

## 2012 MRL PUBLICATIONS

### IRG1

#### **a. Primary MRSEC Support that Acknowledge the MRSEC Award**

C. Cheng, J. Wang, R. Kausik, K.C. Lee, S. **Han**, "An ultrasensitive tool exploiting hydration dynamics to decipher weak lipid membrane-polymer interactions," *J. Magn. Reson.* **215**, 115-119 (2012)

S.G. Jang, A. Khan, C.J. **Hawker**, E.J. **Kramer**, "Morphology evolution of PS-b-P2VP diblock copolymers via supramolecular assembly of hydroxylated gold nanoparticles," *Macromolecules* **45**, 1553-1561 (2012)

R.A. Riggleman, R. Kumar, G.H. **Fredrickson**, "Investigation of the interfacial tension of complex coacervates using field-theoretic simulations," *J. Chem. Phys.* **136**, 024903 (2012)

J.H. **Waite**, C.C. Broomell, "Changing environments and structure-property relationships in marine biomaterials," *Journal of Experimental Biology* **215**, 873-883 (2012)

#### **b. Partial MRSEC Support that Acknowledge the MRSEC Award**

D.S. Hwang, H.B. Zeng, Q.Y. Lu, J. **Israelachvili**, J.H. **Waite**, "Adhesion mechanism in a DOPA-deficient foot protein from green mussels," *Soft Matter* **8**, 5640 (2012)

B.F. Lin, K.A. Megley, N. Viswanathan, D.V. Krogstad, L.B. Drews, M.J. Kade, Y. Qianb, M.V. **Tirrell**, "pH-responsive branched peptide amphiphile hydrogel designed for applications in regenerative medicine with potential as injectable tissue scaffolds," *J. Mater. Chem.* **22**, 19447 (2012)

A. Miserez, Y. Li, J. Cagnon, J.C. Weaver, J.H. **Waite**, "Four-stranded coiled-coil elastic protein in the byssus of the giant clam, *Tridacna maxima*," *Biomacromolecules* **13**(2), 332 (2012)

A. Morriss-Andrew, J.-E. **Shea**, "Kinetic pathways to peptide aggregation on surfaces: The effects of  $\beta$ -sheet propensity and surface attraction," *J. Chem Phys.* **136**, 065103 (2012)

R.A. Riggleman, R. Kumar, G.H. **Fredrickson**, "Investigation of the interfacial tension of complex coacervates using field-theoretic simulations," *J. Chem. Phys.* **136**(2), 024903 (2012)

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

None

### IRG2

#### **a. Primary MRSEC Support that Acknowledge the MRSEC Award**

P. Rinke, A. Schleife, E. Kioupakis, A. Janotti, C. Rödl, F. Bechstedt, M. Scheffler, C.G. **Van de Walle**, "First-principles optical spectra for F centers in MgO," *Phys. Rev. Lett.* **108**, 126404 (2012)

J. Varley, A. Janotti, C. Franchini, C.G. **Van de Walle**, “Role of self-trapping in luminescence and *p*-type conductivity of wide-band-gap oxides,” *Phys. Rev. B* **85**, 081109 (2012)

**b. Partial MRSEC Support that Acknowledge the MRSEC Award**

F. Alibart, L. Gao, B. Hoskins, D.B. **Strukov**, “High-precision tuning of state for memristive devices by adaptable variation-tolerant algorithm,” *Nanotechnology* **23**, art. 075201 (2012) Highlighted in [www.nanotechweb.org](http://www.nanotechweb.org)

T.A. Cain, S. Lee, P. Moetakef, L. Balents, S. **Stemmer**, S.J. Allen, “Seebeck coefficient of a quantum confined, high-electron-density electron gas in SrTiO<sub>3</sub>,” *Appl. Phys. Lett.* **100**, 161601 (2012)

H. Peelaers, E. Kioupakis, C.G. **Van de Walle**, “Fundamental limits on optical transparency of transparent conducting oxides: Free-carrier absorption in SnO<sub>2</sub>,” *Appl. Phys. Lett.* **100**, 011914 (2012)

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

D.B. **Strukov**, H. Kohlstedt, “Resistive switching phenomena in thin films: Materials, devices and applications,” *MRS Bulletin* **37**(02), 108-114 (2012)

**IRG3**

**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

**IRG4**

**a. Primary MRSEC Support that Acknowledge the MRSEC Award**

None

**b. Partial MRSEC Support that Acknowledge the MRSEC Award**

L.E. Clinger, G. Pernot, T.E. Buehl, P.G. Burke, A.C. **Gossard**, C.J. **Palmstrøm**, A. Shakouri, J.M.O. Zide, “Thermoelectric properties of epitaxial TbAs:InGaAs nanocomposites,” *J. Appl. Phys.* **111**, 094312 (2012)

**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**

I. Riisness, C. Carach, M.J. Gordon, “Spatially resolved spectral mapping of phase mixing and charge transfer excitons in bulk heterojunction solar cell films,” *Appl. Phys. Lett.* **100**, 073308 (2012)

**b. Partial MRSEC Support that Acknowledge the MRSEC Award**

A. Birkel, L.E. Darago, A. Morrison, L. Lory, N.C. George, A.A. Mikhailovsky, C.S. Birkel, R. **Seshadri**, “Microwave assisted preparation of Eu<sup>2+</sup>-doped Akermanite Ca<sub>2</sub>MgSi<sub>2</sub>O<sub>7</sub>,” *Solid State Sci.* **14**(6), 739 (2012)

D. Valdman, P.J. Atzberger, D. Yu, S. Kuei, M.T. Valentine, “Spectral analysis methods for the robust measurement of the flexural rigidity of biopolymers,” *Biophysical Journal* **102**(5), 1144 (2012)

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

None

**SHARED EQUIPMENT FACILITIES**

P.T. Barton, R. **Seshadri**, A. Knöller, M.J. Rosseinsky, “Structural and magnetic characterization of the complete delafossite solid solution (CuAlO<sub>2</sub>)<sub>1-x</sub>(CuCrO<sub>2</sub>)<sub>x</sub>,” *J. Phys. Condensed Matter* **24**, 016002(1–6) (2012)

A. Birkel, K.A. Denault, N.C. George, C.E. Doll, B. Héry, A.A. Mikhailovsky, C.S. Birkel, B.-C. Hong, R. **Seshadri**, “Rapid microwave preparation of highly efficient Ce<sup>3+</sup>-substituted garnet phosphors for solid state white lighting,” *Chem. Mater.* **24**, 1198–1204 (2012)

Y.L. Chen, A.M. Kushner, G.A. Williams, Z.B. Guan, “Multiphase design of autonomic self-healing thermoplastic elastomers,” *Nature Chemistry* **4**, 467 (2012)

K.K. Clark, A.A. Keller, “Adsorption of perchlorate and other oxyanions onto magnetic permanently confined micelle arrays (Mag-PCMA),” *Water Research* **46**, 635 (2012)

X. Fang, B. Guo, Y. Shi, B. Li, C. Hua, C. Yao, Y. Zhang, Y.-S. Hu, Z. Wang, G.D. **Stucky**, L. Chen, “Enhanced Li storage performance of ordered mesoporous MoO<sub>2</sub> via tungsten doping,” *Nanoscale* **4**(5), 1541-1544 (2012)

R.M. Farrell, E.C. Young, F. Wu, S.P. **DenBaars**, J.S. **Speck**, “Materials and growth issues for high-performance nonpolar and semipolar light-emitting devices,” *Semicond. Sci. Technol.* **27**, 024001 (2012)

S.M. Griffin, N.A. **Spaldin**, “Ab initio investigation of FeAs/GaAs heterostructures for potential spintronic and superconducting applications,” *Phys. Rev. B* **85**, 155126 (2012)

P.S. Hsu, M.T. Hardy, F. Wu, I. Koslow, E.C. Young, A.E. Romanov, K. Fujito, D. Feezell, S.P. **DenBaars**, J.S. **Speck**, S. **Nakamura**, “444.9 nm semipolar (11 $\bar{2}$ ) laser diode grown on an intentionally stress relaxed InGaN waveguiding layer,” *Appl. Phys. Lett.* **100**, 021104 (2012)

P.S. Hsu, M.T. Hardy, E.C. Young, A.E. Romanov, S.P. **DenBaars**, S. **Nakamura**, J.S. **Speck**, “Stress relaxation and critical thickness for misfit dislocation formation in (10-10) and (30-31) InGaN/GaN heteroepitaxy,” *Appl. Phys. Lett.* **100**, 171917 (2012)

Y.-L. Hu, R.M. Farrell, C.J. Neufeld, M. Iza, S.C. Cruz, N. Pfaff, D. Simeonov, S. Keller, S. **Nakamura**, S.P. **DenBaars**, U.K. **Mishra**, J.S. **Speck**, “Effect of quantum well cap layer thickness on the microstructure and performance of InGaN/GaN solar cells,” *Appl. Phys. Lett.* **100**, 161101 (2012)

X. Ji, D.-Y. Liu, D.G. Prendiville, Y. Zhang, X. Liu, G.D. **Stucky**, “Spatially heterogeneous carbon-fiber papers as surface dendrite-free current collectors for lithium deposition,” *Nano Today* **7**(1), 10-20 (2012)

N. Julian, P. Mages, C. Zhang, J. Zhang, S. Kraemer, S. **Stemmer**, S. **DenBaars**, L. Coldren, P. Petroff, J. Bowers, “Coalescence of InP epitaxial lateral overgrowth by MOVPE with V/III Ratio variation,” *J. Electron. Mater.* **41**, 845 (2012)

M.C. Kemei, S.L. Moffitt, D.P. Shoemaker, R. **Seshadri**, “Evolution of magnetic properties in the normal spinel solid solution Mg<sub>1-x</sub>Cu<sub>x</sub>Cr<sub>2</sub>O<sub>4</sub>,” *J. Phys. Condensed Matter* **24**, 046003(1–8) (2012)

K.L. Killops, N. Gupta, M.D. Dimitriou, N.A. Lynd, H. Jung, H. Tran, J. Bang, L.M. Campos, “Nanopatterning biomolecules by block copolymer self-assembly,” *ACS Macro Lett.* **1**, 758 (2012)

B.F. Lin, D. Missirlis, D.V. Krogstad, M. **Tirrell**, “Structural effects and lipid membrane interactions of the pH-responsive GALA peptide with fatty acid acylation,” *Biochemistry* **51**, 4658 (2012)

A.D. Ostrowski, B.F. Lin, M.V. **Tirrell**, P.C. Ford, “Liposome encapsulation of a photochemical NO precursor for controlled nitric oxide release and simultaneous fluorescence imaging,” *Molec. Pharm.* **9**, 2950 (2012)

D.L. Poerschke, C.G. Levi, “Yttrium bearing silicon carbide matrices for robust ceramic composites,” *J. Am. Ceram. Soc.* 1–9 (2012) (online)

A.D. Price, S. Hur, G.H. **Fredrickson**, A.L. Frischknecht, D.L. Huber, “Exploring lateral microphase separation in mixed polymer brushes by experiment and self-consistent field theory simulations,” *Macromolecules* **45**, 510 (2012)

A.T. Ramua, J.E. Bowers, “A ‘2-omega’ technique for measuring anisotropy of thermal conductivity,” *Review of Scientific Instruments* **83**, 124903 (2012)

A.H. Reading, J.J. Richardson, C.C. Pan, S. **Nakamura**, S.P. **DenBaars**, “High efficiency white LEDs with single-crystal ZnO current spreading layers deposited by aqueous solution epitaxym,” *Optics Express* **20**, A13 (2012)

S. Sadro, J.M. Melack, "The effect of an extreme rain event on the biogeochemistry and ecosystem metabolism of an oligotrophic high-elevation lake," *Arctic, Antarctic, and Alpine Research* **44**, 222 (2012)

P.J. Saines, P.T. Barton, P. Jain, A.K. **Cheetham**, "Structures and magnetic properties of Mn and Co inorganic-organic frameworks with mixed linear dicarboxylate ligands," *Cryst. Eng. Comm.* **14**, 2711-2720 (2012)

K. Satoh, J.E. Poelma, L.M. Campos, B. Stahl, C.J. **Hawker**, "A facile synthesis of clickable and acid-cleavable PEO for acid-degradable block copolymers," *Poly. Chem.* **3**(7), 1890 (2012)

C.G. Shuttle, N.D. Treat, J. Fan, A. Varotto, C.J. **Hawker**, F. Wudl, M.L. **Chabinyc**, "In situ current voltage measurements for optimization of a novel fullerene acceptor in bulk heterojunction photovoltaics," *J. Polym. Sci., Polym. Phys.* **50**, 174-179 (2012)

T.M. Tovar, S.M. Stewart, S.L. Scott, "Origin of the  $ZnCl_2$  effect on  $CH_3ReO_3/\gamma-Al_2O_3$  in olefin metathesis," *Topics in Catalysis* **55**, 530 (2012)

M.H. Tucker, A.J. Crisci, B.N. Wigington, N. Phadke, R. Alamillo, J.P. Zhang, S.L. Scott, J.A. Dumesic, "Acid-functionalized SBA-15-type periodic mesoporous organosilicas and their use in the continuous production of 5-hydroxymethylfurfural," *ACS Catalysis* **2**, 1865 (2012)

J.F. von Bulow, H.-L. Zhang, D.E. **Morse**, "Hydrothermal realization of high-power nanocomposite cathodes for lithium ion batteries," *Adv. Energy Mater.* **2**, 309 (2012)

M.H. Wong, F. Wu, C.A. Hurni, S. Choi, J.S. **Speck**, U.K. **Mishra**, "Molecular beam epitaxy of InAlN lattice-matched to GaN with homogeneous composition using ammonia as nitrogen source," *Appl. Phys. Lett.* **100**, 072107 (2012)

Y. Wu, E.M. Haney, N.J. Cunningham, G.R. Odette, "Transmission electron microscopy characterization of the nanofeatures in nanostructured ferritic alloy MA957," *Acta Materialia* **60**, 3456 (2012)

H.-L. Zhang, D.E. **Morse**, "Transforming large-scale industrially produced carbon nanotubes to high-performance electrode materials for lithium-ion batteries," *J. Mat. Res.* **27**, 410 (2012)

Y. Zhang, M.L. Snedaker, C.S. Birkel, S. Mubeen, X. Ji, Y. Shi, D. Liu, X. Liu, M. Moskovits, G.D. **Stucky**, "Silver-based intermetallic heterostructures in  $Sb_2Te_3$  thick films with enhanced thermoelectric power factors," *Nano Lett.* **12**, 1075 (2012)

Y. Zhao, Q. Yan, C.-Y. Huang, S.-C. Huang, P.S. Hsu, S. Tanaka, C.-C. Pan, Y. Kawaguchi, K. Fujito, C.G. **Van de Walle**, J.S. **Speck**, S.P. **DenBaars**, S. **Nakamura**, D. Feezell, "Indium incorporation and emission properties of nonpolar and semipolar InGaN quantum wells," *Appl. Phys. Lett.* **100**, 201108 (2012)