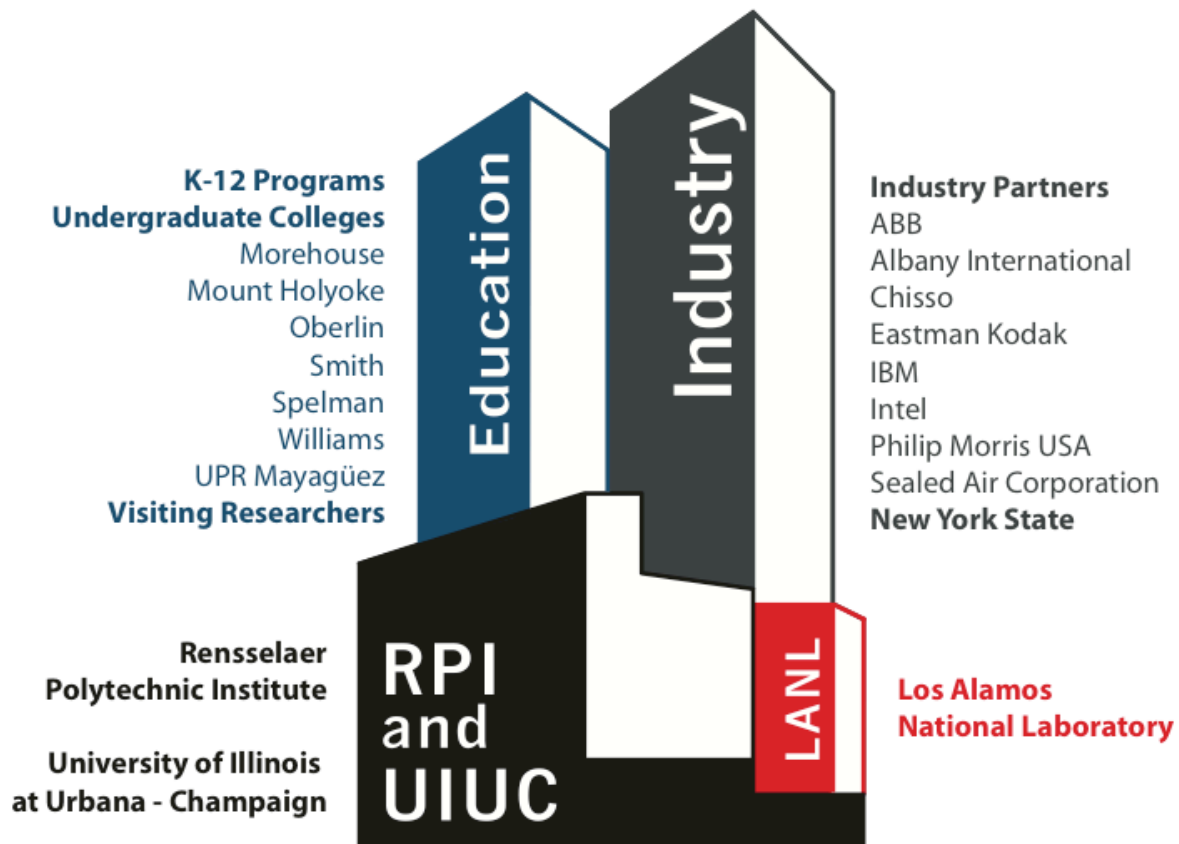


# FINAL REPORT TO THE NATIONAL SCIENCE FOUNDATION



## NSF NANOSCALE SCIENCE AND ENGINEERING CENTER FOR DIRECTED ASSEMBLY OF NANOSTRUCTURES

15 DECEMBER 2012

## 14. Publications and Patents

### 14.1 Publications

#### 14.1.1 Thrust 1

##### 14.1.1.1 Primary NSEC Support

- Adhikari, A. R., M. Huang, H. Bakhru, M. Chipara, **C. Y. Ryu, P. M. Ajayan**, “Thermal Property of Regioregular Poly(3-Hexylthiophene)/Nanotube Composites using Modified Single-Walled Carbon Nanotubes via Ion Irradiation”, *Nanotechnology* **17** (24), 5947-5953 (2006)
- Akcora, P. K., **S. K. Kumar**, V. G. Sakai, Y. Li, **B. C. Benicewicz, L. S. Schadler**, “Segmental Dynamics in PMMA-Grafted Nanoparticle Composites”, *Macromolecules* **43**, 8275-8281 (2010)
- Akcora, P., H. Liu, **S. K. Kumar**, Y. Li, **B. C. Benicewicz, L. S. Schadler**, D. Acehan, A. Z. Panagiotopoulos, J. F. Douglas, “Anisotropic Self-Assembly of Spherical Polymer-Grafted Nanoparticles”, *Nature Materials* **8**(4), 354-359 (2009)
- Akcora, P., **S. K. Kumar**, J. Moll, S. Lewis, **L. S. Schadler**, Y. Li, **B. C. Benicewicz**, A. Sandy, S. Narayanan, J. Ilavsky, P. Thiyagarajan, R. H. Colby, J. F. Douglas, “Gel-Like” Mechanical Reinforcement in Polymer Nanocomposite Melts”, *Macromolecules* **43**(2), 1003-1010 (2010)
- Anderson, B. J., **C. F. Zukoski**, “Colloidal Glass Transition in Unentangled Polymer Nanocomposite Melts”, *Journal of Physics: Condensed Matter* **21**(28), 285102 (2009)
- Anderson, B. J., **C. F. Zukoski**, “Nanoparticle Stability in Polymer Melts as Determined by Particles Second Virial Measurement”, *Macromolecules* **40**(14), 5133-5140 (2007)
- Anderson, B. J., **C. F. Zukoski**, “Rheology and Microstructure of Entangled Polymer Nanocomposite Melts”, *Macromolecules* **42**(21), 8370-8384 (2009)
- Anderson, B. J., **C. F. Zukoski**, “Rheology and Microstructure of Polymer Nanocomposite Melts: Variation of Polymer Segment-Surface Interaction”, *Langmuir* **26**(11), 8709-8720 (2010)
- Bhimaraj, P., H. Yang, **R. W. Siegel, L. S. Schadler**, “Crystal Nucleation and Growth in Poly(ethylene terephthalate)/Alumina-Nanoparticle Composites”, *Journal of Applied Polymer Science* **106**(6), 4233-4240 (2008)
- Borca-Tasciuc, T., M. Mazumder, Y. Son, S. K. Pal, **L. S. Schadler, P. M. Ajayan**, “Anisotropic Thermal Diffusivity Characterization of Aligned Carbon Nanotube-Polymer Composites”, *Journal of Nanoscience and Nanotechnology* **7**, 1581-1588 (2007)
- **Braun, P. V.**, A. Wolosiuk, D. Son, D. V. Gough, “Double Direct Templating of Periodically Nanostructured Inorganic Hollow Microspheres”, *Polymeric Materials Science and Engineering, Preprint* (2007)
- Busbee, J. D., A. T. Juhl, L. V. Natarajan, V. P. Tongdilia, T. J. Bunning, R. A. Vaia, **P. V. Braun**, “SiO<sub>2</sub> Nanoparticle Sequestration via Reactive Functionalization in Holographic Polymer Dispersed Liquid Crystals”, *Advanced Materials* **21**, 3659-3662 (2009)
- Caruso, M. M., S. R. Schelkopf, A. C. Jackson, A. M. Landry, **P. V. Braun, J. S. Moore**, “Microcapsules Containing Suspensions of Carbon Nanotubes”, *Journal of Materials Chemistry* **19**, 6093-6096 (2009)

- Chae, W. S., R. J. Kershner, **P. V. Braun**, “Fabrication of 50 to 1000 nm Monodisperse ZnS Colloids”, *Bulletin of the Korean Chemical Society* **30**, 129-132 (2009)
- Chen, R. C. Li, **B. C. Benicewicz**, “Reversible Addition-Fragmentation Chain Transfer Polymerization of 4-Anilinophenyl(meth)acrylates”, *ACS Symposium Series* **962**(5), 54-68 (2007)
- Conrad, J. C., **J. A. Lewis** “Structure of Colloidal Gels During Microchannel Flow Flow”, *Langmuir* **24**(15), 7628-7634 (2008)
- Dell’Acqua-Bellavitis, L. M., J. D. Ballard, R. Vajtai, **P. M. Ajayan**, **R. W. Siegel**, “The Generation of Domain Boundaries in Catalytically-Grown Carbon Nanotubes”, *Journal of Nanoscience and Nanotechnology* **7**(7), 2335-2342 (2007)
- Dell’Acqua-Bellavitis, L. M., J. D. Ballard, R. Vajtai, **P. M. Ajayan**, **R. W. Siegel**, “The Role Played by Strain Fields, Dislocation Arrays, and Domain Boundaries During the Catalytic Synthesis of Carbon Nanotubes”, *Materials Research Symposium Proceedings* **900E**, 001-01.1-6 (2006)
- Dell’Acqua-Bellavitis, L. M., J. D. Ballard, R. Vajtai, **P. M. Ajayan**, **R. W. Siegel**, “The Role of Dislocations at the Catalyst-Wall Interface in Carbon Nanotube Growth”, *The Journal of Physical Chemistry C* **111**(6), 2623-2630 (2007)
- Dell’Acqua-Bellavitis, L. M., **R. W. Siegel**, “New Rules for the Old Game of Porous Micro-and Nanoparticle Synthesis”, *Langmuir* **24**, 957-964 (2008)
- Desai, T. P., **P. J. Keblinski**, **S. K. Kumar**, **S. Granick**, “Modeling Diffusion of Adsorbed Polymer with Explicit Solvent”, *Physical Review Letters* **98**, 218301-21305 (2007)
- Desai, T. P., **P. J. Keblinski**, **S. K. Kumar**, **S. Granick**, “Molecular Dynamics Simulations of the Transport Properties of a Single Polymer Chain in Two Dimensions”, *The Journal of Chemical Physics* **124**, 084904 (2006)
- Desai, T., **P. J. Keblinski**, **S. K. Kumar**, “Computer Simulations of the Conformations of Strongly Adsorbed Chains at Solid-Liquid Interface”, *Polymer* **47**, 722-727 (2006)
- Dukes, D., Y. Li, S. Lewis, **B. C. Benicewicz**, **L. S. Schadler**, **S. K. Kumar**, “Conformational Transitions of Spherical Polymer Brushes: Synthesis, Characterization, and Theory”, *Macromolecules* **43**(3), 1564-1570 (2010)
- Gao, J., J. Li, **B. C. Benicewicz**, H. Hillborg, **L. S. Schadler**, “The Mechanical Properties of Epoxy Composites Filled with Rubbery Copolymer Grafted SiO<sub>2</sub>”, *Polymers* **4**(1), 187-210 (2012)
- Hall, L. B., A. Jayaraman, **K. S. Schweizer**, “Molecular Theories of Polymer Nanocomposites”, *Current Opinion in Solid State and Materials Science* **14**(2), 38-48 (2010) Invited
- Hall, L. M., B. J. Anderson, **C. F. Zukoski**, **K. S. Schweizer**, “Concentration Fluctuations, Local Order and the Collective Structure of Polymer Nanocomposites”, *Macromolecules* **42**, 8435 (2009)
- Hartley, C. S., **J. S. Moore**, “Programmed Dynamic Covalent Assembly of Unsymmetrical Macrocycles”, *Journal of American Chemical Society* **129**(38), 11682-11683 (2007)
- Hong, J.-I. **L. S. Schadler**, **R. W. Siegel**, E. Mårtensson, “Electrical Behavior of Low Density Polyethylene Containing an Inhomogeneous Distribution of ZnO Nanoparticles”, *Journal of Materials Science* **41**, 5810-5814 (2006)

- Hooper, J. B., **K. S. Schweizer**, “Real Space Structure and Scattering Patterns in Model Polymer Nanocomposites”, *Macromolecules* **40**, 6998 (2007)
- Hooper, J. B., **K. S. Schweizer**, “Theory of Phase Separation in Polymer Nanocomposites”, *Macromolecules* **39**, 5133 (2006)
- Iyakutti, K., A. Bodapati, X. Peng, **P. J. Keblinski**, **S. K. Nayak**, “Electronic Band Structure, Electron-Phonon Interaction and Superconductivity of (5,5), (10,10) and (5,0) Carbon Nanotubes”, *Physical Review B* **73**, 035413 (2006)
- Jayaraman, A., **K. S. Schweizer**, “Liquid State Theory of the Structure and Phase Behavior of Polymer Tethered Nanoparticles in Dense Suspensions, Melts and Nanocomposites”, *Molecular Simulation* **35**, 835 (2009) Invited
- Jayaraman, A., **K. S. Schweizer**, “Structure and Assembly of Dense Solutions and Melts of Tethered Nanoparticles”, *The Journal of Chemical Physics* **128**, 164904 (2008)
- Jayaraman, A., **K. S. Schweizer**, “Structure and Assembly of Multi-Tethered Nanoparticles in Dense Solutions and Melts: Role of Number and Location of Tethers”, *Langmuir* **24**, 11119 (2008)
- Juhl, A. T., J. D. Busbee, J. J. Koval, L. V. Natarajan, V. P. Tondiglia, R. A. Vaia, T. J. Bunning, **P. V. Braun**, “Holographically Directed Assembly of Polymer Nanocomposites”, *ACS Nano* **4**, 5953-5961 (2010)
- Kaur, S., S. Sahoo, **P. M. Ajayan**, **R. S. Kane**, “Capillarity-Driven Assembly of Carbon Nanotubes on Substrates into Dense Vertically Aligned Arrays”, *Advanced Materials* **19**, 2984-2987 (2007)
- Khan, J., S. E Harton, P. Akcora, **B. C. Benicewicz**, **S. K. Kumar**, “Polymer Crystallization in Nanocomposites: Spatial Reorganization of Nanoparticles”, *Macromolecules* **42**, 5741-5744 (2009)
- Kim, S. Y., **K. S. Schweizer**, **C. F. Zukoski**, “Multiscale Structure, Interfacial Cohesion, Adsorbed Layers and Thermodynamics in Dense Polymer-Particle Mixtures”, *Physical Review Letters* **107**(22), 225504 (2011)
- Kim, S. Y., L. M. Hall, **K. S. Schweizer**, **C. F. Zukoski**, “Long Wavelength Concentration Fluctuations and Cage Scale Ordering of Nanoparticles in Concentrated Polymer Solutions”, *Macromolecules* **43**(23), 10123-10131 (2010)
- Kim, W., J. Han, **C. Y. Ryu**, H. Yang, “Chemical Composition Effects on the Fracture of Polystyrene-Block-Poly(methyl methacrylate) Block Copolymers”, *Journal of Polymer Science B: Polymer Physics* **44**(24), 3612-3620 (2006)
- Lambeth, R. H., **J. S. Moore**, “Light Induced Shape Changes in Azobenzene Functionalized Polymers Prepared by Ring Opening Metathesis Polymerization”, *Macromolecules* **40**, 1838 (2007)
- Lambeth, R. H., **J. S. Moore**, “Preparation of Well-Defined Azobenzene Polymers by Ring Opening Metathesis Polymerization”, *Polymer Preprints* **48**, 244 (2007)
- Lastella, S., G. Mallick, R. Woo, S. P. Karna, D. A. Rider, I. Manners, Y. Jung, **C. Y. Ryu**, **P. M. Ajayan**, “Parallel Arrays of Individually Addressable Single-Walled Carbon Nanotube Field-Effect Transistors”, *Journal of Applied Physics* **99**, 024302 (2006)
- **Lewis, J. A.**, “Novel Inks for Direct-Write Assembly of 3-D Periodic Structures”, *Materials Matters*, Sigma-Aldrich, 1-6 (2008) Invited

- Li, Y., **B. C. Benicewicz**, “Functionalization of Silica Nanoparticles via the Combination of Surface-Initiated RAFT Polymerization and Click Reactions”, *Macromolecules* **41**, 7986-7992 (2008)
- Li, Y., J. Yang, **B. C. Benicewicz**, “Well-Controlled Homopolymerization of 2-Azidoethyl Methacrylate at Near Room Temperature and Click Functionalization”, *Journal of Polymer Science Part A: Polymer Chemistry* **45**(18), 4300-4308 (2007)
- Li, Y., **L. S. Schadler**, **B. C. Benicewicz**, “Surface and Particle Modification via the RAFT Process: Approach and Properties”, in *Handbook of RAFT Polymerization*, C. Barner-Kowollik, Ed., Wiley-VCH, Weinheim, Germany, **11**, 423-453 (2008)
- Liu, T., R. Ozisik, **R. W. Siegel**, “Phase Separation and Surface Morphology of Spin-Coated Films of Polyetherimide/Polycaprolactone Immiscible Polymer Blends”, *Thin Solid Films* **515**(5), 2965-2973 (2007)
- Liu, T., R. Ozisik, **R. W. Siegel**, “Pore Structure and Glass-Transition Temperature of Nanoporous Poly(ether imide)”, *Journal of Polymer Science Part B: Polymer Physics* **44**(24), 3546-3552 (2006)
- Liu, T., **R. W. Siegel**, R. Ozisik, “The Effect of Confinement in Nanoporous Polymers on the Glass Transition Temperature”, *Polymer* **51**(2), 540-546 (2010)
- Ma, D., **L. S. Schadler**, **R. W. Siegel**, N. Wu, D. F. Rogers, **B. C. Benicewicz**, “Improving Dielectric Properties of Polymer Nanocomposites Through Nanoparticle Surface Modification”, *Frontal Nanotechnology Research*, M. V. Berg, Ed., **8**, 189-219, Nova Publication (2007)
- Maillard, D., **S. K. Kumar**, A. Rungta, **B. C. Benicewicz**, R. E. Prud’homme, “Polymer-Grafted Nanoparticle Surfactants”, *Nanoletters* **11**(11), 4569-4573 (2011)
- McDaniel, H., **M. Shim**, “Size and Growth Rate Dependent Structural Diversification of Fe<sub>3</sub>O<sub>4</sub>/CdS Anisotropic Nanocrystal Heterostructures”, *ACS Nano* **3**(2), 434-440 (2009)
- Mehta, R. J., C. Karthik, W. Jiang, B. Singh, Y. Shi, **R. W. Siegel**, **T. Borca-Tasciuc**, **G. Ramanath**, “High Electrical Conductivity Antimony Selenide Nanocrystals and Assemblies”, *Nano Letters* **10**, 4417-4422 (2010)
- Moll, J., P. Akcora, A. Rungta, S. Gong, R. Colby, **B. C. Benicewicz**, **S. K. Kumar**, “Mechanical Reinforcement in Polymer Melts Filled with Polymer Grafted Nanoparticles”, *Macromolecules* **44**(18), 7473-7477 (2011)
- Narayanan, R. A., S. L. Lewis, A. Bansal, **L. S. Schadler**, L. B. Lurio, P. Thiyagarajan, “Dynamics and Internal Stress at the Nanoscale Related to Unique Thermomechanical Behavior in Polymer Nanocomposites”, *Physical Review Letters* **97**(7), 075505 (2007)
- Park, I., S. Park, H.-W. Park, T. Chang, H. Yang, **C. Y. Ryu**, “Unexpected Hexagonally Perforated Layer Morphology of PS-b-PMMA Block Copolymer in Supported Thin Film”, *Macromolecules* **39**(1), 315-318 (2006)
- Parker, K., R. T. Schneider, **R. W. Siegel**, R. Ozisik, J. C. Cabanelas, B. Serrano, C. Antonelli, J. Baselga, “Molecular Probe Technique for Determining Local Thermal Transitions: The Glass Transition at Silica/PMMA Nanocomposite Interfaces”, *Polymer* **51**, 4891-4898 (2010)
- Ramakrishnan, S., S. A. Shah, L. Ruggeri, Y. L. Chen, **K. S. Schweizer**, **C. F. Zukoski**, “Collective Diffusion in Colloid-Polymer Suspensions: Relative Role of Thermodynamics and Hydrodynamics”, *Langmuir* **18**, 10507 (2009)

- Rao, R., V. L. Koblelev, Q. Li, **J. A. Lewis**, **K. S. Schweizer**, “Nonlinear Elasticity and Yielding of Nanoparticle Glasses”, *Langmuir* **22**, 2441-2443 (2006)
- Rhodes, S. K., R. H. Lambeth, J. Gonzales, **J. S. Moore**, **J. A. Lewis**, “Cationic Comb Polymer Superdispersants for Colloidal Silica Suspensions”, *Langmuir* **19**(9), 6787-6792 (2009)
- Roberts, M. T., A. Mohraz, K. T. Christensen, **J. A. Lewis**, “Direct Flow Visualization of Colloidal Gels in Microchannels”, *Langmuir* **23**(17), 8726-8731 (2007)
- Saltzman, E. J., G. Yatsenko, **K. S. Schweizer**, “Anomalous Diffusion, Structural Relaxation and Shear Thinning in Glassy Hard Sphere Fluids”, *Journal of Physics: Condensed Matter* **20**(24), 244129 (2008)
- Saltzman, E. J., **K. S. Schweizer**, “Activated Hopping and Dynamical Fluctuation Effects in Hard Sphere Suspensions and Fluids”, *The Journal of Chemical Physics* **125**, 044509 (2006)
- **Schadler, L. S.**, “Nanocomposites: Model Interfaces”, *Nature Materials* **6**(4), 257-258 (2007) Invited
- **Schadler, L. S.**, L. C. Brinson, W. G. Sawyer, “Polymer Nanocomposites – A Small Part of the Story”, *Journal of Materials* **59**(3), 53-61 (2007) Invited
- **Schadler, L. S.**, **S. K. Kumar**, **B. C. Benicewicz**, S. L. Lewis, S. E. Harton, “Designed Interfaces in Polymer Nanocomposites: A Fundamental Viewpoint”, *MRS Bulletin* **32**(4), 335-340 (2007) Invited
- Schubert, M. F., J.-Q. Xi, J. K. Kim, **E. F. Schubert**, “Distributed Bragg Reflector Consisting of High- and Low-Refractive-Index Thin Film Layers Made of the Same Material”, *Applied Physics Letters* **90**(14), 141115 (2007)
- **Schweizer, K. S.**, “Dynamical Fluctuations Effects in Glassy Colloidal Suspensions”, *Current Opinion in Colloid and Interface Science* **12**(6), 297-306 (2007) Invited
- **Schweizer, K. S.**, “Relationships Between the Activated Barrier Hopping Theory and Thermodynamic, Porous Media, Jamming and Elastic Models of Glassy Systems”, *The Journal of Chemical Physics* **127**, 16506 (2007)
- Sen, S., **S. K. Kumar**, **P. J. Keblinski**, “Analysis of Uncertainties in Polymer Viscoelastic Properties Obtained from Equilibrium Computer Simulations”, *The Journal of Chemical Physics* **124**, 144909 (2006)
- Sen, S., Y. Xie, **S. K. Kumar**, H. Yang, A. Bansal, D. L. Ho, L. Hall, J. B. Hooper, **K. S. Schweizer**, “Chain Conformations and Bound-Layer Correlations in Polymer Nanocomposites”, *Physical Review Letters* **98**(12), 128302 (2007)
- Shimmin, R. G., A. J. Di Mauro, **P. V. Braun**, “Slow Vertical Deposition of Colloidal Crystals: A Langmuir-Blodgett Process”, *Langmuir* **22**, 6507-6513 (2006)
- Shimmin, R. G., R. Vajtai, **R. W. Siegel**, **P. V. Braun**, “Room-Temperature Assembly of Germanium Photonic Crystals Through Colloidal Crystal Templating”, *Chemistry of Materials* **19**, 2102-2107 (2007)
- Smaldone, R. A., **J. S. Moore**, “Foldamers as Reactive Sieves: Reactivity as a Probe of Conformational Flexibility”, *Journal of American Chemical Society* **129**(17), 5444-5450 (2007)
- Smaldone, R. A., **J. S. Moore**, “Sequence Dependence of Methylation Rate Enhancement in Meta-Phenyleneethynylene Foldamers”, *Chemical Communications*, 1011-1013, doi: 10.1039/B716122k (2008)

- Son, D., A. Wolosiuk, **P. V. Braun**, “Double Direct Templated Hollow ZnS Microspheres Formed on Chemically Modified Silica Colloids”, *Chemistry of Materials* **21**(4) 628-634 (2009)
- Suhr, J., A. Joshi, **L. S. Schadler**, **R. S. Kane**, N. A. Koratkar, “Effect of Filler Geometry on Interfacial Friction Damping in Polymer Nanocomposites”, *Journal of Nanoscience and Nanotechnology* **7**, 1684-1687 (2007)
- Sussman, D. M., **K. S. Schweizer**, “Communication: Effects of Stress on the Tube Confinement Potential and Dynamics of Topologically Entangled Rod Fluids”, *The Journal of Chemical Physics* **135**(13), 131104 (2011)
- Sussman, D. M., **K. S. Schweizer**, “Microscopic Theory of Entangled Polymer Melt Dynamics: Flexible Chains as Primitive Path Random Walks and Super Coarse-Grained Needles”, *Physical Review Letter*, September (2012) Accepted
- Sussman, D. M., **K. S. Schweizer**, “Microscopic Theory of Quiescent and Deformed Topologically Entangled Rod Solutions: General Formulation and Relaxation After Nonlinear Step Strain”, *Macromolecules* **45**(7), 3270-3284 (2012)
- Sussman, D. M., **K. S. Schweizer**, “Microscopic Theory of Topologically Entangled Fluids of Rigid Macromolecules”, *Physical Review E* **83**(6), 061501 (2011)
- Sussman D. M., **K. S. Schweizer**, “Microscopic Theory of the Tube Confinement Potential for Liquids of Topologically Entangled Rigid Macromolecules”, *Physical Review Letters* **107**(7), 078102 (2011)
- Sussman, D. M., **K. S. Schweizer**, “Space-Time Correlated Two-Particle Hopping in Glassy Fluids: Structural Relaxation, Irreversibility and Facilitation”, *Physical Review E* **85**, 061504 (2012)
- Sussman, D. M., **K. S. Schweizer**, “Theory of Correlated Two-Particle Activated Glassy Dynamics: General Formulation and Heterogeneous Structural Relaxation in Hard Sphere Fluids”, *The Journal of Chemical Physics* **134**(6), 064516 (2011)
- Sussman, D. M., **K. S. Schweizer**, “Theory of Two-Particle Activated Glassy Dynamics: General Formulation and Heterogeneous Structural Relaxation in Hard Sphere Fluids”, *The Journal of Chemical Physics* **134**(6), 064516 (2011)
- Thomin, J. D., **P. J. Keblinski**, **S. K. Kumar**, “Network Effects on the Non-Linear Rheology of Polymer Nanocomposites”, *Macromolecules* **41**, 5988-5991 (2008)
- Viehman, D. C., **K. S. Schweizer**, “Cooperative Activated Dynamics in Dense Mixtures of Hard and Sticky Spheres”, *Physical Review E* **78**, 051404 (2008)
- Viehman, D. C., **K. S. Schweizer**, “Dynamics of Tracer Particles in Gel-Like Media” *The Journal of Physical Chemistry B* **112**(50), 16110-16114 (2008)
- Viehman, D. C., **K. S. Schweizer**, “Theory of Gelation, Vitrification, and Activated Barrier Hopping in Mixtures of Hard and Sticky Spheres”, *The Journal of Chemical Physics* **128**(8), 084509 (2008)
- Wang, B., J. Guan, S. M. Anthony, S. C. Bae, **K. S. Schweizer**, **S. Granick**, “The Confining Potential when a Biopolymer Reptates”, *Physical Review Letters* **104**, 118301 (2010)
- Wang, G., **M.-O. Coppens**, “Calculation of the Optimal Macropore Size in Nanoporous Catalysts and its Application to DeNOx Catalysis”, *Industrial & Engineering Chemistry Research* **47**(11), 3847-3855 (2008)

- Wang, G., **M.-O. Coppens**, C. R. Kleijn, “A Tailored Strategy for PDE-Based Design of Hierarchically Structured Porous Catalysts”, *International Journal for Multiscale Computational Engineering* **6**(2), 179-190 (2008)
- Wang, J., **M.-O. Coppens**, “Synthesis of Meso-Structured Silicalite-1 by Combining Solid Phase Crystallization and Carbon Templating”, *Studies in Surface Science and Catalysis* **165**, 503-506 (2007)
- Wang, S., S. Huang, **D.-A. Borca-Tasciuc**, “Potential Sources of Errors in Measuring and Evaluating the Specific Loss Power of Magnetic Nanoparticles in an Alternating Magnetic Field”, *IEEE Transaction on Magnetics* (2012) In Press
- Wang, X., J. K. Nelson, **L. S. Schadler**, H. Hillborg, “Mechanisms Leading to Nonlinear Electrical Response of a Nano p-SiC/Silicone Rubber Composite”, *IEEE Transactions on Dielectrics and Electrical Insulation* **17**(6), 1687-1696 (2010)
- Wang, Z., J. K. Nelson, H. Hillborg, S. Zhao, **L. S. Schadler**, “Graphene Oxide Filled Nanocomposite with Novel Electrical and Dielectric Properties”, *Advanced Materials* **24**(23), 3134-3137 (2012)
- Wang, Z., J. K. Nelson, J. Miao, **R. J. Linhardt**, **L. S. Schadler**, H. Hillborg, S. Zhao, “Effect of High Aspect Ratio Filler on Dielectric Properties of Polymer Composites: A Study on Barium Titanate Fibers and Graphene Platelets”, *IEEE Transactions on Dielectrics and Electrical Insulation* **19**(3), 960-967 (2012)
- Wei, B. Q., **M. Shima**, R. Pati, **S. K. Nayak**, D. J. Singh, R. Z. Ma, Y. B. Li, Y. Bando, S. Nasu, **P. M. Ajayan**, “Room-Temperature Ferromagnetism in Doped Face-Centered Cubic Fe Nanoparticles”, *Small* **2**(6), 804-809 (2006)
- Xiao, Z., Y. Li, D. Ma, **L. S. Schadler**, **Y. A. Akpalu**, “Probing the use of Small-Angle Light Scattering for Characterizing Structure of Titanium Dioxide/Low Density Polyethylene Nanocomposites”, *Journal of Polymer Science Part B: Polymer Physics* **44**(7), 1084-1095 (2006)
- Yang J., **K. S. Schweizer**, “Glassy Dynamics and Mechanical Response in Dense Fluids of Soft Repulsive Spheres. I. Activated Relaxation, Kinetic Vitrification and Fragility”, *The Journal of Chemical Physics* **134**(20), 204908(2011)
- Yang J., **K. S. Schweizer**, “Glassy Dynamics and Mechanical Response in Dense Fluids of Soft Repulsive Spheres. II. Shear Modulus, Relaxation-Elasticity Connections, and Rheology”, *The Journal of Chemical Physics* **134**(20), 204909 (2011)
- Yang, H., P. Bhimaraj, L. Yang, **R. W. Siegel**, **L. S. Schadler**, “Crystal Growth in Alumina/Poly(ethylene terephthalate) Nanocomposite Films”, *Journal of Polymer Science Part B: Polymer Physics* **45**(7), 747-757 (2007)
- Yang, H., U. Sa, M. Kang, H. S. Ryu, **C. Y. Ryu**, K. Cho, “Near-Surface Morphology Effect on Tack Behavior of Poly(styrene-*b*-butadiene-*b*-styrene) Triblock Copolymer/Rosin Films”, *Polymer* **47**(11), 3889-3895 (2006)
- Yang, J., **K. S. Schweizer**, “Tunable Dynamic Fragility, Shear Elasticity and Soft Jamming in Dense Suspensions of Many Arm Star Polymer Colloids”, *Europhysics Letters* **90**, 66001 (2010)
- Yuan, Y., D. Rende, C. L. Altan, S. Bucak, R. Ozisik, **D.-A. Borca-Tasciuc**, “The Effect of Surface Modification on Magnetization of Iron Oxide Nanoparticle Colloids”, *Langmuir* **28**(36), 13051-13059 (2012)



- Yuan, Y., **D.-A. Borca-Tasciuc**, “Anomalously High Specific Absorption Rate in Bioaffine Ligand Coated Iron Oxide Nanoparticle Suspensions, IEEE Transactions on Magnetics” (2012) In Press
- Zhang, Y., C. L. Hapenciuc, E. E. Castillo, **T. Borca-Tasciuc**, R. J. Mehta, C. Karthik, **G. Ramanath**, “A Microprobe Technique for Simultaneously Measuring Thermal Conductivity and Seebeck Coefficient of Thin Films”, Applied Physics Letters **96**, 062107 (2010)
- Zhao, S., **L. S. Schadler**, H. Hillborg, T. Auletta, “Improvements and Mechanisms of Fracture and Fatigue Properties of Well-Dispersed Alumina/Epoxy Nanocomposites”, Composite Science and Technology **68**(14), 2976-2982 (2009)

#### **14.1.1.2 Partial NSEC Support**

- Abdulahad, I., **C. Y. Ryu**, “Liquid Chromatography at the Critical Condition: Thermodynamic Significance and Influence of Pore Size”, Journal of Polymer Science Polymer Physics **47**(24), 2533-2540 (2009)
- Acharya, H., N. J. Mozdierz, **P. K. Keblinski**, **S. G. Garde**, “How Chemistry, Nanoscale Roughness, and the Direction of Heat Flow Affect Thermal Conductance of Solid-Water Interfaces”, Industry & Engineering Chemical Research **51**(4) 1767-1773 (2012)
- Adhikari, A. R., M. B. Huang, H. Bakhru, R. Vajtai, **C. Y. Ryu**, **P. M. Ajayan**, “Stability of Ion Implanted Single-Walled Carbon Nanotubes: Thermogravimetric and Raman Analysis”, Journal of Applied Physics **100**, 064315 (2006)
- Akhavan, A., J. R. van Ommen, J. Nijenhuis, X. S. Wang, **M.-O. Coppens**, M. Rhodes, “Improved Drying in a Pulsation-Assisted Fluidized Bed”, Industrial Engineering Chemical Research **48**(1), 302-309 (2009)
- **Akpalu, Y. A.**, “Towards Polyethylene Nanocomposites with Controlled Properties”, in Polyolefin Composites, D. Nwabunma, T. Kyu, Eds., John Wiley & Sons, Inc., doi: 10.1002/9780470199039 (2007)
- An, X. H., T. Simmons, R. Shah, C. Wolfe, K. M. Lewis, M. Washington, **S. K. Nayak**, S. Talapatra, S. Kar, “Stable Aqueous Dispersions of Noncovalently Functionalized Graphene from Graphite and Their Multifunctional High-Performance Applications”, Nano Letters **10**, 4295 (2010)
- Anthony, S. A., **S. Granick**, “Image Analysis with Rapid and Accurate 2D Gaussian Fitting”, Langmuir **25**, 8152-8160 (2009)
- Bansal, A., H. Yang, C. Li, **B. C. Benicewicz**, **S. K. Kumar**, **L. S. Schadler**, “Controlling the Thermochemical Properties of Polymer Nanocomposites by Tailoring the Polymer-Particle Interface”, Journal of Polymer Science Part B: Polymer Physics **44**, 2944-2950 (2006)
- Berfield, T. A., J. K. Patel, R. G. Shimmin, **P. V. Braun**, J. Lambros, N. R. Sottos, “Fluorescent Image Correlation for Nanoscale Deformation Measurements”, Small **2**, 631-635 (2006)
- Berfield, T. A., J. K. Patel, R. G. Shimmin, **P. V. Braun**, J. Lambros, N. R. Sottos, “Micro- and Nanoscale Deformation Measurement of Surface and Internal Planes via Digital Image Correlation”, Experimental Mechanics **47**(1), 51-62 (2007)

- Bhimaraj, P., D. Burris, G. W. Sawyer, C. G. Toney, **R. W. Siegel, L. S. Schadler**, “Tribological Investigation of the Effects of Particle Size, Loading and Crystallinity on Poly(ethylene) Terephthalate Nanocomposites”, *Wear* **264**(7-8), 632-637 (2008)
- Blanchet, T. A., S. S. Kandanur, **L. S. Schadler**, “Coupled Effect of Filler Content and Countersurface Roughness on PTFE Nanocomposite Wear Resistance”, *Tribology Letters* **40**(1), 11-21 (2009)
- Bult, J., W. G. Sawyer, P. M. Ajayan, **L. S. Schadler**, “Passivation Oxide Controlled Selective Carbon Nanotube Growth on Metal Substrates”, *Nanotechnology* **20**(8), 085302 (2009)
- Burris, D. L., S. Zhao, R. Duncan, J. Lowitz, S. S. Perry, **L. S. Schadler**, W. G. Sawyer, “A Route to Wear Resistant PTFE via Trace Loadings of Functionalized Nanofillers”, *Wear* **267**, 653-660 (2009)
- Burris, D. L., T. A. Blanchet, K. Santos, S. L. Lewis, X. Liu, S. K. Pal, S. S. Perry, **L. S. Schadler**, W. G. Sawyer, “Polytetrafluoroethylene Matrix Nanocomposites For Tribological Applications”, *Tribology of Polymeric Nanocomposites: Friction and Wear and Bulk Materials and Coatings*, K. Friedrich, Ed., Elsevier, New York, NY, **55**, 403-438 (2008)
- Butail, G., P. G. Ganesan, M. Raddiar, R. Teki, N. Ravishankar, D. J. Duquette, **G. Ramanath**, “Kinetics of Titania Nanotube Formation by Anodization of Titanium Films”, *Thin Solid Films* **519**(6), 1821-1824 (2011)
- Butail, G., P. G. Ganesan, R. Teki, R. Mahima, **G. Ramanath**, “Dye-Sensitized Solar Cells using Branched Titania Nanotube Films”, *Thin Solid Films* **520**(7), 2764-2768 (2012)
- Butail, G., P. G. Ganesan, R. Teki, R. Mahima, N. Ravishankar, D. J. Duquette, **G. Ramanath**, “Branched Titania Nanotubes Through Aodization Voltage Control”, *Thin Solid Films* **520**(1), 235-238 (2011)
- Cardelino, B. H., C. A. Cardelino, “Adsorption and Dissociation of Trimethylindium on an Indium Nitride Substrate”, A Computational Study, *The Journal of Physical Chemistry C* **113**, 21765–21778 (2009)
- Caruso, M. M., D. A. Delafuente, V. Ho, N. R. Sottos, **J. S. Moore**, S. R. White, “Solvent-Promoted Self-Healing Materials”, *Macromolecules* **40**, 8830-8832 (2007)
- Castillo, E. E., C. L. Hapenciuc, **T. Borca-Tasciuc**, “Thermoelectric Characterization by Transient Harman Method Under Non-Ideal Contact and Boundary Conditions”, *Review of Scientific Instruments* **81**, 044902 (2010)
- Chae, W. S., D. Gough, S.-K. Ham, D. Robinson, **P. V. Braun**, “Effect of Ordered Intermediate Porosity on Ion Transport in Hierarchically Nanoporous Electrodes”, *ACS Applied Materials & Interfaces* **4**(8), 3973-3979 (2012)
- Chakrabarti, R., J.-Y. Delannoy, M. Couty, **K. S. Schweizer**, “Packing Correlations, Collective Scattering and Compressibility of Fractal-Like Aggregates in Polymer Nanocomposites and Suspensions”, *Soft Matter* **7**(11), 5397 (2011)
- Chakrabarti, R., **K. S. Schweizer**, “Polymer-Mediated Spatial Organization of Nanoparticles in Dense Melts: Transferability and an Effective One-Component Approach”, *The Journal of Chemical Physics* **133**(14), 144905 (2010)
- Chen, K. X., Q. Dai, W. Lee, J. K. Kim, **E. F. Schubert**, W. Liu, S. Wu, X. Li, J. A. Smart, “Parasitic Sub-Band-Gap Emission Originating from Compensating Native Defects in Si-Doped AlGaIn”, *Applied Physics Letters* **91**, 121110 (2007)

- Chen, K. X., Y. A. Xi, F. W. Mont, J. K. Kim, **E. F. Schubert**, W. Liu, X. Li, J. A. Smart, “Recombination Dynamics in Ultraviolet Light-Emitting Diodes with Si-Doped  $\text{Al}_x\text{Ga}_{1-x}\text{N}/\text{Al}_y\text{Ga}_{1-y}\text{N}$  Multiple Quantum Well Active Regions”, *Journal of Applied Physics* **101**, 113102 (2007)
- Chen, K., E. J. Saltzman, **K. S. Schweizer**, “Segmental Dynamics in Polymers: from Cold Melts to Aging and Stressed Glasses”, *Journal of Physics: Condensed Matter* **21**, 503101 (2009) Invited
- Chen, L., R. Ozisik, **L. S. Schadler**, “The Influence of Carbon Nanotube Aspect Ratio on the Foam Morphology of MWNT/PMMA Nanocomposite Foams”, *Polymer* **51**, 2368-2375 (2010)
- Chen, X. F., **S. K. Kumar**, R. Ozisik, “Monte Carlo Simulations of the Crystallization of Isotactic Polypropylene”, *Journal of Polymer Science Part B: Polymer Physics* **44**(24), 3453-3460 (2006)
- Chhajed, S., D. J. Poxson, X. Yan, J. Cho, **E. F. Schubert**, R. E. Welsler, A. K. Sood, J. K. Kim, “Nanostructured Multilayer Tailored-Refractive-Index Antireflection Coating for Glass with Broadband and Omnidirectional Characteristics”, *Applied Physics Express* **4**, 052503 (2011)
- Christensen, D. O., D. Vervloet, J. Nijenhuis, B.G.M. van Wachem, J. R. van Ommen, **M.-O. Coppens**, “Insights in Distributed Secondary Gas Injection in a Bubbling Fluidized Bed via Discrete Particle Simulations”, *Powder Technology* **183**(3), 454-466 (2008)
- Christensen, D. O., J. Nijenhuis, J. R. van Ommen, **M.-O. Coppens**, “Influence of Distributed Secondary Gas Injection on the Performance of a Bubbling Fluidized-Bed Reactor”, *Industrial & Engineering Chemistry Research* **47**(10), 3601-3618 (2008)
- Christensen, D. O., J. Nijenhuis, J. R. van Ommen, **M.-O. Coppens**, “Residence Times in Fluidized Beds with Secondary Gas Injection”, *Powder Technology* **180**, 321-331 (2008) Invited
- Conrad, J. C., **J. A. Lewis**, “Structural Evolution of Colloidal Gels During Constricted Microchannel Flow”, *Langmuir* **26**(9) 6102-6107 (2010)
- Conrad, J. C., S. R. Ferreira, J. Yoshikawa, R. F. Shepherd, B. Y. Ahn, **J. A. Lewis**, “Designing Colloidal Suspensions for Directed Materials Assembly”, *Current Opinions in Colloid and Interface Science* **16**(1), 71-79 (2011) Invited
- Conrad, J. C., S. R. Ferreira, J. Yoshikawa, R. F. Shepherd, B. Y. Ahn, **J. A. Lewis**, “Designing Colloidal Suspensions for Directed Materials Assembly”, *Current Opinions in Colloid and Interface Science* **16**, 71-79 (2011)
- Dai, Q., Q. Shan, J. Cho, **E. F. Schubert**, M. H. Crawford, D. D. Koleske, M.-H. Kim, Y. Park, “On the Symmetry of Efficiency-Versus-Carrier-Concentration Curves in  $\text{GaInN}/\text{GaN}$  Light-Emitting Diodes and Relation to Droop-Causing Mechanisms”, *Applied Physics Letters* **98**(3), 033506-033506-3 (2011)
- Dai, Q., Q. Shan, J. Wang, S. Chhajed, J. Cho, **E. F. Schubert**, M. H. Crawford, D. D. Koleske, M.-H. Kim, Y. Park, “Carrier Recombination Mechanisms and Efficiency Droop in  $\text{GaInN}/\text{GaN}$  Light-Emitting Diodes”, *Applied Physics Letters* **97**, 133507 (2010)
- De, S., J. Fish, M. S. Shephard, **P. J. Keblinski**, **S. K. Kumar**, “Multiscale Modeling of Polymer Rheology”, *Physical Review E* **74**(3), 030801 (2006)

- Denkova, A. G., E. Mendes, **M.-O. Coppens**, “Effects of Salts and Ethanol on the Population and Morphology of Triblock Co-Polymer Micelles in Solution”, *The Journal of Physical Chemistry B* **112**(3), 793-801 (2008)
- Denkova, A. G., E. Mendes, **M.-O. Coppens**, “Kinetics and Mechanism of Sphere-to-Rod Transition of Tri-Block Copolymer Micelles in Aqueous Solutions”, *The Journal of Physical Chemistry B* **113**(4), 989-996 (2009)
- Denkova, A. G., E. Mendes, **M.-O. Coppens**, “Non-Equilibrium Dynamics of Block Copolymer Micelles in Solution: Recent Insights and Open Questions”, *Soft Matter* **6**, 2351-2357 (2010)
- Denkova, A. G., E. Mendes, **M.-O. Coppens**, “Rheology of Worm-Like Micelles Composed of Tri-Block Copolymer in the Limit of Slow Dynamics”, *Journal of Rheology* **53**(5), 1087-1100 (2009)
- Duncan, R. K., X. G. Chen, J. B. Bult, L. C. Brinson, **L. S. Schadler**, “Measurement of the Critical Aspect Ratio and Interfacial Shear Strength in MWNT/Polymer Composites”, *Composites Science and Technology* **70**(4), 599-605 (2010)
- Gandhi, D. D., B. Singh, A. P. Singh, R. Moore, E. Simonyi, M. W. Lane, **G. Ramanath**, “Effects of Silylation on Fracture and Mechanical Properties of Mesoporous Silica Films Interfaced with Copper”, *Journal Applied Physics* **106**(5), 054502 (2009)
- Garg, S., B. Singh, X. Liu, A. Jain, N. Ravishankar, L. Interrante, **G. Ramanath**, “Metal-Dielectric Interface Toughening by Catalyzed Ring Opening in a Monolayer”, *The Journal of Physical Chemistry Letters* **1**, 336-340 (2010)
- Garg, S., R. Singh, M. Teki, M. W. Lane, **G. Ramanath**, “Hydrophobic Fluoroalkylsilane Nanolayers for Inhibiting Copper Diffusion into Silica”, *Applied Physics Letters* **96**(14), 14321 (2010)
- Garg, S., R. Teki, M. W. Lane, **G. Ramanath**, “Factorial Toughening at Microcorrugated Metal-Ceramic Interfaces”, *Applied Physics Letters* **99**, 133101 (2011)
- Giedt, J., A. Skinner, **S. K. Nayak**, “Effects of Flavor-Symmetry Violation from Staggered Fermion Lattice Simulations of Graphene”, *Physical Review B* **83**, 045420 (2011)
- Gomez, M. A., L. R. Pratt, **J. D. Kress**, D. Asthagiri, “Water Adsorption and Dissociation on BeO (001) and (100) Surfaces”, *Surface Science* **601**, 1608-1614 (2007)
- Goren, K., L. Chen, **L. S. Schadler**, **R. Ozisik**, “Influence of the Nanoparticle-Polymer Interface on Supercritical Carbon Dioxide Assisted Processing”, *The Journal of Supercritical Fluids* **51**, 429-427 (2010)
- Gozen, A. O., M. K. Gaines, M. W. Hamersky, P. Maniadis, **K. Ø. Rasmussen**, S. D. Smith, R. J. Spontak, “Controlling the Phase Behavior of Block Copolymers via Sequential Block Growth”, *Polymer* **51**(3), 5304-5308 (2010)
- Hadi, B., J. R. van Ommen, **M.-O. Coppens**, “Improved Heat Transfer in Structured Fluidized Beds by Two Innovative Techniques: Gas Pulsation and Fractal Injection”, *Proceedings of the 6th World Congress on Particle Technology* (2010)
- Halder, A., P. Kundu, N. Ravishankar, **G. Ramanath**, “Directed Synthesis of Rocksalt AuCl Crystals”, *The Journal of Physical Chemistry C* **113**(14), 5349-5351 (2009)
- Hall, L.M., **K. S. Schweizer**, “Impact of Monomer Sequence, Composition and Chemical Heterogeneity on Copolymer-Mediated Effective Interactions between Nanoparticles in Melts”, *Macromolecules* **44**(8), 3149 (2011)

- Hall, L. M., **K. S. Schweizer**, “Structure, Scattering Patterns and Phase Behavior of Polymer Nanocomposites with Nonspherical Fillers”, *Soft Matter* **6**, 1015-1025 (2010)
- Hartley, C. S., E. L. Elliott, **J. S. Moore**, “Covalent Assembly of Molecular Ladders”, *Journal of American Chemical Society* **129**(15), 4512-4513 (2007)
- Han, J., B. H. Jeon, **C. Y. Ryu**, J. J. Semler, Y. K. Jhon, J. Genzer, “Discriminating Among Co-Monomer Sequence Distributions in Random Copolymers using Interaction Chromatography”, *Macromolecular Rapid Communications* **30**, 1543-1548 (2009)
- Herth, S., D. Miranda, R. H. Doremus, **R. W. Siegel**, “Modifications of Multi-Wall Carbon Nanotubes with B-Containing Vapor and Their Effects on the Properties of Boron Carbide Matrix Nanocomposites”, *Journal of Nanoscience and Nanotechnology* **8**(6), 3106-3111 (2008)
- Herth, S., W. J. Joost, R. H. Doremus, **R. W. Siegel**, “New Approach to the Synthesis of Nanocrystalline Boron Carbide”, *Journal of Nanoscience and Nanotechnology* **6**, 954-959 (2006)
- Horner, D. A., **J. D. Kress**, L. A. Collins, “Quantum Molecular Dynamics Simulations of Warm, Dense Lithium Hydride: Examination of Mixing Rules”, *Physical Review B* **77**, 064102 (2008)
- Hu, M., S. Shenogin, **P. J. Keblinski**, R. Nachiket, “Air Flow Through Carbon Nanotube Arrays”, *Applied Physics Letters* **91**, 131905 (2007)
- Hu, M., S. Shenogin, **P. J. Keblinski**, R. Nachiket, “Thermal Energy Exchange Between Carbon Nanotube and Air”, *Applied Physics Letters* **90**, 231905 (2007)
- Huang, R., G. Korniss, **S. K. Nayak**, “Interplay Between Structural Randomness, Composite Disorder, and Electrical Response: Resonances and Transient Delays in Complex Impedance Networks”, *Physical Review E* **80**, 04501 (2009)
- Huang, S., A. Gupta, **D.-A. Borca-Tasciuc**, “Sources of Experimental Errors in Specific Absorption Rate Measurement of Magnetic Nanoparticle”, *Proceedings of ASME 2010 3rd Joint US-European Fluids Engineering Summer Meeting and 8th International Nanochannels, Microchannels, and Minichannels, Montreal, Canada, FEDSM2010-ICNMM2010* (2010)
- Hwang, M., H. Yang, S. Park, D. H. Lee, K. Cho, “Effect of Solvent Type and Aging on Structure Development in Thermoreversible Poly(vinyl chloride) Gels”, *Journal of Polymer Science Part B: Polymer Physics* **46**, 263 (2008)
- Jain, A., B. Singh, S. Garg, N. Ravishankar, M. Lane, **G. Ramanath**, “Atomistic Fracture Energy Partitioning at a Metal-Ceramic Interface using a Nanomolecular Monolayer”, *Physical Review B* **83**(3), 035412 (2011)
- Jayaraman, A., **K. S. Schweizer**, “Effective Interactions and Self-Assembly of Hybrid Polymer Grafted Nanoparticles in a Homopolymer Matrix”, *Macromolecules* **42**, 8423 (2009)
- Jeon, B. H., J.-W. Lee, **C. Y. Ryu**, “Confocal Raman Microscopy for the In-Situ Characterization of Polymer Adsorption Into Nanoporous Silica in Solution”, *Polymer Preprints* **51**(2), 168-169 (2010)
- Jeon, B., **J. D. Kress**, L. A. Collins, N. Gronbeck-Jensen, “Parallel TREE Code for Two Component Ultracold Plasma Analysis”, *Computer Physics Communication* **178**(4), 272-279 (2008)

- Jeon, B., **J. D. Kress**, N. Gronbeck-Jensen, “Thiol Density Dependent Empirical Potential for Methyl-Thiol on a Au(111) Surface”, *Physical Review B* **76**, 155120 (2007)
- Jiang, J., **S. Granick**, “A Simple Method to Produce Trivalent Colloidal Particles”, *Langmuir* **25**, 8915-8918 (2009)
- Johannessen, E., G. Wang, **M.-O. Coppens**, “Optimal Distributor Networks in Porous Catalyst Pellets, I: Molecular Diffusion”, *Industrial Engineering Chemical Research* **46**(12), 4245-4256 (2007) Invited
- Jood, P., R. J. Mehta, Y. Zhang, G. Peleckis, X. Wang, **R. W. Siegel**, **T. Borca-Tasciuc**, S. X. Dou, **G. Ramanath**, “Al-Doped Zinc Oxide Nanocomposites with Enhanced Thermoelectric Properties”, *Nano Letters* **11**(10), 4337-4342 (2011)
- Jung, N., H. Seo, D. Lee, **C. Y. Ryu**, S. Jeon, “Nanomechanical Thermal Analysis of the Glass Transition of Polystyrene using Silicon Cantilevers”, *Macromolecules* **41**(19), 6873-6875 (2008)
- Jung, Y. J., S. Kar, S. Talapatra, C. Soldano, G. Vishwanathan, X. S. Li, Z. L. Yao, F. S. Ou, A. Avadhanula, R. Vajtai, S. Curran, O. Nalamasu, **P. M. Ajayan**, “Aligned Carbon Nanotube-Polymer Hybrid Architectures for Diverse Flexible Electronic Applications”, *Nano Letters* **6**(3), 413-418 (2006)
- Kamphaus, J. M., J. D. Rule, **J. S. Moore**, N. R. Sottos, S. R. White, “A New Self-Healing Epoxy with Tungsten (VI) Chloride Catalyst”, *Journal of the Royal Society Interface* **5**, 95-103 (2008)
- Kang, Y. M., Y. I. Kim, M. W. Oh, R. Z. Yin, L. Youngmin, D. W. Han, H. S. Kwon, J. H. Kim, **G. Ramanath**, “Structurally Stabilized Olivine Lithium Phosphate Cathodes with Enhanced Electrochemical Properties Through Fe Doping”, *Energy & Environmental Science* **4**(12), 4978-4983 (2011)
- Kar, S., A. Vijayaraghavan, C. Soldano, S. Talapatra, R. Vajtai, O. Nalamasu, **P. M. Ajayan**, “Quantitative Analysis of Hysteresis in Carbon Nanotube Field-Effect Devices”, *Applied Physics Letters* **89**, 132118 (2006)
- Kar, S., C. Soldano, L. Chen, S. Talapatra, R. Vajtai, **S. K. Nayak**, P. M. Ajayan, “Luttinger Liquid to Al'tshuler-Aronov Transition in Disordered, Many-Channel Carbon Nanotubes”, *ACS Nano* **3**, 307 (2009)
- Kärger, J., J. Caro, P. Cool, **M.-O. Coppens**, D. Jones, F. Kapteijn, D. Rodriguez-Reinoso, M. Stöcker, D. Theodorou, E. Vansant, J. Weitkamp, “The Benefit of Microscopic Diffusion Measurement for the Characterization of Nanoporous Materials”, *Chemical Engineering & Technology* **32**(10), 1494-1511 (2009)
- Kauffman, J. F., J. M. Turner, I. V. Alabugin, B. Breiner, E. A. Badaeva, A. Masunov, **S. Tretiak**, “Two-Photon Excitation of Substituted Eneidyne”, *The Journal of Physical Chemistry A* **110**(1), 241-251 (2006)
- Kelley, R. F., R. Rybtchinski, M. T. Stone, **J. S. Moore**, M. R. Wasielewski, “Solution-Phase Structure of an Artificial Foldamer: X-Ray Scattering Study”, *Journal of American Chemical Society* **129**(14), 4114-4115 (2007)
- Kesapragada, S. V., T.-J. Yim, **J. S. Dordick**, **R. S. Kane**, D. Gall, “Selective Assembly of Multi-Components Nanosprings and Nanorods”, *Journal of Nanoscience and Nanotechnology* **10**(3), 2252-2256 (2010)
- Kharche, N., S. R. Manjari, Y. Zhou, R. E. Geer, **S. K. Nayak**, “A Comparative Study of Quantum Transport in Silver and Copper Nanowires using First Principles Calculations”, *Journal of Physics: Condensed Matter* **23**, 085501 (2011)

- Kilina, S., E. R. Batista, P. Yang, **S. Tretiak**, A. Saxena, R. L. Martin, D. L. Smith, “Electronic Structure of Amorphous Polyfluorene Aggregates”, *ACS Nano* **2**, 1381-1388 (2009)
- Kilina, S., E. Badaeva, **S. Tretiak**, A. Piryatinski, A. Saxena, A. R. Bishop, “Bright and Dark Excitons in Semiconductor Carbon Nanotubes: Insights from Electronic Structure Calculations”, *Physical Chemistry Chemical Physics* **11**(21), 4113-4123 (2009)
- Kim, J. Q., A. N. Noemaun, F. W. Mont, D. Meynard, D. J. Poxson, H. Kim, C. Sone, Y. Park, **E. F. Schubert**, “Elimination of Total Internal Reflection in GaInN Light-Emitting Diodes by Graded-Refractive-Index Micropillars”, *Applied Physics Letters* **93**(22) 221111 (2008)
- Kim, M-H., M. F. Schubert, Q. Dai, J. K. Kim, **E. F. Schubert**, J. Piprek, Y. Park, “Origin of Efficiency Droop in GaN-Based Light-Emitting Diodes”, *Applied Physics Letters* **91**, 183507 (2007)
- Kim, Y. L., B. Li, X. An, M. G. Hahm, L. Chen, M. Washington, P. M. Ajayan, **S. K. Nayak**, A. Busnaina, S. Kar, Y. J. Jung, “Highly Aligned Scalable Platinum-Decorated Singlewall Carbon Nanotube Arrays for Nanoscale Electrical Interconnects”, *ACS Nano* **3**, 2818 (2009)
- Kjelstrup, S., **M.-O. Coppens**, J. Pharoah, P. Pfeifer, “Nature-Inspired Energy- and Material-Efficient Design of a Polymer Electrolyte Membrane Fuel Cell”, *Energy and Fuels* **24**(9), 5097-5108 (2010)
- Korzdorfer, T., **S. Tretiak**, S. Kummel, “Fluorescence Quenching in an Organic Donor-Acceptor Dyad: A First Principles Study”, *The Journal of Chemical Physics* **131**(3), 034310 (2009)
- **Kress, J. D.**, D. A. Wroblewski, D. A. Langlois, E. B. Orler, J. M. Lightfoot, W. A. Rodin, C. Huddleston, L. Woods, B. G. Russell, M. R. Salazar, D. K. Pauler, “Aging of the Binder in Plastic-Bonded Explosive PBX 9501 and Free-Radical Oxidation”, M. C. Celina, J. S. Wiggins, N. C. Billingham, Eds., N.C. Billingham, *ACS Symposium Series* **1004**(20), 227-238 (2009)
- Kundu, P., A. Halder, B. Viswanath, D. Kundu, **G. Ramanath**, N. Ravishankar, “Nanoscale Heterostructures with Molecular-Scale Single-Crystal Metal Wires”, *Journal of American Chemical Society* **132**(1), 20-21 (2010)
- Lambeth, R. H., S. Ramakrishnan, R. Mueller, J. P. Poziemski, G. S. Miguel, **C. F. Zukoski, J. S. Moore**, “Synthesis and Aggregation Behavior of Thermally Responsive Star Polymers”, *Langmuir* **22**(14), 6352-6360 (2006)
- Lastella, S., H. Yang, **P. M. Ajayan, C. Y. Ryu**, D. Rider, I. Manners, “Influence of Organometallic Polymer-Derived Catalyst Dispersion Effects on SWNT Growth”, *Journal of Polymer Science Part B: Polymer Physics* **45**, 758 (2007)
- Lee, B. H., K.-W. Kwon, **M. Shim**, “Semiconductor-Polymer Hybrid Colloidal Nanoparticles”, *Journal of Materials Chemistry* **13**, 1284-1291 (2007)
- Lee, W., M.-H. Kim, D. Zhu, A. N. Noemaun, J. K. Kim, **E. F. Schubert**, “Growth and Characteristics of GaInN/GaN Multiple Quantum Well Light-Emitting Diodes”, *Journal of Applied Physics* **107**, 063102 (2010)
- LeFevre, S. W., H. Choi, T. Chang, **C. Y. Ryu**, “Temperature-Rise Fractionation of Poly(3-alkyl thiophenes)”, *Journal of Polymer Science Part B: Polymer Physics* **47**(24), 2547-2555 (2009)

- **Lewis, J. A.**, J. E. Smay, J. Stuecker, J. Cesarano, “Direct Ink Writing of Three-Dimensional Ceramic Structures”, *Journal of the American Ceramic Society* **89**(12), 3599-3587 (2006)
- Li, C., J. Han, **C. Y. Ryu, B. C. Benicewicz**, “A Versatile Method to Prepare RAFT Agent Anchored Substrates and the Preparation of PMMA Grafted Nanoparticles”, *Macromolecules* **39**, 3175-3183 (2006)
- Li, G., Y. Yao, H. Yang, V. Shrotriya, G. Yang, Y. Yang, “Solvent Annealing” Effect in Polymer Solar Cells Based on Poly(3-hexylthiophene) and Methanofullerene”, *Advanced Functional Materials* **17**, 1636 (2007)
- Li, X. S., L. J. Ci, S. Kar, C. Soldano, S. J. Kilpatrick, **P. M. Ajayan**, “Densified Aligned Carbon Nanotube Films via Vapor Phase Infiltration of Carbon”, *Carbon* **45**(4), 847-851 (2007)
- Li, Y., Tao, P., Viswanath, A., **Benicewicz, B. C., Schadler, L. S.**, “Bimodal Surface Ligand Engineering: The Key to Tunable Nanocomposites”, *Langmuir*, in press (2012)
- Liu, X., D. Newsome, **M.-O. Coppens**, “Dynamic Monte Carlo Simulations of Binary Self-Diffusion in ZSM-5”, *Microporous and Mesoporous Materials* **125**(1-2), 149-159 (2009)
- **Lu, Y.**, T. Suzuki, W. Zhang, **J. S. Moore**, B. J. Marinas, “Nanofiltration Membranes Based on Rigid Star Amphiphiles”, *Chemistry of Material* **19**(13), 3194-3204 (2007)
- Ma, M., F. W. Mont, D. J. Poxson, J. Cho, **E. F. Schubert**, R. E. Welser, A. K. Sood, “Enhancement of Photovoltaic Cell Response Due to High-Refractive-Index Encapsulants”, *Journal of Applied Physics* **108**, 043102 (2010)
- Maniadis, P., R. Thompson, **K. Ø. Rasmussen**, E. M. Kober, “Ordering and Reverse Ordering Mechanisms of Triblock Copolymers in the Presence of Solvent”, *International Journal of Molecular Science* **10**, 805 (2009)
- Mao, A., J. Cho, Qi Dai, **E. F. Schubert**, J. K. Son, Y. Park, “Characteristics of Dotlike Green Satellite Emission in GaInN Light-Emitting Diodes”, *Applied Physics Letters* **98**, 02350 (2011)
- Marras, F., J. Wang, **M.-O. Coppens**, J. N. H. Reek, “Ordered Mesoporous Materials as Solid Supports for Rhodium-Diphosphine Catalysts with Remarkable Hydroformylation Activity”, *Chemical Communications* **46**, 6587-6589 (2010)
- Matthews, K. D., M. G. Lemaitre, T. Kim, H. Chen, **M. Shim**, J.-M. Zuo, “Growth Modes of Carbon Nanotubes on Metal Substrates”, *Journal of Applied Physics* **100**, 044309 (2006)
- Mazumder, M., **T. Borca-Tasciuc**, S. Teehan, H. Efstathiadis, E. Stinzianni, V. Solovyov, “Temperature Dependent Thermal Conductivity of Si/SiC Amorphous Multilayer Films”, *Applied Physics Letters* **96**, 093103 (2010)
- Mehta, R. J., C. Karthik, B. Singh, R. Teki, **T. Borca-Tasciuc, G. Ramanath**, “Seebeck Tuning in Single-Crystal Chalcogenide Nanoplate Assemblies by Heterostructuring”, *ACS Nano* **4**, 5055-5060 (2010)
- Mehta, R. J., **G. Ramanath**, “High Efficiency Nanobulk Thermoelectrics by Bottom-Up Nano-Crystal Sculpting and Assembly”, *American Ceramic Society Bulletin* **91**(3), 28-33 (2012)



- Mehta, R. J., Y. Zhang, C. Karthik, B. Singh, **R. W. Siegel**, **T. Borca-Tasciuc**, **G. Ramanath**, “A New Class of Doped Nanobulk High-Figure-of-Merit Thermoelectrics by Scalable Bottom-Up Assembly”, *Nature Materials* **11**, 233-240 (2012)
- Merabia, S., S. Shenogin, L. Joly, **P. J. Keblinski**, J. L. Barrat, “Heat Transfer from Nanoparticles: A Corresponding State Analysis”, *Proceedings of the National Academy of Sciences USA* **106**(36), 15113 (2009)
- Mirhosseini, R., M. F. Schubert, S. Chhajed, J. Cho, J. K. Kim, **E. F. Schubert**, “Improved Color Rendering and Luminous Efficacy in Phosphor-Converted White Light-Emitting Diodes by use of Dual-Blue Emitting Active Regions”, *Optics Express* **17**, 10806 (2009)
- Mont, F. W., H. Luo, M. F. Schubert, J. K. Kim, **E. F. Schubert**, **R. W. Siegel** “High Refractive Index Nanoparticle-Loaded Encapsulation Materials for Light-Emitting Diode Applications”, *MRS Proceedings* **955**, 0955-I13-02 (2007)
- Mont, F. W., J. K. Kim, M. F. Schubert, **E. F. Schubert**, **R. W. Siegel**, “High Refractive Index TiO<sub>2</sub>-Nanoparticle-Loaded Encapsulants for Light-Emitting Diodes”, *Journal of Applied Physics* **103**(8), 083120-083126 (2008)
- Mont, F. W., J. K. Kim, M. F. Schubert, H. Luo, **E. F. Schubert**, **R. W. Siegel**, “High Refractive Index Nanoparticle-Loaded Encapsulants for Light-Emitting Diodes”, *Proceeding - SPIE Digital Library*, 6486-64861C (2007)
- Naddo, T., Y. Che, W. Zhang, K. Balakrishnan, X. Yang, M. Yen, J. Zhao, **J. S. Moore**, “Detection of Explosives with a Fluorescent Nanobril Film”, *Journal of American Chemical Society* **129**(22), 6978-6979 (2007)
- Narayanan, R. A., P. Thiyagarajan, A-J. Zhu, B. J. Ash, M. L. Shofner, **L. S. Schadler**, **S. K. Kumar**, S. S. Sternstein, “Nanostructural Features in Silica-Polyvinyl Acetate Nanocomposites Characterized by Small Angle Scattering”, *Polymer* **48**(19), 5734-5741 (2007)
- Ojha, M., A. Chatterjee, F. Mont, **E. F. Schubert**, P. C. Wayner Jr., J. L. Plawsky, “The Role of Solid Surface Structure on Dropwise Phase Change Processes”, *International Journal of Heat and Mass Transfer* **53**(5-6), 910-922 (2010)
- Pauler, D. K., N. J. Henson, **J. D. Kress**, “A Mechanism for the Decomposition of Dinitropropyl Compounds”, *Physical Chemistry Chemical Physics* **9**, 5121-5126 (2007)
- Potisek, S. L., D. A. Davis, N. R. Sottos, S. R. White, **J. S. Moore**, “Mechanophore-Linked Addition Polymers”, *Journal of American Chemical Society* **129**(45), 13808-13809 (2007)
- Poxson, D. J., F. W. Mont, M. F. Schubert, J. K. Kim, J. Cho, **E. F. Schubert**, “Demonstration of Optical Interference Filters Utilizing Tunable Refractive Index Layers”, *Optics Express* **18**, A594 (2010)
- Poxson, D. J., F. W. Mont, M. F. Schubert, J.-K. Kim, **E. F. Schubert**, “Quantification of Porosity and Deposition Rate of Nanoporous Films Grown by Oblique-Angle Deposition”, *Applied Physics Letters* **93**, 101914 (2008)
- Poxson, D. J., M. F. Schubert, F. W. Mont, **E. F. Schubert**, J. K. Kim, “Broadband Omnidirectional Antireflection Coatings Optimized by Genetic Algorithm”, *Optics Letters* **34**, 728 (2009)
- Poxson, D. J., M.-L. Kuo, F. W. Mont, Y.-S. Kim, X. Yan, R. E. Welser, A. K. Sood, J. Cho, S.-Y. Lin, **E. F. Schubert**, “High-Performance Antireflection Coatings Utilizing Nanoporous Layers”, *MRS Bulletin* **36**(6), 434-438 (2011)

- Putnam, S. A., D. G. Cahill, **P. V. Braun**, Z. Ge, R. G. Shimmin, “Thermal Conductivity of Nanoparticles Suspensions”, *Journal of Applied Physics* **99**, 084308 (2006)
- **Ramanath, G.**, T. Wang, T., R. Mehta, C. Karthik, P. G. Ganesan, B. Singh, W. Jiang, N. Ravishankar, **T. Borca-Tasciuc**, “Microsphere Bouquets of Bismuth Telluride Nanoplates: Room-Temperature Synthesis and Thermoelectric Properties”, *The Journal of Physical Chemistry C* **114**(4), 1796-1799 (2010)
- Rao, S. M., **M.-O. Coppens**, “Mitigating Deactivation Effects Through Rational Design of Hierarchically Structured Catalysts - Application to Hydrodemetalation”, *Industrial Engineering Chemical Research* **49**, 11087-11097 (2010)
- **Ryu, C. Y.**, J. Han, W. S. Lyoo, “Block Copolymer Analysis and Purification”, *Journal of Polymer Science: Polymer Physics Edition* **48** (24), 2561-2565 (2010)
- Sahoo, S., S. Husale, B. Colwill, T. M. Lu, **S. K. Nayak**, P. M. Ajayan, “Electric Field Directed Self-Assembly of Cuprous Oxide Nanostructures for Photon Sensing”, *ACS Nano* **3**, 3935 (2009)
- Salazar, M. R., **J. D. Kress**, J. M. Lightfoot, B. G. Russell, W. A. Rodin, L. Woods, “Experimental Study of the Oxidative Degradation of PBX 9501 and Its Components”, *Propellants, Explosives, Pyrotechnics* **33**(3), 182-202 (2008)
- **Schadler, L. S.**, X. Wang, J. K. Nelson, H. Hillborg, “Non-Linear Field Grading Materials and Carbon Nanotube Nanocomposites with Controlled Conductivity”, in *Dielectric Polymer Nanocomposites*, J. K. Nelson, Ed., Springer, New York, NY, **9**, 259-284 (2010)
- **Schubert, E. F.**, J. K. Kim, “Low-Refractive Index Materials: A New Class of Optical Thin-Film Materials”, *Physica Status Solidi B* **244**(8), 3002-3008 (2007) Invited
- **Schubert, E. F.**, J. K. Kim, J.-Q. Xi, “Light-Emitting Diodes Hit the Centenary Milestone”, *Compound Semiconductors*, 20-23 (2007) Invited
- Schubert, M. F., A. Noemaun, S. Chhajed, J. K. Kim, **E. F. Schubert**, C. Sone, “Encapsulation Shape with Non-Rotational Symmetry Designed for Extraction of Polarized Light from Unpolarized Sources”, *Optics Express* **15**(16), 10452-10457 (2007)
- Schubert, M. F., D. J. Poxson, F. W. Mont, **E. F. Schubert**, “Performance of Anti-Reflection Coatings Consisting of Multiple Discrete Layers and Comparison with Continuously Graded Anti-Reflection Coatings”, *Applied Physics Express* **3**, 082502 (2010)
- Schubert, M. F., **E. F. Schubert**, “Effect of Heterointerface Polarization Charges and Well Width Upon Capture and Dwell Time for Electrons and Holes Above GaInN/GaN Quantum Wells”, *Applied Physics Letters* **96**, 131102 (2010)
- Schubert, M. F., Q. Dai, J. Xu, J. K. Kim, **E. F. Schubert**, “Electroluminescence Induced by Photoluminescence Excitation in GaInN/GaN Light-Emitting Diodes”, *Applied Physics Letters* **95**, 191105 (2009)
- Schubert, M. F., S. Chhajed, J. K. Kim, **E. F. Schubert**, D. D. Koleske, M. H. Crawford, S. R. Lee, A. J. Fischer, G. Thaler, “Effect of Dislocation Density on Efficiency Droop in GaInN/GaN Light-Emitting Diodes”, *Applied Physics Letters* **91**(23), 231114 (2007)
- Schubert, M. F., S. Chhajed, J. K. Kim, **E. F. Schubert**, J. Cho, “Linearly Polarized Emission from GaInN Light-Emitting Diodes with Polarization-Enhancing Reflector”, *Optics Express* **15**, 11213 (2007)

- Schubert, M. F., S. Chhajed, J. K. Kim, **E. F. Schubert**, J. Cho, “Polarization of Light Emission by 460 nm GaInN/GaN Light-Emitting Diodes Grown on (0001) Oriented Sapphire Substrates”, *Applied Physics Letters* **91**, 051117 (2007)
- Sen, S., J. D. Thomin, **S. K. Kumar**, **P. J. Keblinski**, “Molecular Underpinnings of the Mechanical Reinforcement in Polymer Nanocomposites”, *Macromolecules* **40**, 4059-4067 (2007)
- Sen, S., Y. Xie, A. Bansal, H. Yang, K. Cho, **L. S. Schadler**, **S. K. Kumar**, “Equivalence Between Polymer Nanocomposites and Thin Polymer Films”, *The European Physical Journal - Special Topics* **141**(1), 161-165 (2007)
- Shan, Q., Q. Dai, S. Chhajed, J. Cho, **E. F. Schubert**, “Analysis of Thermal Properties of GaInN Light-Emitting Diodes and Laser Diodes”, *Journal of Applied Physics* **108**, 084504 (2010)
- Shemella, P., **S. K. Nayak**, “Electronic Structure and Band-Gap Modulation of Graphene via Substrate Surface Chemistry”, *Applied Physics Letters* **94**, 3 (2009)
- Shenogin, S., A. Bodapati, **P. J. Keblinski**, A. J. H. McGaughey, “Predicting the Thermal Conductivity of Inorganic and Polymeric Glasses: The Role of Anharmonicity”, *Journal of Applied Physics* **105**(3), 034906 (2009)
- Shenogin, S., N. Ravikar, R. Ozisik, **P. J. Keblinski**, “Using Vibrational Mode Analysis for Predicting the Coefficient of Thermal Expansion of Amorphous Polymers”, *Journal of Polymer Science Part B: Polymer Physics* **47**(21), 2114 (2009)
- Shin, T. J., H. Yang, “Grazing Incidence X-Ray Diffraction (GIXD)”, *Optical Science and Engineering* **128**, 301-339 (2007)
- Shin, T. J., H. Yang, M-M. Ling, L. Yang, B. Lee, M. Roberts, J. Locklin, A. B. Mallik, Z. Bao, “Tunable Thin-Film Crystalline Structures and Field-Effect Mobility of Oligofluorene-Thiophene Derivatives”, *Chemistry of Materials* **19**, 5882 (2007)
- Shogbon C, J.-L. Brousseau, H. Zhang, **B. C. Benicewicz**, **Y. A. Akpalu**, “Determination of the Molecular Parameters and Studies of the Chain Conformation of Polybenzimidazole in DMAc/LiCl”, *Macromolecules* **39**, 9409-9418 (2006)
- Singh, A. P., D. D. Gandhi, B. K. Singh, E. Simonyi, E. G. Liniger, M. W. Lane, S. V. Nitta, **G. Ramanath**, “Pore-Orientation Dependent Mechanical and Electrical Properties of Mesoporous Silica Thin Films”, *Applied Physics Letters* **94**, 093502 (2009)
- Singh, B., N. S. Sariciftci, H. Yang, L. Yang, B. Plochberger, H. Sitter, “Correlation of Crystalline and Structural Properties of C60 Thin Films Grown at Various Temperatures with Charge Carrier Mobility”, *Applied Physics Letters* **90**, 213512 (2007)
- Singh, B., S. Garg, A. Jain, R. Moore, **G. Ramanath**, “Effects of Molecular Functionalization Sequence on Mesoporous Silica Film Properties”, *Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures* **29**(1), 010602-01060204 (2011)
- Singh, T. B., H. Yang, B. Plochberger, L. Yang, H. Sitter, H. Neugebauer, N. S. Sariciftci, “Characterization of Highly Crystalline C60 Thin Films and Their Field-Effect Mobility”, *Physica Status Solidi B* **244**(11), 3845-3848 (2007)
- Son, Y., S. K. Pal, **T. Borca-Tasciuc**, **P. M. Ajayan**, **R. W. Siegel**, “Thermal Resistance of the Native Interface Between Vertically Aligned Multiwalled Carbon Nanotube Arrays and their SiO<sub>2</sub>/Si Substrate”, *Journal of Applied Physics* **103**, 1-7 (2008)

- Sood, A. K., R. E. Welsler, A. W. Sood, Y. R. Puri, D. J. Poxson, J. Cho, **E. F. Schubert**, N. K. Dhar, M. B. Soprano, R. S. Balcerak, “Development of Nanostructure Based Antireflection Coatings for EO/IR Sensor Applications”, SPIE Photonics West Conference Proceedings **8257**(53) (2012)
- Talapatra, S., S. Kar, S. Pal, R. Vajtai, L.J. Ci, V. Pushparaj, M. Shaijumon, S. Kaur, O. Nalamasu, **P. M. Ajayan**, “Direct Growth of Aligned Carbon Nanotubes on Bulk Metals”, Nature Nanotechnology **1**(2), 112-116 (2006)
- Tao, J., **S. Tretiak**, “Optical Absorptions of New Blue-Light Emitting Oligoquinolines Bearing Pyrenyl and Triphenyl Endgroups Investigated with Time-Dependent Density Functional Theory”, Journal of Chemical Theory and Computation **5**(4), 866-872 (2009)
- Thomas, J. B., E. B. Watson, F. S. Spear, P. T. Shemella, **S. K. Nayak**, A. Lanzirrotti, “TitaniQ Under Pressure: the Effect of Pressure and Temperature on the Solubility of Ti in Quartz”, Contributions to Mineralogy and Petrology **106**(5), 743-759 (2010)
- Toohey, K. S., N. R. Sottos, **J. A. Lewis**, **J. S. Moore**, S. R. White, “Self-Healing Materials with Microvascular Networks”, Nature Materials **6**, 581-585 (2007)
- **Tretiak, S.**, Kilina, A. Piryatinski, A. Saxena, R. L. Martin, A. R. Bishop, “Excitons and Peierls Distortion in Conjugated Carbon Nanotubes”, Nano Letters **7**, 86-92 (2007)
- Vafaei, S., A. Purkayastha, A. Jain, **G. Ramanath**, **T. Borca-Tasciuc**, “Effect of Nanoparticles on the Liquid-Gas Surface Tension of Bi<sub>2</sub>Te<sub>3</sub> Nanofluids”, Nanotechnology **20**(18), 185702 (2009)
- Vafaei, S., D. Wen, D., **T. Borca-Tasciuc**, “Nanofluid Surface Wettability Through Asymptotic Contact Angle”, Langmuir **27**, 2211 (2011)
- Vafaei, S., **T. Borca-Tasciuc**, D. Wen, “Theoretical and Experimental Investigation of Quasi Steady State Bubble Growth from a Microscale Nozzle”, Colloids and Surfaces A: Physicochemical and Engineering Aspects **369**, 11 (2010)
- Vajtai, R., B. Q. Wei, T. F. George, **P. M. Ajayan**, “Chemical Vapor Deposition of Organized Architectures of Carbon Nanotubes for Applications”, in “Molecular Building Blocks for Nanotechnology, from Diamondoids to Nanoscale Materials and Applications”, G. A. Mansoori, T. F. George, L. Assoufid, G. P. Zhang, Eds., Springer-New York, Topics in Applied Physics **109**, 188-211 (2007)
- Vajtai, R., **P. M. Ajayan**, “Controlled Processes for Growth of Carbon Nanotube Structures”, (book chapter), J. R. Groza, J. F. Shackelford, E. J. Lavernia, Eds., Taylor & Francis, Materials Processing Handbook, 1-13 (2007)
- Vajtai, R., S. K. Biswas, B. Q. Wei, G. W. Meng, Y. J. Jung, **P. M. Ajayan**, “Electrical Characterization of Carbon Nanotube Structures”, Nanopages **1**(1), 45-68 (2006)
- Van Gough, D., A. T. Juhl, **P. V. Braun**, “Programming Structure into 3D Nanomaterials”, Materials Today **12**(6), 28-35 (2009)
- van Ommen, J. R., J. Nijenhuis, **M.-O. Coppens**, “Four Approaches to Structure Gas-Solid Fluidized Beds”, Fluidization XII (2007 ECI Conferences on the 12<sup>th</sup> International Conference on Fluidization, F. Berutti, X. Bi, T. Pugsley, Eds., Industrial & Engineering Chemistry Research **46**, 4236-4244 (2007) Invited
- van Ommen, J. R., J. Nijenhuis, **M.-O. Coppens**, “Reshaping the Structure of Fluidized Beds”, Chemical Engineering Progress **7**, 49-57 (2009)

- van Ommen, J. R., S. Sasic, J. van der Schaaf, S. Gheorghiu, F. Johnsson, **M.-O. Coppens**, “Time-Series Analysis of Pressure Fluctuations in Gas-Solid Fluidized Beds - A Review”, *International Journal of Multiphase Flow* **37**(5), 403-428 (2011)
- Veedu, V. P., A. Y. Cao, X. S. Li, K. Ma, C. Soldano, **P. M. Ajayan**, M. N. Ghasemi-Nejhad, “Multifunctional Composites using Reinforced Laminae with Carbon Nanotube Forests”, *Nature Materials* **5**, 457-462 (2006)
- Vijayashankar, D., H. Zhu, S. Garg, R. Teki, R. Ramprasad, M. W. Lane, **G. Ramanath**, “Atomistic Mechanisms of Moisture-Induced Fracture at Copper-Silica Interfaces”, *Applied Physics Letters* **99**(13), 133103-133103-3 (2011)
- Viswanatha, R., H. Amenitsch, S. Santra, S. Sapra, S. S. Datar, Y. Zhou, **S. K. Nayak**, **S. K. Kumar**, D. D. Sarma, “Growth Mechanism of Cadmium Sulfide Nanocrystals”, *The Journal of Physical Chemistry Letters* **1**, 304 (2010)
- Wang, G., C. R. Kleijn, **M.-O. Coppens**, “Multi-Scale PDE-Based Design of Hierarchically Structured Porous Catalysts”, in *Advanced Computational Methods in Science and Engineering*, B. Koren, C. Vuik, Eds., Springer Lecture Notes in Computational Science and Engineering **71**, 437-452 (2009) Invited
- Wang, G., E. Johannessen, C.R. Kleijn, S.W. de Leeuw, **M.-O. Coppens**, “Optimizing Transport in Nanostructured Catalysts: A Computational Study”, *Chemical Engineering Sciences* **62**, 5110-5116 (2007)
- Wang, G., **M.-O. Coppens**, “Rational Design of Hierarchically Structured Porous Catalysts for Autothermal Reforming of Methane”, *Chemical Engineering Science* **65**(7), 2344-2351 (2010)
- Wang, J., A. Vinu, **M.-O. Coppens**, “Synthesis and Structure of Silicalite-1/SBA-15 Composites Prepared by Carbon Templating and Crystallization”, *Journal of Materials Chemistry* **17**(40), 4265-4273 (2007)
- Wang, J., J. C. Groen, **M.-O. Coppens**, “Unified Formation Mechanism of Disordered Mesoporous Silica, Structured by Means of Nontemplating Organic Additives”, *The Journal of Physical Chemistry C* **112**(49), 19336-19345 (2008)
- Wang, J., J. C. Groen, W. Yue, W. Zhou, **M.-O. Coppens**, “Facile Synthesis of ZSM-5 Composites with Hierarchical Porosity”, *Journal of Materials Chemistry* **18**(4), 468-474 (2008)
- Wang, J., J. C. Groen, W. Yue, W. Zhou, **M.-O. Coppens**, “Single-Template Synthesis of Zeolite ZSM-5 Composites with Tunable Mesoporosity”, *Chemical Communications* **44**, 4653-4655 (2007)
- Wang, J., J. C. Groen, W. Yue, W. Zhou, **M.-O. Coppens**, “TUD-C: A Tunable, Hierarchically Structured Mesoporous Zeolite Composite”, *Microporous and Mesoporous Materials* **120**(1-2), 19-28 (2009)
- Wang, X., S. Herth, T. Hugener, **R. W. Siegel**, J. K. Nelson, **L. S. Schadler**, H. Hillborg, T. Auletta, “Nonlinear Electrical Behavior of Treated ZnO-EPDM Nanocomposites”, *Electrical Insulation and Dielectric Phenomena*, 2006 IEEE Conference, 421-424 (2006)
- Wilson, G. O., **J. S. Moore**, S. R. White, N. R. Sottos, H. M. Andersson, “Autonomic Healing of Epoxy Vinyl Esters via Ring Opening Metathesis Polymerization”, *Advanced Functional Materials* **18**(1) 44-52 (2007)

- Wroblewski, D. A., D. A. Langlois, E. B. Orler, A. Labouriau, M. Uribe, R. Houlton, **J. D. Kress**, B. Kendrick, “Accelerated Aging and Characterization of a Plasticized Poly(ester urethane) Binder”, in “Polymer Degradation and Performance”, M. C. Celina, J. S. Wiggins, Eds., N. C. Billingham, ACS Symposium Series **1004**(16), 181-196 (2009)
- Wu, C., S. Malinin, **S. Tretiak**, V. Chernyak, “Exciton Scattering and Localization in Branched Dendrimeric Structures”, *Nature Physics* **2**, 631-635 (2006)
- Xi, J.-Q., M. F. Schubert, J. K. Kim, **E. F. Schubert**, M. Chen, S.-Y. Lin, W. Liu, J. A. Smart, “Optical Thin-Film Materials with Low Refractive Index for Broadband Elimination of Fresnel Reflection”, *Nature Photonics* **1**, 176 (2007)
- Xi, Y. Andrew, K. X. Chen, F. W. Mont, J. K. Kim, **E. F. Schubert**, C. Wetzel, W. Liu, X. Li, J. A. Smart, “Optimization of High-Quality AlN Epitaxially Grown on (0001) Sapphire by Metal-Organic Vapor-Phase Epitaxy”, *Journal of Electronic Materials* **36**, 533-537 (2007)
- Yamamoto, U., **K. S. Schweizer**, “Theory of Nanoparticle Diffusion in Unentangled and Entangled Polymer Melts”, *The Journal of Chemical Physics* **135**(22), 224902 (2011)
- Yan, Q., A. Purkayastha, A. Singh, H. Li, R. Ramanujan, **G. Ramanath**, “High-Coercivity FePt Nanoparticle Assemblies Embedded in Silica Thin Films”, *Nanotechnology* **20**, 025609 (2009)
- Yan, X., F. W. Mont, D. J. Poxson, J. Cho, **E. F. Schubert**, M.-H. Kim, C. Sone, “Electrically Conductive Thin-Film Color Filters Made of Single-Material Indium-Tin-Oxide”, *Journal of Applied Physics* **109**, 103113 (2011)
- Yang, H., “Scanning Probe Techniques”, *Optical Science and Engineering* **128**, 301-340 (2007)
- Yang, H., “Solution Deposition of Polymers”, *Optical Science and Engineering* **128**, 371-401 (2007)
- Yang, H., L. Yang, M.-M. Ling, S. Lastella, D. D. Gandhi, **G. Ramanath**, Z. Bao, **C. Y. Ryu**, “Aging Susceptibility of Terrace-Like Pentacene Films”, *The Journal of Physical Chemistry C* **112**(42), 16161-16724 (2008)
- Yang, H., M.-M. Ling, L. Yang, “Temperature-Dependent Pentacene Nanostructures on Hydrophobic Gate-Dielectrics with Charge Carrier Mobilities”, *The Journal of Physical Chemistry C* **111**(34), 12508-12511 (2007)
- Yang, H., S. H. Kim, L. Yang, S. Yang, C. E. Park, “Pentacene Nanostructures on Surface Hydrophobicity-Controlled Polymer/SiO<sub>2</sub> Bilayer Gate Dielectrics”, *Advanced Materials* **19**, 2868 (2007)
- Yang, H., S. W. LeFevre, Z. Bao, **C. Y. Ryu**, “Solubility-Driven Thin Film Structures of Regioregularpoly(3-hexyl thiophene) using Volatile Solvents”, *Applied Physics Letters* **90**, 172116 (2007)
- Yang, H., T. J. Shin, Z. Bao, **C. R. Ryu**, “Structural Transitions of Nanocrystalline Domains in Regioregular Poly(3-hexyl thiophene) Thin Films”, *Journal of Polymer Science Part B: Polymer Physics* **45**(11), 1303-1312 (2007)
- Yang, X., C. Karthik, X. Li, J. Fu, X. Fu, C. Liang, N. Ravishankar, M. Wu, **G. Ramanath**, “Oriented Nanocrystal Arrays of Selectable Polymorphs by Chemical Sculpture”, *Chemistry of Materials* **21**(14), 3197-3201 (2009)

- Yavari, F. C. Kritzinger, C. Gaire, L. Song, H. Gulapalli, **T. Borca-Tasciuc**, P. M. Ajayan, N. Koratkar, “Tunable Band Gap in Graphene by the Controlled Adsorption of Water Molecule”, *Small* **6**, 2535-2538 (2010)
- Yu, Y., J. A. Vroman, S. C. Bae, **S. Granick**, “Vesicle Budding Induced by Pore-Forming Peptide”, *Journal of American Chemical Society* **132**, 195-201 (2010)
- Zagorevskii, D. V., M. J. Nasrullah, V. Raghunadh, **B. C. Benicewicz**, “The Effect of THF as Solvent on MALDI and ESI Mass Spectra of Functional Polystyrenes”, *Rapid Communications in Mass Spectrometry* **20**(2), 178-180 (2006)
- Zheng, J., R. Ozisik, **R. W. Siegel**, “Phase Separation and Mechanical Responses of Polyurethane Nanocomposites”, *Polymer* **47**, 7786-7794 (2006)
- Zhicheng X., J. Ilavsky, G. G. Long, **Y. A. Akpalu**, “How do Orientation Fluctuations Evolve to Crystals?”, *Progress in Understanding of Polymer Crystallization*, G. Strobl, Ed., Springer Press, *Lecture Notes in Physics* **714**(7), 117-132 (2007)
- Zhu, D., A. N. Noemaun, M. F. Schubert, J. Cho, **E. F. Schubert**, M. H. Crawford, D. D. Koleske, “Enhanced Electron Capture and Symmetrized Carrier Distribution in GaInN Light-Emitting Diodes Having Tailored Barrier Doping”, *Applied Physics Letters* **96**, 121110 (2010)
- Zschiegner, S., S. Russ, R. Valiullin, **M.-O. Coppens**, A. J. Dammers, A. Bunde, J. Kärger, “Normal and Anomalous Diffusion of Non-Interacting Particles in Linear Nanopores”, *The European Physical Journal - Special Topics* **161**(1), 109-120 (2008)

## 14.1.2 Thrust 2

### 14.1.2.1 Primary NSEC Support

- Asuri, P., S. Karajanagi, **J. S. Dordick**, **R. S. Kane**, “Directed Assembly of Carbon Nanotubes at Liquid-Liquid Interfaces: Nanoscale Conveyors for Interfacial Biocatalysis”, *Journal of American Chemical Society* **128**, 1046-1047 (2006)
- Asuri, P., S. Karajanagi, T.-J. Yim, **R. S. Kane**, **J. S. Dordick**, “Engineering Protein Activity and Stability Through Control of the Nanoscale Environment”, *Langmuir* **22**, 5833-5836 (2006)
- Asuri, P., S. S. Karajanagi, A. A. Vertegel, **J. S. Dordick**, **R. S. Kane**, “Enhanced Stability of Enzymes Adsorbed onto Nanoparticles”, *Journal of Nanoscience and Nanotechnology* **7**, 1675-1678 (2007)
- Asuri, P., S. S. Karajanagi, E. Sellitto, D.-Y. Kim, **R. S. Kane**, **J. S. Dordick**, “Water-Soluble Carbon Nanotube-Enzyme Conjugates as Functional Biocatalytic Formulations”, *Biotechnology and Bioengineering* **95**, 804-811 (2006)
- Asuri, P., S. S. Karajanagi, **R. S. Kane**, **J. S. Dordick**, “Polymer-Nanotube-Enzyme Composites as Active Antifouling Films”, *Small* **3**(1), 50-53 (2007)
- Athawale, M., S. N. Jamadagni, **S. G. Garde**, “How Hydrophobic Hydration Responds to Solute Size and Attractions: Theory and Simulations”, *The Journal of Chemical Physics* **131**, 115102 (2009)
- Athawale, M. V., G. Goel, T. M. Truskett, **S. G. Garde**, “Effects of Lengthscales and Attractive Interactions on the Collapse of Hydrophobic Polymers in Water”, *Proceedings of the National Academy of Sciences USA* **104**, 733-738 (2007)

- Bale, S. S., S. J. Kwon, D. A. Shah, A. Banerjee, **J. S. Dordick**, **R. S. Kane**, “Nanoparticle-Mediated Cytoplasmic Delivery of Proteins to Target Cellular Machinery”, *ACS Nano* **4**(3), 1493-1500 (2010)
- Bale, S. S., S. J. Kwon, D. A. Shah, **R. S. Kane**, **J. S. Dordick**, “A GFP Complementation System for Monitoring and Directing Nanomaterial Mediated Protein Delivery to Human Cellular Organelles”, *Biotechnology & Bioengineering* **107**(6), 1040-1047 (2010)
- Ballard, J. D., A. J. Dulgar-Tulloch, **R. W. Siegel**, “Nanophase Materials - Their Characteristics and Interactions with Proteins and Cells”, Wiley, Hoboken, NJ, *Encyclopedia of Biomedical Engineering* **4**, 2489-2507 (2006) Invited
- Brown, A. K., J. Liu, Y. He, **Y. Lu**, “Biochemical Characterization of a Uranyl Ion-Specific DNAzyme”, *ChemBioChem* **10**, 486-492 (2009)
- Canchi, D. R., **A. E. García**, “Backbone and Sidechain Contributions in Protein Denaturation by Urea”, *Biophysical Journal* **109**(6), 1526-1533 (2011)
- Cao, Z., R. Tong, A. Mishra, W. Xu, **G. C. L. Wong**, J. Cheng, **Y. Lu**, “Reversible Cell-Specific Drug Delivery with Aptamer-Functionalized Liposomes”, *Angewandte Chemie International Edition* **48**, 6494-6498 (2009)
- Cao, Z., **Y. Lu**, “New Metallo-DNAzymes: Fundamental Studies of Metal-DNA Interactions and Metal Sensing Applications”, N. Hadjiliadis, E. Sletten, Eds., in “Metal Complex-DNA Interactions”, **14**, 395 (2009)
- **Coppens, M.-O.**, “Multi-Scale Nature Inspired Chemical Engineering”, in *Bridging Scales in Science and Engineering*, J. Fish, Ed., Oxford University Press, Oxford, UK, 536-560 (2009) Invited
- **Coppens, M.-O.**, “Nature Inspired Chemical Engineering: A New Paradigm for Sustainability”, Centre for Advanced Studies, Norwegian Academy of Sciences and Letters, Oslo, Norway, *Confluence Interdisciplinary Communications*, 101-106 (2008)
- **Coppens, M.-O.**, G. Wang, “Optimal Design of Hierarchically Structured Porous Catalysts”, in *Design of Heterogeneous Catalysts*, U. Ozkan, Ed., Wiley, Weinheim, 25-58 (2009) Invited
- Coridan, R. H., N. W. Schmidt, G. H. Lai, **G. C. L. Wong**, “Hydration Structures Near Finite Sized Nanoscopic Objects Reconstructed using Inelastic X-Ray Scattering Measurements”, *Journal of Physics: Condensed Matter* **21**, 424115 (2009)
- Coridan, R. H., N. W. Schmidt, G. H. Lai, R. Godawat, M. Krisch, **S. G. Garde**, P. Abbamonte, **G. C. L. Wong**, “Hydration Dynamics at Femtosecond Timescales and Angstrom Lengthscales from Inelastic X-Ray Scattering”, *Physical Review Letters* **103**, 237402 (2009)
- Day, R., **A. E. García**, “Water Penetration in the Low and High Pressure States of Ubiquitin”, *Proteins* **70**, 1175-1184 (2008)
- Dinu, C. Z., S. S. Bale, D. B. Chrisey, **J. S. Dordick**, “Manipulation of Individual Carbon Nanotubes by Reconstructing the Intracellular Transport of a Living Cell”, *Advanced Materials* **201**, 1182-1186 (2009)
- Dinu, C. Z., S. S. Bale, G. Zhu, **J. S. Dordick**, “Tubulin Encapsulation of Carbon Nanotubes into Functional Hybrid Assemblies”, *Small* **5**, 310-315 (2009)



- Dinu, C. Z., S. S. Bale, **J. S. Dordick**, “Kinesin I ATPase Manipulates Biohybrids Formed from Tubulin and Carbon Nanotubes”, *Methods in Molecular Biology* **743**, 77-93 (2011)
- Dulgar-Tulloch, A. J., R. Bizios, **R. W. Siegel**, “Differentiation of Human Mesenchymal Stem Cells on Nano-and Micro-Grainsize Titania Topography”, *Materials Science and Engineering C: Materials for Biological Applications* **31**, 357-362 (2011)
- Dulgar-Tulloch, A. J., R. Bizios, **R. W. Siegel**, “Human Mesenchymal Stem Cell Adhesion and Proliferation in Response to Ceramic Chemistry and Nanoscale Topography”, *Journal of Biomedical Materials Research Part A* **90**(2), 586-594 (2009)
- Eker, B., P. Asuri, S. Murugesan, **R. J. Linhardt, J. S. Dordick**, “Enzyme-Carbon Nanotube Conjugates in Room-Temperature Ionic Liquids”, *Applied Biochemistry and Biotechnology* **143**(2), 153-163 (2007)
- Gagner, J. E., M. D. Lopez, **J. S. Dordick, R. W. Siegel**, “Effect of Gold Nanoparticle Morphology on Adsorbed Protein Structure and Function”, *Biomaterials* **32**(29), 7241-7252 (2011)
- Gagner, J. E., S. Shrivastava, X. Qian, **J. S. Dordick, R. W. Siegel**, “Engineering Nanomaterials for Biomedical Applications Requires Understanding the Nano-Bio Interface - A Perspective”, *The Journal of Physical Chemistry Letters* **3**(21), 3149-3158 (2012) Invited
- Gagner, J. E., X. Qian, M. Lopez, **J. S. Dordick, R. W. Siegel**, “Effect of Gold Nanoparticle Structure on the Conformation and Function of Adsorbed Proteins”, *Biomaterials* **33**(33), 8503-8516 (2012)
- **García, A. E.**, “Molecular Dynamics Simulations of Protein Folding”, Humana Press, M. Zacki, C. Bystroff, Eds., *Methods in Molecular Biology* **143**, 315-330 (2008)
- **García, A. E.**, D. Paschek, “Simulation of the Pressure and Temperature Folding/Unfolding of a Small RNA Hairpin”, *Journal of American Chemical Society* **130**(3), 815-817 (2008)
- **García, A. E.**, H. Herce, D. Paschek, “Studying Protein Conformations using Replica Exchange Molecular Dynamics”, *Annual Reports in Computational Chemistry* **2**, 83-96 (2006)
- **García, A. E.**, S. D. Paschek, “Molecular Dynamics Simulations of the Folding/Unfolding Thermodynamics of an RNA Tetraloop”, *Biophysical Journal*, 228A (2007)
- Godawat, R., S. N. Jamadagni, **S. G. Garde**, “Unfolding of Hydrophobic Polymers in Guanidinium Chloride Solutions”, *The Journal of Physical Chemistry B* **114**, 2246-2254 (2010)
- Hassan, H. H. A. M., A. F. Elhousseiny, A. M. Sweyllam, **R. J. Linhardt**, “New Sulfonated Aramides Nanoparticles and their Copper Complexes with Anomalous Dielectric Behavior” *Journal of Applied Polymer Science*, DOI: 10.1002/app.36791 (2012)
- Herce, H. D., **A. E. García**, “Cell Penetrating Peptides: How Do They Do It?”, *Journal of Biological Physics* **33**(5-6), 345-356 (2007)
- Herce, H. D., **A. E. García**, “Correction of Apparent Finite Size Effects in the Area per Lipid of Lipid Membranes Simulations”, *The Journal of Chemical Physics* **125**, 224711 (2006)

- Herce, H. D., **A. E. García**, “Molecular Dynamics Simulations Suggest a Translocation Mechanism of the HIV-1TAT Peptide Across Lipid Membranes”, *Proceedings of the National Academy of Sciences USA* **104**, 20805-20810 (2007)
- Jamadagni, S. N., C. Bosoy, **S. G. Garde**, “Designing Heteropolymer to Fold into Unique Structures via Water-Mediated Interactions”, *The Journal of Physical Chemistry B* **114**, 13282-13288 (2010)
- Jamadagni, S. N., R. Godawat, **J. S. Dordick**, **S. G. Garde**, “How Interfaces Affect Hydrophobically Driven Polymer Folding”, *The Journal of Physical Chemistry B* **113**, 4093-4101 (2009)
- John, G., G. Zhu, J. Li, **J. S. Dordick**, “Enzymatically Derived Sugar-Containing Self-Assembled Organogels with Nanostructured Morphologies”, *Angewandte Chemie International Edition* **45**, 4772-4775 (2006)
- Joshi, A, S. Kate, D. Mondal, M. B. Boggara, A. Saraph, J. T. Martin, R. McAlpine, R. Day, **A. E. García**, J. Mogridge, **R. S. Kane**, “Structure-Based Design of a Heptavalent Anthrax Toxin Inhibitor”, *Biomacromolecules* **12**(3), 791-796 (2011)
- Joshi, S. P., J. Miao, C. J. Rivet, P. Datta, S. W. Donahue, **R. J. Linhardt**, R. J. Gilbert, “Electrospun Polyester Fiber Composites for Controlled Release of Parathyroid Hormone” *Acta Biomaterials* (2012) Submitted
- **Kane, R. S.**, A. D. Stroock, “Nanobiotechnology: Protein-Nanomaterial Interactions”, *Biotechnology Progress* **23**, 316-319 (2007)
- Karajanagi, S. S., P. Asuri, E. Sellitto, B. Eker, S. S Bale, **R. S. Kane**, **J. S. Dordick**, “Protein-Carbon Nanotube Conjugates”, *ACS Symposium Series* **986**(5), 100-115 (2008)
- Karajanagi, S. S., P. Asuri, **J. S. Dordick**, **R. S. Kane**, “Protein-Assisted Solubilization of Single-Walled Carbon Nanotubes”, *Langmuir* **22**, 1392-1395 (2006)
- Lee, J. H., D. P. Wernette, M. V. Yigit, J. Liu, Z. Wang, **Y. Lu**, “Site-Specific Control of Distances Between Gold Nanoparticles using Phosphorothioate Anchors on DNA and a Short Bifunctional Molecular Fastener”, *Angewandte Chemie International Edition* **46**, 9006-9010 (2007)
- Lee, J. H., N. Y. Wong, L. H. Tan, Z. Wang, **Y. Lu**, “Controlled Alignment of Multiple Proteins and Nanoparticles with Nanometer Resolution via Backbone-Modified Phosphorothioate DNA and Bifunctional Linkers”, *Journal of American Chemical Society* **132**(26), 8906-8908 (2010)
- Lee, J.-H., Z. Wang, J. Liu, **Y. Lu**, “Highly Sensitive and Selective Colorimetric Sensors for Uranyl (UO<sub>2</sub><sup>2+</sup>): Development and Comparison of Labeled and Label-Free DNAzyme-Gold Nanoparticle Systems”, *Journal of American Society* **130**, 14217-14226 (2008)
- Lee, S. H., M. Miyauchi, **J. S. Dordick**, **R. J. Linhardt**, “Preparation of Biopolymer-Based Materials using Ionic Liquids for the Biomedical Applications”, *ACS Symposium Series Ionic Liquids Application: Pharmaceutical, Therapeutics, and Biotechnology* **10**, 115-134 (2010)
- Li, X., G. Zhu, **J. S. Dordick**, **P. M. Ajayan**, “Compression-Modulated Tunable-Pore Carbon Nanotube Filters”, *Small* **3**, 595-599 (2007)
- Liu, J., J. H. Lee, **Y. Lu**, “Quantum Dot Encoding of Aptamer-Linked Nanostructures for One-Pot Simultaneous Detection of Multiple Analytes”, *American Chemical Society* **79**, 4120-4125 (2007)

- Liu, J., **Y. Lu**, “A DNAzyme Catalytic Beacon Sensor for Paramagnetic Cu<sup>2+</sup> Ions in Aqueous Solution with High Sensitivity and Selectivity”, *Journal of American Society* **129**, 9838-9839 (2007)
- Liu, J., **Y. Lu**, “Colorimetric Cu<sup>2+</sup> Detection with a Ligation DNAzyme and Nanoparticles”, *Chemical Communications* **46**, 4872-4874 (2007)
- Liu, J., **Y. Lu**, “Design of Asymmetric DNAzymes for Dynamic Control of Nanoparticle Aggregation States in Response to Chemical Stimuli”, *Organic & Biomolecular Chemistry* **4**, 3435-3441 (2006)
- Liu, J., **Y. Lu**, “Fast Colorimetric Sensing of Adenosine and Cocaine Based on a General Sensor Design Involving Aptamers and Nanoparticles”, *Angewandte Chemie International Edition* **45**, 90-94 (2006)
- Liu, J., **Y. Lu**, “Non-Base Pairing DNA Provides a New Dimension for Controlling Aptamer-Linked Nanoparticles and Sensors”, *Journal of American Society* **129**, 8634-8643 (2007)
- Liu, J., **Y. Lu**, “Preparation of Aptamer-Linked Gold Nanoparticle Purple Aggregates for Colorimetric Sensing of Analytes”, *Nature Protocols* **1**, 246-252 (2006)
- Liu, J., **Y. Lu**, “Rational Design of “Turn-On” Allosteric DNAzyme Catalytic Beacons for Aqueous Mercury Ions with Ultrahigh Sensitivity and Selectivity”, *Angewandte Chemie* **119**(40) 7731-7734 (2007)
- Liu, J., **Y. Lu**, “Smart Nanomaterials Responsive to Multiple Chemical Stimuli with Controllable Cooperativity”, *Advanced Materials* **18**(13), 1667-1671 (2006)
- Liu, J., **Y. Lu**, Eds., “Colorimetric Biosensors Based on Directed Assembly of Nanoparticles with Functional DNA”, in *Functional Nucleic Acids for Sensing and Other Analytical Applications*, Springer, New York, NY, 155-178 (2009)
- **Lu, Y.**, J. Liu, “Catalyst-Functionalized Nanomaterials”, *WIREs Nanomed Nanobiotechnology* **1**, 35 (2008)
- **Lu, Y.**, J. Liu, “Smart Nanomaterials Inspired by Biology: Dynamic Assembly of Error-Free Nanomaterials in Response to Multiple Chemical Stimuli”, *Accounts of Chemical Research* **40**, 315-323 (2007)
- **Lu, Y.**, Liu, J., “Functional DNA Nanotechnology: Emerging Applications of DNAzymes and Aptamers”, *Current Opinion in Biotechnology* **17**(16), 580-588 (2006)
- **Lu, Y.**, Y. Li, Eds., *Functional Nucleic Acids for Analytical Applications*, Springer **8**, 395 (2009) Book
- Malek, K., **M.-O. Coppens**, “Molecular Simulations of Solute Transport in Xylose Isomerase Crystals”, *The Journal of Physical Chemistry B* **112**(5), 1549-1554 (2008)
- Malek, K., **M.-O. Coppens**, “Reply to Comment on ‘Diffusion of Water and Sodium Counter-ions in Nanopores of Beta-Lactoglobulin Crystal: A Molecular Simulation Study’”, *Nanotechnology* **19**(43), 438002 (2008)
- Mazumdar, D., J. Liu, G. Lu, J. Zhou, **Y. Lu**, “Easy-To-Use Dipstick Tests for Detection of Lead in Paints using Non-Cross-Linked Gold Nanoparticle-DNAzyme Conjugates”, *Chemical Communications* **46**, 1416-1419 (2010)
- Meli, L., J. Miao, **J. S. Dordick**, **R. J. Linhardt**, “Electrospinning from Room Temperature Ionic Liquids for Biopolymer Fiber Formation”, *Green Chemistry* **12**, 1883-1892 (2010)

- Miao, J., M. Miyauchi, T. J. Simmons, **J. S. Dordick, R. J. Linhardt**, “Electrospinning of Nanomaterials and Applications in Electronic Components and Devices”, *Journal of Nanoscience and Nanotechnology* **10**, 5507-5519 (2010)
- Miao, J., R. C. Pangule, E. E. Paskaleva, E. Hwang, **R. S. Kane, R. J. Linhardt, J. S. Dordick**, “Lysostaphin-Functionalized Cellulose Fibers with Antistaphylococcal Activity for Wound Healing Applications”, *Biomaterials* **32**(36), 9557-9567 (2011)
- Miyauchi, M., J. Miao, T. J. Simmons, J.-W. Lee, T. V. Doherty, **J. S. Dordick, R. J. Linhardt**, “Conductive Cable Fibers with Insulating Surface Prepared by Coaxial Electrospinning of Multi-Walled Nanotubes and Cellulose”, *Biomacromolecules* **11**, 2440-2445 (2010)
- Miyauchi, M., T. J. Simmons, J. Miao, J. E. Gagner, Z. H. Shriver, U. Aich, **J. S. Dordick, R. J. Linhardt**, “Electrospun Polyvinylpyrrolidone Fibers with High Concentrations of Ferromagnetic and Superparamagnetic Nanoparticles”, *ACS Applied Materials and Interfaces* **3**(6), 1958-1964 (2011)
- Nuffer, J. H., **R. W. Siegel**, “Nanostructure-Biomolecule Interactions: Implications for Tissue Regeneration and Nanomedicine”, *Tissue Engineering Part A* **16**, 423-430 (2010) Invited
- Pangule, R., S. S. Bale, D. Shah, A. Joshi, P. Asuri, **J. S. Dordick, R. S. Kane**, “Biomolecule-Nanomaterial Interactions: Effect on Biomolecule Structure, Function, and Stability”, in *Biological Interactions on Materials Surfaces: Understanding and Controlling Protein, Cell and Tissue Responses*, D. A. Puleo, R. Bizios, Eds., Springer Science + Business Media, LLC 97-114 (2009)
- Paschek, D., **A. E. García**, “Replica Exchange Simulation of Reversible Folding/Unfolding of the TRP-Cage Protein in Explicit Solvent: On the Structure and Possible Role of Internal Water”, *Journal of Structural Biology* **157**(3) 524-533 (2007)
- Purdy Drew, K. R., L. K. Sanders, Z. Culumber, O. Zribi, **G. C. L. Wong**, “Cationic Amphiphiles Increase Activity of Aminoglycoside Antibiotic Tobramycin in the Presence of Airway Polyelectrolytes”, *Journal of American Chemical Society* **131**(2), 486-493 (2009)
- Raja, P. M. V., J. Connolley, G. P. Ganesan, L. Ci, P. M. Ajayan, O. Nalamasu, **D. M. Thompson**, “Impact of Carbon Nanotube Exposure, Dosage and Aggregation on Smooth Muscle Cells”, *Toxicology Letters* **169**, 51-63 (2007)
- Ravel, B., S. C. Slimmer, X. Meng, **G. C. L. Wong, Y. Lu**, “EXAFS Studies of Catalytic DNA Sensors for Mercury Contamination of Water”, *Radiation Physics and Chemistry* **78**(10), 575-579 (2009)
- Rege, K., G. Viswanathan, G. Zhu, A. Vijayaraghavan, **P. M. Ajayan, J. S. Dordick**, “In Vitro Transcription and Protein Translation from Carbon Nanotube-DNA Assemblies”, *Small* **2**, 718-722 (2006)
- Rodriguez, J. R., **A. E. García**, “Concentration Dependence of NaCl Ion Distributions Around DPPC Lipid Bilayers”, *Interdisciplinary Sciences - Computational Life Sciences* **3**(4), 372-382 (2011)
- Sang, L. C., **M.-O. Coppens**, “Enhancing Protein Stability and Function by Confinement in Nanoporous Materials: Fundamental Understanding using Experiments and Simulations”, *Physical Chemistry Chemical Physics*, DOI:10.1039/C0CP02273J (2011)

- Sang, L.-C., A. Vinu, **M.-O. Coppens**, “A General Description of the Adsorption of Proteins at their Iso-electric Point in Nanoporous Materials”, *Langmuir* **27**(22), 13828-13837 (2011)
- Sang, L.-C., A. Vinu, **M.-O. Coppens**, “Ordered Mesoporous Carbon with Tunable, Unusually Large Pore Size and Well-Controlled Particle Morphology”, *Journal of Materials Chemistry* **21**, 7410-7417 (2011)
- Sang, L.-C., **M.-O. Coppens**, “Effects of Surface Curvature and Surface Chemistry on the Structure and Activity of Proteins Adsorbed in Nanopores”, *Physical Chemistry Chemical Physics* **13**(14), 6689-6698 (2011)
- Schmidt, N. W., A. Mishra, G. H. Lai, **G. C. L. Wong**, “Arginine-Rich Cell Penetrating Peptides”, *FEBS Letters* **584**(9) 1806-1813 (2009)
- Serdakowski, A. L., **J. S. Dordick**, “Enzyme Activation for Organic Solvents Made Easy”, *Trends Biotechnology* **26**(1), 48-54 (2008)
- Sgourakis, N. G., **A. E. García**, “Global Versus Local Features of an Unfolded Peptide System – Ab42 Modeled by Dynamics Simulations and NMR Experiments”, for Book Entitled “From Denatured States to Intrinsically Disordered”, Vladimir Uversky, T. Creamer, Eds., 195-212 (2008)
- Shah, D. A., S. J. Kwon, S. S. Bale, A. Banerjee, **J. S. Dordick**, **R. S. Kane**, “Regulation of Stem Cell Signaling by Nanoparticle-Mediated Intracellular Protein Delivery”, *Biomaterials*, **32**(12), 3210-3219 (2011)
- Shah, D., R. Pangule, S. S. Bale, P. Asuri, A. Joshi, A. Banerjee, D. Vance, **J. S. Dordick**, **R. S. Kane**, “Preparation and Characterization of Carbon Nanotube-Protein Conjugates”, in *Methods in Bioengineering: Nanoscale Bioengineering and Nanomedicine*, K. Rege, I. L. Medintz, Eds., 1-23 (2009)
- Shang, W., D. E. Crone, H. Yang, **J. S. Dordick**, R. E. Palazzo, **R. W. Siegel**, “Using Centrosome Fragments in the Directed Assembly of Microtubules”, *Journal of Nanoscience and Nanotechnology* **9**, 871-875 (2009)
- Shang, W., J. H. Nuffer, **J. S. Dordick**, **R. W. Siegel**, “Unfolding of Ribonuclease A on Silica Nanoparticle Surfaces”, *Nano Letters* **7**, 1991-1995 (2007)
- Shang, W., J. H. Nuffer, V. A. Muñoz-Papandrea, W. Colón, **R. W. Siegel**, **J. S. Dordick**, “Cytochrome C on Silica Nanoparticles: Influence of Nanoparticle Size on Protein Structure, Stability and Activity”, *Small* **5**, 470-476 (2009)
- Shang, W., **J. S. Dordick**, R. E. Palazzo, **R. W. Siegel**, “Direct Patterning of Centrosome Arrays as Templates for Microtubule Growth”, *Biotechnology and Bioengineering* **94**, 1012-1016 (2006)
- Shenogina, N., P. J. Keblinski, **S. G. Garde**, Strong Frequency Dependence of Dynamical Coupling Between Protein and Water, *Journal of Chemical Physics* **129**(15), 155105 (2008)
- Shenogina, N., R. Godawat, **P. J. Keblinski**, **S. G. Garde**, “How Wetting and Adhesion Affect Thermal Conductance of a Range of Hydrophobic to Hydrophilic Aqueous Interfaces”, *Physical Review Letters* **102**, 156101 (2009)
- Shrivastava, S., J. H. Nuffer, **R. W. Siegel**, **J. S. Dordick**, “Position-Specific Chemical Modification and Quantitative Proteomics Disclose Protein Orientation Adsorbed on Silica Nanoparticles”, *Nano Letters* **12**(3), 1583-1587 (2012)

- Simmons, T. J., C. J. Rivet, G. Singh, J. Beaudet, E. Sterner, D. Guzman, D. P. Hashim, S.-H. Lee, G. Qian, K. M. Lewis, R. Rosales, P. Karande, P. M. Ajayan, R. J. Gilbert, **J. S. Dordick**, **R. J. Linhardt**, “Application of Carbon Nanotubes to Wound Healing Biotechnology”, *Nanomaterials for Biomedicine*, R. Nagarajan, Ed., ACS Symposium Series (2012) In Press
- Simmons, T. J., D. P. Hashim, X. Zhan, M. Bravo-Sanchez, M. G. Hahm, E. López-Luna, **R. J. Linhardt**, P. M. Ajayan, H. Navarro-Contreras, M. A. Vidal, “Functionalization of Nitrogen-Doped Carbon Nanotubes with Gallium to form Ga-CN<sub>x</sub>-Multi-Wall Carbon Nanotube Hybrid Materials” *Nanotechnology* **23**(32), 325601-325609 (2012)
- Smalyukh, I., O. Zribi, J. Butler, O. Lavrentovich, **G. C. L. Wong**, “Structure and Dynamics of Liquid Crystalline Pattern Formation in Drying Droplets of DNA”, *Physical Review Letters* **96**, 177801 (2006)
- Som, A., L. Yang, **G. C. L. Wong**, G. N. Tew, “Divalent Metal Ion Triggered Activity of a Synthetic Antimicrobial in Cardiolipin Membranes”, *Journal of American Chemical Society* **131**, 5102-5103 (2009)
- Sroga, G. E., **J. S. Dordick**, “Controlled Hierarchical Assembly of Switchable DNA-Multiprotein Complexes”, *Biotechnology and Bioengineering* **94**(2), 312-321 (2006)
- Stanley, S. A., J. E. Gagner, S. Damanpour, M. Yoshida, **J. S. Dordick**, J. M. Friedman, “Radio-Wave Heating of Iron Oxide Nanoparticles Can Regulate Plasma Glucose in Mice”, *Science* **336** (6081), 604-608 (2012)
- Tian J., **A. E. García**, “Self Assembly of AOT Reverse Micelles with/without Peptides”, *Biophysical Journal* **96**(3), 428a (2009)
- Tian, J. H., **A. E. García**, “Dynamics of Alanine Rich Peptides in the Confined Environment of a Reverse Micelle”, *Biophysical Journal*, Supplement S, 36A-36A (2007)
- Tian, J., **A. E. García**, “Simulation Studies of Protein Folding/Unfolding Equilibrium Under Polar and Nonpolar Confinement”, *Journal of the American Chemical Society* **133**(38), 15157-15164 (2011)
- Tian, J., **A. E. García**, “Simulations of the Confinement of Ubiquitin in Self-Assembled Reverse Micelles”, *The Journal of Chemical Physics* **134**(22), 225101 (2011)
- Tikhonov, A. M., H. Patel, **S. G. Garde**, M. L. Schlossman, “Tail Ordering Due to Head Group Hydrogen-Bonding Interactions in Surfactant Monolayers at the Water-Oil Interface”, *The Journal of Physical Chemistry B* **110**, 19093-19096 (2006)
- Vaitheeswaran, S., **A. E. García**, “Protein Stability at a Carbon Nanotube Interface”, *The Journal of Chemical Physics* **134**, 125101 (2011)
- Van Gough D., J. L. Defino, **P. V. Braun**, “Programmed Size-Selected Permeation of DNA into ZnS Mesoporous Hollow Spheres”, *Soft Matter* **8**, 4396-4401 (2012)
- Van Gough, D. V., A. Wolosiuk, **P. V. Braun**, “Templated Microreactors: A Synthetic Approach to Enzyme Entrapment”, 233<sup>rd</sup> ACS National Meeting, Polymeric Materials and Engineering (2007)
- Van Gough, D., A. Wolosiuk, **P. V. Braun**, “Mesoporous ZnS Nanorattles: Programmed Size Selected Access to Encapsulated Enzymes”, *Nano Letters* **9**, 1994-1998 (2009)
- Vertegel, A. A., W. Shang, **J. S. Dordick**, **R. W. Siegel**, “Protein-Directed Self-Assembly of Gold Nanoparticles”, *Materials Research Society* **901E**, 0901-Ra10-06.1 (2006)

- Wang, Z., J.-H. Lee, **Y. Lu**, “Label-Free Colorimetric Detection of Lead Ions with a Nanomolar Detection Limit and Tunable Dynamic Range by using Gold Nanoparticles and DNAzyme”, *Advanced Materials* **20**, 3263-3267 (2008)
- Wang, Z., **Y. Lu**, “Functional DNA Directed Assembly of Nanomaterials for Biosensing”, *Journal of Materials Chemistry* **19**, 1788-1798 (2009)
- Wei, H., Z. Wang, J. Zhang, S. House, Y.-G. Gao, L. Yang, H. Robinson, L. Huey T., H. Xing, C. Hou, I. M. Robertson, J.-M. Zuo, **Y. Lu**, “Time-Dependent, Protein-Directed Growth of Gold Nanoparticles within a Single Crystal of Lysozyme”, *Nature Nanotechnology* **6**, 93-97 (2011)
- Webster, M., J. Miao, B. Lynch, D. Green, R. J-S. Sawyer, **R. J. Linhardt**, J. Mendenhall, “Tunable Thermo-Responsive Poly (N-vinylcaprolactam) Cellulose Nanofibers: Synthesis, Characterization, and Fabrication”, *Macromolecular Materials and Engineering*, DOI: 10.1002/mame.201200081 (2012)
- Yang, L., **S. G. Garde**, “Modeling the Selective Partitioning of Cations into Negatively Charged Nanopores in Water”, *The Journal of Chemical Physics* **126**(8), 084706 (2007)
- Yigit, M. V., A. Mishra, R. Tong, W. Xu, J. Cheng, **G. C. L. Wong**, **Y. Lu**, “Inorganic Mercury Detection and Controlled Release of Chelating Agents from Ion-Responsive Liposomes”, *Chemistry & Biology* **16**(9), 937-942 (2009)
- Yigit, M. V., D. Mazumdar, H-K. Kim, J. H. Lee, B. Odintsov, **Y. Lu**, “Smart “Turn-On” Magnetic Resonance Contrast Agents Based on Aptamer-Functionalized Superparamagnetic Iron Oxide Nanoparticles”, *ChemBioChem* **8**(14), 1675-1678 (2007)
- Yigit, M. V., D. Mazumdar, **Y. Lu**, “MRI Detection of Thrombin with Aptamer Functionalized Superparamagnetic Iron Oxide Nanoparticles”, *Bioconjugate Chemistry* **19**(2), 412-417 (2008)
- Zhu, G., **J. S. Dordick**, “Solvent Effect on Organogel Formation by Low Molecular Weight Molecules”, *Chemistry of Materials* **18**, 5988-5995 (2006)

#### ***14.1.2.2 Partial NSEC Support***

- Abbamonte, P., **G. C. L. Wong**, D. G. Cahill, J. P. Reed, R. H. Coridan, N. W. Schmidt, G. H. Lai, Y. I. Joie, D. Casa, “Ultrafast Imaging and the ‘Phase Problem’ for Inelastic X-Ray Scattering”, *Advanced Materials* **22**, 1141-1147 (2010)
- Acharya, H., S. Vembanur, S. N. Jamadagni, **S. G. Garde**, “Mapping Hydrophobicity at the Nanoscale: Applications to Heterogeneous Surfaces and Proteins”, *Faraday Discussions* **146**, 353-365 (2010)
- Akbar, U., C. D. Aschenbrenner, M. R. Harper, H. R. Johnson, **J. S. Dordick**, D. S. Clark, “Direct Solubilization of Enzyme Assemblies with Enhanced Activity in Nonaqueous Media”, *Biotechnology and Bioengineering* **96**, 1030-1039 (2007)
- Anand, G., F. Zhang, **R. J. Linhardt**, G. Belfort, “Protein-Associated Water and Secondary Structure Effect Removal of Blood Proteins from Metallic Substrates”, *Langmuir*, **27**(5), 1830-1836 (2011)
- Anand, G., S. N. Jamadagni, **S. G. Garde**, G. Belfort, “Self-Assembly of TMAO at Hydrophobic Interfaces and its Effect on Protein Adsorption: Insights from Experiments and Simulations”, *Langmuir* **26**, 9695-9702 (2010)
- Asuri, P., S. S. Bale, R. C. Pangule, D. A. Shah, **R. S. Kane**, **J. S. Dordick**, “Structure, Function, and Stability of Enzymes Covalently Attached to Single-Walled Carbon Nanotubes”, *Langmuir* **23**, 12318-12321 (2007)

- Bale, S. S., P. Asuri, S. S. Karajanagi, **J. S. Dordick, R. S. Kane**, “Protein-Directed Formation of Silver Nanoparticles on Carbon Nanotubes”, *Advanced Materials* **19**(20), 3167-3170 (2007)
- Borkar, I. V., C. Z. Dinu, G. Zhu, **R. S. Kane, J. S. Dordick**, “Bionanoconjugate-Based Composites for Decontamination of Nerve Agents”, *Biotechnology Progress* **26**, 1622-1628 (2010)
- Bruckman, M. A., J. Liu, G. Koley, Y. Li, **B. C. Benicewicz**, Z. Niu, Q. Wang, “Tobacco Mosaic Virus Based Electrochemical Sensor for Detection of Volatile Organic Compounds”, *Journal of Materials Chemistry* **20**, 5715-5719 (2010)
- Butler, J., G. H. Lai, I. Smalyukh, O. Zribi, R. Golestanian, **G. C. L. Wong**, “Self-Organized Gels in DNA/F-Actin Mixtures without Crosslinkers: Networks of Induced Nematic Domains with Tunable Density”, *Physical Review Letters* **101**, 218303 (2008)
- Canchi, D., D. Paschek, **A. E. García**, “An Equilibrium Study of Protein Denaturation by Urea”, *The Journal of American Chemical Society* **132**(7), 2338-2344 (2010)
- **Coppens, M.-O.** “A Nature-Inspired Approach to Reactor and Catalysis Engineering”, *Current Opinion in Chemical Engineering* **1**(3), 281-289 (2012)
- Coridan, R. H., A. R. Dinner, **G. C. L. Wong**, “Molecular Solvation Dynamics from Inelastic X-Ray Scattering Measurements”, *Advances in Chemical Physics* **149**(3), (2012)
- Damjanovic, A., C. A. Fitch, **A. E. García**, B. Garcia-Moreno, “Role of Flexibility and Polarity as Determinants of the State of Hydration of Internal Cavities and Pockets in Proteins”, *Biophysical Journal* **93**(8), 2791-2804 (2007)
- Damjanovic, A., J. L., Schlessman, C. A. Fitch, **A. E. García**, B. Garcia-Moreno, “Disordered Water Molecules in Proteins: Now You See Them, Now You Don’t”, XVII Symposium on Condensed Matter Physics-SFKM 2007, Vrsac, Serbia, 1-4 (2007)
- Dammers, A. J., **M.-O. Coppens**, “Knudsen Diffusion in Finite-Size Channels from a First-Passage Point of View”, *Soft Materials* **10**, 1-3 (2011)
- Day, R., D. Paschek, **A. E. García**, “Microsecond Simulations of the Folding/Unfolding Thermodynamics of the Trp-Cage Miniprotein”, *Proteins: Structure, Function and Bioinformatics* **78**(8), 1889-1899 (2010)
- Dinu, C. Z., G. Zhu, S. S. Bale, G. Anand, P. J. Reeder, K. Sanford, G. Whited, **R. S. Kane, J. S. Dordick**, “Enzyme-Based Nanoscale Composites for use as Active Decontamination Surfaces”, *Advanced Functional Materials* **20**(3), 392-398 (2009)
- Dinu, C. Z., I. V. Borkar, S. S. Bale, A. S. Campbell, **R. S. Kane, J. S. Dordick**, “Perhydrolase-Nanotube-Paint Sporocidal Composites Stabilized by Intramolecular Crosslinking”, *Journal of Molecular Catalysis B: Enzymatic* **75**, 20-26 (2012)
- Dinu, C. Z., I. V. Borkar, S. S. Bale, G. Zhu, K. Sanford, G. Whited, **R. S. Kane, J. S. Dordick**, “Enzyme-Nanotube Based Composites used for Chemical and Biological Decontamination”, *Green Polymer Chemistry: Biocatalysis and Biomaterials*, ACS Symposium Series **8**, 103-107 (2010)
- Doherty, T. V., M. Mora-Pale, S. Foley, **R. J. Linhardt, J. S. Dordick**, “Ionic Liquid Solvent Properties as Predictors of Lignocellulose Pretreatment Efficacy”, *Green Chemistry* **12**, 1967-1975 (2010)



- Du, Z., P. T. Shemella, Y. Liu, S. A. McCallum, B. Pereira, **S. K. Nayak**, G. Belfort, M. Belfort, C. Wang, “Highly Conserved Histidine Plays a Dual Catalytic Role in Protein Spicing: A pKa Shift Mechanism”, *Journal of American Chemical Society* **131**, 11581 (2009)
- Eker, B., D. Zagorevski, G. Zhu, **R. J. Linhardt**, **J. S. Dordick**, “Enzymatic Polymerization of Phenols in Room Temperature Ionic Liquids”, *Journal of Molecular Catalysis B* **9**, 177-184 (2009)
- Ellison, K. S., D. B. Chrisey, **D. M. Thompson**, “Laser Machining of Elastomeric Microstencils”, *Journal of Optoelectronics and Advanced Materials* **12**(3), 659-662 (2010)
- Fernandes, T. G., S.-J. Kwon, M.-Y. Lee, D. S. Clark, J. M. S. Cabral, **J. S. Dordick**, “An On-Chip, Cell-Based Microarray Immunofluorescence Assay for High-Throughput Analysis of Target Proteins”, *American Chemical Society* **80**, 6633-6639 (2008)
- **Garde, S. G.**, A. J. Patel, “Unraveling the Hydrophobic Effect, One Molecule at a Time”, *PNAS* **108**(40), 16491-16492 (2011)
- Gnanakaran, S., B. Scott, T. M. McCleskey, **A. E. García**, “Perturbation of Local Solvent Structure by a Small Dication: A Theoretical Study on Structural, Vibrational, and Reactive Properties of Beryllium Ion in Water”, *The Journal of Physical Chemistry B* **112**(10), 2958-2963 (2008)
- Godawat, R., S. Jamadagni, J. R. Errington, **S. G. Garde**, “Structure, Stability, and Rupture of Free and Supported Liquid Films and Assemblies in Molecular Simulations”, *Industrial & Engineering Chemistry Research* **47**(10), 3582-3590 (2008)
- Godawat, R., S. N. Jamadagni, **S. G. Garde**, “Characterizing Hydrophobicity of Interfaces using Cavity Formation, Solute Binding and Water Correlations”, *Proceeding of the National Academy of Sciences USA* **106**(36), 15119-15124 (2009)
- Goel, G., M. V. Athawale, **S. G. Garde**, T. M. Truskett, “Attractions, Water Structure, and Thermodynamics of Hydrophobic Collapse”, *The Journal of Physical Chemistry B* **112**(42), 13193-13196 (2008)
- Grover, N., I. V. Borkar, C. Z. Dinu, **R. S. Kane**, **J. S. Dordick**, “Laccase- and Chloroperoxidase-Nanotube Paint Composites with Bactericidal and Sporicidal Activity”, *Enzyme and Microbial Technology* **50**(6-7), 271-279 (2012)
- Herce, H. D., **A. E. García**, J. Litt, **R. S. Kane**, P. Martin, N. Enrique, A. Rebolledo, V. Milesi, “Arginine-Rich Peptides Destabilize the Plasma Membrane, Consistent with a Pore Formation Translocation Mechanism of Cell Penetrating Peptides”, *Biophysical Journal* **97**, 1917-1925 (2009)
- Herce, H. D., **A. E. García**, T. Darden, “The Electrostatic Surface Term: (I) Periodic Systems”, *The Journal of Chemical Physics* **126**(12), 124106 (2007)
- Jamadagni, S. N., R. Godawat, **S. G. Garde**, “How Surface Wettability Affects Binding, Folding, and Dynamics of Hydrophobic Polymers at Interfaces”, *Langmuir* **25**, 13092-13099 (2009)
- Jamadagni, S. N., R. Godawat, **S. G. Garde**, “Hydrophobicity of Proteins and Interfaces: Insights from Density Fluctuations”, *Annual Reviews of Chemical and Biomolecular Engineering* **2**, 147-171 (2011)
- Jayachandran, G., V. Vishal, **A. E. García**, V. S. Pande, “Local Structure Formation in Simulations of Two Small Proteins”, *Journal of Structural Biology* **157**(3), 491-499 (2007)

- Jimenez-Cruz, C., G. I. Makhatadze, **A. E. García**, “Protonation/Deprotonation Effects on the Stability of the Trp-Cage Miniprotein”, *Physical Chemistry Chemical Physics* **13**, 17056-17063 (2011)
- Joshi, A., S. Punyani, S. S. Bale, H. Yang, **T. Borca-Tasçiuç**, **R. S. Kane**, “Nanotube Assisted Protein Deactivation”, *Nature Nanotechnology* **3**, 41-45 (2008)
- Kalra, A., **S. G. Garde**, G. Hummer, “Lubrication by Molecularly Thin Water Films Confined Between Nanostructured Membranes”, *The European Physical Journal - Special Topics* **189**(1), 147-154 (2010)
- Kemp, M. M., A. Kumar, D. Clement, P. Ajayan, S. Mousa, **R. J. Linhardt**, “Hyaluronan and Heparin Reduced Silver Nanoparticles Having Antimicrobial Properties”, *Nanomedicine* **4**, 421-429 (2009)
- Kemp, M. M., A. Kumar, S. Mousa, E. Dyskin, M. Yalcin, P. Ajayan, **R. J. Linhardt**, S. A. Mousa, “Gold and Silver Nanoparticles Conjugated with Heparin-Derivative Possess Anti-Angiogenesis Properties”, *Nanotechnology* **20**, 455104 (2009)
- Kemp, M. M., A. Kumar, S. Mousa, T.-J., Park, N. Kubotera, S. Mousa, P. Ajayan, **R. J. Linhardt**, “Synthesis of Gold and Silver Nanoparticles Stabilized with Glycosaminoglycans Having Distinctive Biological Activities”, *Biomacromolecules* **10**, 589-595 (2009)
- Kemp, M. M., **R. J. Linhardt**, “Heparin-Based Nanoparticles”, *Nanomedicine and Nanobiotechnology* **2**, 77-87 (2010)
- Kim, H.-K., J. Li, N. Nagraj, **Y. Lu**, “Probing Metal Binding in the 8-17 DNAzyme by TbIII Luminescence Spectroscopy”, *Chemistry – A European Journal* **14**(28) 8696-8703 (2008)
- Koerber, J. T., J-H. Jang, J. H. Yu, **R. S. Kane**, D. V. Schaffer, “Engineering Adeno-Associated Virus for One-Step Purification Via Immobilized Metal Affinity Chromatography”, *Human Gene Therapy* **18**, 367-378 (2007)
- Lee, J. H., M. V. Yigit, D. Mazumdar, **Y. Lu**, “Molecular Diagnostic and Drug Delivery Agents Based on Aptamer-Nanomaterial Conjugates”, *Advanced Drug Delivery Reviews* **62**, 592-605 (2010)
- Lee, M.-Y., D. S. Clark, **J. S. Dordick**, “Human P450 Microarrays for in Vitro Toxicity Analysis: Toward Complete Automation of Human Toxicology Screening”, *Journal of Laboratory Automation* **11**, 374-380 (2006)
- Lee, M.-Y., **J. S. Dordick**, “High-Throughput Human Metabolism and Toxicity Analysis”, *Current Opinion in Biotechnology* **17**(6), 619-627 (2006)
- Lee, M.-Y., R. A. Kumar, S. M. Sukumaran, M. G. Hogg, D. S. Clark, **J. S. Dordick**, “Three-Dimensional Cellular Microarray for High-Throughput Toxicology Assays”, *Proceedings of the National Academy of Sciences USA* **105**, 59-63 (2008)
- Lee, S.-H., T. V. Doherty, **R. J. Linhardt**, **J. S. Dordick**, “Ionic Liquid-Mediated Selective Extraction of Lignin from Wood Leading to Enhanced Enzymatic Cellulose Hydrolysis”, *Biotechnology and Bioengineering* **102**(5), 1368-1376 (2009)
- Lee, S.-H., T.-J. Park, T. J. Simmons, M. Miyauchi, S. S. Bale, R. Pangule, J. Miao, J. Bult, J. G. Martin, **J. S. Dordick**, **R. J. Linhardt**, “Preparation of Synthetic Wood Composites using Ionic Liquids”, *Wood Science and Technology* **45**(4) 719-733 (2011)

- Li, L.-L., R. Zhang, L. Yin, K. Zheng, W. Qin, P. R. Selvin, **Y. Lu**, “Biomimetic Surface Engineering of Lanthanide-Doped Upconversion Nanoparticles as Versatile Bioprobes”, *Angewandte Chemie* **124**(25), 6225-6229 (2012)
- Litt, J., C. Padala, P. Asuri, S. Vutukuru, K. Athmakuri, **S. Kumar, J. S. Dordick, R. S. Kane**, “Enhancing Protein Stability by Adsorption onto Raft-Like Lipid Domains”, *Journal of American Chemical Society* **131**, 7107-7111 (2009)
- Liu, J., A. K. Brown, X. Meng, D. M. Crokek, J. D. Istok, D. B. Watson, **Y. Lu**, “A Catalytic Beacon Sensor for Uranium with Parts-Per-Trillion Sensitivity and Million-Fold Selectivity”, *Proceedings of the National Academy of Sciences USA* **104**, 2056-2061 (2007)
- Liu, J., Z. Cao, **Y. Lu**, “Functional Nucleic Acid Sensors”, *Chemical Reviews* **109**(5), 1948–1998 (2009)
- **Lu, Y.**, J. Liu, D. Mazumdar, “Nanoparticles/Dip Stick” in *Nucleic Acid and Peptide Aptamers: Methods and Protocols*, G. Mayer, Ed., *Methods in Molecular Biology* **535**, 223-240 (2009)
- Mazumdar, D., J. Liu, **Y. Lu**, “Functional Nucleic Acid-Directed Assembly of Nanomaterials and their Applications as Colorimetric and Fluorescent Sensors for Trace Contaminants in Water”, M. Diallo, J. Duncan, N. Savage, A. Street, R. Sustich, Eds., “Nanotechnology Application for Clean Water”, **38**, 585-587 (2009)
- Mazumdar, D., N. Nagraj, H. K. Kim, X. Meng, A. K. Brown, Q. Sun, W. Li, **Y. Lu**, “Activity, Folding and Z-DNA Formation of the 8-17 DNAzyme in the Presence of Monovalent Ions”, *Journal of American Chemical Society* **131**, 5506-5515 (2009)
- Martin, J. G., J. M. Beaudet, **J. S. Dordick, R. J. Linhardt**, “Artificial Organelles: Digital Microfluidic Platform for Proteoglycan and Glycoprotein Biosynthesis”, *The World Scientific Journal* **10**, 997-1000 (2010)
- Miao, J., M. Miyauchi, **J. S. Dordick, R. J. Linhardt**, “Preparation and Characterization of Electrospun Core Sheath Nanofibers from Multi-Walled Carbon Nanotubes and Poly(vinyl Pyrrolidone)”, *Journal of Nanoscience and Nanotechnology* **12**(3), 2387-2393 (2012)
- Mishra, A., Gordon, V., L. Yang, R. Coridan, **G. C. L. Wong**, “HIV TAT Perforates Membranes by Inducing Saddle-Splay Curvature: Potential Role of Bidentate Hydrogen Bonding”, *Angewandte Chemie International Edition* **47**, 2986-2989 (2008)
- Mora-Pale, M., L. Meli, T. V. Doherty, **R. J. Linhardt, J. S. Dordick**, “Room Temperature Ionic Liquids as Emerging Solvents for the Pretreatment of Lignocellulosic Biomass”, *Biotechnology and Bioengineering* **108**, 1229-1245 (2011)
- Murday, J. S., **R. W. Siegel**, J. Stein, J. F. Wright, “Translational Nanomedicine: Status Assessment and Opportunities”, *Nanomedicine: Nanotechnology, Biology and Medicine* **5**, 251-273 (2009)
- Naumov, S., R. Valiullin, J. Kärger, R. Pitchumani, **M.-O. Coppens**, “Tracing Pore Connectivity and Architecture in Nanostructured Silica SBA-15”, *Microporous and Mesoporous Materials* **110**(1), 37-40 (2008)
- Pangule, R. C., S. J. Brooks, C. Z. Dinu, G. Zhu, S. S. Bale, S. Salmon, D. W. Metzger, **R. S. Kane, J. S. Dordick**, “Antimicrobial Nanocomposite Films Based on Nanotube-Enzyme Conjugates”, *ACS Nano* **4**, 3993-4000 (2010)

- Park, T.-J., S. Murugesan, **R. J. Linhardt**, “Cellulose Composites Prepared using Ionic Liquids (ILs)-Blood Compatibility to Batteries”, in Polysaccharide Materials: Performance by Design, K. Edgar, T. Heinze, C. Buchanan, Eds., ACS Symposium Series **1017**(7), 133-152 (2009)
- Paschek, D., R. Day, **A. E. García**, “Influence of Water-Protein Hydrogen Bonding on the Stability of Trp-Cage Miniprotein. A Comparison Between the TIP3P and TIP4P-Ew Water Models”, Physical Chemistry Chemical Physics **13**, 19840-19847 (2011)
- Patel, A. J., P. Varilly, S. N. Jamadagni, M. Hagan, D. Chandler, **S. G. Garde**, “Sitting at the Edge: How Biomolecules use Hydrophobicity to Tune their Interactions and Function”, The Journal of Physical Chemistry B **116**(8), 2498-2503 (2012)
- Patel, M., N. G. Sgourakis, **A. E. García**, G. I. Makhatadze, “Experimental Test of the Thermodynamic Model of Protein Cooperativity using Temperature-Induced Unfolding of a Ubq-UIM Fusion Protein”, Biochemistry **49**(39), 8455-8467 (2010)
- Pitchumani, R., A. Schmidt-Ott, **M.-O. Coppens**, “Continuous Synthesis by Spray Drying of Remarkably Stable Mesoporous Silica and Aluminosilica Catalysts, using Industrial Raw Materials”, Microporous and Mesoporous Materials **120**(1-2), 39-46 (2009)
- Pitchumani, R., A. Schmidt-Ott, **M.-O. Coppens**, “Statistics-Aided Optimal Design of the Continuous Aerosol-Based Synthesis of Nanostructured Silica Supports”, Journal of Nanoscience and Nanotechnology **9**(1), 598-611 (2009)
- Pushparaj, V. L., S. M. Manikoth, A. Kumar, S. Murugesan, L. Ci, R. Vajtai, **R. J. Linhardt**, O. Nalamasu, **P. M. Ajayan**, “Flexible Energy Storage Devices Based on Nanocomposite Paper”, Proceedings of the National Academy of Sciences USA **104**(34), 13574-13577 (2007)
- Rai, P. R., A. Saraph, R. Ashton, V. Poon, J. Mogridge, **R. S. Kane**, “Raftlike Polyvalent Inhibitors of the Anthrax Toxin: Modulating Inhibitory Potency by Formation of Lipid Microdomains”, Angewandte Chemie International Edition **46**, 2207 (2007)
- Rasaiah, J. C., **S. G. Garde**, G. Hummer, “Water in Nonpolar Confinement: from Nanotubes to Proteins and Beyond”, Annual Reviews in Physical Chemistry **59**, 713-740 (2008)
- Roche, J., J. A. Caro, D. R. Norberto, P. Barthe, C. Roumestand, J. L. Schlessman, **A. E. García**, B. García-Moreno E., C. A. Royer, “Cavities Determine the Pressure Unfolding of Proteins”, PNAS USA **109**, 6945-6950 (2012)
- Rouget, J.-B., T. Aksel, J. Roche, J. L. Saldana, **A. E. García**, D. Barrick, C. Royer, “Size and Sequence and the Volume Change of Protein Folding”, Journal of the American Chemical Society **133**(15), 6020-6027 (2011)
- Sánchez-Rodríguez, S. P., L. Münch-Anguiano, O. Echeverría, G. Vázquez-Nin J. M. Mora-Pale, **J. S. Dordick**, I. Bustos-Jaimes, “Human Parvovirus B19 Virus-Like Particles: *in Vitro* Assembly and Stability”, Biochimie **94**(3), 870-878 (2011)
- Sarupria, S., T. Ghosh, **A. E. García**, **S. G. Garde**, “Studying Pressure Denaturation of a Protein by Molecular Dynamics Simulations”, Proteins: Structure, Function and Bioinformatics **78**, 1641-1651 (2010)
- Seggio, A. M., A. Narayanaswamy, B. Roysam, **D. M. Thompson**, “Local Orientation of Schwann Cells Directs Neurite Outgrowth”, Journal of Neural Engineering **7**(4), 046001 (2010)

- Sgourakis, G. S., **A. E. García**, “The Membrane Complex Between Transducin and Dark-State Rhodopsin Exhibits Large-Amplitude Interface Dynamics on the Sub-Usec Timescale: Insights from All-Atom MD Simulations”, *Journal of Molecular Biology* **398**(1), 161-173 (2010)
- Sgourakis, N. G., M. M. Patel, **A. E. García**, G. I. Makhatadze, S. A. McCallum, “Conformational Dynamics and Structural Plasticity Play Critical Roles in Ubiquitin--Recognition of a UIM Domain”, *Journal of Molecular Biology* **396**(4), 1128-1144 (2010)
- Sgourakis, N. G., M. Merced-Serrano, C. Boutsidis, P. Drineas, Z. Du, C. Wang, **A. E. García**, “Atomic-Level Characterization of the Ensemble of the Ab(1–42) Monomer in Water using Unbiased Molecular Dynamics Simulations and Spectral Algorithms”, *Journal of Molecular Biology* **405**(2), 570-583 (2011)
- Sgourakis, N. G., Y. Yan, S. A. McCallum, C. Wang, **A. E. García**, “The Alzheimer’s Peptides Ab40 and Ab42 Adopt Distinct Conformations in Water: A Combined MD/NMR Study”, *Journal of Molecular Biology* **368**(5), 1448-1457 (2007)
- Sgourakis, N., Y. L. Yang, S. McCallum, **A. E. García**, et al. conference, “Probing the Structure of the Alzheimer’s Peptides Ab40 and AP42 Monomers”, *Biophysical Journal*, Supplement, 359A-360 (2007)
- Shin, H., K. R. Purdy Drew, K. R. Bartles, **G. C. L. Wong**, G. M. Grason, “Cooperativity and Frustration in Protein-Mediated Parallel Actin Bundles”, *Physical Review Letters* **103**, 238102 (2009)
- Simmons T. J., S.-H. Lee, T.-J. Park, D. P. Hashim, P. M. Ajayan, **R. J. Linhardt**, “Antiseptic Single Wall Carbon Nanotube Bandages”, *Carbon* **47**, 1561-1564 (2009)
- Simmons, T. J., J. Bult, D. P. Hashim, **R. J. Linhardt**, P. M. Ajayan, “Non-Covalent Functionalization as an Alternative to Oxidative Acid Treatment of Single Wall Carbon Nanotubes”, *ACS Nano* **3**, 865-870 (2009)
- Suzuki, T., **Y. Lu**, W. Zhang, **J. S. Moore**, B. J. Marinas, “Performance Characterization of Nanofiltration Membranes Based on Rigid Star Amphiphiles”, *Environmental Science & Technology* **41**(17), 6246-6252 (2007)
- Torabi, S.-F., **Y. Lu**, “Small-Molecule Diagnostics Based on Functional DNA Nanotechnology: A Dipstick Test for Mercury”, *Faraday Discussions* **149**(1), 125-135 (2011)
- van Hijkoop, V. J., A. J. Dammers, K. Malek, **M.-O. Coppens**, “Water Diffusion Through a Membrane Protein Channel: A First Passage Time Approach”, *The Journal of Chemical Physics* **127**(8), 085101 (2007)
- Voulgarakis, N. K., **A. Redondo**, A. R. Bishop, K. Ø. Rasmussen, “Probing the Mechanical Unzipping of DNA”, *Physical Review Letters* **96**, 248101 (2006)
- Voulgarakis, N. K., **A. Redondo**, A. R. Bishop, K. Ø. Rasmussen, “Sequencing DNA by Dynamic Force Spectroscopy: Limitations and Prospects”, *Nano Letters* **6**, 1483-1486 (2006)
- Voulgarakis, N. K., **K. Ø. Rasmussen**, P. M. Welch, “Dendrimers as Gene Delivery Vectors: Cell Membrane Attachment”, *The Journal of Chemical Physics* **130**, 155101 (2009)
- Wang, Z., J.-H. Lee, **Y. Lu**, “Highly Sensitive “Turn-On” Fluorescent Sensor for Hg<sup>2+</sup> in Aqueous Solution Based on Structure-Switching DNA”, *Chemical Communications* (45), 6005-6007 (2008)

- Wei, H., **Y. Lu**, “Catalysis of Gold Nanoparticles within Lysozyme Single Crystals”, *Chemistry, An Asian Journal* **7**(4), 680-683 (2012)
- Wei, H., Z. Wang, L. Yang, S. Tian, C. Hou, **Y. Lu**, “Lysozyme-Stabilized Gold Fluorescent Cluster: Synthesis and Its Application in Hg<sup>2+</sup> Sensor”, *Analyst* **135**, 1406-1410 (2010)
- Wernette, D. P., C. Mead, P. W. Bohn, **Y. Lu**, “Surface Immobilization of Catalytic Beacons Based on Ratiometric Fluorescent DNAzyme Sensors - A Systematic Study”, *Langmuir* **23**, 9513-9521 (2007)
- Wernette, D. P., C. Swearingen, D. Cropek, **Y. Lu**, J. Sweedler, P. Bohn, “Incorporation of a DNAzyme into Au-Coated Nanocapillary Array Membranes with an Internal Standard for Pb(II) Sensing”, *Analyst* **131**, 41-47 (2006)
- Wernette, D. P., J. Liu, P. W. Bohn, **Y. Lu**, “Functional DNA-Based Nanoscale Materials and Devices for Sensing Trace Contaminants in Water”, *MRS Bulletin* **33**, 34-41 (2008)
- Zhuang, W., N. G. Sgourakis, Z. Li, **A. E. García**, S. Mukamel, “Discriminating Early Sage Ab42 Monomer Structures using Chirality-Induced 2DIR Spectroscopy in a Simulation Study”, *Proceedings of the National Academy of Sciences USA* **107**(36), 15687-15692 (2010)
- Wong, N. Y., C. Zhang, L. H. Tan, **Y. Lu**, “Site-Specific Attachment of Proteins Onto a 3D DNA Tetrahedron Through Backbone-Modified Phosphorothioate DNA”, *Small* **7**(10), 1427-1430 (2011)
- Xing, H., N. Y. Wong, Y. Xiang, **Y. Lu**, “DNA Aptamer Functionalized Nanomaterials for Intracellular Analysis, Cancer Cell Imaging and Drug Delivery”, *Current Opinion in Chemical Biology, Elsevier* **16**(3-4), 429-435 (2012)
- Xing, H., Z. Wang, Z. Xu, N. Y. Wong, Y. Xiang, G. L. Liu, **Y. Lu**, “DNA-Directed Assembly of Asymmetric Nanoclusters using Janus Nanoparticles”, *ACS Nano* **6**(1), 802-809 (2012)
- Yang, L., V. Gordon, A. Mishra, K. R. Purdy, A. Som, G. Tew, **G. C. L. Wong**, “Synthetic Antimicrobial Oligomers Induce Composition-Dependent Topological Transition in Membranes”, *Journal of American Society* **129**, 12141-12142 (2007)
- Yang, L., V. Gordon, D. Trinkle, M. Davis, C. deVries, A. Som, J. Cronan, G. Tew, **G. C. L. Wong**, “Mechanism of a Prototypical Synthetic Membrane-Active Antimicrobial: Efficient Hole Punching via Interactions Negative Curvature Lipids”, *Proceedings of the National Academy of Sciences USA* **105**, 20595-20600 (2008)
- Yang, S., J. N. Onuchic, **A. E. García**, H. Levine, “Folding Time Predictions from All-Atom Replica Simulations”, *Journal of Molecular Biology* **372**, 756-763 (2007)

### 14.1.3 Thrust 3

#### 14.1.3.1 Primary NSEC Support

- **Peters, L. S.**, “Grabbing Lightning: Building a Capability for Breakthrough Innovation”, G. C. O’Connor, A. Paulson, R. Leifer, Eds., Wiley, 364 (2008)
- **Peters, L. S.**, “The Continuing Economic Potential of Nanotechnology”, in *The Encyclopedia of Technology and Innovation Management*, V. Narayanan, G. C. O’Connor, Eds., 491-504 (2010)

- Wei, Z., L. Chen, **D. M. Thompson, L. Montoya**, “Effect of Size on In Vitro Cytotoxicity of Titania and Alumina Nanoparticles”, Accepted by the Journal of Experimental Nanoscience (TJEN-2010-0279) (2012) In Press
- Wei, Z., R. C. Rosario, **L. D. Montoya**, “Collection Efficiency of a Midget Impinger for Nanoparticles in the Range of 3-100 nm”, Atmospheric Environment **44**(6), 872-876 (2009)

#### **14.1.3.2 Partial NSEC Support**

- Behan, B. L., D. G. DeWitt, D. R. Bogdanowicz, A. N. Koppes, S. S. Bale, **D. M. Thompson**, “Single-Walled Carbon Nanotubes Alter Schwann Cell Behavior Differentially within 2D and 3D Environments”, Journal of Biomedical Materials Research **96A**(1), 46-57 (2011)
- Kelley, D., **L. S. Peters**, G. C. O’Connor, “Intra-Organizational Networking for Innovation-Based Corporate Entrepreneurship”, Journal of Business Venturing **24**, 221-235 (2009)
- Kelly, D. H. Neck, G. C. O’Connor, **L. S. Peters**, “Building an Organizational Capability for Radical Innovation: The Direct Managerial Role”, Journal of Engineering and Technology Management **28**(4), 249-267 (2011)
- Mehta, R. J., Y. Zhang, H. Zhu, D. S. Parker, M. Belley, D. J. Singh, R. Ramprasad, **T. Borca-Tasciuc, G. Ramanath**, “Seebeck and Figure of Merit Enhancement in Nanostructured Antimony Telluride by Antisite Defect Suppression Through Sulfur Doping”, Nano Letters **12**(9) 4523-4529 (2012)
- O’Brien, P. J., S. Shenogin, J. Liu, P. K. Chow, D. Laurencin, P. H. Mutin, M. Yamaguchi, P. K. Keblinski, **G. Ramanath**, “Bonding-Induced Thermal Conductance Enhancement at Inorganic Heterointerfaces using Nanomolecular Monolayers”, Nature Materials (2012) In Press
- **Peters, L. S.**, “The Future of Innovation for Corporate Renewal: Building Breakthrough Capabilities”, in The Future of Innovation, B. von Stamm, A. Trifilova, Eds., Gower, UK, ISBN: 978-0-566-09213-8 (2009)

## **14.2 Patents**

### **14.2.1 Granted**

- Ajayan, P., E. Lahiff, P. Stryjek, **C. Y. Ryu**, S. Curran, “Embedded Nanotube Array Sensor and Method of Making a Nanotube Polymer Composite”, U.S. Patent No. 7,673,521 (Issue Date: March 9, 2010)
- Bhimaraj, P., G. C. Toney, **L. S. Schadler, R. W. Siegel**, “Method for Producing Polyester Nanocomposites”, Russian Patent No. 2458080 (Issue Date: August 10, 2012); Japanese Patent No. 50737 (Issue Date: August 31, 2012)
- **Braun, P. V.**, S. H. Cho, S. R. White, N. R. Sottos, M. Andersson, “Self-Healing Polymers”, U.S. Patent No. 7,612,152 (Issue Date: November 3, 2009)
- Cho, J., **E. Fred Schubert**, X. Yan, “Liquid Crystal Display with Refractive Index Matched Electrodes”, U.S. Patent No. 8,164,727 (Issue Date: 24 April 2012)
- Cho, J., M. F. Schubert, **E. F. Schubert**, J. K. Kim, Cheolsoo Sone, “Light Emitting Diodes and Display Apparatuses”, U.S. Patent No. 7,560,746, (Issue Date: July 14, 2009)

- Debapriya M., J. Liu, **Y. Lu**, “Lateral Flow Devices”, U.S. Patent Number 7,799,554 (Issue Date: September 21, 2010)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Resistivity and Permittivity”, Chinese Patent No. 200480030818.2 (Issue Date: April 26, 2010)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Electrical Properties”, Indian Patent No. IN 242852 (Issue Date: September 16, 2010)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Electrical Properties”, Japanese Patent No. 4772676 (Issue Date: September 14, 2011)
- **Lewis, J. A.**, R. Rao, Q. Li, “Biphasic Inks”, U.S. Patent No. 8,187,500 (Issue Date: May 29, 2012)
- **Lu, Y.**, J. Liu, “Nucleic Acid Biosensors”, U.S. Patent No. 7,612,185 (Issue Date: November 3, 2009)
- Mårtensson, E., J. I. Hong, **L. S. Schadler, R. W. Siegel**, L. Palmqvist, A. Gustafsson, C. Önnby, “Field Grading Material”, Swedish Patent No. WO9135; SE0203121-9 (Issue Date: March 1, 2005); U.S. Patent No. 7,868,079 (Issue Date: January 11, 2011)
- Sarkar, J., C. J. Brooks, A. Bose, V. John, **G. Ramanath**, “Highly Ordered Titania and Platinum/Titania Nanocomposites for Advanced Catalytic Applications”, U.S. Patent No. 8003567B2 (Issue Date: August 23, 2011)
- **Siegel, R. W.**, J. M. Nugent, P. M. Ajayan, “Carbon Nanotrees Formed by Flash CVD Method”, U.S. Patent No. 7,504,152 (Issue Date: March 17, 2009)

#### 14.2.2 Applications

- Ajayan, P. M., **R. J. Linhardt**, O. Nalamasu, A. Kumar, S. Murugesan, S. M. Manikoth, V. L. Pushparaj, “Energy Storage Devices and Composite Articles Associated with the Same”, U.S. Patent Application 20080212261 (September 2008)
- Bhimaraj, P., G. C. Toney, **L. S. Schadler, R. W. Siegel**, “Method for Producing Polyester Nanocomposites”, U.S. Patent Application 20080113189 (May 2008)
- **Braun, P. V.**, H. G. Zhang, X. Yu, “Porous Battery Electrode for a Rechargeable Battery and Method of making Electrode”, U.S. Patent Application 20100068623 (March 2010)
- **Braun, P. V.**, J. Coleman, V. Elarde, E. Nelson, V. Verma, “Porous Device for Optical and Electronic Applications and Method of Fabricating the Porous Device”, U.S. Patent Application 20100065889 (March 2010)
- Dell’Acqua-Bellavitis, L. M., J. D. Ballard, R. Bizios, **R. W. Siegel**, “Nanoscale Probes for Electrophysiological Applications”, U.S. Patent Application 20070187840 (August 2007)
- **Dordick, J. S., R. S. Kane**, P. Asuri, P., S. S. Karajanagi, A. A. Vertegel, **R. W. Siegel**, “Enhanced Stability of Proteins Immobilized on Nanoparticles”, U.S. Patent Application, (January 2009)
- **Linhardt, R. J., J. S. Dordick**, J. G. Martin, “An Artificial Organelle on a Digital Microfluidic Chip Used to Redesign the Biological Activities of Heparan Sulfate”, U.S. Patent Application 20110070440 (March 2011)



- **Linhardt, R. J., J. S. Dordick**, T. J. Simmons, M. Miyauchi, S.-H. Lee, “Synthetic Wood Composite”, U.S. Patent Application 20110190402 (August 2011)
- **Linhardt, R. J.**, S. Murugesan, T. Park, “Blood Compatible Nanomaterials and Methods of Making and using the Same”, U.S. Patent Application 20100239673 (September 2010)
- **Lu, Y.**, J. Liu, “Aptamer- and Nucleic Acid Enzyme-Based Systems for Simultaneous Detection of Multiple Analytes”, U.S. Patent Application 20090197261 (August 2009)
- **Lu, Y.**, J. Liu, “Nucleic Acid Based Fluorescent Sensor for Copper Detection”, U.S. Patent Application 20110123982 (May 2011)
- **Lu, Y.**, J. Liu, “Nucleic Acid Based Fluorescent Sensor for Mercury Detection”, U.S. Patent Application 20120149119 (June 2012)
- **Lu, Y., G. C. L. Wong**, M. Yigit, A. Mishra, “Amphiphilic Substances and Functionalized Lipid Vesicles Including the Same”, U.S. Patent Application 20100166842 (July 2010)
- **Lu, Y.**, M. V. Yigit, D. Mazumdar, “MRI Contrast Agents and High-Throughput Screening by MRI”, U.S. Patent Application 20090098550 (April 2009)
- **Lu, Y.**, Z. Wang, J.-H. Lee, “Fluorescent Sensor for Mercury”, U.S. Patent Application 20100151579 (June 2010)
- **Lu, Y.**, Z. Wang, J.-H. Lee. “Label-Free Colorimetric Detection”, U.S. Patent Application 20100105039 (April 2010)
- **Lu, Y.**, Z. Wang, J. Zhang, P. A. Kenis, “Nucleic Acid-Mediated Shape Control of Nanoparticles for Biomedical Use”, U.S. Patent Application 20120107242 (May 2012)
- Poxson, D. J., F. W. Mont, **E. F. Schubert, R. W. Siegel**, “Tunable Nanoporous Films on Polymer Substrates, and Methods for their Manufacture”, U.S. Patent Application, (August 2011)
- **Ramanath, G., T. Borca-Tasciuc**, R. Mehta, “Doped Pnictogen Chalcogenide Nanoplates, Methods of Making, and Assemblies and Films Thereof”, U.S. Patent Application 20120111385 (May 2012)
- Shang, W., **J. S. Dordick**, R. E. Palazzo, **R. W. Siegel**, “Patterning of Centrosomes and Centrosome Fragments as Templates for Directed Growth of Microtubules”, U.S. Patent Application 20060263832 (November 2006)
- **Siegel, R. W., L. S. Schadler**, D. Ma, J. Hong, E. Martensson, C. Onneby, “Nanocomposites with Controlled Electrical Properties”, U.S. Patent Application 20070199729 (August 2007)
- Tao, P., **L. S. Schadler, R. W. Siegel, Y. Li, B. C. Benicewicz**, “Nanofilled Polymeric Nanocomposites with Tunable Index of Refraction”, U.S. Patent Application, (January 2011) Pending
- Wang, Z., **L. S. Schadler**, H. Hillborg, S. Zhao, “High Dielectric Constant Ceramic Filler Particles, Composites and Methods for Making Same”, International Patent Application, PCT/US11/43178, (July 2011)
- Wang, Z., **L. S. Schadler**, H. Hillborg, S. Zhao, “Nonlinear Resistivity Polymer Composites Filled with Graphene Oxide”, US Provisional Patent (September 2011)
- Zheng, J., **R. Ozisik, R. W. Siegel**, “Block Copolymer and Nanofiller Composites”, U.S. Patent Application 20050239939 (October 2005)

### 14.2.3 Licensed

- Ajayan, P. M., **R. J. Linhardt**, O. Nalamasu, A. Kumar, S. Murugesan, S. M. Manikoth, V. L. Pushparaj, “Energy Storage Devices and Composite Articles Associated with the Same”, U.S. Patent Application 20080212261 (September 2008), (Licensed to Paper Battery Co)
- Cho, J., M. F. Schubert, **E. F. Schubert**, J. K. Kim, Cheolsoo Sone, “Light Emitting Diodes and Display Apparatuses”, U.S. Patent No. 7,560,746, (Issue Date: July 14, 2009), (Licensed to Samsung)
- **Dordick, J. S., R. S. Kane**, P. Asuri, P., S. S. Karajanagi, A. A. Vertegel, **R. W. Siegel**, “Enhanced Stability of Proteins Immobilized on Nanoparticles”, U.S. Patent Application, (January 2009), (Licensed to Nano Surfaces)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Resistivity and Permittivity”, Chinese Patent No. 200480030818.2 (Issue Date: April 26, 2010), (Licensed to ABB)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Electrical Properties”, Indian Patent No. IN 242852 (Issue Date: September 16, 2010), (Licensed to ABB)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Electrical Properties”, U.S. Patent No. 7,923,500 (Issue Date: April 12, 2011) , (Licensed to ABB)
- Hong, J.-I., D. Ma, **L. S. Schadler, R. W. Siegel**, E. Mårtensson, C. Önnby, “Nanocomposites with Controlled Electrical Properties”, Japanese Patent No. 4772676 (Issue Date: September 14, 2011), (Licensed to ABB)
- **Linhardt, R. J., J. S. Dordick**, T. J. Simmons, M. Miyauchi, S.-H. Lee, “Synthetic Wood Composite”, U.S. Patent Application 20110190402 (August 2011), (Licensed to Chisso)
- **Linhardt, R. J., J. S. Dordick**, J. G. Martin, “An Artificial Organelle on a Digital Microfluidic Chip Used to Redesign the Biological Activities of Heparan Sulfate, U.S. Patent Application 20110070440 (March 2011), (Licensed to DNANO)
- **Ramanath, G., T. Borca-Tasciuc**, R. Mehta, “Doped Pnictogen Chalcogenide Nanoplates, Methods of Making, and Assemblies and Films Thereof”, U.S. Patent Application 20120111385 (May 2012), (Licensed to ThermoAura)
- Wang, Z., **L. S. Schadler**, H. Hillborg, S. Zhao, “High Dielectric Constant Ceramic Filler Particles, Composites and Methods for Making Same”, International Patent Application, PCT/US11/43178, (July 2011), (Licensed to ABB)
- Wang, Z., **L. S. Schadler**, H. Hillborg, S. Zhao, “Nonlinear Resistivity Polymer Composites Filled with Graphene Oxide”, US Provisional Patent (September 2011), (Licensed to ABB)

