

DR. VIRGINIA A. DAVIS
Associate Professor
Department of Chemical Engineering
Auburn University, AL 36849

EDUCATION:

- Ph.D.** Rice University, Department of Chemical and Biomolecular Engineering
Center for Nanoscale Science and Technology (2006)
Advisors: Matteo Pasquali and Richard E. Smalley
Dissertation: Rheology and Phase Behavior of Single Walled Carbon Nanotubes (SWNTs) in Superacids with Application to Fiber Spinning
- M.S.E.** Tulane University, Department of Chemical Engineering (1993)
Advisor: Victor Law
Thesis: Mineral Accretion in the Louisiana Wetlands
- B.S.E.** Tulane University, Department of Chemical Engineering (1990)

EXPERIENCE SUMMARY:

- Aug. 2010 – date** **Auburn University**
Associate Professor, Department of Chemical Engineering
- Aug. 2005 – 2010** **Auburn University**
Assistant Professor, Department of Chemical Engineering
- May 2001 – July 2005** **Rice University**
Department of Chemical Engineering
Center for Nanoscale Science and Nanotechnology
Graduate Research Assistant and Teaching Assistant
- May 1990 – May 2001** **Shell Chemicals / M & G Polymers**
Polyester Business: Global Marketing Manager, Engineer R&D,
Polypropylene Business: Technical Support to Operations
Houston, Texas; Brussels, Belgium; Akron, Ohio; Norco, LA
- Sept. 1987 – Aug. 1993** **Tulane University**
Graduate Researcher (Part-Time), Undergraduate Researcher
New Orleans, LA

RECENT HONORS AND AWARDS

- 2011 National Academy of Engineering Frontiers of Engineering Symposium
- 2011 Mark A. Spencer Creative Mentorship Award
- 2010 Presidential Early Career Award for Scientists and Engineers
- 2010 South Texas Section of AIChE Best Applied Paper Award
- 2009 Junior Faculty Alumni Engineering Council Research Award for Excellence
- 2009 NSF Faculty Early Career Development (CAREER) Award

PRIMARY RESEARCH INTERESTS:

- Carbon Nanotubes, Silver Nanowires, Cellulose Nanocrystals
- Polymer Nanocomposites (microbiological, thermoset, thermoplastic)
- Structure-Processing-Property Relationships
- Macroscale assembly of Nanocylinder Building Blocks
- Lyotropic Liquid Crystals
- Rheology of Complex Fluids

TEACHING SUMMARY:

- ENGR 1110 Introduction to Engineering
- CHEN 5970/6970/6976 Macroscale Assembly and Applications of Nanomaterials
- CHEN 3370 Phase and Reaction Equilibrium
- CHEN 4980 Undergraduate Research
- Various industrial training seminars on polyethylene terephthalate (PET), polyethylene naphthalate (PEN), polymer processing, and packaging

RESEARCH DETAILS:

Auburn University

2005 – date

- Developed research program on the bottom-up assembly of fluid dispersions of nanocylinder building blocks into coatings, films, and fibers.
- Discovered that low shear aggregation in an unsaturated polyester resin was a very sensitive probe of carbon nanotube surface chemistry.
- Demonstrated the connections between rheological behavior, morphological characterization and thermal properties for SWNT-polypropylene nanocomposites.
- Discovered the first lyotropic SWNT cholesteric phase.
- Proved that high aspect ratio inorganic nanowires up to 10 microns in length were Brownian.
- Collaborated with other research groups at Auburn and other universities on nanocylinder dispersion and bottom-up assembly, antimicrobial surfaces, sensors, and biofuel cells.
- Mentored a total of 2 post-doctoral researchers, 5 PhD students, 1 MS student, and 13 undergraduates. Advisees have received multiple awards for teaching and research.

Grants and Contracts Awarded

1. "Alabama Nano- Bio- Math Science Partnership," Lead Institution Tuskegee University, Auburn Lead: Curtis Shannon, Senior Investigators: Christopher Easley, Virginia A. Davis, National Science Foundation.

2. "Collaborative Research: Processing and Properties of Cellulose Films for MEMS Applications," PI: Virginia A. Davis, co-PI: William R. Ashurst. Clemson PI: Christopher Kitchens, National Science Foundation, 9/1/2011 – 8/31/2014.
3. "NERAM: Dispersion of Carbon Nanotubes for Incorporation into Composite Materials," AU PI: Dr. V. A. Davis, Funding Agency US Army Space Missile Defense Command 2nd Year (Optional Period 1), Subcontract from Lamar University, 4/7/11 – 4/6/12.
4. "Rheology of Lyotropic Nematogenic Nanorod Dispersions," Sole PI: Dr. V. A. Davis, National Science Foundation, 9/1/09 – 8/31/11.
5. PECASE: "CAREER: Microstructure and Processing of Cylindrical Nanomaterial Dispersions," Sole PI: Dr. V. A. Davis, National Science Foundation, 3/1/09 – 2/28/14.
6. Gift from Triad Lubrication for Dr. V. A. Davis Nanotechnology Research, 8/2009.
7. "Research Infrastructure Improvement (RII): Enhancing Alabama's Research Capacity in Nano/Bio Science and Sensors," PI: D. Ila, Co-PI's: K. Boykin, M. Hosur, F. Bartol, C. Lawson. Senior Investigators Include Dr. V. A. Davis, National Science Foundation, 9/1/2008 – 8/31/2013.
8. "NERAM: Dispersion of Carbon Nanotubes for Incorporation into Composite Materials," AU PI: Dr. V. A. Davis, Funding Agency US Army Space Missile Defense Command 1st Year (Basic Period), Subcontract from Lamar University, 3/30/10 – 9/30/11.
9. "Research Experiences for Undergraduates Supplement for Nanoscale Exploratory Research," Sole PI: Dr. V. A. Davis, National Science Foundation, 9/1/2007 - 6/30/09.
10. "Nanoscale Exploratory Research (NER): Coupled Self-Assembly and Flow Alignment of Inorganic Nanorods," Sole PI: Dr. V. A. Davis, National Science Foundation, 07/01/2007 – 6/30/2009.
11. "Dispersion of Carbon Nanotubes for Incorporation into Composite Materials," PI: Dr. V. A. Davis, US Army Space Missile Defense Command, 4/1/2007 – 3/31/2008.
12. "Auburn Chemical Engineering GAANN Program," US Department of Education, PI: R. P. Chambers, Co-PIs: W. R. Ashurst, M. E. Byrne, V. A. Davis, S.R. Duke, M.R. Eden, 8/1/06 – 7/31/10.
13. "Auburn Undergraduate Research Fellowship" for stipend and supplies for Bennett D. Marshall, 5/2006 – 8/2008 (including renewal).
14. "Research Experiences for Undergraduates (REU) Site for Micro/Nano-Structured Materials, Therapeutics and Devices," National Science Foundation, PI: S. Duke, co-PI M. E. Byrne, Senior Investigators included Dr. V. A. Davis, 4/01/06 – 3/31/09.
15. Gift from OPTEM Polymers for Dr. V. A. Davis Nanotechnology Research, 8/2009.
16. "Dispersion of Carbon Nanotubes for Incorporation into Composite Materials," Space Missile Defense Command through Center for Microfibrous Materials, 3/2006-3/2007.
17. "Incorporation of Carbon Nanotubes at Various Length Scales," Center for Microfibrous Materials. PI: B. T. Tatarchuk, Senior Investigators included Dr. V. A. Davis, Prime Contract was from Department of the Army for High Performance carriers and Logistical Fuel Processing, 3/1/2006-2/28/2007.

Graduate Students Advised

1. Vinod Radhakrishnan, Ph.D., "Structure-Processing-Property Interrelationships for Polypropylene Nanocomposites Containing Carbon Nanofibers or Carbon Nanotubes," December, 2010. *1st Place Engineering Oral Presentation Graduate Research Forum 2008*. Now employed at Anton-Paar.

Matthew Kayatin, Ph.D., "Rheology, Structure and Stability of Single-Walled Carbon Nanotube Unsaturated Polyester Resin Dispersions." MS completed December 2008. *McLeod Outstanding Chemical Engineering Graduate Student Teaching Award 2006, 2007. Outstanding MS Student 2008, 3rd Place Engineering Oral Presentation Graduate Research Forum 2009.*

2. Ao Geyou, Ph.D., "Dispersions of Nanocylinders in Biopolymers."
3. Teng (Daisy) Xu, Ph.D., "Inorganic Nanocylinder Liquid Crystals."
4. Daniel Horn, Ph.D. "Phase Behavior and Solution Spinning of Single-Walled Carbon Nanotube (SWNT) – Lysozyme (LSZ) Fibers."
5. Shanthi Murali, MS, "Coupled Self-Assembly and Flow Alignment of Inorganic Nanorods," July 2008. Ms. Murali is now a Ph.D. Candidate in Materials Engineering (Ruoff Group) at the University of Texas at Austin and has published in *Science*.

Undergraduate Students Advised

1. Patricia Murdock, Bucky Papers for Composites. Supported by DOD contract. Fall 2011 to date.
2. Kathryn Tracy, Dispersion of SWNTs in Aqueous Lysozyme, Supported by NSF REU Site, Summer 2011. Currently an undergraduate at Florida International University.
3. Jennifer Perkins, Synthesis and Assembly of Silver Nanowires. Supported by NSF REU CAREER supplement, Spring 2010 to Spring 2011. Supported by NSF REU CAREER Supplement. Currently employed in industry.
4. Ange (Gloria) Nyankima, Bucky Papers for High Strength Composites and SWNT Biomolecule Dispersions. Supported by DOD contract and NSF REU CAREER supplement, Summer 2010 to date. Currently Auburn junior.
5. Phillip Higginbotham, Bucky Papers for High Strength Composites and SWNT Biomolecule Dispersions. Supported by DOD contract and NSF REU supplement NSF REU CAREER supplement, Bucky Papers for High Strength Composites, Summer 2010 to date. Currently Auburn senior.
6. Drew Ainscough, Scale-up of Polypropylene-Carbon Nanotube Composites. Research for credit hours. Summer 2010. Currently employed in industry.
7. Caitlyn Coats, Coagulation in SWNT-Lysozyme and SWNT-DNA fiber spinning, Supported by NSF REU CAREER supplement. Spring 2010. Currently Auburn senior.
8. Kristine Pizarro, Silver Nanorod Synthesis, Silicon Nitride Dispersion, TEM and AFM. Supported by NSF REU Site Summer 2007 and NSF REU Supplement. Spring 2008, Fall 2008, Spring 2009. *1st Place Award from Sigma Xi in AU 2008, 2009 Undergraduate Research Forum*. Currently Auburn senior.
9. Kyle Taylor, Silicon Nitride Dispersion, SWNT-Biopolymer Assembly, and TEM. Supported by NSF REU Supplement. Fall 2007, Spring 2008, Fall 2008, Spring 2008 *3rd*

Place Award in AU 2009 Undergraduate Research Forum. Currently employed by Exxon Mobil.

10. Ben Marshall, Dispersion, Alignment, Rotational and Translational Diffusivities of Germanium Nanowires, *Advanced Optical Microscopy (images featured on Electrical Engineering book cover and Nikon Product Brochure)*. Supported by AU Undergraduate Research Program and NSF-REU Supplement, Spring 2006 to Summer 2008. Now a PhD Student in Rice's Chemical Engineering Department (Chapman Group).
11. Lauren Lamere, Effect of Microwave Synthesis Conditions on Silver Nanoparticle and Nanorod Growth. Supported by NSF REU Site, Summer 2008. Now a senior in chemical engineering at UMass.
12. Natalie Wagner, Bucky Paper Fabrication, research for credit hours Fall 2006 – Spring 2008. Now an engineer with Chevron Texaco.
13. Brian Downs, Extrusion of PP-SWNT Composites, research for credit hours Fall 2006 – Spring 2008. Completed MS at MIT Practice School.
14. Richard Bates, Extrusion of SWNT-PP nanocomposites, research for its own reward, Summer 2006. Currently AU PhD student.
15. Michael Rasche, Dispersion of Ge Nanowires, Supported by NSF REU Site. Summer 2006. Currently PhD Student at UIUC.

Post-Doctoral Researchers Advised

1. Esteban Urena-Benavides, Carbon Nanotube and Cellulose Nanocrystal Research, June 2011 to date.
2. Dr. Dhriti Nepal, November 2006 – July 2008. Dr. Nepal moved from AU to Dr. Satish Kumar's group at the Georgia Institute of Technology and is now employed at the Wright Patterson Air Force Laboratory working for Dr. Richard Vaia, a leader in nanomaterials research.

Rice University

- Proved that single-walled carbon nanotubes (SWNTs) in superacids form a nematic liquid crystal and that the phase transitions are determined by the protonating power of the superacid.
- Determined that SWNTs are dilute Brownian rods below 70 ppm vol. and used the viscosity data to calculate the average aspect ratio of the SWNTs using the Batchelor Modification to the Kirkwood-Auer Equation.
- Utilized the lyotropic nematogenic nature of the dispersion to produce macroscopic fibers comprised solely of SWNTs. This work was in conjunction with an interdisciplinary team of chemical engineers, physicists and chemists.

Shell Chemical Company / M&G Polymers

- Procured and managed multi-million dollar research budget for the development of a resin for monolayer polyester beer bottles. The result was the commercialization of a new polyester resin in over nine countries.

- Received highest possible performance rating and bonus three consecutive years based on research efforts and a Special Recognition Award for increasing R&D Center's material testing capabilities.
- Researched relationships between polymer chemistry, processing and thermal stability of bottles made from polyethylene terephthalate (PET), polyethylene naphthalate (PEN) and PET/PEN copolymers and blends. Developed first polyester beer bottle capable of withstanding tunnel pasteurization.
- Worked with Eli Lilly Company to convert a glass pharmaceutical bottle to polyethylene naphthalate (PEN). Determined oxygen, light and water barrier, physiochemical interaction and structural requirements. Identified the required resin and processing conditions. Remained with the project from the initial meeting through commercialization.
- Investigated the compatibility of PET/PEN copolymers and blends with the existing PET recycling stream. Submitted findings to the FDA. My research protocol became the basis for the Association for Post-Consumer Plastic Recyclers "Design for Recycling Guidelines."
- Researched structure-processing-property relationships governing the CO₂ barrier of carbonated soft drink bottles in conjunction with a consortium led by Coca-Cola and Shell.
- Determined alkalinity of rinse water in filling plant was the primary contributor to environmental stress cracking of PET bottles after examining the interrelationships between stress crack resistance, polymer chemistry, polymer processing, bottle design and filling plant operation.
- Led Polypropylene Pellet Quality Team. Used statistically designed experiments to elucidate the relationships between melt flow index, die design, processing conditions and pellet quality. Results reduced off specification product and enabled the production of a 100 MFI product far exceeding the previous limitations. Received a letter of commendation and a Champions of Quality nomination for this work.

PUBLICATIONS

1. Narvaez Villarrubia, C. W.; Rincoin, R. A.; Radhakrishnan, V. K.; Davis, V. A.; Atanassov, P., "Methylene Green Electrodeposited on SWNT-Based Bucky-Papers for NADH and L-Malate Oxidation," ACS Applied Materials & Interfaces, 3, 2402-2409. (2011).
2. G. Ao, M. Aono, D. Nepal, V. A. Davis, "Cholesteric and Nematic Liquid Crystalline Phase Behavior of Double-Stranded DNA Stabilized Single-Walled Carbon Nanotube Dispersions," ACS Nano, 5, 1450-1458 (2011).
3. V. A. Davis, "Liquid Crystalline Assembly of Nanocylinders," Journal of Materials Research, 26, 140-153 (2011). [invited for Focus Issue on Self-Assembly and Directed Assembly of Advanced Materials]
4. V. K. Radhakrishnan, E. W. Davis, V. A. Davis, "Thermal Properties of Polypropylene Nanocomposites: Effects of Carbon Nanomaterial Type and Processing," Polymer Engineering and Science, 51, 3, 460-473, (2011).

5. S. Mantha, V. A. Pedrosa, E. Olsen, V. A. Davis, A. L. Simonian, "A Renewable Nanocomposite Layer-by-Layer Assembled Catalytic Interfaces for Biosensing Applications," *Langmuir*, .26, 19114 – 19119 (2010).
6. S. Murali, T. Xu, B. D. Marshall, M. J. Kayatin, K. Pizarro, V. K. Radhakrishnan, D. Nepal, V. A. Davis, "Lyotropic Liquid Crystalline Self-Assembly in Dispersions of Silver Nanowires and Nanoparticles," *Langmuir*, 26, 11176–11183 (2010).
7. V. K. Radhakrishnan, E. W. Davis, V. A. Davis, "Influence of Initial Mixing Methods on Melt Extruded Single-Walled Carbon Nanotube-Polypropylene Nanocomposites," *Polymer Engineering and Science*, 50, 1831 – 1842, (2010).
8. E. W. Davis, V. K. Radhakrishnan, V. A. Davis, "Scaleable Route to Well Dispersed Polyolefin / Carbon Nanotube Composites," *SPE Plastics Research Online*, 10.1002/spepro.0022910.
9. V. A. Pedrosa, S. Paliwal, S. Balasubramanian, D. Nepal, V. A. Davis, J. Wild, E. Ramankulov, A. Simonian, "Enzyme Modified Carbon Nanotubes for Amperometric Detection of Organophosphate Pesticides," *Colloids and Surfaces B: Biointerfaces*, 77, 69-74, (2010).
10. V. A. Davis, A. N. G. Parra-Vasquez, M. J. Green, P. K. Rai, N. Behabtu, V. Prieto, R. D. Booker, J. Schmidt, E. Kesselman, W. Zhou, H. Fan, W. W. Adams, R. H. Hauge, J. E. Fischer, Y. Cohen, Y. Talmon, R. E. Smalley, M. Pasquali, "True Solutions of Single Walled Carbon Nanotubes for Assembly into Macroscopic Material," *Nature Nanotechnology*, 4, 830-834 (2009).
11. M. J. Kayatin and V. A. Davis, "Viscoelasticity and Shear Stability of Single-Walled Carbon Nanotube/Unsaturated Polyester Resin Dispersions." *Macromolecules*, 42(17) 6624-6632 (2009).
12. V. A. Pedrosa, T. Gnanaprakasa, S. Balasubramanian, E. V. Olsen, V. A. Davis, A. L. Simonian, "Electrochemical properties of interface formed by interlaced layers of DNA- and lysozyme-coated single-walled carbon nanotubes." *Electrochemistry Communications*, 11 (7), 1401-1404 (2009).
13. B. D. Marshall, V. A. Davis, D. C. Lee, B. A. Korgel, "Rotational and translational diffusivities of germanium nanowires." *Rheologica Acta*, 48 (5), 589-596 (2009).
14. D. Nepal, S. Balasubramanian, A. Simonian, and V. A. Davis, "Mechanically Strong Antibacterial Coating: Single-Walled Carbon Nanotubes Armored with Biopolymers." *Nano Letters*, 8, 1896-1901 (2008).
15. A. N. G. Parra-Vasquez, I. Stepanek, I.; V. A Davis, V. C. Moore; E.H. Haroz, J. Shaver, R.H. Hauge, R. E. Smalley, and M. Pasquali, "Simple Length Determination of Single-Walled Carbon Nanotubes by Viscosity Measurements in Dilute Suspensions." *Macromolecules*, 40 (11), 4043-4047 (2007).
16. P. K. Rai, R. A. Pinnick, A. N. G. Parra-Vasquez, V. A. Davis, H. K. Schmidt, R. H. Hauge, R. E. Smalley and M. Pasquali, "Isotropic-Nematic Phase Transition of Single-Walled Carbon Nanotubes in Strong Acids." *Journal of the American Chemical Society*, 128, 591-595 (2006).
17. W. Zhou, J. E. Fischer, P. A. Heiney, H. Fan, V. A. Davis, M. Pasquali and R. E. Smalley "Single-Walled Carbon Nanotubes in Superacid: X-ray and Calorimetric Evidence for Partly Ordered H₂SO₄." *Physical Review B*, 72(4), 045440 (2005).

18. V. A. Davis and M. Pasquali, "Macroscopic Fibers of Single-Walled Carbon Nanotubes." *Nanoengineering of Structural Materials*, Eds. M. Schulz, A. Kelkar, and M. Sundaresan, CRC Press (2005). [invited]
19. L. M. Ericson, H. Fan, H. Q. Peng, V. A. Davis, W. Zhou, J. Sulpizio, Y. H. Wang, R. Booker, J. Vavro, C. Guthy, A. N. G. Parra-Vasquez, M. J. Kim, S. Ramesh, R. K. Saini, C. Kittrell, G. Lavin, H. Schmidt, W. W. Adams, W. E. Billups, M. Pasquali, W. F. Hwang, R. H. Hauge, J. E. Fischer and R. E. Smalley "Macroscopic, Neat, Single-Walled Carbon Nanotube Fibers." *Science*, 305(5689), 1447-1450 (2004).
20. S. Ramesh, L. M. Ericson, V. A. Davis, R. K. Saini, C. Kittrell, M. Pasquali, W. E. Billups, W. W. Adams, R. H. Hauge, and R. E. Smalley, "Dissolution of Pristine Single Walled Carbon Nanotubes in Superacids by Direct Protonation." *Journal of Physical Chemistry B*, 108, 8794-8798 (2004).
21. V. A. Davis, L. M. Ericson, A. Nicholas G. Parra-Vasquez, H. Fan, Y. Wang, V. Prieto, J. A. Longoria, S. Ramesh, R. K. Saini, C. Kittrell, W. E. Billups, W. W. Adams, R. H. Hauge, R. E. Smalley, and M. Pasquali, "Phase Behavior and Rheology of SWNTs in Superacids." *Macromolecules*, 37, 154–160 (2004) [issue cover].
22. W. Zhou, J. Vavro, C. Guthy, K. I. Winey, J. E. Fischer, L. M. Ericson, S. Ramesh, R. Saini, V. A. Davis, C. Kittrell, M. Pasquali, R. H. Hauge, and R. E. Smalley, "Single Wall Carbon Nanotube Fibers Extruded From Strong Acid Suspensions: Preferred Orientation And Electrical Resistivity." *Journal of Applied Physics*, 95, 649–655 (2004).
23. J. Vavro, M. C. Llaguno, J. E. Fischer, S. Ramesh, R. K. Saini, L. M. Ericson, V. A. Davis, R. H. Hauge, M. Pasquali, and R. E. Smalley, "Thermoelectric Power of p-Doped Single-Wall Carbon Nanotubes and the Role of Phonon Drag." *Physical Review Letters*, 90, 065503 (2003).

INVITED SEMINARS AND LECTURES

1. Gordon Conference on Microbial Adhesion and Signal Transduction, Newport, RI, "Nanoengineering of Functional Surfaces," (July 2011)
2. Jules Collins Museum of Art, Science Café, "The History and Future of Nanotechnology in Art," (March 2011)
3. NSF CMMI CAREER Workshop, Atlanta, GA. "Perspectives on a Successful CAREER Proposal," One of 2 CAREER award winner speakers at the annual workshop. (March 2010)
4. Department of Chemistry, Auburn University, AL, "Macroscale Assembly of Nanocylinders: New Materials Meet a 120-Year Old Field," (March 2010).
5. Auburn University Board of Trustees Meeting, Auburn University, AL, "Nanotechnology Research," (November 2009).
6. Auburn-Opelika Rotary Club, Auburn, AL, "Nanotechnology," (February 2010).
7. Centre National de la Recherche Scientifique (CNRS) - Centre de Recherche Paul Pascal (CRPP), Bordeaux, France "The Effects of Dispersion Methodology on the Rheology and Liquid Crystallinity Of SWNT- DNA Dispersions," (October 2009).
8. Department of Chemical Engineering, Vanderbilt University, TN, "Macroscale Assembly and Applications of Nanocylinders," (March 2009).

9. Polymer and Fiber Engineering Department, Auburn University, AL, "Macroscale Assembly and Applications of Nanocylinders," (October 2008).
10. 3M, Minneapolis, MN, "Robust Antimicrobial Films," (March 2008).
11. American Composite Manufacturers Association Conference, Birmingham, AL, "Nanocomposites: Opportunities and Challenges," (March 2008).
12. Materials Engineering Department, Auburn University, AL, "Macroscale Assembly and Applications of Nanomaterials," (January 2008).
13. Department of Materials Engineering, University of Alabama at Birmingham, Birmingham, AL, "Macroscale Systems of SWNTs and Other Anisotropic Nanomaterials: Challenge and Opportunities," (March 2007).
14. Department of Chemical Engineering, Tennessee Technological University, "Macroscale Systems of SWNTs and Other Anisotropic Nanomaterials: Challenges and Opportunities," (March 2007).
15. Materials and Manufacturing Directorate, Wright Patterson Air Force Base, OH, "Promises & Challenges: Macroscopic Structures from SWNTs and Other Anisotropic Nanomaterials," (April 2006).
16. Chemical and Materials Engineering Departmental Seminar, University of Cincinnati, Cincinnati, OH, "Promises & Challenges: Macroscopic Structures from SWNTs and Other Anisotropic Nanomaterials," (April 2006).
17. Ethics of the Nanoscale Group, Auburn University, AL, "SWNT Presentation for Ethics of the Nanoscale," (March 2006).
18. Mechanical Engineering Department, Auburn University, Auburn, AL, "Single-Walled Carbon Nanotubes (SWNTs): From Nanomaterials to Macroscopic Applications," (February 2006).
19. Center for Biological and Environmental Nanotechnology (CBEN), Rice University, TX, Graduate Student Seminar, "Phase Behavior and Rheology of Single-Walled Carbon Nanotubes in Superacids with Application to Fiber Spinning," (August 2004).
20. Department of Polymer, Textile and Fiber Engineering, Georgia Institute of Technology, GA, "Phase Behavior, Rheology and Fiber Spinning of Single-Walled Carbon Nanotubes (SWNTs) in Superacids," (April 2004).

SELECTED PRESENTATIONS

(Speaker in Bold, Davis Advisees Indicated by *)

1. **M. J. Kayatin*** and V. A. Davis. "Reactivity of CoMoCAT[®] Single-walled Carbon Nanotubes Under Bingel Conditions and their Dispersibility in Unsaturated Polyester Resin," *ACS Fall National Meeting*, Denver, CO (August, 2011).
2. **D. Horn*** and V. A. Davis, "Phase Behavior and Macroscale Assembly of Lysozyme (LSZ) – Single-Walled Carbon Nanotube (SWNT) Dispersions," *NSTI Nanotech*, Boston, MA (June, 2011).
3. **V. A. Davis**, "Lyotropic Nanocylinder Dispersions" (poster) *Gordon Research Conference: Liquid Crystals*, South Hadley, CT (June, 2011)
4. T. J. Gnanaprakasa, **S. Mantha**, V. A. Davis, A. L. Simonian "Development of MWCNT/AuNP Nanostructures for Label-Free Localized SPR Based Biosensing,"

- (poster) *American Institute of Chemical Engineers Annual Meeting*, Salt Lake City, UT (November 2010).
5. **E. Ureña-Benavides***, G. Ao*, V. A. Davis, and C. L. Kitchens, "Cellulose Nanocrystals Liquid Crystalline Suspensions: Rheology and Phase Behavior," (poster) *American Institute of Chemical Engineers Annual Meeting*, Salt Lake City, UT (November 2010).
 6. **S. Mantha**, V. A. Pedrosa, E. V. Olsen, V. A. Davis, A. L. Simonian, "Layer-by-Layer Assembly of Multiwall Carbon Nanotube Ultrathin Films for Paraoxon Detection," *American Institute of Chemical Engineers Annual Meeting*, (November 2010).
 7. **S. Mantha**, M. Ramanathan, V. A. Davis, A. L. Simonian, "Enzyme Entrapment in Silica Nanoparticles: Mediated by Single Walled Carbon Nanotubes-Lysozyme for Biosensor Applications," *Carbon 2010*, Clemson, SC (June 2010).
 8. **G. Ao***, D. Nepal,* V. A. Davis, "Cholesteric Liquid Crystal Phase Formation in Double-stranded DNA Stabilized Single-walled Carbon Nanotube Dispersions," *Carbon 2010*, Clemson, SC (June 2010).
 9. G. Ao*, M. Aono, D. Nepal*, **V. A. Davis**, "Cholesteric and Nematic Liquid Crystalline Phase Formation in Double-Stranded DNA Stabilized SWNT Dispersions," Arcachon, France, *ChemonTubes*, (April, 2010)
 10. **M. J. Kayatin*** and V. A. Davis. "Aligned Carbon Nanotube Films by Lyophilization," *American Institute of Chemical Engineers Annual Meeting*, Nashville, TN, (November, 2009).
 11. **V. K. Radhakrishnan***, and V. A. Davis, "Effect of Functional Group Length on Properties of Single-Walled Carbon Nanotube - Polypropylene Nanocomposites," *American Institute of Chemical Engineers Annual Meeting*, Nashville, TN, (November 2009).
 12. **S. Mantha**, V. A. Pedrosa, A. L. Simonian, V. A. Davis, "Layer by Layer Assembly of Multiwalled Carbon Nanotube Ultra Thin Films for Paraoxon Detection," *American Institute of Chemical Engineers Annual Meeting*, Nashville, TN, (November 2009).
 13. **A. N. Karwa***, V. A. Davis and B. J. Tatarchuk, "Synthesis of Vapor Grown Carbon Fibers (VGCF) On Sintered Metal Fibers (SMF) for Air-Filtration," *American Institute of Chemical Engineers Annual Meeting*, Nashville, TN, (November 2009).
 14. **C. Young**, D. E. Tsentelovich, V. A. Davis, M. J. Green, A. N. Parra-Vasquez, N. Behabtu, M. Banzola, Matteo Pasquali, "Viscoelasticity of single-walled carbon nanotubes (SWNTs) in superacids," *Society of Rheology Annual Meeting*, Madison, WI, (October 2009).
 15. **V. A. Pedrosa**, T. J. Gnanaprakasa, E. V. Olsen, V. A. Davis, A. L. Simonian, "Electrochemical Properties of Interface Formed by Interlaced Layers of DNA and Lysozyme Coated Single-Walled Carbon Nanotubes," *216th Electrochemical Society Meeting*, Vienna, Austria, (October 2009).
 16. **T. J. Gnanaprakasa**, V. A. Pedrosa, E. V. Olsen, V. A. Davis, A. L. Simonian, "Probing conductivity and lateral charge transfer across LSZ-SWNT/DNA-SWNT nanocomposites using scanning electrochemical microscopy," *215th Electrochemical Society Meeting*, San Francisco, CA, (May 2009).
 17. **M. J. Kayatin*** and V. A. Davis, "Viscoelasticity and Stability of Single Walled Carbon Nanotube – Unsaturated Polyester Resin Dispersions," *American Chemical Society Colloids Meeting*, New York, NY, USA, (June 2009).

18. **V. A. Davis**, Ao Geyou*, Dhriti Nepal*, “Rheology and Liquid Crystallinity of Dispersions of Carbon Nanotubes in DNA and Enzymes,” *American Chemical Society Colloids Meeting*, New York, NY, USA, (June 2009).
19. S. Murali*, K. Pizarro*, T. Xu*, J. Boice*, **V. A. Davis**, “Phase Behavior and Processing of Inorganic Nanocylinder Dispersions,” *NSTI Nanotech*, Houston, TX, (May 2009).
20. **V. K. Radhakrishnan***, E.W. Davis, V.A. Davis, “The Effects of Functionalization, Preblending, and Melt Processing on SWNT-PP Nanocomposite Properties,” (poster) *NSTI Nanotech*, Houston, TX, USA, (May 2009).
21. **M. J. Kayatin*** and V. A. Davis “Aligned Carbon Nanotube Films by Lyophilization,” (poster) *NSTI Nanotech*, Houston, TX, USA, (May 2009).
22. S. Mantha, A. Geyou*, V. Pedrosa, D. Nepal*, S. Balasubramanian, S. Paliwal, J. Wild, A. Simonian, V. A. Davis, “Multifunctional Carbon Nanotube-Enzyme Composites,” (poster) *NSTI Nanotech*, Houston, TX, USA, (May 2009).
23. **V. K. Radhakrishnan***, M. J. Kayatin*, R. L. Yuan, and V. A. Davis, “Effect of Pore Size and Rope Size on the Mechanical Properties of Vapor Grown Carbon Nanofiber – Unsaturated Polyester Resin Nanocomposites,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
24. **A. N. Karwa***, B. J. Tatarchuk, and V. A. Davis, “Vapor Grown Carbon Fiber - Microfibrinous Matrix Composites,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
25. S. Murali*, K. Pizarro*, K. Taylor*, and **V. A. Davis**, “Liquid Crystalline Assemblies of Inorganic Nanorods Enzyme Modified Carbon Nanotube Biosensors for Pesticide Detection,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
26. S. Balasubramanian, V. Pedrosa, S. Paliwal, **V. A. Davis**, J. Wild, and A. Simonian, “Enzyme Modified Carbon Nanotube Biosensors for Pesticide Detection,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
27. **M. J. Kayatin*** and V. A. Davis, “Viscoelasticity and Stability of Single Walled Carbon Nanotube – Unsaturated Polyester Resin Dispersions,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
28. **V. K. Radhakrishnan*** and V. A. Davis “Effect of Functionalization and Processing Parameters on SWNT Polypropylene Nanocomposites,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
29. **M. J. Green**, A. N. G. Parra-Vasquez, N. Behabtu, V. A. Davis, and M. Pasquali, “Modeling the Phase Behavior of Polydisperse Rodlike Molecules with Attractive Interactions,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
30. D. Nepal* and **V. A. Davis**, “Phase Behavior and Rheology of Biopolymers Stabilized Carbon Nanotubes,” *AICHE Annual Meeting*, Philadelphia, PA, USA, (November 2008).
31. **K. Taylor***, D. Nepal*, K. Pizarro*, and S. Murali*, and V. A. Davis, “Dispersion and Shear Alignment of Nanostructured Materials,” (poster) *AICHE Annual Undergraduate Meeting*, Philadelphia, PA, USA, (November 2008).
32. **V. A. Davis***, S. Murali*, K. Pizarro*, D. Nepal*, and K. Taylor*, “Nanorod Dispersions, Phase Behavior and Shear Alignment,” *ACS Colloids*, Raleigh NC, USA, (June 2008).

33. **S. Balasubramanian**, D. Nepal*, T. Gnanaprakasa, V. A. Davis, and A. Simonian, "Electrochemical Characteristics of SWNT-biopolymer Nanocomposites," *213th ECS Meeting*, Phoenix, AZ, USA, (May 2008).
34. **N. Behabtu**, A. N. G. Parra-Vasquez, M. J. Green, V. A. Davis, M. Pasquali, "Morphology and Properties of Neat SWNT Fibers from Chlorosulfonic Dope," *AICHE/ACS Joint Spring Meeting*, New Orleans, LA, USA (April 2008).
35. **D. Nepal***, S. Balasubramanian, A. Simonian, V. A. Davis, "Strong Antimicrobial Coatings: Single-Walled Carbon Nanotubes Armored with Biopolymers," *AICHE/ACS Joint Spring Meeting*, New Orleans, LA, USA (April 2008).
36. V. K. Radhakrishnan, S. Zagarola, and **V. A. Davis**, "Effect of Structure and Processing on the Properties of Vapor Grown Carbon Fibers (VGCF), Single Walled Carbon Nanotubes (SWNT) and C12 Functionalized Single-Walled Carbon Nanotubes (C12-SWNT) – Polypropylene Nanocomposites," (poster) *Nanomaterials for Defense Conference*, Arlington, VA, USA (April 2008).
37. D. Nepal*, S. Balasubramanian, A. Simonian, and **V. A. Davis**, "Strong Antimicrobial Coatings: Single-Walled Carbon Nanotubes Armored with Biopolymers," (poster) *Nanomaterials for Defense Conference*, Arlington, VA, USA (April 2008).
38. M. J. Kayatin*, V. K. Radhakrishnan*, R. L. Yuan, and **V. A. Davis**, "Unsaturated Polyester Resin Glass Fiber Composites With Single-Walled Carbon Nanotubes and Vapor Grown Carbon Fibers," (poster) *Nanomaterials for Defense Conference*, Arlington, VA, USA (April 2008).
39. S. Murali*, Bennett Marshall*, K. Pizarro*, K. Taylor*, and **V. A. Davis**, "Self-Assembly and Shear Alignment of Inorganic Nanorods: Highly Aligned Films," (poster) *Nanomaterials for Defense Conference*, Arlington, VA, USA (April 2008).
40. A. N. Karwa*, B. J. Tatarchuk, and **V. A. Davis**, "Vapor Grown Carbon Fiber – Microfibrous Matrix Composites," (poster) *Nanomaterials for Defense Conference*, Arlington, VA, USA (April 2008).
41. **S. Murali*** and V. A. Davis, "Aligned Nanorod Coatings," (poster) *American Composites Manufacturers Association (ACMA)*, Birmingham, AL, USA, (March 2008).
42. **V. K. Radhakrishnan*** and V. A. Davis, "Polypropylene Carbon Nanotube Composites," (poster) *American Composites Manufacturers Association (ACMA)*, Birmingham, AL, USA, (March 2008).
43. V. K. Radhakrishnan*, **M. J. Kayatin***, and V. A. Davis, "Unsaturated Polyester Resin VGCF-Fiber Reinforced Composites," (poster) *American Composites Manufacturers Association (ACMA)*, Birmingham, AL, USA, (March 2008).
44. B. D. Marshall*, S. Murali*, D. Nepal*, K. Pizarro*, D.C. Lee, B. A. Korgel, and **V. A. Davis**, "Dispersion Behavior and Assembly of Inorganic Nanorods, Nanowires, and Nanowhiskers," *Materials Research Society Annual Meeting*, Boston, MA, USA (November 2007).
45. **A. N. G. Parra-Vasquez**, V.A. Davis, P.K. Rai, H. Fan, R. Booker, N. Behabtu, V. Prieto*, R. A. Pinnick, J. Allison, C. K. Kittrell, W. F. Hwang, H. K. Schmidt, R. H. Hauge, R. E. Smalley, and M. Pasquali, "Controlling the Phase Behavior of Single-Walled Carbon Nanotube-Superacid Dispersions," (poster) *Materials Research Society Annual Meeting*, Boston, MA, USA (November 2007).

46. **D. Nepal***, Shankar Balasubramanian, A. Simonian, and V. A. Davis, "Thin Film SWNT-Biopolymer Nanocomposites: Production and Characterization of Protein and DNA Based Single-Walled Carbon Nanocomposite by Layer by Layer Assembly," (poster), *Materials Research Society Annual Meeting*, Boston, MA, USA (November 2007).
47. M. J. Kayatin*, D. E. Jones, and R. L. Yuan, **V. A. Davis**, "Carbon Nanotube - Unsaturated Polyester Resin Composites," *Materials Research Society Annual Meeting*, Boston, MA, USA (November 2007).
48. S. Murali*, **B. D. Marshall***, D. Nepal*, and V. A. Davis, "Self-Assembly and Flow Alignment of Inorganic Nanorods," (poster) *AICHE Annual Meeting*, Salt Lake City, UT, USA (November 2007).
49. **M.J. Kayatin***, N. K. Wagner*, R. L. Yuan, D. M. Jones, and V. A. Davis, "Carbon Nanotube – Unsaturated Polyester Resin Composites," *AICHE Annual Meeting*, Salt Lake City, UT, USA (November 2007).
50. **V. K. Radhakrishnan***, B. J. Downs*, D. Nepal*, V. A. Davis*, and S. W. Zagarola, "Structure-Processing-Property Interrelationships in SWNT, C12-SWNT and VGCF Polypropylene Nanocomposites" *AICHE Annual Meeting*, Salt Lake City, UT, USA (November 2007).
51. **D. Nepal***, V. A. Davis*, and K. E. Geckeler, "Dispersion of Single-Walled Carbon Nanotubes In Proteins: Characterization and Potential Applications," *AICHE Annual Meeting*, Salt Lake City, UT, USA (November 2007).
52. **B. D. Marshall***, M. Rasche*, D. C. Lee, B. A. Korgel, and V. A. Davis, "Dispersion, Brownian Motion, and Self-Assembly of Germanium Nanowires," *AICHE Annual Meeting*, Salt Lake City, UT, USA (November 2007).
53. V. K. Radhakrishnan*, B. J. Downs*, D. Nepal*, and **V. A. Davis**, "Viscoelasticity of Polypropylene -Carbon Nanotube Composites: Effect of Functionalization and Processing Conditions," *Society of Rheology Annual Meeting*, Salt Lake City, UT, USA (October 2007).
54. B. D. Marshall*, D. C. Lee, B. A. Korgel, and **V. A. Davis**, "Brownian Motion of Germanium Nanowires," *Society of Rheology Annual Meeting*, Salt Lake City, UT, USA (October 2007).
55. V. Radhakrishnan*, **S. W. Zagarola**, and **V. A. Davis**, "Structure-Processing-Property Interrelationships in Carbon Nanotube Polypropylene Composites – A Statistically Sound Approach to Maximum Learning in Minimum Time," *Nanocomposites 2007*, Las Vegas, NV, USA (September 2007).
56. A. N. G. Parra-Vasquez, **V. A. Davis**, P. Rai, M. Pasquali, "Isotropic-Nematic Phase Transition Of Single-Walled Carbon Nanotubes In Strong Acids," *AICHE Annual Meeting*, San Francisco, CA, USA (November 2006).
57. **V.A. Davis**, V. Prieto*, P. Rai, A. N. G. Parra-Vasquez, R Pinnick, R.H. Hauge, R.E. Smalley, M. Pasquali, "Controlling the Phase Behavior of Single - Walled Carbon Nanotube – Superacid Dispersions," *AICHE Annual Meeting*, Cincinnati, OH, USA (November 2005).
58. **V. A. Davis**, A. N. G. Parra-Vasquez, V. Prieto*, P. Rai, R. H. Hauge, R. E. Smalley, and M. Pasquali "Progress on Tailoring SWNT / Superacid Phase Behavior for Improved Fiber Properties," *Materials Research Society Annual Meeting*, Boston, MA, USA (November 2004).

59. **V. A. Davis**, A. N. G. Parra-Vasquez, V. Prieto*, K. R. Cox, R. H. Hauge, R. E. Smalley, and M. Pasquali, "Toward Improved Dispersability of SWNTs in Superacids," *AICHE Annual Meeting*, Austin, TX, USA (November 2004).
60. **V. A. Davis**, Phase Behavior, Rheology, and Fiber Spinning of Single-Walled Carbon Nanotubes (SWNTs) in Superacids," (poster) *AICHE Annual Meeting*, Austin, TX, USA (November 2004).
61. **R. L. Carver**, P. Nikolaev, H. Peng, V. A. Davis, A. Sadana, C. Scott, S. Arepalli, M. Pasquali R. H. Hauge, and R. E. Smalley, "SWNT Length and Diameter Dependence on HiPco Process Parameters," *AICHE Annual Meeting*, Austin, TX, USA (November 2004).
62. N. G. Parra-Vasquez, I. Stepanek, V. A. Davis, V. C. Moore, E. H. Haroz, H. Peng, **R. L. Carver**, R. H. Hauge, R. E. Smalley, and M. Pasquali, "Determining the Distribution and Average Length of Single-Walled Carbon Nanotubes by Atomic Force Microscopy and Viscosity Measurements in Dilute Brownian Suspensions," *AICHE Annual Meeting*, Austin, TX, USA (November 2004).
63. **R. Duggal**, V.A. Davis, A. N. G. Parra-Vasquez, and M. Pasquali, "Drying Mediated Assembly of SWNT-Pluronic Films," *AICHE Annual Meeting*, Austin, TX, USA (November 2004).
64. **V. A. Davis**, H. Fan, A. N. G. Parra-Vasquez, L. M. Ericson, V. Prieto*, S. Ramesh, C. Kittrell, J. Sulpizio, K. Winey, J. E. Fischer, R. H. Hauge, M. Pasquali and R. E. Smalley, "Macroscopic Neat SWNT Fibers from Liquid Crystalline Dispersions," *MRS Spring Meeting*, San Francisco, CA, USA (April 2004).
65. **H. Fan**, L. M. Ericson, V. A. Davis, H. Peng, A. N. G. Parra-Vasquez, J. Sulpizio, S. Ramesh, W. Adams, M. Pasquali, H. K. Schmidt, R. H. Hauge, and R. E. Smalley, "Neat Single Wall Carbon Nanotube Fibers," *Annual APS March Meeting*, Montreal, Quebec, Canada (March 2004).
66. H. Fan, V. A. Davis, L. M. Ericson, H. Peng, A. N. G. Parra-Vasquez, Y. Wang, V. Prieto, J. A. Longoria*, S. Ramesh, R. K. Saini, C. Kittrell, W. E. Billups, **W. W. Adams**, W. F. Hwang, R. H. Hauge, M. Pasquali, and R. E. Smalley, "Phase Behavior, Rheology and Fiber Spinning of SWNTs in Superacids," (poster) *Nanomaterials for Defense Applications*, Maui, HI, USA (February 2004).
24. I. Stepanek, V. A. Davis, **A. N. G. Parra-Vasquez**, V. Moore, M. S. Strano, and M. Pasquali, "Determining the Length of Single-Walled Carbon Nanotubes by Viscosity Measurements in Dilute Brownian Suspensions," *AICHE Annual Meeting*, San Francisco, CA, USA (November 2003).
67. V. A. Davis, N. G. Parra-Vasquez, L. M. Ericson, **M. Pasquali**, "New Developments in Spinning Neat SWNT Fibers from Lyotropic Nematogenic Dispersions in Acids," *AICHE Annual Meeting*, San Francisco, CA, USA (November 2003).
68. V. A. Davis, **A. N. G. Parra-Vasquez**, L. M. Ericson, and M. Pasquali, "Lyotropic Nematic Dispersions of Single-Walled Carbon Nanotubes in Strong Acids," *75th Society of Rheology Annual Meeting*, Pittsburgh, PA, USA (October 2003).
69. **V. A. Davis**, N. Parra-Vasquez, L. M. Ericson, S. Ramesh, R. Saini, C. Kittrell, W. E. Billups, R. H. Hauge, R. E. Smalley, and M. Pasquali, "Rheology and Phase Behavior of SWNTs in Strong Acids: Evidence of Mesophases," *Annual APS March Meeting*, Austin, TX, USA (March 2003).

70. **A. Dalton**, L. M. Ericson, E. Munoz, S. Ramesh, V. H. Ebron, D. Mudigonda, S. Collins, R. Saini, V. A. Davis, Ferraris, M. Pasquali, R. H. Hauge, R. E. Smalley and R. H. Baughman, "Multifunctional Carbon Nanotube Composites for Energy Harvesting and Mechanical Actuation," *APS March Annual Meeting*, Austin, TX, USA (March 2003).
71. **W. Zhou**, K. I. Winey, J. E. Fischer, S. Ramesh, R. K. Saini, L. M. Ericson, V. A. Davis and R. E. Smalley, "Preferred Orientation in Fibers of HiPco Single Wall Carbon Nanotubes From Diffuse X-ray Scattering," (poster) *Materials Research Society Annual Meeting*, Boston, MA, USA (December 2002).
72. **V. A. Davis**, L. M. Ericson, R. Sivarajan, R. Saini, C. Kittrell, W. E. Billups, R. H. Hauge, R. E. Smalley, and M. Pasquali, "Rheology & Phase Behavior of Single Wall Carbon Nanotubes in Strong Acids," (poster) *Materials Research Society Annual Meeting*, Boston, MA, USA (December 2002).
73. **L. M. Ericson**, R. Sivarajan, J. Sulpizio, H. Fan, R. Saini, V. A. Davis, N. Parra-Vasquez, J. Longoria, C. Kittrell, M. Pasquali, R. H. Hauge, R. E. Smalley, J. Vavro and J. E. Fischer, "Macroscopic Neat Single Wall Carbon Nanotube Fibers," *Materials Research Society Annual Meeting*, Boston, MA, USA (December 2002).
74. **M. Pasquali**, V. A. Davis, L. M. Ericson, R. E. Smalley, and K. I. Winey, "Rheology and Phase Behavior of Single Wall Carbon Nanotube / Strong Acid Systems," *Annual APS March Meeting*, Indianapolis, IN, USA (March 2002).
75. **L. M. Ericson**, S. Ramesh, R. Saini, V. A. Davis, C. Kittrell, M. J. Casavant, M. Pasquali, R. H. Hauge, R. E. Smalley, A. Dalton, R. H. Baughman, and J. E. Fischer, "Macroscopic Neat Single Wall Carbon Nanotube Fibers," *Annual APS March Meeting*, Indianapolis, IN, USA (March 2002).
76. **A. Dalton**, L. M. Ericson, E. Munoz, S. Ramesh, V. H. Ebron, D. Mudigonda, S. Collins, R. Saini, V. A. Davis, J. Ferraris, M. Pasquali, R. H. Hauge, R. E. Smalley, and R. H. Baughman, "Multifunctional Carbon Nanotube Fiber Composites for Energy Harvesting and Mechanical Actuation," *Annual APS March Meeting*, Indianapolis, IN, USA (March 2002).
77. **V. A. Davis**, L. M. Ericson, R. Sivarajan, R. Saini, C. Huffman, K. D. Ausman, S. Veedu, A. Bhattacharyya, J. Zeng, S. Kumar, R. H. Hauge, R. E. Smalley, and M. Pasquali, "From Ropes to Super-ropes to Alewives: Alignment and Aggregation of SWNTs Dispersions," *AIChE Annual Meeting*, Reno, NV, USA (November 2001).

PATENTS AND INVENTIONS

3. V. A. Davis, S. Murali*, B. D. Marshall*, "Assembly of Inorganic Nanorods," US Patent Application 12/261,867 and PCT/US08/81812 filed 10/30/2008.
4. V. A. Davis, A. Simonian, D. Nepal*, S. Subramanian, "Preparation of Precisely Controlled Thin Film Nanocomposite of Carbon Nanotubes and Biomaterials," US Patent Application 12/261,892 and PCT/US08/81819 filed 10/30/2008.
5. R. E. Smalley, R. K. Saini, S. Ramesh, R. H. Hauge, V. A. Davis, M. Pasquali, and L. M. Ericson, "Fibers of Aligned Single-Wall Carbon Nanotubes Process for Making the Same," U.S. Patent 7,125,502 issued October 24, 2006.
6. M. Pasquali, V. A. Davis, I. Stepanek, and A. N. Parra-Vasquez, "Method and Apparatus for Determining the Length of Single-Walled Carbon Nanotubes," U.S. Patent 6,962,092, issued November 8, 2005.

7. R. E. Smalley, R. H. Hauge, R. Sivarajan, R. K. Saini, V. A. Davis, M. Pasquali, L. M. Ericson, S. Kumar, and S. T. Veedu, "Single-Wall Carbon Nanotube Alewives, Process for Making, and Compositions Thereof," U.S. Patent 7,288,238, issued October 30, 2007.

PUBLICITY, NEWS & VIEWS

1. Numerous websites including Nanowerk.com featured "True Solutions of Carbon Nanotubes Work"
2. Interviewed by Infection Control Today for article on antimicrobial surface technologies.
3. Interviewed by MSNBC.com, Zapping Microbes With Lasers and Enzymes, July 28, 2008. (<http://www.msnbc.msn.com/id/25838829>)
4. Interviewed on the American Chemical Society, Global Challenges Chemistry Solutions Podcast on "Promoting Personal Safety and National Security."
(http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_SUPERARTICLE&node_id=2104&use_sec=false&sec_url_var=region1&__uuid=d2ee481b-e10d-4b47-9784-1f1ca45b1ead)
5. Over 200 websites in at least 4 languages featuring antimicrobial nanotube films work published in Nano Letters.
6. Dr. V. A. Davis Group featured in Auburn websites, magazines, post cards and electronic publicity numerous times from Fall 2005 to date.
7. Carbon nanotube fiber spinning work featured in Wall Street Journal and numerous other news sources in 2004.

OUTREACH & SERVICE

2011 – Present	Secretary/Treasurer AIChE Nanoscale Science and Engineering Forum
2010 – Present	Advisor / Founder Society of Hispanic Professional Engineers (SHPE) Student Chapter at Auburn
2010 – Present	Editorial Board Journal of Nano Energy and Power Research
2010 – Present	Chair Auburn Women in Science and Engineering Steering Committee
2010	Session Chair Composites Session, ChemonTubes 2010, Arcachon, France, April 2010
2008 – Present	Nanoeducation Outreach through AU Youth Experiences in Science
2007 – Present	Women in Science and Engineering (WISE) Steering Committee
2006 – Present	BEST Robotics – Judge Various Events Annually
2006 – Present	Science Olympiad Event Coordinator Annually
2009 – 2010	Nanoeducation Activities for Fall Tuskegee STEM Open House
2006 – 2007	E-Day for High School Students – Assist With Booth
2006 – Present	Representative to State Meetings on Nanotechnology and Participated in the Informal "Nano-working group" at Auburn
2006 – Present	Meetings with Engineering Scholarship Winners and Their Parents
2006 – Present	Seminars for AIChE Student Chapter, Society of Women Engineers and Other Organizations

Davis, Virginia A.

2006 – 2008	Department of Chemical Engineering Graduate Recruiting Committee. Chair 2007-2008.
2006 – Present	Proposal reviewer for NSF, ACS PRF/DNI, DTRA, DOE, AAAS and Israel National Science Foundation
2009	Session Chair AIChE Annual Meeting Characterization of Nanocomposites
2008 – 2009, 2011	Programming Chair for the Carbon Nanotube Sessions at the AIChE Annual Meeting (Nanoscale Science and Engineering Forum 22a)
2008	Session Co-Chair AIChE Annual Mtg. Processing of Nanocomposites
2005 – Present	Session Chair & Co-Chair AIChE Annual Mtg. Carbon Nanotubes I- V
2006 – Present	Reviewer for <i>Nature Communications</i> , <i>Angewandte Chemie</i> , <i>Chemistry of Materials</i> , <i>Chemical Physics Letters</i> , <i>ACS Applied Materials and Interfaces</i> , <i>Journal of the American Chemical Society</i> , <i>Materials Chemistry and Physics</i> , <i>Journal of Nanoscale Science and Nanotechnology</i> , <i>Journal of Materials Chemistry</i> , <i>Journal of STEM Education</i> , <i>Macromolecular Rapid Communications</i> , <i>Polymer</i> , <i>Journal of Applied Polymer Science</i> , <i>Polymer Engineering and Science</i> , <i>Polymer International</i> , <i>Composites Science and Technology</i> , <i>Composites B</i> , and <i>Biomacromolecules</i>