

2010 MRL PUBLICATIONS

IRG 1

a. Primary MRSEC Support

R. Chollakup, W. Smitthipong, C.D. Eisenbach, M. Tirrell, "Phase behavior and coacervation of aqueous poly(acrylic acid)-poly(allylamine) solutions," *Macromolecules* **43**, 2518-2528 (2010)

K.E. Feldman, M.J. Kade, E.W. Meijer, C.J. **Hawker**, E.J. **Kramer**, "Phase behavior of complementary multiply hydrogen bonded end-functional polymer blends," *Macromolecules* **43**, 5121-5127 (2010)

N. Gupta, B. Lin, L. Campos, M. Dimitriou, S. Hikita, N. Treat, M.V. Tirrell, D. Clegg, E.J. **Kramer**, C.J. **Hawker**, "Versatile approach to high-throughput microarrays using thiol-ene Click chemistry," *Nature Chemistry* **2**, 138 (2010)

D.S. Hwang, J.H. **Waite**, M.V. Tirrell, "Promotion of osteoblast proliferation on complex coacervation-based hyaluronic acid -recombinant mussel adhesive protein coatings on titanium," *Biomaterials* **31**, 1080 (2010)

D.S. Hwang, H. Zeng, A. Masic, M.J. Harrington, J. **Israelachvili**, J.H. **Waite**, "Fe³⁺-dependent cohesion of a prominent protein of mussel adhesive plaques," *J. Biol. Chem.* **285**, 25850-25858 (2010)

D.S. Hwang, H. Zeng, A. Srivastava, D.V. Krogstad, M. Tirrell, J.N. **Israelachvili**, J.H. **Waite**, "Viscosity and interfacial properties in a mussel-inspired coacervate," *Soft Matter* **6**, 3232-3236 (2010)

R. Kumar, D. Audus, G.H. **Fredrickson**, "Phase separation in symmetric mixtures of oppositely charged rodlike polyelectrolytes," *J. Phys. Chem. B* **114**, 9956 (2010)

J.H. Ortony, C.-Y. Cheng, R. Kausik, A. Pavlova, J. Hunt, S. **Han**, "Probing hydration water diffusion of macromolecular surfaces and interfaces," *New J. Phys.* **12**, 000000 (2010)

C. Tang, S. Hur, B.C. Stahl, K. Sivanandan, M. Dimitriou, E. Pressly, G.H. **Fredrickson**, E.J. **Kramer**, C.J. **Hawker**, "Thin film morphology of block copolymer blends with tunable supramolecular interactions for lithographic applications," *Macromolecules* **43**, 2880 (2010)

H. Zeng, D.S. Hwang, J. **Israelachvili**, J.H. **Waite**, "Strong reversible Fe³⁺ mediated bridging between Dopa-containing protein films in water," *Proc. Nat. Acad. Sci.* **107**, 12850-12853 (2010)

b. Partial MRSEC Support

Y.S. Jho, M.W. Kim, S.A. Safran, P.A. **Pincus**, "Lamellar phase coexistence induced by electrostatic interactions," *EPJE* **31**, 207-214 (2010)

M.J. Kade, D.J. Burke, C.J. **Hawker**, “The power of thiol-ene chemistry,” *J. Polym. Sci., Polym. Chem.* **48**, 743-750 (2010)

F.A. Leibfarth, M. Kang, M. Ham, J. Kim, L.M. Campos, N. Gupta, B. Moon, C.J. **Hawker**, “A facile route to ketene-functionalized polymers for general materials applications,” *Nature Chem.* **2**, 207-212 (2010)

C. Schneider, A. Jusufi, R. Farina, P. **Pincus**, M. Tirrell, M. Ballauff, “Stability behavior of anionic spherical polyelectrolyte brushes in the presence of La (III) counterions,” *Phys. Rev. E* **82**, 011401 (2010)

IRG 2

a. Primary MRSEC Support

T. Ben-Yaacov, T. Ive, C.G. **Van de Walle**, U.K. **Mishra**, J.S. **Speck**, S.P. **DenBaars**, “Properties of In-Doped ZnO films grown by metalorganic chemical vapor deposition on GaN(0001) templates,” *J. Electron. Mater.* **39**, 608 (2010)

O. Bierwagen, J.S. **Speck**, “High electron mobility In₂O₃ (001) and (111) thin films with nondegenerate electron concentration,” *Appl. Phys. Lett.* **97**, 072103 (2010)

O. Bierwagen, J.S. **Speck**, “Nucleation of islands and continuous high-quality In₂O₃ (001) films during plasma-assisted molecular beam epitaxy on Y-stabilized ZrO₂ (001),” *J. Appl. Phys.* **107**, 113519 (2010)

A. Janotti, C.G. **Van de Walle**, “Theory of native point defects and impurities in InN,” Chapter 11 in *Indium Nitride and Related Alloys*, edited by T.D. Veal, C.F. McConville, and W.J. Schaff (CRC Press, Boca Raton, 2010)

A. Janotti, J.B. Varley, P. Rinke, N. Umezawa, G. Kresse, C.G. **Van de Walle**, “Hybrid functional studies of the oxygen vacancy in TiO₂,” *Phys. Rev. B* **81**, 085212 (2010)

S. Limpijumnong, L. Gordon, M. Miao, A. Janotti, C.G. **Van de Walle**, “Alternative sources of p-type conduction in acceptor-doped ZnO,” *Appl. Phys. Lett.* **97**, 072112 (2010)

T. Nagata, O. Bierwagen, M.E. White, M-Y. Tsai, J.S. **Speck**, “Study of gold Schottky contact formation on oxygen plasma treated n-type SnO₂ (101) films,” *J. Appl. Phys.* **107**, 033707 (2010)

M-Y. Tsai, O. Bierwagen, M.E. White, J.S. **Speck**, “β-Ga₂O₃ growth by plasma-assisted molecular beam epitaxy,” *J. Vac. Sci. Tech.* **A28**, 354 (2010)

C.G. **Van de Walle**, A. Janotti, “Hydrogen in oxides and nitrides: Unexpected physics and impact on devices,” in *Proceedings of the 11th Europhysical Conference on Defects in Insulating Materials (EURODIM 2010)* (IOP Publishing), IOP Conf. Series: Mater. Sci. Eng. **15**, 012001 (2010)

J.B. Varley, A. Janotti, C.G. **Van de Walle**, “Group-V impurities in SnO₂ from first-principles calculations,” *Phys. Rev. B* **81**, 245216 (2010)

J.B. Varley, J.R. Weber, A. Janotti, C.G. **Van de Walle**, "Oxygen vacancies and donor impurities in β -Ga₂O₃," *Appl. Phys. Lett.* **97**, 142106 (2010)

J.R. Weber, W.F. Koehl, J.B. Varley, A. Janotti, B.B. Buckley, C.G. **Van de Walle**, D.D. Awschalom, "Quantum computing with defects," *Proc. Nat. Acad. Sci.* **107**, 8513 (2010)

M.E. White, O. Bierwagen, M.-Y. Tsai, J.S. **Speck**, "Synthesis and characterization of highly resistive epitaxial indium-doped SnO₂," *Appl. Phys. Express* **3**, 051101 (2010)

b. Partial MRSEC Support

B. Jalan, S. **Stemmer**, S. Mack, S.J. Allen, "Two-dimensional electron gas in δ -doped SrTiO₃," *Phys. Rev. B* **82**, 081103(R) (2010)

J. Son, P. Moetakef, B. Jalan, O. Bierwagen, N.J. Wright, R. Engel-Herbert, S. **Stemmer**, "Epitaxial SrTiO₃ films with electron mobilities exceeding 30,000 cm²V⁻¹s⁻¹," *Nature Materials* **9**, 482-484 (2010)

W.M. Hlaing Oo, S. Tabatabaei, M.D. McCluskey, J.B. Varley, A. Janotti, C.G. **Van de Walle**, "Hydrogen donors in SnO₂ studied by infrared spectroscopy and first-principles calculations," *Phys. Rev. B* **82**, 193201 (2010)

E. Kioupakis, P. Rinke, A. Schleife, F. Bechstedt, C.G. **Van de Walle**, "Free-carrier absorption in nitrides from first principles," *Phys. Rev. B* **81**, 241201 (2010)

E. Kioupakis, P. Rinke, C.G. **Van de Walle**, "Determination of internal loss in nitride lasers from first principles," *Appl. Phys. Express* **3**, 082101 (2010)

M. Mohamed, C. Janowitz, I. Unger, R. Manzke, Z. Galazka, R. Uecker, R. Fornari, J.R. Weber, J.B. Varley, C.G. **Van de Walle**, "The electronic structure of *b*-Ga₂O₃," *Appl. Phys. Lett.* **97**, 211903 (2010)

J. T-Thienprasert, S. Limpijumngong, A. Janotti, C.G. **Van de Walle**, L. Zhang, M.H. Du, D.J. Singh, "Vibrational signatures of O_{Te} and O_{Te}-V_{Cd} in CdTe: A first-principles study," *Comput. Mater. Sci.* **49**, S242 (2010)

J.R. Weber, A. Janotti, C.G. **Van de Walle**, "Intrinsic and extrinsic causes of electron accumulation layers on InAs surfaces," *Appl. Phys. Lett.* **97**, 192106 (2010)

IRG 3

a. Primary MRSEC Support

P. Antoni, M.J. Robb, L. Campos, M. Montanez, A. Hult, E. Malmstrom, M. Malkoch, C.J. **Hawker**, "Pushing the limits for thiol-Ene and CuAAC reactions: Synthesis of a 6th generation dendrimer in a single day," *Macromolecules* **43**, 6625-6631 (2010)

S.Q. Choi, T.M. **Squires**, "Dynamics within surfactant monolayers," *Phys. Fluids* **22**, 091113 (2010)

N.A. Lynd, F.T. Oyerokun, D. O'Donoghue, D.L. Handlin, G.H. **Fredrickson**, "Design of soft and strong thermoplastic elastomers based on nonlinear block copolymer architectures using self-consistent field theory," *Macromolecules* **43**, 3479 (2010)

J.E. Poelma, C.J. **Hawker**, "Block copolymers: With a little help from above," *Nature Nanotech.* **5**, 243-244 (2010)

C.B. Tang, S.M. Hur, B.C. Stahl, K. Sivanandan, M. Dimitriou, E. Pressly, G.H. **Fredrickson**, E.J. **Kramer**, C.J. **Hawker**, "Thin film morphology of block copolymer blends with tunable supramolecular interactions for lithographic applications," *Macromolecules* **43**, 2880-2889 (2010)

b. Partial MRSEC Support

D.S. Hwang, H. Zeng, A. Srivastava, D.V. Krogstad, M. Tirrell, J.N. **Israelachvili**, J.H. **Waite**, "Viscosity and interfacial properties in a mussel-inspired adhesive coacervate," *Soft Matter* **6**, 3232-3236 (2010)

Y. Min, N. Pesika, J. Zasadzinski, J. **Israelachvili**, "Studies of bilayers and vesicle adsorption to solid substrates: Development of a miniature streaming potential apparatus (SPA)," *Langmuir* **26**(11), 8684-8689 (2010)

M.I. Montanez, L.M. Campos, P. Antoni, Y. Hed, M.V. Walter, B.T. Krull, A. Khan, A. Hult, C.J. **Hawker**, M. Malkoch, "Accelerated growth of dendrimers via thiol-ene and esterification reactions," *Macromolecules* **43**, 6004-6013 (2010)

K. Sivanandan, T. Chatterjee, N. Treat, E.J. **Kramer**, C.J. **Hawker**, "High surface area poly(3-hexylthiophenes) thin films from cleavable graft copolymers," *Macromolecules* **43**, 233-241 (2010)

C. Tang, K. Sivanandan, B.C. Stahl, G.H. **Fredrickson**, E.J. **Kramer**, C.J. **Hawker**, "Multiple nanoscale templates by orthogonal degradation of a supramolecular block copolymer lithographic system," *ACS Nano* **4**, 285 (2010)

M. Yoo, S. Kim, J. Lim, E.J. **Kramer**, C.J. **Hawker**, B.J. Kim, J. Bang, "Facile synthesis of thermally stable core-shell gold nanoparticles via photo-cross-linkable polymeric ligands," *Macromolecules* **43**, 3570-3575 (2010)

Z. Zell, S.Q. Choi, L.G. **Leal**, T.M. **Squires**, "Microfabricated deflection tensiometers for measuring surface pressure of insoluble surfactants," *App. Phys. Lett.* **97**, 133505 (2010)

H. Zeng, D.S. Hwang, J.N. **Israelachvili**, J.H. **Waite**, "Strong reversible Fe³⁺-mediated bridging between dopa-containing protein films in water," *PNAS* **107**(29), 12850-12853 (2010)

IRG 4

a. Primary MRSEC Support

T.E. Buehl, J.M. LeBeau, S. **Stemmer**, M.A. Scarpulla, C.J. **Palmström**, A.C. **Gossard**, "Growth of embedded ErAs nanorods on (411)A and (411)B GaAs by molecular beam epitaxy," *J. of Crystal Growth* **312**(14), 2089-2092 (2010)

K.T. Delaney, N.A. **Spaldin**, C.G. **Van de Walle**, “Theoretical study of Schottky-barrier formation at epitaxial rare-earth-metal/semiconductor interfaces,” *Phys. Rev. B* **81**, 165312 (2010)

J.R. Pettta, H. Lu, A.C. **Gossard**, “A coherent beam splitter for electronic spin states,” *Science* **327**(5966), 669-672 (2010)

b. Partial MRSEC Support

Y.Y. Kuznetsova, M. Remeika, A.A. High, A.T. Hammack, L.V. Butov, M. Hanson, A.C. **Gossard**, “All-optical excitonic transistor,” *Optics Letters* **35**(10), 1587-1589 (2010)

S. Preu, S. Malzer, G.H. Dohler, H. Lu, A.C. **Gossard**, L.J. Wang, “Efficient III-V tunneling diodes with ErAs recombination centers,” *Semiconductor Science and Technology* **25**(11), Art. No. 115004 (2010)

A. Schwagmann, Z.-Y. Zhao, F. Ospald, H. Lu, D.C. Driscoll, M.P. Hanson, A.C. **Gossard**, J.H. Smet, “Terahertz emission characteristics of ErAs:InGaAs-based photoconductive antennas excited at 1.55 μm ,” *Appl. Phys. Lett.* **96**(14), 141108 (2010)

A. Sciambi, M. Pelliccione, S.R. Bank, A.C. **Gossard**, D. Goldhaber-Gordon, “Virtual scanning tunneling microscopy: A local spectroscopic probe of two-dimensional electron systems,” *Appl. Phys. Lett.* **97**(13), 132103 (2010)

W. Yi, V. Narayanamurti, H. Lu, M.A. Scarpulla, A.C. **Gossard**, “Probing semiconductor band structures and heterojunction interface properties with ballistic carrier emission: GaAs/Al_xGa_{1-x}As as a model,” *Phys. Rev. B* **81**(23), 235325 (2010)

Z. Zhao, A. Schwagmann, F. Ospald, D.C. Driscoll, H. Lu, A.C. **Gossard**, J.H. Smet, “Thickness dependence of the terahertz response in < 110 >-oriented GaAs crystals for electro-optic sampling at 1.55 μm ,” *Optics Express* **18**(15), 15956-15963 (2010)

J.M.O. Zide, J.H. Bahk, R. Singh, M. Zebarjadi, G. Zeng, H. Lu, J.P. Feser, D. Xu, S.L. Singer, Z.X. Bian, A. Majumdar, J.E. Bowers, A. Shakouri, A.C. **Gossard**, “High efficiency semimetal/semiconductor nanocomposite thermoelectric materials,” *J. Appl. Phys.* **108**(12), Art. No. 123702 (2010)

SEEDS/Initiatives

a. Primary MRSEC Support

F.G. Brunetti, X. Gong, M. Tong, A.J. **Heeger**, F. **Wudl**, “Strain and Hueckel aromaticity: Driving forces for a new generation of electron acceptors in organic electronics,” *Angew. Chem. Int. Ed.* **49**(3), 532 (2010)

F.G. Brunetti, R. Kumar, F. **Wudl**, “Organic electronics from perylene to organic photovoltaics: Painting a brief history with a broad brush,” *J. Mater. Chem.* **20**, 2934-2948 (2010)

b. Partial MRSEC Support

N.D. Treat, M.A. Brady, G. Smith, M.F. Toney, E.J. **Kramer**, C.J. **Hawker**, M.L. **Chabinyc**, "Interdiffusion of PCBM and P3HT reveals miscibility in a photovoltaically active blend," *Adv. Energy Mater.* (online) (Dec. 2010) DOI: 10.1002/aenm.201000023

SHARED FACILITIES

L.J. Allen, A.J. D'Alfonso, S.D. Findlay, J.M. LeBeau, N.R. Lugg, S. **Stemmer**, "Elemental mapping in scanning transmission electron microscopy," *J. Phys.: Conf. Ser.* **241**, 012061 (2010)

S.W. Boettcher, M. Schierhorn, N.C. Strandwitz, M.C. Lonergan, G.D. **Stucky**, "Ionic-ligand-mediated electrochemical charging of anionic gold nanoparticle films and anionic-cationic gold nanoparticle bilayers," *J. Phys. Chem. C* **114**, 4168-4178 (2010)

R.C. Coffin, Y. Schneider, E.J. **Kramer**, G.C. **Bazan**, "Novel binuclear initiators for the telechelic synthesis of elastomeric polyolefins," *J. Am. Chem. Soc.* **132**, 13869-13878 (2010)

S.A. Corr, D.P. Shoemaker, B.C. Melot, R. **Seshadri**, "Real space investigation of structural changes at the metal-insulator transition in VO₂," *Phys. Rev. Lett.* **105**, 056404, 1-4 (2010)

F. Deplace, Z. Wang, N.A. Lynd, A. Hotta, J.M. Rose, P.D. Hustad, J. Tian, H. Ohtaki, G.W. Coates, F. Shimizu, K. Hirokane, F. Yamada, Y.-W. Shin, L. Rong, J. Zhu, S. Toki, B.S. Hsiao, G.H. **Fredrickson**, E.J. **Kramer**, "Processing-structure-mechanical property relationships of semicrystalline polyolefin based block copolymers," *J. Polym. Sci.: Part B: Polym. Phys.* **48**, 1428 (2010)

R.M. Farrell, D.A. Haeger, X. Chen, C.S. Gallinat, R.W. Davis, M. Cornish, K. Fujito, S. Keller, S.P. **DenBaars**, S. Nakamura, J.S. **Speck**, "Origin of pyramidal hillocks on GaN thin films grown on free-standing *m*-plane GaN substrates," *Appl. Phys. Lett.* **96**, 231907 (2010)

R.M. Farrell, P.S. Hsu, D.A. Haeger, K. Fujito, S.P. **DenBaars**, J.S. **Speck**, S. Nakamura, "Low-threshold-current-density AlGaIn-cladding-free *m*-plane InGaIn/GaN laser diodes," *Appl. Phys. Lett.* **96**, 231113 (2010)

A.J. Forman, J.-N. Park, W. Tang, Y.-S. Hu, G.D. **Stucky**, E.W. McFarland, "Silica-encapsulated Pd nanoparticles as a regenerable and sintering-resistant catalyst," *ChemCatChem* **2**, 1318-1324 (2010)

C.S. Gallinat, G. Koblmüller, F. Wu, J.S. **Speck**, "Evaluation of threading dislocation densities in In- and N-face InN," *J. Appl. Phys.* **107**, 053517 (2010)

M.J. Harrington, A. Masic, N. Holten Andersen, J.H. **Waite**, P. Fratzl, "Iron-clad fibers: A metal-based biological strategy for hard flexible coatings," *Science* **328**, 216-220 (2010)

A.M. Horst, A.C. Neal, R.E. Mielke, P.R. Sislian, W.H. Suh, L. Madler, G.D. **Stucky**, P.A. Holden, "Dispersion of TiO₂ nanoparticle agglomerates by *Pseudomonas aeruginosa*," *Appl. and Environ. Microbiology* **76**, 7292-7298 (2010)

P.S. Hsu, K.M. Kelchner, A. Tyagi, R.M. Farrell, D.A. Haeger, K. Fujito, H. Ohta, S.P. **DenBaars**, J.S. **Speck**, S. Nakamura, "InGaN/GaN blue laser diode grown on semipolar (3031) free-standing GaN substrates," *Appl. Phys. Express* **3**, 052702 (2010)

W.B. Im, S. Brinkley, A. Mikhailovsky, J. Hu, S.P. **DenBaars**, R. **Seshadri**, "Sr_{2.975-x}Ba_xCe_{0.025}AlO₄F: A highly efficient green-emitting oxyfluoride phosphor for solid state white lighting," *Chem. Mater.* **22**, 2842-2849 (2010)

T. Kang, R.J. Amir, A. Khan, K. Ohshimizu, J.N. Hunt, K. Sivanandan, M.I. Montanez, M. Malkoch, M. Ueda, C.J. **Hawker**, "Facile access to internally functionalized dendrimers through efficient and orthogonal click reactions," *Chem. Commun.* **46**, 1556-1558 (2010)

K.M. Kelchner, R.M. Farrell, Y.-D. Lin, P.S. Hsu, M.T. Hardy, F. Wu, D.A. Cohen, H. Ohta, J.S. **Speck**, S. Nakamura, S.P. **DenBaars**, "Continuous-wave operation of pure blue AlGaIn-cladding-free nonpolar InGaIn/GaN laser diodes," *Appl. Phys. Express* **3**, 092103 (2010)

M.H. Kim, J.M. Baik, S.J. Lee, H.-Y. Shin, J. Yoon, G.D. **Stucky**, M. Moskovits, A.M. Wodtke, "Growth direction determination of a single RuO₂ nanowire by polarized Raman spectroscopy," *Appl. Phys. Lett.* **96**, 213108 (2010)

M.H. Kim, J.M. Baik, J. Zhang, C. Larson, Y. Li, G.D. **Stucky**, M. Moskovits, A.M. Wodtke, "TiO₂ nanowire growth driven by phosphorous-doped nanocatalysis," *J. Phys. Chem. C* **114**, 10697-10702 (2010)

S.-H. Kim, P.S. Halasyamani, B. Melot, R. **Seshadri**, M.A. Green, A.S. Sefat, D. Mandrus, "Experimental and computational investigation of the polar ferrimagnet VOSe₂O₅," *Chem. Mater.* **22**, 5074-50083 (2010)

A. Kleiman-Shwarscstein, M.N. Huda, A. Walsh, Y.F. Yan, G.D. **Stucky**, Y.S. Hu, M.M. Al-Jassim, E.W. McFarland, "Electrodeposited aluminum-doped alpha-Fe₂O₃ photoelectrodes: Experiment and theory," *Chemistry of Materials* **22**, 510-517 (2010)

G. Koblmüller, R.M. Chu, A. Raman, U.K. **Mishra**, J.S. **Speck**, "High-temperature molecular beam epitaxial growth of AlGaIn/GaN on GaN templates with reduced interface impurity levels," *J. Appl. Phys.* **107**, 043527 (2010)

G. Koblmüller, F. Reurings, F. Tuomisto, J.S. **Speck**, "Influence of Ga/N ratio on morphology, vacancies, and electrical transport in GaN grown by molecular beam epitaxy at high temperature," *Appl. Phys. Lett.* **97**, 191915 (2010)

E.J. **Kramer**, "Phase transitions in thin block copolymer films," *MRS Bulletin* **35**, 457-465 (2010)

S. Krishnan, M. Paik, C.K. Ober, E. Martinelli, G. Galli, K.E. Sohn, E.J. **Kramer**, D.A. Fischer, "NEXAFS depth profiling of surface segregation in block copolymer thin films," *Macromolecules* **43**, 4733-4743 (2010)

- C.B. Kristalyn, X. Lu, C.J. Weinman, C.K. Ober, E.J. **Kramer**, Z. Chen, "Surface structures of an amphiphilic tri-block copolymer in air and in water probed using sum frequency generation vibrational spectroscopy," *Langmuir* **26**, 11337-11343 (2010)
- J.A. Kurzman, X. Ouyang, W.B. Im, J. Li, J. Hu, S.L. Scott, R. **Seshadri**, "La₄LiAuO₈ and La₂BaPdO₅: Comparing two highly stable d⁸ square-planar oxides," *Inorg. Chem.* **49**, 4670-4680 (2010)
- J.M. LeBeau, S.D. Findlay, L.J. Allen, S. **Stemmer**, "Position averaged convergent beam electron diffraction: Theory and applications," *Ultramicroscopy* **110**, 118 (2010)
- J.M. LeBeau, S.D. Findlay, L.J. Allen, S. **Stemmer**, "Standardless atom counting in scanning transmission electron microscopy," *Nano Letters* **10**, 4405-4408 (2010)
- F.A. Leibfarth, Y. Schneider, N.A. Lynd, A. Schultz, B. Moon, E.J. **Kramer**, G.C. **Bazan**, C.J. **Hawker**, "Ketene functionalized polyethylene: Control of cross-link density and material properties," *J. Am. Chem. Soc.* **132**, 14706-14709 (2010)
- D.I. Liang, D.C. Chapman, Y. Li, D.C. Oakley, T. Napoleone, P.W. Juodawlkis, C. Brubaker, C. Mann, H. Bar, O. Raday, J.E. Bowers, "Uniformity study of wafer-scale InP-to-silicon hybrid integration," *Applied Physics A*, DOI 10.1007/s00339-010-5999-z (2010)
- C.-Y. Lin, A. Garcia, P. Zalar, J.Z. Brzezinski, T.-Q. **Nguyen**, "Effect of thermal annealing on polymer light-emitting diodes utilizing cationic conjugated polyelectrolytes as electron injection layers," *J. Phys. Chem. C* **114**(37), 15786-15790 (2010)
DOI: 10.1021/jp103184z
- Y.-D. Lin, S. Yamamoto, C.-Y. Huang, C.-L. Hsiung, F. Wu, K. Fujito, H. Ohta, J.S. **Speck**, S.P. **DenBaars**, S. Nakamura, "High quality InGaN/AlGaN multiple quantum wells for semipolar InGaN green laser diodes," *Appl. Phys. Express* **3**, 082001 (2010)
- W.M. Linhart, T.D. Veal, P.D.C. King, G. Koblmüller, C.S. Gallinat, J.S. **Speck**, C.F. McConville, "Surface, bulk, and interface electronic properties of nonpolar InN," *Appl. Phys. Lett.* **97**, 112103 (2010)
- B.C. Melot, A. Goldman, L.E. Darago, J.D. Furman, E.E. Rodriguez, R. **Seshadri**, "Magnetic ordering and magnetodielectric phenomena in CoSeO₄," *J. Phys.: Condensed Matter* **22**, 506003(1-7) (2010)
- B.C. Melot, B. Paden, R. **Seshadri**, E. Suard, G. N'enert, A. Dixit, G. Lawes, "Magnetic structure and susceptibility of CoSe₂O₅: An antiferromagnetic chain compound," *Phys. Rev. B* **82**, 014411, 1-6 (2010)
- V. Mishra, S. Hur, G.H. **Fredrickson**, E.W. Cochran, G.E. Stein, E.J. **Kramer**, "Symmetry transitions in thin films of diblock copolymer/homopolymer blends," *Macromolecules* **43**, 1942 (2010)
- A. Mohan, R. Elliott, G.H. **Fredrickson**, "Field-theoretic model of inhomogeneous supramolecular polymer networks and gels," *J. Chem. Phys.* **133**, 174903 (2010)

- J. Neilson, J. Kurzman, R. **Seshadri**, D.E. Morse, "Cobalt coordination and clustering in γ -Co(OH)₂ revealed by synchrotron X-ray total scattering," *Chem. Eur. J.* **16**, 9998-10006 (2010)
- H. Nulwala, D.J. Burke, A. Khan, A. Serrano, C.J. **Hawker**, "N-Vinyltriazoles: A new functional monomer family through Click chemistry," *Macromolecules* **43**, 5474-5477 (2010)
- D. Park, J.A. Finlay, R.J. Ward, C.J. Weinman, S. Krishnan, M.Y. Paik, K.E. Sohn, M.E. Callow, J.A. Callow, D.L. Handlin, C.L. Willis, D.A. Fischer, E.R. Angert, E.J. **Kramer**, C.K. Ober, "Antimicrobial behavior of semifluorinated-quaternized triblock copolymers against marine and airborne microorganisms," *ACS Applied Materials & Interfaces* **2**, 703-711 (2010)
- D. Park, C.J. Weinman, J.A. Findlay, B.R. Fletcher, M.Y. Paik, H.S. Sundaram, M. Dimitriou, K.E. Sohn, M.E. Callow, J.A. Callow, D.L. Handlin, C.L. Willis, D.A. Fischer, E.J. **Kramer**, C.K. Ober, "Amphiphilic surface active triblock copolymers with mixed hydrophobic and hydrophilic side chains for tuned marine fouling-release properties," *Langmuir* **26**, 9772-9781 (2010)
- J.N. Park, P. Zhang, Y.S. Hu, E. McFarland, "Synthesis and characterization of sintering-resistant silica-encapsulated Fe₃O₄ magnetic nanoparticles active for oxidation and chemical looping combustion," *Nanotechnology* **21**, 225708 (2010)
- A.J. Pascall, T.M. **Squires**, "An automated, high-throughput experimental system for induced charge electrokinetics," *Lab. Chip* **10**, 2350-2357 (2010)
- A. Rawal, B.J. Smith, G.L. Athens, C. Edwards, L. Roberts, V. Gupta, B.F. **Chmelka**, "Molecular silicate and aluminate species in anhydrous and hydrated cements," *J. Am. Chem. Soc.* **132**, 7321-7337 (2010)
- R.A. Riggleman, G.H. **Fredrickson**, "Field theoretic simulations in the Gibbs ensemble," *J. Chem. Phys.* **132**, 024104 (2010)
- P.J. Saines, B.C. Melot, R. **Seshadri**, A.K. Cheetham, "Synthesis, structure and magnetic phase transitions of the manganese succinate hybrid framework, Mn(C₄H₄O₄)," *Chem. Eur. J.* **25**, 7579-7585 (2010)
- M. Schierhorn, S.W. Boettcher, J.H. Peet, E. Matioli, G.C. **Bazan**, G.D. **Stucky**, M. Moskovits, "CdSe nanorods dominate photocurrent of hybrid CdSe-P3HT photovoltaic cell," *ACS Nano* **4**, 6132-6136 (2010)
- Y. Shi, F. Zhang, Y.-S. Hu, X. Sun, Y. Zhang, H.I. Lee, L. Chen, G.D. **Stucky**, "Low-temperature pseudomorphic transformation of ordered hierarchical macro-mesoporous SiO₂/C nanocomposite to SiC via magnesiothermic reduction," *J. Am. Chem. Soc.* **132**, 5552-5553 (2010)
- D.P. Shoemaker, R. **Seshadri**, "Total scattering descriptions of local and cooperative distortions in the oxide spinel (Mg,Cu)Cr₂O₄ with dilute Jahn-Teller ions," *Phys. Rev. B* **82**, 214107(1-9) (2010)

- K.E. Sohn, K. Kojio, B.C. Berry, A. Karim, R.C. Coffin, G.C. **Bazan**, E.J. **Kramer**, M. Sprung, J. Wang, "Surface effects on the thin film morphology of block copolymers with a bulk order-order transition," *Macromolecules* **43**, 3406-3414 (2010)
- J. Son, J.M. LeBeau, S.J. Allen, S. **Stemmer**, "Conductivity enhancement of ultrathin LaNiO₃ films in superlattices," *Appl. Phys. Lett.* **97**, 202109 (2010)
- J. Son, P. Moetakef, J.M. LeBeau, D. Ouellette, L. Balents, S.J. Allen, S. **Stemmer**, "Low-dimensional Mott material: Transport in ultrathin epitaxial LaNiO₃ films," *Appl. Phys. Lett.* **96**, 062114 (2010)
- N.C. Strandwitz, Y. Nonoguchi, S.W. Boettcher, G.D. **Stucky**, "In situ photopolymerization of pyrrole in mesoporous TiO₂," *Langmuir* **26**, 5319-5322 (2010)
- W. Tang, Z.P. Hu, M.J. Wang, G.D. **Stucky**, H. Metiu, E.W. McFarland, "Methane complete and partial oxidation catalyzed by Pt-doped CeO₂," *J. Catal.* **273**, 125-137 (2010)
- N.D. Treat, L.M. Campos, M.D. Dimitriou, B. Ma, M.L. **Chabinye**, C.J. **Hawker**, "Nanostructured hybrid solar cells: Dependence of the open circuit voltage on the interfacial composition," *Adv. Mater.* **22**, 4982 (2010)
- A. Tyagi, R.M. Farrell, K.M. Kelchner, C.-Y. Huang, P.S. Hsu, D.A. Haeger, M.T. Hardy, C. Holder, K. Fujito, D.A. Cohen, H. Ohta, J.S. **Speck**, S.P. **DenBaars**, S. Nakamura, "AlGaIn-cladding free green semipolar GaN based laser diode with a lasing wavelength of 506.4nm," *Appl. Phys. Express* **3**, 011002 (2010)
- M.C. Villet, G.H. **Fredrickson**, "Numerical coarse-graining of fluid field theories," *J. Chem. Phys.* **132**, 034109 (2010)
- Z. Wang, Y. Niu, G.H. **Fredrickson**, E.J. **Kramer**, Y.-W. Shin, F. Shimizu, L. Rong, B.S. Hsiao, G.W. Coates, "Step-cycle mechanical processing of gels of sPP-b-EPR-b-sPP triblock copolymer and mineral oil," *Macromolecules* **43**, 6782 (2010)
- C.J. Weinman, N. Gunari, S. Krishnan, R. Dong, M.Y. Paik, K.E. Sohn, G.C. Walker, E.J. **Kramer**, D.A. Fischer, C.K. Ober, "Protein adsorption resistance of anti-biofouling block copolymers containing amphiphilic side chains," *Soft Matter* **6**, 3237-3243 (2010)
- F. Wu, Y.-D. Lin, A. Chakraborty, H. Ohta, S.P. **DenBaars**, S. Nakamura, J.S. **Speck**, "Stacking fault formation in the long wavelength InGaIn/GaN multiple quantum wells grown on *m*-plane GaN," *Appl. Phys. Lett.* **96**, 231912 (2010)
- E.C. Young, C.S. Gallinat, A.E. Romanov, A. Tyagi, F. Wu, J.S. **Speck**, "Critical thickness for onset of plastic relaxation in (11 $\bar{2}2$) and (20 $\bar{2}1$) semipolar AlGaIn heterostructures," *Appl. Phys. Express* **3**, 111002 (2010)
- E.C. Young, A.E. Romanov, C.S. Gallinat, As. Hirai, G.E. Beltz, J.S. **Speck**, "Anisotropy of tensile stresses and cracking in nonbasal plane Al_xGa_{1-x}In/GaN heterostructures," *Appl. Phys. Lett.* **96**, 041913 (2010)
- E.C. Young, F. Wu, A.E. Romanov, A. Tyagi, C.S. Gallinat, S.P. **DenBaars**, S. Nakamura, J.S. **Speck**, "Lattice tilt and misfit dislocations in (11 $\bar{2}2$) Semipolar GaIn heteroepitaxy," *Appl. Phys. Express* **3**, 011004 (2010)

Y. Zhang, Y. Shi, Y-H. Liou, A. M. Sawvel, X. Sun, Y. Cai, P.A. Holden, G.D. **Stucky**, “High performance separation of aerosol sprayed mesoporous TiO₂ sub microspheres from aggregates via density gradient centrifugation,” *J. Mater. Chem.* **20**, 4162-4167 (2010)

PATENTS

a. Patents granted

“Block polymer processing for mesostructured inorganic oxide materials”
G.D. **Stucky**, B.F. **Chmelka**, D. Zhao, N. Melosh, Q. Huo, J. Feng, P. Yang, D. Pine, D. Margolese, W. Lukens, Jr., G.H. **Fredrickson**, P. Schmidt-Winkel
U. S. Patent 7,763,665 (July 27, 2010)

“Inorganic materials for hemostatic modulation and therapeutic wound healing”
G.D. **Stucky**, T.A. Ostomel, Q. Shi, P.K. Stoimenov, P.A. Holden
U. S. Patent 7,858,123 (December 28, 2010)

b. Patent applications (excluding provisional applications)

“Oxides for wound healing and body repair”
G.D. **Stucky**, T. Ostomel, Q. Shi, A.M. Sawvel
U. S. Patent Application 20100209531 (August 19, 2010)

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None