

2013 MRL PUBLICATIONS

IRG1

a. Primary MRSEC Support that Acknowledge the MRSEC Award

S.H. Donaldson Jr., M. Valtiner, M.A. Gebbie, J. Harada, J.N. **Israelachvili**, "Interactions and visualization of bio-mimetic membrane detachment at smooth and nano-rough gold electrode surfaces," *Soft Matter* **9**, 5231-5238 (2013)

J. Franck, J.A. Scott, S. **Han**, "Nonlinear scaling of surface water diffusion with bulk water viscosity of crowded solutions," *J. Am. Chem. Soc.* **135**, 4175 (2013)

J. Heo, T. Kang, S.G. Jang, J.H. Hwang, J.M. Spruell, K.L. Killops, J.H. **Waite**, C.J. **Hawker**, "Improved performance of protected polysiloxanes for bio-inspired wet adhesion to surface oxides," *J. Am. Chem. Soc.* **134**, 20139 (2013)

S.G. Jang, D.J. Audus, D. Klinger, D.V. Krogstad, B.J. Kim, A. Cameron, S.W. Kim, K.T. Delaney, S.M. Hur, K.L. Killops, G.H. **Fredrickson**, E.J. Kramer, C.J. **Hawker**, "Striped, ellipsoidal particles by controlled assembly of diblock copolymers," *J. Am. Chem. Soc.* **135**, 6649-6657 (2013)

D. Klinger, M.J. Robb, J.M. Spruell, N.A. Lynd, C.J. **Hawker**, L.A. Connal, "Supramolecular guests in solvent driven block copolymer assembly: From internally structured nanoparticles to micelles," *Polym. Chem.* **4**, 5038-5042 (2013)

D.V. Krogstad, N.A. Lynd, S.-H. Choi, J.M. Spruell, C.J. **Hawker**, E.J. Kramer, M.V. Tirrell, "The effects of polymer and salt concentration on the structure and properties of triblock copolymer coacervate hydrogels," *Macromolecules* **46**, 1512 (2013)

F.A. Leibfarth, K.M. Mattson, B.P. Fors, H.A. Collins, C.J. **Hawker**, "External regulation of controlled polymerizations," *Angewandte Chemie International Edition* **52**, 199 (2013)

M. Menyo, C.J. **Hawker**, J.H. **Waite**, "Versatile tuning of supramolecular hydrogels through metal complexation of oxidation resistant catechol inspired ligands," *Soft Matter* **9**, 10314-10323 (2013)

J.H. Ortony, D.S. Hwang, J.M. Franck, J.H. **Waite**, S. **Han**, "Asymmetric collapse in biomimetic complex coacervates revealed by local polymer and water dynamics," *Biomacromolecules* **14**(5), 1395-1402 (2013)

L.M. Pitet, A.H.M. van Loon, E.J. Kramer, C.J. **Hawker**, E.W. Meijer, "Nanostructured supramolecular block copolymers based on polydimethylsiloxane and polylactide," *ACS Macro Lett.* **2**, 1006-1010 (2013)

S. Tamesue, M. Ohtani, K. Yamada, Y. Ishida, J.M. Spruell, N.A. Lynd, C.J. **Hawker**, T. Aida, "Linear versus dendritic molecular binders for hydrogel network formation with clay nanosheets: Studies with ABA triblock copolyethers carrying guanidinium ion pendants," *J. Am. Chem. Soc.* **135**, 15650-15655 (2013)

W. Wei, J. Yu, C.C. Broomell, J.N. **Israelachvili**, J.H. **Waite**, "Hydrophobic enhancement of Dopa mediated adhesion in a mussel foot protein," *J. Am. Chem. Soc.* **135**, 377 (2013)

J. Yu, Y. Kan, M. Rapp, E. Danner, W. Wei, S. Das, D.R. Miller, Y. Chen, J.H. **Waite**, J.N. **Israelachvili**, "Adaptive hydrophobic and hydrophilic interactions of mussel foot proteins with organic thin films," *Proc. Nat. Acad. Sci. USA* **110**, 15680-15685 (2013)

b. Partial MRSEC Support that Acknowledge the MRSEC Award

D.J. Audus, K.T. Delaney, H.D. Ceniceros, G.H. **Fredrickson**, "Comparison of pseudo-spectral algorithms for field-theoretic simulations of polymers," *Macromolecules* **46**, 8383 (2013). DOI 10.1021/ma401804j

K.P. Barteau, M. Wolffs, N.A. Lynd, G.H. **Fredrickson**, E.J. Kramer, C.J. **Hawker**, "Allyl glycidyl ether-based polymer electrolytes for room temperature lithium batteries," *Macromolecules* **46**, 8988-8994 (2013)

M.R. **Begley**, R.R. Collino, J.N. **Israelachvili**, R.M. McMeeking, "Peeling of a tape with large deformations and frictional sliding," *J. of Mech. and Phys. of Solids* **61**, 1265 (2013)

C.Y. Cheng, S. **Han**, "Dynamic nuclear polarization methods in solids and solutions to explore membrane proteins and membrane systems," *Annu. Rev. Phys. Chem.* **64**, 507 (2013)

S. Das, X. Banquy, B. Zappone, G.W. Greene, G.D. Jay, J.N. **Israelachvili**, "Synergistic interactions between grafted hyaluronic acid and Lubricin provide enhanced wear protection and lubrication," *Biomacromolecules* **14**(5), 1669-1677 (2013)

S. Donaldson, S. Das, M. Gebbie, M. Rapp, L. Jones, Y. Roiter, P. Koenig, Y. Gizaw, J.N. **Israelachvili**, "Asymmetric electrostatic and hydrophobic-hydrophilic interaction forces between mica surfaces and silicone polymer thin films," *ACS Nano* **7**(11), 10094-10104 (2013)

B.P. Fors, J.E. Poelma, M.S. Menyo, M.J. Robb, D.M. Spokoyny, J.W. Kramer, J.H. **Waite**, C.J. **Hawker**, "Fabrication of unique chemical patterns and concentration gradients with visible light," *J. Am. Chem. Soc.* **135**, 14106-14109 (2013)

J.M. Franck, R. Kausik, S. **Han**, "Overhauser dynamic nuclear polarization-enhanced NMR relaxometry," *Microporous and Mesoporous Mater.* **178**, 113-118 (2013)

J.M. Franck, A. Pavlova, J.A. Scott, S. **Han**, "Quantitative cw Overhauser effect dynamic nuclear polarization for the analysis of local water dynamics," *Prog. Nucl. Magn. Reson.* **74**, 33-56 (2013)

J.N. **Israelachvili**, K. Kristiansen, M.A. Gebbie, D.W. Lee, S.H. Donaldson Jr., S. Das, M.V. Rapp, X. Banquy, M. Valtiner, J. Yu, "The intersection of interfacial forces and electrochemical reactions," *J. Phys. Chem. B* **117**(51), 16369-16387 (2013)

H. Jung, F.A. Leibfarth, S. Woo, S. Lee, M. Kang, B. Moon, C.J. **Hawker**, J. Bang, "Efficient surface neutralization and enhanced substrate adhesion through ketene mediated crosslinking and functionalization," *Advanced Functional Materials* **23**, 1597 (2013)

A. Lee, P. Lundberg, D. Klinger, B.F. Lee, C.J. **Hawker**, N.A. Lynd, "Physiologically relevant, pH-responsive PEG-based block and statistical copolymers with N,N-diisopropylamine units," *Polym. Chem.* **4**, 5735-5742 (2013)

D.W. Lee, C. Lim, J.N. **Israelachvili**, D.S. Hwang, "Strong adhesion and cohesion of chitosan in aqueous solutions," *Langmuir* **29**(46), 14222-14229 (2013)

F.A. Leibfarth, C.J. **Hawker**, "The emerging utility of ketenes in polymer chemistry," *J. Polym. Sci., Polym. Chem.* **51**, 3769-3782 (2013)

P. Lundberg, N.A. Lynd, Y.N. Zhang, X.H. Zeng, D.V. Krogstad, T. Paffen, M. Malkoch, A.M. Nystrom, C.J. **Hawker**, "pH-triggered self-assembly of biocompatible histamine-functionalized triblock copolymers," *Soft Matter* **9**, 82 (2013)

S.C.T. Nicklisch, S. Das, N. Martinez, J.H. **Waite**, J.N. **Israelachvili**, "Antioxidant efficacy and adhesion rescue by a recombinant mussel foot protein-6," *Biotech. Progress* **29**, 1587-1593 (2013)

L.M. Pitet, A.H.M. van Loon, E.J. Kramer, C.J. **Hawker**, E.W. Meijer, "Nanostructured supramolecular block copolymers based on polydimethylsiloxane and polylactide," *ACS Macro Lett.* **2**(11), 1006-1010 (2013)

L.M. Pitet, S.F. Wuister, E. Peeters, E.J. Kramer, C.J. **Hawker**, E.W. Meijer, "Well-organized dense arrays of nanodomains in thin films of poly(dimethylsiloxane)-b-poly(lactide) diblock copolymers," *Macromolecules* **46**(20), 8289 (2013)

P. Plunkett, B.A. Camley, K.L. Weirich, J.N. **Israelachvili**, P.J. Atzberger, "Simulation of edge facilitated adsorption and critical concentration induced rupture of vesicles at a surface," *Soft Matter* **9**, 8420-8427 (2013)

J.E. Poelma, B.P. Fors, G.F. Meyers, J.W. Kramer, C.J. **Hawker**, "Fabrication of complex three-dimensional polymer brush nanostructures through light-mediated living radical polymerization," *Angew. Chemie, Int. Ed.* **52**, 6844-6848 (2013)

R. Pötzsch, H. Komber, B.C. Stahl, C.J. **Hawker**, B.I. Voit, "Radical thiol-yne chemistry on diphenylacetylene: Selective and quantitative addition enabling the synthesis of hyperbranched poly(vinyl sulfide)s," *Macromol. Rapid Comm.* **34**, 1772 (2013)

M.J. Robb, S.Y. Ku, C.J. **Hawker**, "No assembly required: Recent advances in fully conjugated block copolymers," *Adv. Mater.* **25**, 5686-5700 (2013)

K.M. Stone, J. Voska, M. Kinnebrew, A. Pavlova, M.J.N. Junk, S. **Han**, "Structural insight into proteorhodopsin oligomers," *Biophys. J.* **104**(2), 472 (2013)

c. Publications Resulting from IRG Research, but do not Acknowledge the MRSEC Award

None

IRG2

a. Primary MRSEC Support that Acknowledge the MRSEC Award

S.J. Allen, B. Jalan, S. Lee, D.G. Ouellette, G. Khalsa, J. Jaroszynski, S. Stemmer, A.H. MacDonald, "Conduction-band edge and Shubnikov-de Haas effect in low-electron-density SrTiO₃," *Phys. Rev. B* **88**(4), 045114 (2013)

A.P. Kajdos, D.G. Ouellette, T.A. Cain, S. Stemmer, "Two-dimensional electron gas in a modulation-doped SrTiO₃/Sr(Ti,Zr)O₃ heterostructure," *Appl. Phys. Lett.* **103**, 082120 (2013)

S. Raghavan, S.J. Allen, S. Stemmer, "Subband structure of two-dimensional electron gases in SrTiO₃," *Appl. Phys. Lett.* **103**, 212103 (2013)

b. Partial MRSEC Support that Acknowledge the MRSEC Award

S. Bubel, M.L. Chabinye, "Model for determination of mid-gap states in amorphous metal oxides from thin film transistors," *J. Appl. Phys.* **113**, 234507 (2013)

S. Bubel, S. Meyer, F. Kunze, M.L. Chabinye, "Ionic liquid gating reveals trap-filled limit mobility in low temperature amorphous zinc oxide," *Appl. Phys. Lett.* **103**, 152102 (2013)

R. Chen, S. Lee, L. Balents, "Dimer Mott insulator in an oxide heterostructure," *Phys. Rev. B* **87**, 161119(R) (2013)

G. Conti, A.M. Kaiser, A.X. Gray, S. Nemsak, G.K. Palsson, J. Son, P. Moetakef, A. Janotti, L. Bjaalie, C.S. Conlon, D. Eiteneer, A.A. Greer, A. Keqi, A. Rattanachata, A.Y. Saw, A. Bostwick, W.C. Stolte, A. Gloskovskii, W. Drube, S. Ueda, M. Kobata, K. Kobayashi, C.G. Van de Walle, S. Stemmer, C.M. Schneider, C.S. Fadley, "Band offsets in complex-oxide thin films and heterostructures of SrTiO₃/LaNiO₃ and SrTiO₃/GdTiO₃ by soft and hard X-ray photoelectron spectroscopy," *J. Appl. Phys.* **113**, 143704 (2013)

L. Fidkowski, H-C. Jiang, R.M. Lutchyn, C. Nayak, "Magnetic and superconducting ordering in one-dimensional nanostructures at the LaAlO₃/SrTiO₃ interface," *Phys. Rev. B* **87**, 014436 (2013)

J. Hwang, J. Son, J.Y. Zhang, A. Janotti, C.G. Van de Walle, S. Stemmer, "Structural origins of the properties of rare earth nickelate superlattices," *Phys. Rev. B* **87**, 060101(R) (2013)

A. Janotti, C. Franchini, J.B. Varley, G. Kresse, C.G. Van de Walle, "Dual behavior of excess electrons in rutile TiO₂," *Phys. Status Solidi RRL* **7**, 199 (2013)

H-C. Jiang, M.S. Block, R.V. Mishmash, J.R. Garrison, D.N. Sheng, O.I. Motrunich, M.P.A. Fisher, "Non-Fermi-liquid d-wavemetal phase of strongly interacting electrons," *Nature* **493**, 39 (2013)

W-H. Ko, H-C. Jiang, J.G. Rau, L. Balents, "Ordering and criticality in an underscreened Kondo chain," *Phys. Rev. B* **87**, 205107 (2013)

J.L. Lyons, A. Janotti, C.G. Van de Walle, "Theory and modeling of oxide semiconductors," *Semicon. and Semimetals* **88**, 1 (2013)

M.S. Miao, Q.M. Yan, C.G. **Van de Walle**, “Electronic structure of a single-layer InN quantum well in a GaN matrix,” *Appl. Phys. Lett.* **102**, 102103 (2013)

P. Moetakef, J.Y. Zhang, S. Raghavan, A.P. Kajdos, S. **Stemmer**, “Growth window and effect of substrate symmetry in hybrid molecular beam epitaxy of a Mott insulating rare earth titanate,” *J. Vac. Sci. Technol. A* **31**, 041503 (2013)

A. Schleife, J.B. Varley, A. Janotti, C.G. **Van de Walle**, “Conductivity and transparency of TiO₂ from first principles,” *Proc. of SPIE, Solar Hydrogen and Nanotechnology VIII* **8822**, 882205 (2013)

S. **Stemmer**, A.J. Millis, “Quantum confinement in oxide quantum wells,” *MRS Bulletin* **38**, 1032-1039 (2013)

S. **Stemmer**, P. Moetakef, T. Cain, C. Jackson, D. Ouellette, J.R. Williams, D. Goldhaber-Gordon, L. **Balents**, S.J. **Allen**, “Properties of high-density two-dimensional electron gases at Mott/band insulator interfaces,” *Proc. of SPIE, Oxide-based Materials and Devices IV* **8626**, 86260F (2013)

J.B. Varley, A. Schleife, A. Janotti, C.G. **Van de Walle**, “Ambipolar doping in SnO,” *Appl. Phys. Lett.* **103**, 082118 (2013)

c. Publications Resulting from IRG Research, but do not Acknowledge the MRSEC Award

None

IRG3

a. Primary MRSEC Support that Acknowledge the MRSEC Award

C.S. Birkel, J.E. Douglas, B.R. Lettiere, G. Seward, Y.C. Zhang, T.M. **Pollock**, R. **Seshadri**, G.D. Stucky, “Improving the thermoelectric properties of half-Heusler TiNiSn through inclusion of a second full-Heusler phase: Microwave preparation and spark plasma sintering of TiNi_{1+x}Sn,” *Phys. Chem. Chem. Phys.* **15**, 6990 (2013)

C.S. Birkel, J.E. Douglas, B.R. Lettiere, G. Seward, Y.C. Zhang, T.M. **Pollock**, R. **Seshadri**, G.D. Stucky, “Influence of Ni nanoparticle addition and spark plasma sintering on the TiNiSn-Ni system: Structure, microstructure, and thermoelectric properties,” *Solid State Sci.* **26**, 16-22 (2013)

M.W. Gaultois, P.T. Barton, C.S. Birkel, L.M. Misch, E.E. Rodriguez, G.D. Stucky, R. **Seshadri**, “Structural disorder, magnetism, and electrical and thermoelectric properties of pyrochlore Nd₂Ru₂O₇,” *J. Phys.: Condens. Matter* **25**, 186004 (1–10) (2013)

M.W. Gaultois, T.D. Sparks, C.K.H. Borg, R. **Seshadri**, W.D. Bonificio, D.R. Clarke, “Data-driven review of thermoelectric materials: Performance and resource considerations,” *Chem. Mater.* **25**, 2911-2920 (2013)

J.K. Kawasaki, T. Neulinger, T.R. Rainer, M. Hjort, A.A. Zakharov, A. Mikkelsen, B.D. Schultz, C.J. **Palmstrøm**, “Epitaxial growth and surface studies of the Half Heusler compound NiTiSn (001),” *J. Vac. Sci. Technol. B* **31**, 04D106 (2013)

b. Partial MRSEC Support that Acknowledge the MRSEC Award

J.K. Kawasaki, B.D. Schultz, H. Lu, A.C. Gossard, C.J. **Palmstrøm**, “Surface-mediated tunable self-assembly of single crystal semimetallic ErSb/GaSb nanocomposite structures,” *Nano Letters* **13**, 2895 (2013)

J.K. Kawasaki, B.D. Schultz, C.J. **Palmstrøm**, “Size effects on the electronic structure of ErSb nanoparticles embedded in the GaSb (001) surface,” *Phys. Rev. B* **87**, 035419 (2013)

G. Kieslich, C.S. Birkel, J.E. Douglas, M.W. Gaultois, I. Veremchuk, R. **Seshadri**, G.D. Stucky, Y. Grin, W. Tremel, “SPS-assisted preparation of the Magnéli phase WO_{2.90} for thermoelectric applications,” *J. Mater. Chem. A* **1**, 13050-13054 (2013)

c. Publications Resulting from IRG Research, but do not Acknowledge the MRSEC Award

None

SEEDS/INITIATIVES

a. Primary MRSEC Support that Acknowledge the MRSEC Award

None

b. Partial MRSEC Support that Acknowledge the MRSEC Award

None

c. Publications Resulting from IRG Research, but do not Acknowledge the MRSEC Award

None

SHARED FACILITIES

M. Alabduljalil, X. Tang, T. Yang, “Cache-conscious performance optimization for similarity search,” *SIGIR '13 Proc. of 36th Int'l. ACM SIGIR Conference on Research and Development in Information Retrieval*, 713-722 (2013)

M.A. Alexandrou, B.A. Swartz, N.J. Matzke, T.H. Oakley, “Genome duplication and multiple evolutionary origins of complex migratory behavior in Salmonidae,” *Molec. Phylogen. and Evol.* **69**(3), 514 (2013)

A.C. Anselmo, V. Gupta, B.J. Zern, D. Pan, M. Zakrewsky, V. Muzykantov, S. Mitragotri, “Delivering nanoparticles to lungs while avoiding liver and spleen through adsorption on red blood cells,” *ACS Nano* **7**(12), 11129 (2013)

- P.T. Barton, Y.D. Premchand, P.A. Chater, R. **Seshadri**, M.J. Rosseinsky, "Chemical inhomogeneity, short-range order, and magnetism in the LiNiO₂-NiO solid solution," *Chem. Eur. J.* **19**(43), 14521-14531 (2013)
- P.T. Barton, R. **Seshadri**, A. Llobet, M.R. Suhomel, "Magnetostructural transition, metamagnetism, and magnetic phase coexistence in Co₁₀Ge₃O₁₆," *Phys. Rev. B* **88**, 024403(1-7) (2013)
- S.W. Bennett, A. Adeleye, Z. Ji, A.A. Keller, "Stability, metal leaching, photoactivity and toxicity in freshwater systems of commercial single wall carbon nanotubes," *Water Research* **47**(12), 4074 (2013)
- A. Birkel, N.A. DeCino, N.C. George, K.A. Hazelton, B.-C. Hong, R. **Seshadri**, "Eu²⁺-doped M₂SiO₄ (M = Ca, Ba) phosphors prepared by a rapid microwave-assisted sol-gel method: Phase formation and optical properties," *Solid State Sci.* **19**, 51 (2013)
- C. Bleiholder, T.D. Do, C. Wu, N. Economou, S. Bernstein, S. Buratto, J.-E. **Shea**, M.T. Bowers, "Ion mobility spectrometry reveals the mechanism of amyloid formation of ABeta(25-35) and its modulation by inhibitors at the molecular level: Epigallocatechin gallate and scyllo-inositol," *J. Am. Chem. Soc.* **135**, 16926-16937 (2013)
- E.G. Brandt, "Fluctuating hydrodynamics simulations of coarse-grained lipid membranes under steady-state conditions and in shear flow," *Phys. Rev. E* **88**(1), 012714 (2013)
- J. Brgoch, C.K.H. Borg, K.A. Denault, S.P. DenBaars, R. **Seshadri**, "Tuning luminescent properties through solid-solution in (Ba_{1-x}Sr_x)₉Sc₂Si₆O₂₄:Ce³⁺,Li⁺," *Solid State Sci.* **18**, 149 (2013)
- J. Brgoch, C.K.H. Borg, K.A. Denault, J.R. Douglas, T.A. Strom, S.P. DenBaars, R. **Seshadri**, "Rapid microwave preparation of cerium-substituted sodium yttrium silicate phosphors for solid state white lighting," *Solid State Sci.* **26**, 115-120 (2013)
- J. Brgoch, C.K.H. Borg, K.A. Denault, A.A. Mikhailovsky, S.P. DenBaars, R. **Seshadri**, "An efficient, thermally stable cerium-based silicate phosphor for solid state white lighting," *Inorg. Chem.* **52**, 8010-8016 (2013)
- J. Brgoch, S.P. DenBaars, R. **Seshadri**, "Proxies from *Ab-initio* calculations for screening efficient Ce³⁺ phosphor hosts," *J. Phys. Chem. C* **117**, 17955-17959 (2013)
- J.J. Burk, S.K. Buratto, "Electrodeposition of Pt nanoparticle catalysts from H₂Pt(OH)₆ and their application in PEM fuel cells," *J. Phys. Chem. C* **117**(37), 18957 (2013)
- T.A. Cain, A.P. Kajdos, S. **Stemmer**, "La-doped SrTiO₃ films with large cryogenic thermoelectric power factors," *Appl. Phys. Lett.* **102**, 182101 (2013)
- R. Chen, H.J. Ju, H.C. Jiang, O.A. Starykh, L. **Balents**, "Ground states of spin-1/2 triangular antiferromagnets in a magnetic field," *Phys. Rev. B* **87**(16), 165123 (2013)
- C.Y. Cheng, J. Varkey, M.R. Ambroso, R. Langen, S. **Han**, "Hydration dynamics as an intrinsic ruler for refining protein structure at lipid membrane interfaces," *Proc. Natl. Acad. Sci.* **110**(42), 16838-16843 (2013)

- V. Chobpattana, T.E. Mates, W.J. Mitchell, J.Y. Zhang, S. **Stemmer**, "Influence of plasma-based in-situ surface cleaning procedures on $\text{HfO}_2/\text{In}_{0.53}\text{Ga}_{0.47}\text{As}$ gate stack properties," *J. Appl. Phys.* **114**, 154108 (2013)
- M. Choi, A. Janotti, C.G. **Van de Walle**, "Native point defects and dangling bonds in $\alpha\text{-Al}_2\text{O}_3$," *J. Appl. Phys.* **113**, 044501 (2013)
- M. Choi, A. Janotti, C.G. **Van de Walle**, "Native point defects in LaAlO_3 : A hybrid functional study," *Phys. Rev. B* **88**, 214117 (2013)
- M. Choi, J.L. Lyons, A. Janotti, C.G. **Van de Walle**, "Impact of carbon and nitrogen impurities in high- κ dielectrics on metal-oxide-semiconductor devices," *Appl. Phys. Lett.* **102**, 142902 (2013)
- M. Choi, J.L. Lyons, A. Janotti, C.G. **Van de Walle**, "Impact of native defects in high- κ dielectric oxides on GaN/oxide metal-oxide semiconductor devices," *Phys. Status Solidi B* **250**, 787 (2013)
- W. Chun, J.-E. **Shea**, "Structural similarities and differences between amyloidogenic and non-amyloidogenic Islet Amyloid Polypeptide (IAPP) sequences and implications for the dual physiological and pathological activities of these peptides," *Plos. Comput. Biol.* **9**(8), e1003211 (2013)
- J.E. Cochran, E. Amir, K. Sivanandan, S.Y. Ku, J.H. Seo, B. Collins, J.R. Tubmelston, M.F. Toney, H. Ade, C.J. **Hawker**, M.L. **Chabinye**, "Synthesis, solid-state, and charge-transport properties of conjugated polythiophene-S,S-dioxides," *J. Poly. Sci. B.* **51**, 48 (2013)
- F.C Coomer, E.J. Cussen, "Structural and magnetic properties of $\text{Ba}_2\text{LuMoO}_6$: A valence bond glass," *J. Phys.: Condens. Matter* **25**, 082202 (2013)
- M. Cromer, M.C. Villet, G.H. **Fredrickson**, L.G. Leal, "Shear banding in polymer solutions," *Phys. Fluids.* **25**, 051703 (2013)
- M. Cromer, M.C. Villet, G.H. **Fredrickson**, L.G. Leal, R. Stepanyan, M.J.H. Bulters, "Concentration fluctuations in polymer solutions under extensional flow," *J. Rheology* **57**(4), 1211 (2013)
- D.F. Cusack, O.A. Chadwick, T. Ladefoged, P.M. Vitousek, "Long-term effects of agriculture on soil carbon pools and carbon chemistry along a Hawaiian environmental gradient," *Biogeochemistry* **112**, 229 (2013)
- S. Das, S. Chary, J. Yu, J. Tamelier, K.L. Turner, J.N. **Israelachvili**, "JKR theory for the stick-slip peeling and adhesion hysteresis of gecko mimetic patterned surfaces with a smooth glass surface," *Langmuir* **29**(48), 15006-15012 (2013)
- S. Das, S.H. Donaldson Jr., Y. Kaufman, J.N. **Israelachvili**, "Interaction of adsorbed polymers with supported cationic bilayers," *RSC Adv.* **3**, 20405-20411 (2013)
- J. Deek, P.J. Chung, J. Kayser, A.R. Bausch, C.R. Safinya, "Neurofilament sidearms modulate parallel and crossed-filament orientations inducing nematic to isotropic and re-entrant birefringent hydrogels," *Nature Comm.* **4**, 2224 (2013)

- K.T. Delaney, G.H. **Fredrickson**, "Polymer field theory simulations on graphics processing units," *Computer Phys. Comm.* **184**(9), 2102 (2013)
- K.A. Denault, M. Cantore, S. Nakamura, S.P. DenBaars, R. **Seshadri**, "Efficient and stable laser-driven white lighting," *AIP Advances* **3**, 072107(1-6) (2013)
- K.A. Denault, Z. Cheng, J. Brgoch, S.P. DenBaars, R. **Seshadri**, "Structure–composition relationships and optical properties in cerium-substituted $(\text{Sr,Ba})_3(\text{Y,La})(\text{BO}_3)_3$ borate phosphors," *J. Mater. Chem. C* **1**(44), 7339-7345 (2013)
- K.A. Denault, A.A. Mikhailovsky, S. Brinkley, S.P. DenBaars, R. **Seshadri**, "Improving color rendition in solid-state white lighting through the use of quantum dots," *J. Mater. Chem. C* **1**, 1461 (2013)
- A.R. Derk, B. Li, S. Sharma, G.M. Moore, E.W. McFarland, H. Metiu, "Methane oxidation by lanthanum oxide doped with Cu, Zn, Mg, Fe, Nb, Ti, Zr, or Ta: The connection between the activation energy and the energy of oxygen-vacancy formation," *Catalysis Lett.* **143**, 406-410 (2013)
- M. Detrixhe, F. Gibou, C. Min, "A parallel fast sweeping method for the Eikonal equation," *J. Comput. Phys.* **237**, 46 (2013)
- B.C. Dickinson, A.M. Leconte, B. Allen, K.M. Esvelt, D.R. Liu, "Experimental interrogation of the path dependence and stochasticity of protein evolution using phage-assisted continuous evolution," *Proc. Nat. Acad. Sci. USA* **110**(22), 9007 (2013)
- T.D. Do, N. LaPointe, N. Economou, S. Bernstein, S. Buratto, S. Feinstein, J.-E. **Shea**, M.T. Bowers, "Effects of pH and charge state on peptide assembly: The YVIFL model system," *J. Phys. Chem. B* **117**, 10759-10768 (2013)
- E.M. Donohue, N.R. Philips, M.R. **Begley**, C.G. **Levi**, "Thermal barrier coating toughness: Measurement and identification of a bridging mechanism enabled by segmented microstructure," *Mater. Sci. and Eng. A* **564**, 324-330 (2013). DOI:10.1016/j.msea.2012.11.126.
- C.E. Dreyer, A. Janotti, C.G. **Van de Walle**, "Effects of strain on the electron effective mass in GaN and AlN," *Appl. Phys. Lett.* **102**, 142105 (2013)
- N.D. Eisenmenger, G.M. Su, G.C. Welch, C.J. Takacs, G.C. Bazan, E.J. Kramer, M.L. **Chabinyc**, "Effect of bridging atom identity on the morphological behavior of solution-processed small molecule bulk heterojunction photovoltaics," *Chem. Mater.* **25**, 1688–1698 (2013)
- R.M. Farrell, A.A. Al-Heji, C.J. Neufeld, X. Chen, M. Iza, S.C. Cruz, S. Keller, S. Nakamura, S.P. DenBaars, U.K. Mishra, J.S. **Speck**, "Effect of intentional p-GaN surface roughening on the performance of InGaN/GaN solar cells," *Appl. Phys. Lett.* **103**(24), 241104 (2013)
- D.F. Feezell, J.S. **Speck**, S.P. DenBaars, S. Nakamura, "Semipolar $(20\bar{2})\text{-over-bar}(1)\text{-over-bar}$ InGaN/GaN light-emitting diodes for high-efficiency solid-state lighting," *J. Display Tech.* **9**(4), 190 (2013)

- S.D. Findlay, J.M. LeBeau, "Detector non-uniformity in scanning transmission electron microscopy," *Ultramicroscopy* **124**, 52 (2013)
- J.M. Franck, J.A. Scott, S. **Han**, "Nonlinear scaling of surface water diffusion with bulk water viscosity of crowded solutions," *J. Am. Chem. Soc.* **135**(11), 4175-4178 (2013)
- J.M. Frostad, J. Walter, L.G. Leal, "A scaling relation for the capillary-pressure driven drainage of thin films," *Phys. of Fluids* **25**(5), 052108 (2013)
- C.C. Fu, P.M. Kulkarni, M.S. Shell, L.G. Leal, "A test of systematic coarse-graining of molecular dynamics simulations: Transport properties," *J. Chem. Phys.* **139**(9), 094107 (2013)
- N.C. George, A. Birkel, J. Brgoch, B.-C. Hong, A. Mikhailovsky, K. Page, A. Llobet, R. **Seshadri**, "Average and local structural origins of the optical properties of the nitride phosphor $\text{La}_{3-x}\text{Ce}_x\text{Si}_6\text{N}_{11}$ ($0 < x \leq 3$)," *Inorg. Chem.* **52**, 13730-13741 (2013)
- N.C. George, A. Pell, G. Dantelle, K. Page, A. Llobet, M. Balasubramanian, G. Pintacuda, B. Chmelka, R. **Seshadri**, "Local environments of dilute activator ions in the solid-state lighting phosphor $\text{Y}_{3-x}\text{Ce}_x\text{Al}_5\text{O}_{12}$," *Chem. Mater.* **25**, 3979-3995 (2013)
- L. Gordon, J.R. Weber, J.B. Varley, A. Janotti, D.D. Awschalom, C.G. **Van de Walle**, "Quantum computing with defects," *MRS Bull.* **38**, 802 (2013)
- V. Gupta, B.H. Hwang, J. Lee, A.C. Anselmo, N. Doshi, S. Mitragotri, "Mucoadhesive intestinal devices for oral delivery of salmon calcitonin," *J. Controlled Release* **172**(3), 753 (2013)
- C.I. Hammett, R.G. Rinaldi, F.W. Zok, "Pyramidal lattice structures for high strength and energy absorption," *J. Appl. Mech. - Trans. of the ASME* **80**(4), 041015 (2013)
- S.K. Hanna, R.J. Miller, E.B. Muller, R.M. Nisbet, H.S. Lenihan, "Impact of engineered zinc oxide nanoparticles on the individual performance of *mytilus galloprovincialis*," *PLOS ONE* **8**(4), e61800 (2013)
- S.K. Hanna, R.J. Miller, D. Zhou, A.A. Keller, H.S. Lenihan, "Accumulation and toxicity of metal oxide nanoparticles in a soft-sediment estuarine amphipod," *Aquatic Toxicology* **142-143**, 441 (2013)
- M.T. Hardy, C.O. Holder, D.F. Feezell, S. Nakamura, J.S. **Speck**, D.A. Cohen, S.P. DenBaars, "Indium-tin-oxide clad blue and true green semipolar InGaN/GaN laser diodes," *Appl. Phys. Lett.* **103**(8), 081103 (2013)
- M.T. Hardy, F. Wu, P.S. Hsu, D.A. Haeger, S. Nakamura, J.S. **Speck**, S.P. DenBaars, "True green semipolar InGaN-based laser diodes beyond critical thickness limits using limited area epitaxy," *J. Appl. Phys.* **114**(18), 183101 (2013)
- A.J. Hauser, E. Mikheev, N.E. Moreno, T.A. Cain, J. Hwang, J.Y. Zhang, S. **Stemmer**, "Temperature-dependence of the Hall coefficient of NdNiO_3 thin films," *Appl. Phys. Lett.* **103**, 182105 (2013)

Z.B. Henson, Y. Zhang, T.Q. Nguyen, J.H. Seo, G.C. Bazan, "Synthesis and properties of two cationic narrow band gap conjugated polyelectrolytes," *J. Am. Chem. Soc.* **135**(11), 4163 (2013)

K. Hoang, C.G. **Van de Walle**, "LiH as a Li⁺ and H⁻ ion provider," *Solid State Ionics* **253**, 53 (2013)

C.-Y. Huang, J.J.M. Law, H. Lu, M.J.W. Rodwell, A.C. Gossard, "Development of AlAsSb as a barrier material for ultra-thin-channel InGaAs nMOSFETs," *MRS Proc.* **1561**, mrss13-1561-cc01-10 (2013). doi:10.1557/opl.2013.821.

S. Hur, A.L. Frischknecht, D.L. Huber, G.H. **Fredrickson**, "Self-assembly in a mixed polymer brush with inhomogeneous grafting density composition," *Soft Matter* **9**(22), 5341 (2013)

S. Hussain, J.M. Franck, S. **Han**, "Transmembrane protein activation refined by site-specific hydration dynamics," *Angewandte Chemie International Edition* **52**(7), 1953 (2013)

J. Hwang, J.Y. Zhang, A.J. D'Alfonso, L.J. Allen, S. **Stemmer**, "Three-dimensional imaging of individual dopant atoms in SrTiO₃," *Phys. Rev. Lett.* **111**, 266101 (2013)

M.J. Isaacman, E.M. Corigliano, L.S. Theogarajan, "Stealth polymeric vesicles via metal-free click coupling," *Biomacromolecules* **14**(9), 2996 (2013)

T. Iwama, N. Laachi, K.T. Delaney, B. Kim, S. Hur, R. Bristol, D. Shykind, C.J. Weinheimer, G.H. **Fredrickson**, "The hole shrink problem: Directed self-assembly using self-consistent field theory," *J. Photopolymer Sci. & Tech.* **26**(1), 15-20 (2013)

C.A. Jackson, S. **Stemmer**, "Interface-induced magnetism in perovskite quantum wells," *Phys. Rev. B* **88**, 180403(R) (2013)

H.-C. Jiang, R.R.P. Singh, L. **Balents**, "Accuracy of topological entanglement entropy on finite cylinders," *Phys. Rev. Lett.* **111**, 107205 (2013)

M.N. Joswiak, N. Duff, M.F. Doherty, B. **Peters**, "Size-dependent surface free energy and Tolman-corrected droplet nucleation of TIP4P/2005 water," *J. Phys. Chem. Lett.* **4**(24), 4267 (2013)

Y.-S. Jun, J. Park, S.U. Lee, A. Thomas, W.H. Hong, G.D. Stucky, "Three dimensional macroscopic assemblies of low-dimensional carbon nitrides for enhanced hydrogen evolution," *Angew. Chemie* **52**(42), 11083-11087 (2013)

A. Kalaji, P.J. Saines, N.C. George, A.K. Cheetham, "Photoluminescence of cerium-doped (Ca_{1-x}Sr_x)₃RE₂Ge₃O₁₂ garnet phosphors for solid state lighting: Relating structure to emission," *Chem. Phys. Lett.* **586**, 91 (2013)

N.K. Kalantari, E. Shechtman, C. Barnes, S. Darabi, D.B. Goldman, P. Sen, "Patch-based high dynamic range video," *ACM Trans. on Graphics* **32**(6), 202 (2013)

Y. Kawaguchi, C.Y. Huang, Y.R. Wu, Y.J. Zhao, S.P. DenBaars, S. Nakamura, "Semipolar (20 $\bar{2}$) single-quantum-well red light-emitting diodes with a low forward voltage," *Jpn. J. Appl. Phys.* **52**(8S), 08JC08 (2013)

Y. Kawaguchi, S.C. Huang, R.M. Farrell, Y.J. Zhao, J.S. **Speck**, S.P. DenBaars, S. Nakamura, "Dependence of electron overflow on emission wavelength and crystallographic orientation in single-quantum-well III-nitride light-emitting diodes," *Appl. Phys. Expr.* **6**(5), 052103 (2013)

B. Kaytanli, M.T. **Valentine**, "Evolute-based Hough transform method for characterization of ellipsoids," *J. Microscopy* **249**(3), 159-164 (2013)

K.M. Kelchner, L.Y. Kuritzky, K. Fujito, S. Nakamura, S.P. DenBaars, J.S. **Speck**, "Emission characteristics of single InGaN quantum wells on misoriented nonpolar m-plane bulk GaN substrates," *J. Cryst. Growth* **382**, 80 (2013)

S. Keller, R.M. Farrell, M. Iza, T. Terao, N. Young, U.K. Mishra, S. Nakamura, S.P. DenBaars, J.S. **Speck**, "Influence of the structure parameters on the relaxation of semipolar InGaN/GaN multi quantum wells," *Jpn. J. Appl. Phys.* **52**(8S), 08JC10 (2013)

M.C. Kemei, P.T. Barton, S.L. Moffitt, M.W. Gaultois, J.A. Kurzman, R. **Seshadri**, M.R. Suchomel, Y.-I. Kim, "Crystal structures of spin-Jahn-Teller-ordered MgCr_2O_4 and ZnCr_2O_4 ," *J. Phys.: Condens. Matter* **25**, 326001(1-7) (2013)

K. Kempe, K.L. Killops, J.E. Poelma, H.J. Jung, J. Bang, R. Hoogenboom, H. Tran, C.J. **Hawker**, U.S. Schubert, L.M. Campos, "Strongly phase-segregating block copolymers with sub-20 nm features," *ACS Macro Letters* **2**, 677-682 (2013)

G. Kieslich, I. Veremchuk, I. Antonyshyn, W.G. Zeier, C.S. Birkel, K. Weldert, C.P. Heinrich, E. Visnow, M. Panthöfer, U. Burkhardt, Y. Grin, W. Tremel, "Using crystallographic shear to reduce lattice thermal conductivity: High temperature thermoelectric characterization of the spark plasma sintered Magnéli phases $\text{WO}_{2.90}$ and $\text{WO}_{2.722}$," *Phys. Chem. Chem. Phys.* **15**, 15399-15403 (2013)

B. Kim, N. Laachi, G.H. **Fredrickson**, "Defectivity study of directed self-assembly of cylindrical diblock copolymers in laterally confined thin channels," *Proc. SPIE* **8680**, 868016 (2013)

J. Kim, Y. Gao, C. Hebebrand, E. Peirtsegeale, M.E. Helgeson, "Polymer-surfactant complexation as a generic route to responsive viscoelastic nanoemulsions," *Soft Matter* **9**, 6897-6910 (2013)

T. Kim, J. Delaney, "Subspace fluid re-simulation," *ACM Trans. on Graphics* **32**(4), 62 (2013)

E. Kioupakis, P. Rinke, A. Janotti, Q. Yan, C.G. **Van de Walle**. "Chapter 8: Energy Conversion: Solid-State Lighting." *Computational Approaches to Energy Materials*. Ed. A. Walsh, A.A. Sokol and C.R.A. Catlow. Chichester, U.K.: John Wiley & Sons Ltd, 2013. 231-260

E. Kioupakis, Q. Yan, D. Steiauf, C.G. **Van de Walle**, "Temperature and carrier-density dependence of Auger and radiative recombination in nitride optoelectronic devices," *New J. Phys.* **15**, 125006 (2013)

A. Knappschneider, C. Litterscheid, D. Dzivenko, J. Kurzman, R. **Seshadri**, N. Wagner, J. Beck, R. Riedel, B. Albert, "Possible superhardness of CrB_4 ," *Inorg. Chem.* **52**, 540 (2013)

- T. Koh, I. Chiles, M.J. **Gordon**, "Slit-based supersonic microplasma jets: Scalable sources for nanostructured thin film deposition," *Appl. Phys. Lett.* **103**, 163115 (2013)
- T. Koh, M.J. **Gordon**, "Spray deposition of nanostructured metal films using hydrodynamically stabilized, high pressure microplasmas," *JVST A* **31**, 061312 (2013) (Cover Article)
- T. Koh, M.J. **Gordon**, "Thin film deposition with high pressure capillary micro-discharges under different supersonic flow and shock regimes," *J. Phys. D: App. Phys.* **46**, 495204 (2013)
- R. Koltun, J.L. Hall, T.E. Mates, J.E. Bowers, B.D. Schultz, C.J. **Palmström**, "Thermoelectric properties of single crystal $\text{Sc}_{1-x}\text{Er}_x\text{As:InGaAs}$ nanocomposites," *J. Vac. Sci. and Tech. B* **31**(4), 041401 (2013)
- C.S. Kong, H.L. Zhang, F. Somodi, D.E. Morse, "Bio-inspired synthesis of high-performance nanocomposite catalysts for hydrogen oxidation," *Adv. Func. Mat.* **23**(36), 4585 (2013)
- J.A. Krogstad, M. Lepple, C.G. **Levi**, "Opportunities for improved TBC durability in the $\text{CeO}_2\text{-TiO}_2\text{-ZrO}_2$ system," *Surface and Coatings Technology* **221**, 44-52 (2013). DOI: 10.1016/j.surfcoat.2013.01.026.
- Z.B. Kuvadia, M.F. Doherty, "Reformulating multidimensional population balances for predicting crystal size and shape," *AICHE J.* **59**(9), 3468 (2013)
- A.K.K. Kyaw, D.H. Wang, D. Wynands, J. Zhang, T.Q. Nguyen, G.C. Bazan, A.J. Heeger, "Improved light harvesting and improved efficiency by insertion of an optical spacer (ZnO) in solution-processed small-molecule solar cells," *Nano Lett.* **13**(8), 3796 (2013)
- N. Laachi, K.T. Delaney, B. Kim, S. Hur, R. Bristol, D. Shykind, C.J. Weinheimer, G.H. **Fredrickson**, "The hole shrink problem: Theoretical studies of directed self-assembly in cylindrical confinement," *Proc. SPIE* **8680**, 868014 (2013)
- L. Larini, M.M. Gessel, N.E. LaPointe, T.D. Do, M.T. Bowers, S.C. Feinstein, J.-E. **Shea**, "Initiation of assembly of Tau(273-284) and its DelK280 mutant: An experimental and computational study," *Phys. Chem. Chem. Phys.* **15**, 8916 (2013)
- L. Larini, J.-E. **Shea**, "Double resolution model for studying TMAO/water effective interactions," *J. Phys. Chem. B* **117**, 13268-13277 (2013)
- J.H. Lee, K.T. Delaney, E. Bousquet, N.A. Spaldin, K.M. Rabe, "Strong coupling of Jahn-Teller distortion to oxygen-octahedron rotation and functional properties in epitaxially strained orthorhombic LaMnO_3 ," *Phys. Rev. B* **88**(17), 174426 (2013)
- R.A. Lewis, S.P. George, A. Chapovetsky, G. Wu, J.S. Figueroa, T.W. Hayton, "Synthesis of a cobalt(IV) ketimide with a squashed tetrahedral geometry," *Chem. Commun.* **49**, 2888 (2013)
- R.A. Lewis, D.E. Smiles, J.M. Darmon, S.C.E. Stieber, G. Wu, T.W. Hayton, "Reactivity and Mossbauer spectroscopic characterization of an Fe(IV) ketimide complex and reinvestigation of an Fe(IV) norbornyl complex," *Inorg. Chem.* **52**(14), 8218 (2013)
- W. Li, A. Chakrabarti, J.D. Gunton, "Self-assembly of a bipolar model of biomacromolecules," *Langmuir* **29**(14), 4470 (2013)

- Y. Li, A.M. Sawvel, Y-S. Jun, S. Nownes, M. Ni, D. Kudela, G.D. Stucky, D. Zink, "Cytotoxicity and potency of mesocellular foam-26 in comparison to layered clays used as hemostatic agents," *Toxicol. Res.* **2**, 136-144 (2013)
- C.D. Liman, S. Choi, D.W. Breiby, J.E. Cochran, M.F. Toney, E.J. Kramer, M.L. **Chabinye**, "Two-dimensional GIWAXS reveals a transient crystal phase in solution-processed thermally converted tetrabenzoporphyrin," *J. Phys. Chem. B* **117**, 14557-14567 (2013)
- B. Lu, Y.X. Li, Y.L. Wang, D.H. Aue, Y.D. Luo, L.M. Zhang, "[3,3]-Sigmatropic rearrangement versus carbene formation in gold-catalyzed transformations of alkynyl aryl sulfoxides: Mechanistic studies and expanded reaction scope," *J. Amer. Chem. Soc.* **135**(23), 8512 (2013)
- J.L. Lyons, A. Janotti, C.G. **Van de Walle**, "Impact of group-II acceptors on the electrical and optical properties of GaN," *Jpn. J. Appl. Phys.* **52**(8S), 08JJ04 (2013)
- R.C.I. MacKenzie, C.G. Shuttle, G.F. Dibb, N. Treat, E. von Hauff, M.J. Robb, C.J. **Hawker**, M.L. **Chabinye**, J. Nelson, "Interpreting the density of states extracted from organic solar cells using transient photocurrent measurements," *J. Phys. Chem. C* **117**, 12407-12414 (2013)
- E.W. McFarland, H. Metiu, "Catalysis by doped oxides," *Chem. Rev.* **113**(6), 4391 (2013)
- G.G. Martirosyan, T.S. Kurtikyan, A.S. Azizyan, A.V. Iretskii, P.C. Ford, "Weak coordination of neutral S- and O-donor proximal ligands to a ferrous porphyrin nitrosyl. Characterization of 6-coordinate complexes at low T," *J. Inorgan. Biochem.* **121**, 129 (2013)
- Z. Mester, N.A. Lynd, G.H. **Fredrickson**, "Numerical self-consistent field theory of multicomponent polymer blends in the Gibbs ensemble," *Soft Matter* **9**, 11288 (2013). DOI 10.1039/c3sm51893k
- M.S. Miao, "Caesium in high oxidation states and as a p-block element," *Nat. Chem.* **5**(10), 846 (2013)
- M.S. Miao, J. Brgoch, A. Krishnapriyan, A. Goldman, J.A. Kurzman, R. **Seshadri**, "On the stereochemical inertness of the auride lone-pair: *Ab-initio* studies of AAu ($A = K, Rb, Cs$)," *Inorg. Chem.* **52**, 8183-8189 (2013)
- R.V. Mishmash, J.R. Garrison, S. Bieri, C. Xu, "Theory of a competitive spin liquid state for weak Mott insulators on the triangular lattice," *Phys. Rev. Lett.* **111**(15), 157203 (2013)
- V. Mishra, E.J. Kramer, "Quantification of temperature-dependent order in graphoepitaxially aligned monolayer and bilayer films of cylindrical morphology block copolymer," *Macromolecules* **46**, 977 (2013)
- S. Mubeen, J. Lee, N. Singh, S. Krämer, G.D. Stucky, M. **Moskovits**, "An autonomous photosynthetic device in which all charge carriers derive from surface plasmons," *Nature Nanotech.* **8**, 247-251 (2013)

- S. Mubeen, J. Lee, N. Singh, M. **Moskovits**, E.W. McFarland, "Stabilizing inorganic photoelectrodes for efficient solar-to-chemical energy conversion," *Energy & Envir. Sci.* **6**(5), 1633 (2013)
- S. Mubeen, N. Singh, J. Lee, G.D. Stucky, M. **Moskovits**, E.W. McFarland, "Synthesis of chemicals using solar energy with stable photoelectrochemically active heterostructures," *Nano Letters* **13**(5), 2110-2115 (2013)
- J. Ott, B. Volker, Y.X. Gan, R.M. McMeeking, M. Kamlah, "A micromechanical model for effective conductivity in granular electrode structures," *Acta Mech. Sinica* **29**(5), 682 (2013)
- D.G. Ouellette, P. Moetakef, T.A. Cain, J.Y. Zhang, S. **Stemmer**, D. Emin, S.J. **Allen**, "High-density two-dimensional small polaron gas in a delta-doped Mott insulator," *Sci. Rep.* **3**, 3284 (2013)
- J. Park, Y-S. Jun, W. Lee, J.A. Gerbec, K.A. See, G.D. Stucky, "Bimodal mesoporous titanium nitride/carbon microfibers as efficient and stable electrocatalysts for Li-O₂ batteries," *Chem. Mater.* **25**(19), 3779-3781 (2013)
- L.A. Perez, K.W. Chou, J.A. Love, T.S. van der Poll, D.-M. Smilgies, T.-Q. Nguyen, E.J. Kramer, A. Amassian, G.C. Bazan, "Solvent additive effects on small molecule crystallization in bulk heterojunction solar cells probed during spin casting," *Adv. Mater.* **25**(44), 6380 (2013)
- N.A. Pfaff, K.M. Kelchner, D.F. Feezell, S. Nakamura, S.P. DenBaars, J.S. **Speck**, "Thermal performance of violet and blue single-quantum-well nonpolar m-plane InGa_N light-emitting diodes," *Appl. Phys. Exp.* **6**(9), 092104 (2013)
- T.V. Pho, F.M. Toma, M.L. **Chabiny**, F. Wudl, "Self-assembling decacyclene triimides prepared through a regioselective hexuple Friedel-Crafts carbamylation," *Angewandte Chemie* **125**(5), 1486 (2013)
- S. Pimputkar, S. Kawabata, J.S. **Speck**, S. Nakamura, "Surface morphology study of basic ammonothermal GaN grown on non-polar GaN seed crystals of varying surface orientations from m-plane to a-plane," *J. Cryst. Growth* **368**, 67 (2013)
- D.L. Poerschke, C.G. **Levi**, "Yttrium bearing silicon carbide matrices for robust ceramic composites," *J. Am. Ceram. Soc.* **96**, 1300 (2013)
- D.L. Poerschke, J.S. Van Sluytman, K. Wong, C.G. **Levi**, "Thermochemical compatibility of Ytterbia-(hafnia/silica) multilayers for environmental barrier coatings," *Acta Materialia* **61**, 6743-6755 (2013). DOI: 10.1016/j.actamat.2013.07.047.
- A. Pourhashemi, R.M. Farrell, M.T. Hardy, P.S. Hsu, K.M. Kelchner, J.S. **Speck**, S.P. DenBaars, S. Nakamura, "Pulsed high-power AlGa_N-cladding-free blue laser diodes on semipolar (20°) GaN substrates," *Appl. Phys. Lett.* **103**, 151112 (2013)
- E.D. Pressly, R.A. Pierce, L.A. Connal, C.J. **Hawker**, Y.J. Liu, "Nanoparticle PET/CT imaging of natriuretic peptide clearance receptor in prostate cancer," *Bioconjugate Chem.* **24**, 196-204 (2013)

J.H. Priester, Y. Ge, V. Chang, P.K. Stoimenov, J.P. Schimel, G.D. Stucky, P.A. Holden, "Assessing interactions of hydrophilic nanoscale TiO₂ with soil water," *J. Nanoparticle Research* **15**, 1899 (2013)

J.H. Priester, A. Singhal, B. Wu, G.D. Stucky, P.A. Holden, "Integrated approach to evaluating the toxicity of novel cysteine-capped silver nanoparticles to *Escherichia coli* and *Pseudomonas aeruginosa*," *Analyst* **139**, 954-963 (2013)

E.L. Ratcliff, R.C. Bakus II, G.C. Welch, T.S. van der Poll, A. Garcia, S.R. Cowan, B.A. MacLeod, D.S. Ginley, G.C. Bazan, D.C. Olson, "Formation of interfacial traps upon surface protonation in small molecule solution processed bulk heterojunctions probed by photoelectron spectroscopy," *J. Mater. Chem. C* **1**, 6223-6234 (2013)

M.J. Robb, D. Montarnal, N.D. Eisenmenger, S.Y. Ku, M.L. Chabinyc, C.J. Hawker, "A one-step strategy for end-functionalized donor-acceptor conjugated polymers," *Macromolecules* **46**, 6431-6438 (2013)

D. Schultz, S.M. Copp, N. Markešević, K. Gardner, S.S.R. Oemrawsingh, D. Bouwmeester, E. Gwinn, "Dual-color nanoscale assemblies of structurally stable, few-atom silver clusters, as reported by fluorescence resonance energy transfer," *ACS Nano* **7**(11), 9798-9807 (2013)

D. Schultz, K. Gardner, S.S.R. Oemrawsingh, N. Markešević, K. Olsson, M. Debord, D. Bouwmeester, E. Gwinn, "Evidence for rod-shaped DNA-stabilized silver nanocluster emitters," *Adv. Mater.* **25**(20), 2797-2803 (2013)

K.A. See, J.A. Gerbec, Y.-S. Jun, F. Wudl, G.D. Stucky, R. Seshadri, "A high capacity calcium primary cell based on the Ca-S System," *Adv. Energy Mater.* **3**(8), 1056-1061 (2013)

F. Siebenhuhner, S.A. Weiss, R. Coppola, D.R. Weinberger, D.S. Bassett, "Intra- and inter-frequency brain network structure in health and schizophrenia," *PLOS ONE* **8**(8), e72351 (2013)

J.K. Sigurdsson, F.L.H. Brown, P.J. Atzberger, "Hybrid continuum-particle method for fluctuating lipid bilayer membranes with diffusing protein inclusions," *J. Comp. Phys.* **252**, 65 (2013)

N. Singh, D.C. Upham, H. Metiu, E.W. McFarland, "Gas-phase chemistry to understand electrochemical hydrogen evolution and oxidation on doped transition metal sulfides," *J. Electrochem. Soc.* **160**(10), A1902-A1906 (2013)

M.L. Snedaker, Y. Zhang, C.S. Birkel, H. Wang, T. Day, Y. Shi, X. Ji, S. Kraemer, C.E. Mills, A. Moosazadeh, M. Moskovits, G.J. Snyder, G.D. Stucky, "Silicon-based thermoelectrics made from a boron-doped silicon dioxide nanocomposite," *Chem. Mater.* **25**(24), 4867-4873 (2013)

D.I. Speiser, R.L. Lampe, V.R. Lovdahl, B. Carrillo-Zazueta, A.S. Rivera, T.H. Oakley, "Evasion of predators contributes to the maintenance of male eyes in sexually dimorphic euphilomedes ostracods (crustacea)," *Integ. and Compar. Biol.* **53**(1), 78 (2013)

X.Y. Sun, B. Li, H. Metiu, "Ethane activation by Nb-doped NiO," *J. Phys. Chem. C* **117**(45), 23597 (2013)

X.Y. Sun, B. Li, H. Metiu, "Methane dissociation on Li-, Na-, K-, and Cu-doped flat and stepped CaO(001)," *J. Phys. Chem. C* **117**(14), 7114 (2013)

C.J. Takacs, N.D. Treat, S. Krämer, Z. Chen, A. Facchetti, M.L. **Chabinyc**, A.J. Heeger, "Remarkable order of a high-performance polymer," *Nano Lett.* **13**, 2522-2527 (2013)

YP. Tan, U.H. Yildiz, W. Wei, J.H. **Waite**, A. Miserez, "Layer-by-layer polyelectrolyte deposition: A mechanism for forming biocomposite materials," *Biomacromolecules* **14**(6), 1715-1726 (2013)

N.D. Treat, J.A.N. Malik, O. Reid, L.Y. Yu, C.G. Shuttle, G. Rumbles, C.J. **Hawker**, M.L. **Chabinyc**, P. Smith, N. Stingelin, "Microstructure formation in molecular and polymer semiconductors assisted by nucleation agents," *Nat. Mater.* **12**, 628-633 (2013)

N.D. Treat, T.E. Mates, C.J. **Hawker**, E.J. Kramer, M.L. **Chabinyc**, "Temperature dependence of the diffusion coefficient of PCBM in poly(3-hexylthiophene)," *Macromolecules* **46**, 1002-1007 (2013)

T.L. Turner, P.M. Miller, V.A. Cochrane, "Combining genome-wide methods to investigate the genetic complexity of courtship song variation in drosophila melanogaster," *Molec. Biol. and Evol.* **30**(9), 2113 (2013)

C.G. **Van de Walle**, M. Choi, J.R. Weber, J.L. Lyons, A. Janotti, "Defects at Ge/oxide and III-V/oxide interfaces," *Microelectron. Eng.* **109**, 211 (2013)

C. Vichery, I. Maurin, O. Proux, I. Kieffer, J.L. Hazemann, R. Cortes, J.P. Boilot, T. Gacoin, "Introduction of cobalt ions in gamma-Fe₂O₃ nanoparticles by direct coprecipitation or postsynthesis adsorption: Dopant localization and magnetic anisotropy," *J. Phys. Chem. C* **117**(38), 19672 (2013)

B. Walker, J. Liu, C. Kim, G.C. Welch, J.K. Park, J. Lin, P. Zalar, C.M. Proctor, J.H. Seo, G.C. Bazan, T.-Q. Nguyen, "Optimization of energy levels by molecular design: evaluation of bis-diketopyrrolopyrrole molecular donor materials for bulk heterojunction solar cells," *Energy Environ. Sci.* **6**, 952-962 (2013)

X. Wang, J. Li, J. Botana, M. Zhang, H. Zhu, L. Chen, H. Liu, T. Cui, M. Miao, "Polymerization of nitrogen in lithium azide," *J. Chem. Phys.* **139**, 164710 (2013)

X. Wang, C.D. Liman, N.D. Treat, M.L. **Chabinyc**, D.G. Cahill, "Ultralow thermal conductivity of fullerene derivatives," *Phys. Rev. B* **88**, 075310 (2013)

Y.H. Wang, J.K. Sigurdsson, E. Brandt, P.J. Atzberger, "Dynamic implicit-solvent coarse-grained models of lipid bilayer membranes: Fluctuating hydrodynamics thermostat," *Phys. Rev. E* **88**(2), 023301 (2013)

Y.L. Wang, A. Yepremyan, S. Ghorai, R. Todd, D.H. Aue, L.M. Zhang, "Gold-catalyzed cyclizations of cis-enediynes: Insights into the nature of gold-aryne interactions," *Angew. Chem., Int. Ed.* **52**(30), 7795 (2013)

C.F. Woellner, Z. Li, J.A. Freire, G. Lu, T.Q. Nguyen, "Charge carrier mobility in a two-phase disordered organic system in the low-carrier concentration regime," *Phys. Rev. B* **88**(12), 125311 (2013)

F. Wrobel, M.C. Kemei, S. Derakhshan, "Antiferromagnetic spin correlations between corner-shared $[\text{FeO}_5]^{7-}$ and $[\text{FeO}_6]^{9-}$ units, in the novel iron-based compound: BaYFeO_4 ," *Inorgan. Chem.* **52**(5), 2671 (2013)

Y. Yang, M.T. **Valentine**. "Determining the structure-mechanics relationships of dense microtubule networks with confocal microscopy and magnetic tweezers-based microrheology." *Methods in Cell Biology*. Ed. John J. Correia and Leslie Wilson. Burlington: Academic Press, 2013. Vol. **115**, 75-96.

N.G. Young, R.M. Farrell, Y.L. Hu, Y. Terao, M. Iza, S. Keller, S.P. DenBaars, S. Nakamura, J.S. **Speck**, "High performance thin quantum barrier InGaN/GaN solar cells on sapphire and bulk (0001) GaN substrates," *Appl. Phys. Lett.* **103**(17), 173903 (2013)

J. Yu, M. Scheffler, H. Metiu, "Oxidative dehydrogenation of methane by isolated vanadium oxide clusters supported on Au (111) and Ag (111) surfaces," *J. Phys. Chem. C* **117**(36), 18475 (2013)

J. Yu, W. Wei, M.S. Menyo, A. Masic, J.H. **Waite**, J.N. **Israelachvili**, "Adhesion of mussel foot protein-3 to TiO_2 surfaces: The effect of pH," *Biomacromolecules* **14**(4), 1072 (2013)

H. Zhang, A.K. Scholz, Y. Merckel, M. Brieu, D. Berghezan, E.J. Kramer, C. Creton, "Strain induced nanocavitation and crystallization in natural rubber probed by real time small and wide angle X-ray scattering," *J. of Polymer Sci. Part B: Polymer Phys.* **51**(15), 1125 (2013)

J.Y. Zhang, J. Hwang, S. Raghavan, S. **Stemmer**, "Symmetry lowering in extreme-electron-density perovskite quantum wells," *Phys. Rev. Lett.* **110**, 256401 (2013)

J.Y. Zhang, C.A. Jackson, S. Raghavan, J. Hwang, S. **Stemmer**, "Magnetism and local structure in low-dimensional Mott insulating GdTiO_3 ," *Phys. Rev. B* **88**, 121104(R) (2013)

J. Zhao, X.C. Chena, P.F. Green, "Nanoparticle encapsulation in thin film micellar structures: A physical method for functional materials design," *Soft Matter* **9**, 6128 (2013)

Y. Zhao, F. Wu, C-Y. Huang, Y. Kawaguchi, S. Tanaka, K. Fujito, J.S. Speck, S.P. DenBaars, S. Nakamura, "Suppressing void defects in long wavelength semipolar (20-21) InGaN quantum wells by growth rate optimization," *Appl. Phys. Lett.* **102**, 091905 (2013)

H. Zhou, Y. Zhang, J. Seifert, S.D. Collins, C. Luo, G.C. Bazan, T-Q. Nguyen, A.J. Heeger, "High-efficiency polymer solar cells enhanced by solvent treatment," *Advanced Materials* **25**, 1646 (2013)

Z.M. Zhou, A.C. Anselmo, S. Mitragotri, "Synthesis of protein-based, rod-shaped particles from spherical templates using layer-by-layer assembly," *Adv. Mater.* **25**(19), 2723 (2013)

Z. Zhu, H.C. Jiang, Y. Qi, C.S. Tian, Z.Y. Weng, "Strong correlation induced charge localization in antiferromagnets," *Scientif. Rep.* **3**, 2586 (2013)

PATENTS

a. Patents granted during the current period

“DNA-DNA sensor”

G. Bazan, B.S. Gaylord, S. Wang
U.S. Patent 8,617,814 (12/31/13)

“Interconnected pore carbon mat”

B.F. Chmelka, G. Athens, A.-H. Lu
U.S. Patent 8,563,124 (10/22/13)

“Oxyfluoride phosphor”

S.P. DenBaars, W.-B. Im, R. **Seshadri**
U.S. Patent 8,535,565 (9/17/13)

“Semiconducting nano materials”

D.E. Morse, B. Schwenzer, J.R. Gomm, K.M. Roth, B. Heiken, R. Brutchey
U.S. Patent 8,568,686 (10/29/13)

“Hydrocarbon conversion process improvements”

J.H. Sherman, E.W. McFarland, M.J. Weiss, I.M. Lorkovic, L.E. Laverman, S. Sun,
D.J. Schaefer, G.D. Stucky, P.C. Ford, P. Grosso, A.W. Breed, M.F. Doherty
U. S. Patent 8,415,512 (4/9/13)

“Mesocellular oxide foams as hemostatic compositions and methods of use”

G. Stucky, S. Baker, A. Sawvel
U. S. Patent 8,603,543 (12/10/13)

b. Patent applications (excluding provisional applications) during the current period

“Regiochemical constructions for the synthesis of thiadiazolo(3,4-c)pyridine containing narrow band-gap conjugated polymers”

G. Bazan, P.S. Hsu, G.C. Welch, Q. Wen, L. Ying
Applic. filed 11/22/13
Applic. # 14/087,702

“Conjugated polymers with chiral side chain for organic thin film transistors”

G. Bazan, T.-Q. Nguyen, L. Ying, P. Zalar
Applic. filed 4/24/13
Applic. # 13/869,533

“Additive processing for single-component solution processed organic field-effect transistors”

G. Bazan, T.-Q. Nguyen, L. Ying, P. Zalar, Y. Zhang
Applic. filed 4/24/13
Applic. # 13/869,498

“A single phase and full color phosphor”

C.S. Birkel, J. Gerbec, B.-C. Hong, R. **Seshadri**
Applic. filed 9/17/13
Applic. # 14/029,486

“A modular strategy for introducing end-functional segments into conjugated copolymers”

M. **Chabiny**, C.J. **Hawker**, S.Y. Ku, M. Robb

Applic. filed 03/25/2013

Applic. # 13/850,040

“Benzodipyrrolidones and their polymers: Synthesis and applications for organic solar cells”

W. Cui, F. Wudl

Applic. filed 4/8/13

Applic. # 13/858,755

“Precise control of a living radical polymerization via visible light”

B.P. Fors, C.J. **Hawker**

Applic. filed 3/26/13

Applic. # “PCT/US2013/033933

“Hydrolytically degradable poly(ethylene glycol) derivatives through incorporation of methylene ethylene oxide units”

C.J. **Hawker**, A. Lee, P. Lundberg, N.A. Lynd, E. Pressly, S.A. van den Berg

Applic. filed 3/15/13

Applic. # PCT/US2013/031882

c. Patents licensed during the current period

“Methods and compositions for detection and analysis of polynucleotides using light harvesting multichromophores”

G. Bazan, B.S. Gaylord, S. Wang

Application filed 11/21/13

Application # 14/086,532

Licensed.

“Organic small molecule semiconducting chromophores for use in organic electronic devices”

G. Bazan, C.V. Hoven, T.-Q. Nguyen, G.C. Welch

Applic. filed 10/11/13

Applic. # 13/988,756

Licensed.

“Spatial and temporal control of brush formation on surfaces”

B.P. Fors, C.J. **Hawker**, J. Poelma

Applic. filed 10/9/13

Applic. # 14/050,098

Licensed.