpendicular Magnetic Recording Media*. J. Appl. Phys. **2006**, 99, 08E708.

Chelikowsky, J.R.; Kaxiras, T.; **Wentzcovitch, R.M.** *Theory of Spintronic Materials*. Phys. Stat. Sol. (b), **2006**, 243, 2133.

Proto-IRG (Nanoparticle-Based Materials)

Proto-IRG Publications resulting from PRIMARY MRSEC Support

Pi, X.D.; Mangolini, L.; **Campbell, S.A.**; **Kortshagen, U.** *Room-Temperature Atmospheric Oxidation of Si Nanocrystals after HF Etching*. Phys. Rev. B, **2007**, 75, 085423-1.

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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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