Jennifer S. Andrew

University of Florida • Department of Materials Science & Engineering
Gainesville, FL 32611-6400
Tel- 352-846-3345 • jandrew@mse.ufl.edu

Education

9/2002 – 6/2008	**Ph.D.** Materials, University of California, Santa Barbara, CA • Polymer-Based Nanocomposites for Multiferroic Applications
9/1998 – 6/2002	**B.S.** Materials Science & Engineering, Cum Laude with Departmental Honors, Northwestern University, Evanston, IL

Honors

2013	**Emerging Investigator**, Royal Society of Chemistry, London, UK
2012	**NSF CAREER Award,** National Science Foundation, Washington, D.C.
2009 – 2010	**University of California President's Postdoctoral Fellowship** University of California Office of the President, Berkeley, CA
2010	**Talk of the Day Award**, Porous Semiconductors- Science and Technology Conference, Valencia, Spain
2004	**National Science Foundation Graduate Fellowship** National Science Foundation, Washington, D.C.
2002	**Graduated Cum Laude**, Northwestern University, Evanston, IL
2002	**Graduated with Honors**, Materials Science & Engineering Department, Northwestern University, Evanston, IL
2002	**Teaching Excellence Award**, Materials Science & Engineering Department, Northwestern University, Evanston, IL
2001	**American Society of Metals Student Chapter Grant Award**, Materials Science & Engineering Department, Northwestern University, Evanston, IL
1999 – 2002	**Dean's List**, Northwestern University, Evanston, IL

Research Experience

1/2011 – Present

Assistant Professor, University of Florida, Gainesville, FL
Member, Center for Macromolecular Science & Engineering
Member, Institute for Cell Engineering and Regeneretive Medicine
Member, Nanoscience Institute for Medical and Engineering Technology
Member, University of Florida Health Cancer Center

8/2008 – 12/2010

Postdoctoral Scholar, University of California, San Diego, CA
Advisor: Professor Michael J. Sailor

- Development of porous silicon based multifunctional materials for drug delivery.
- Bioconjugation of porous silicon based materials with novel monoclonal antibody and small molecule therapeutics.
- Development of bioactivity assays capable of detecting therapeutics released both *in vitro* and *in vivo*.
- Design and implementation of animal experiments using a rabbit eye model.

- Synthesis and surface functionalization of magnetic nanoparticles with novel architectures, optimized for biomedical applications.
- Mentored and guided the research of multiple graduate and undergraduate students in laboratory techniques and experimental design.

9/2002 – 6/2008 **Doctoral Student**, University of California, Santa Barbara, CA
Advisor: Professor David R. Clarke

- Synthesized magnetic and dielectric nanoparticles via wet chemical and solid-state routes.
- Surface functionalized magnetic nanoparticles to allow (1) the formation of a ferrofluid in a wide variety of solvents and (2) their homogeneous incorporation within a polymer matrix.
- Formed polyvinylidene difluoride (PVDF)-based nanocomposites via solution casting, spin coating, and electrospinning.
- Studied the effects of processing conditions on the morphology and properties of electrospun PVDF, PVDF-Ferrite, and PVDF-Rutile nanocomposite fibers.
- Collaborated with Teledyne Scientific on (1) the synthesis of surface functionalized bio-compatible iron oxide nanoparticles and (2) their inclusion in electrospun polycaprolactone (PCL) fibers.

Professional Service and Activities

2014 – Present **Organizer**, Frontiers in Biomagnetic Particles
2014 – Present **Program Committee**, 3rd International Conference on Electrospinning
2011 – Present **Member**, American Ceramic Society (ACers)
2008 – Present **Member**, American Chemical Society (ACS)
2006 – Present **Member**, American Association for the Advancement of Science (AAAS)
2006 – Present **Member**, Materials Research Society (MRS)
2006 – 2008 **Member**, Graduate Students for Diversity in Science, University of California, Santa Barbara

Peer Reviewer for:

ACS Macroletters, Acta Biomaterialia, Journal of the American Ceramic Society, Applied Materials and Interfaces, Journal of Applied Polymer Science, Journal of Biomaterials Science: Polymer Division, Journal of Biomedical Nanotechnology, Journal of Colloid and Interface Science, Journal of Controlled Release, Langmuir, Macro Letters, Macromolecules, Journal of Materials Chemistry, Journal of Materials Research, Journal of Materials Science, Materials Research Bulletin, Molecular Pharmaceutics, MRS Communications, Nanoscale, RSC Advances, Science, Scripta Materialia, Solid State Science

Current and Former Lab Member

Postdoctoral Scholars:

Emilie Secret (2013-Present)

Graduate Students (Ph.D.):

Justin Starr. Ph.D., 2014
Stefan Kelly (2011-Present)

Maeve Budi (2012-Present)
Matthew Bauer (2014-Present)
Amanda Uhl (2014-Present)

Graduate Students (M.S.):

Kelsey Crannell (2014-Present)

Undergraduate Students:

Mitchell Grathwohl (2014-Present)
Catherine Snyder (2014-Present)
Maria Villancio-Wolter (2014-Present)
Camille Leonard (2014-Present)
Evan Glass (2013-Present)
Ali Henriques (2013-2014)
Clayton Cozzan (2013-2014)
Nicholas Vinson (Summer 2013)
Amanda Wickens (Summer 2013)
Kelsey Crannell (2012-2014)
David Llanos (Summer 2012)
Caroline Wood (2011-2012)
Jessica Pu (2011-2012)
Kristi Lim (2011-2012)
Natalie Ganio (2011-2012)

Publications

J. D. Starr, M. A. K. Budi, **J. S. Andrew**, Processing-Property Relationships in Janus-type Bi-phasic Ceramic Nanofibers, *J. Am. Ceram. Soc.*, accepted.

X. Wen, J. D. Starr, C. Kim, Y. K. Yoon, **J. S. Andrew**, D. P. Arnold, Electro-Infiltration: A Method to Form Nanocomposite Soft Magnetic Cores for Integrated Magnetic Devices, *J. Micromech. Microeng.*, in press.

J. L. Jones, J. D. Starr, **J. S. Andrew**, Anisotropy in Magnetoelectric Composites, *Appl. Phys. Lett.*, 104, 242901, 2014.

E. Secret, S. J. Kelly, K. E. Crannell, **J. S. Andrew**, Enzyme-Responsive Hydrogel Microparticles for Pulmonary Drug Delivery, *Appl. Mater. Interfaces*, 6, 10313-10321, 2014.

J. S. Andrew, M. A. K. Budi, J. D. Starr, Prospects for Nanostructured Multiferroic Composite Materials, *Scripta Mater.*, 74, 38-43, 2014.

J. D. Starr, **J. S. Andrew**. A Route to Synthesize Tri-phasic Nanofibers, *J. Mater. Chem. C*, 1, 2529-2533, 2013. (Featured in *J. Mater. Chem.* Rising Stars, Young Nanoarchitects in Materials Science Issue)

J. D. Starr, **J. S. Andrew**. Electrospun Bi-phasic Janus-type Functional Nanofibers, *ChemComm*, 49, 4151-4153, 2013. (Featured in 2013 Emerging Investigator Issue)

J. M. Kinsella, S. Ananda, **J. S. Andrew**, J. Grondek, M. P. Chien, M. Scadeng, N. Gianneschi, E. Ruoslahti, M. J. Sailor. Enhanced Magnetic Resonance Contrast of Fe_3O_4 Nanoparticles Trapped in a Porous Silicon Nanoparticle Host, *Adv. Mater.*, 23, H248-H253, 2011.

E. C. Wu, **J. S. Andrew**, A. Buyanin, J. M. Kinsella, M. J. Sailor. Suitability of Porous Silicon Microparticles for the Long-Term Delivery of Redox-Active Therapeutics, *Chem. Comm.*, 47, 5699-5701, 2011.

E. C. Wu, **J. S. Andrew**, L. Cheng, W. R. Freeman, M. J. Sailor. Sustained and Observable Oxidation-triggered Release of Therapeutics Using Photonic Porous Si Particles, *Biomaterials*, 32, 1957-1966, 2011.

J. S. Andrew, E. J. Anglin, L. Cheng, W. Freeman, M. J. Sailor. Sustained Release of a Monoclonal Antibody from Electrochemically Fabricated Porous Silica, *Adv. Func. Mater.,* 20, 4168-4174, 2010.

J. J. Mack, A. B. N. Cox, O. Sudre, A. A. Corrin, S. dos Santos e Lucato, C. Ma, **J. S. Andrew**. Achieving Nutrient Pumping and Strain Stimulus by Magnetic Actuation of Tubular Scaffolds, *Smart Materials and Structures*, 18, 104025-104040, 2009.

J. J. Mack, A. A. Corrin, S. dos Santos e Lucato, B. N. Cox, **J. S. Andrew**, D. R. Clarke, M. Lam, J. C. Y. Dunn, B. W. Wu. Magnetically Actuable Scaffolds for Tissue Regeneration, *Proceedings of the American Society of Mechanical Engineers Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2008*, 2, 607-610, 2008.

J. S. Andrew, D. R. Clarke. Enhanced Ferroelectic Phase Content of Polyvinylidene Difluoride Fibers with the Addition of Magnetic Nanoparticles, *Langmuir*, *24*, 8435–8438, 2008.

J. S. Andrew, D. R. Clarke. Effect of Electrospinning on the Ferroelectric Phase Content of Polyvinylidene Difluoride Fibers, *Langmuir* 24, 670–672, 2008.

J. S. Andrew, J. J. Mack, D. R. Clarke. Electrospinning of Polyvinylidene Difluoride-based Nanocomposite Fibers, *Journal of Materials Research* 23, 105–114, 2008.

Book Chapters

J. S. Andrew, B. Kozissnik, Synthesis and Bio-Functionalization of Magnetic Nanoparticles, In *Nanomagnetic Actuation of Cell Surface Receptors: Basic Principles and Applications*, J. Dobson, Ed., CRC Press, 2014.

J. S. Andrew, Properties of Ferroic Nanomaterials, In *Handbook of Nanomaterials Properties*, B. Bhusan, D. Luo, S. Schricker, W. Sigmund, S. Zauscher, Eds., Springer, 2014.

Patents

D. P. Arnold, **J. S. Andrew**, Advanced Manufacturing of Magnetic Components Using Nanoscale Magnetic Powders, Provisional Patent (61/858,987), filed July 26, 2013.

J. S. Andrew, Polymer-inorganic Nanocomposites for the Detection of Disease Through a Urinary Assay, Provisional Patent (61/804,459), filed March 22, 2013.

Presentations (**-invited)*

***J. S. Andrew**, Advances in Nanocomposite Design: Towards Biomedical Applications, American Chemical Society, San Francisco, CA, August 10-14, 2014.

***J. S. Andrew**, Electrospinning: A Route to Synthesize Ceramic Nanocomposites on a Single Fiber or Particle, 3rd International Conference on Electrospinning, San Francisco, CA, August 4-7, 2014.

***J. S. Andrew**, Advances in Nanocomposite Design: Composites on a Fiber, CIMTEC 2014, June 8-13, Montecatini Terme, Italy, June 8-13, 2014.

J. D. Starr, **J. S. Andrew**, Multiferroics Within a Fiber: Janus-type Nanomaterials Synthesized via Electrospinning and Electrospray Techniques, Electronic Materials and Applications Conferences, Orlando, FL, January 22-24, 2014.

***J. S. Andrew**, Composites on a Fiber: A New Class of Multiferroic Material, ICANM 2013: International Conference & Exhibition on Advanced & Nano Materials, Quebec City, Quebec, Canada, August 12-14, 2013.

***J. S. Andrew**, Multifunctional Nanofibers: New Methods for Synthesizing Composites on a Fiber, 12th International Conference on Ceramic and Processing Science, Portland, OR, August 4-7, 2013.

***J. S. Andrew**, Bi-phasic Multiferroic Materials: Towards Multifunctional Biomedical Materials, National Institute of Standards and Technology, Boulder, CO, August 2, 2013.

E. Secret, S. J. Kelly, K. Smith, M.-L. Rogers, J.-O. Dunand, N. Voelcker, F. Cunin, **J. S. Andrew**, Porous Silicon Nanoparticles for Applications in Detection and Treatment of Cancer, Gordon Research Conference: Cancer Nanotechnology, Mt. Snow, Vermont July 14-19, 2013.

S. J. Kelly, E. Secret, K. E. Crannell, **J. S. Andrew**, Polymer Nanocomposites for Early Diagnosis of Lung Cancer, Gordon Research Conference: Cancer Nanotechnology, Mt. Snow, Vermont July 14-19, 2013.

***J. S. Andrew**, Bi-phasic Magnetic Materials: Towards Multifunctional Biomedical Materials, New Frontiers in Biomagnetic Particles, Telluride, CO, June 2-5, 2013.

J. D. Starr, **J. S. Andrew**, Synthesis of Janus-type Bi-phasic Multiferroic Nanocomposites, Materials Research Society Meeting, San Francisco, CA, April 1-4, 2013.

***J. S. Andrew**, Advances in Nanocomposite Design: Towards Electronic and Biomedical Applications, Biomaterials Day, University of Florida, Gainesville, FL, March 22, 2013.

K. E. Crannell, S. Kelly, **J. S. Andrew**, Polymer-based Nanocomposite for the Early Detection of Lung Cancer, Biomaterials Day, University of Florida, Gainesville, FL, March 22, 2013.

J. D. Starr, M. Budi, **J. S. Andrew**, Janus type Bi-phasic Multiferroic Nanofibers, Electronic Materials and Applications Conference, Orlando, FL, January 23-25, 2013.

J. D. Starr, **J. S. Andrew**, A New Platform for Multiferroic Composite Materials: Electrospun Janus-type Ceramic Nanofibers, 12th Joint MMM/Intermag Conference, Chicago, IL, January 14-18, 2013.

***J. S. Andrew**, Multiferroic Properties of Bi-phasic Nanocomposite Materials, The 5th International Symposium on Functional Materials, Perth, Australia, December 17-20, 2012.

S. J. Kelly, K. Lim, K. E. Crannell, **J. S. Andrew**, Polymer Nanocomposites for Early Diagnosis of Lung Cancer, NanoFlorida, Tampa, FL, September 28-29, 2012.

J. D. Starr, **J. S. Andrew**, A New Class of Multiferroic Material: Janus-type, Bi-phasic, Ceramic Nanofibers Synthesized by Electrospinning, Tampa, FL, September 28-29, 2012.

***J. S. Andrew**, Nanostructured Composite Materials for Electronics and Biomedicine, University of New South Wales, Sydney, Australia, June 6, 2012.

N. Ganio, J. D. Starr, **J. S. Andrew**, Bi-phasic Magnetic Materials: Towards Multifunctional Contrast Agents, Scientific and Clinical Applications of Magnetic Carriers Meeting, Minneapolis, MN, May 22-26, 2012.

***J.S. Andrew**, J. D. Starr, Enhanced Properties of Multiferroic Nanocomposite Materials: An Electron Microscopy Study, Florida Chapter of the Advanced Vacuum Society, Orlando, FL, March 5-6, 2012.

J. D. Starr, **J. S. Andrew**, Enhanced Multiferroic Properties of Multiferroic Nanocomposite Materials, International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, FL, January 23-27, 2012.

J. S. Andrew, Sustained Release of a Monoclonal Antibody from Electrochemically Prepared Porous Silica, International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, FL, January 23-27, 2012.

***J. S. Andrew**, Nanostructured Composite Materials for Electronics and Biomedicine, Composites Lake Louise, Banff, Canada, October 30- November 4, 2011.

***J. S. Andrew**, Nanostructured Composite Materials for Electronics and Biomedicine, Department of Chemical and Materials Science and Engineering, University of Alberta, October 28, 2011.

***J. S. Andrew**, Nanostructured Composite Materials for Electronics and Biomedicine, Department of Materials Science and Engineering, Clemson University, September 22, 2011.

J. S., L. C. Cheng, W. R. Freeman, M. J. Sailor. Sustained Release of a Monoclonal Antibody from Electrochemically Prepared Porous Silica, Gordon Research Conference: Drug Carriers in Medicine and Biology Waterville Valley Resort, New Hampshire, August 15-20, 2010.

***J. S. Andrew**, Nanostructured Composite Materials for Electronics and Biomedicine, Department of Mechanical and Industrial Engineering, Montana State University, Bozeman, MT, April 20, 2010.

***J. S. Andrew**, Nanostructured Composites for Biomedicine, Bioenegineering Department, University of California, Riverside, CA, April 12, 2010.

J. S. Andrew, E. C. Wu, L. Pearson, L. Cheng, W. R. Freeman, M. J. Sailor. Bevacizumab-loaded Porous Silicon Particles for Controlled Drug Delivery Applications. Porous Seminconductors Science & Technology Conference, Valencia, Spain, March 13-19, 2010.

***J. S. Andrew**. Nanostructured Composite Materials for Electronics and Biomedicine, Nanoengineering Department Seminar, San Diego, CA, February 17, 2010.

E. C. Wu, **J. S. Andrew**, J.-H. Park, J. S. Park, E. Segal, L. Cheng, W. R. Freeman, M. J. Sailor. Sustained and Observable Oxidation-triggered Release of Therapeutics Using Porous Si Particles. SPIE Photonics West, San Francisco, CA, January 23-28, 2010.

J. S. Andrew, E. C. Wu, E. J. Anglin, L. C. Cheng, W. R. Freeman, M. J. Sailor. Enhanced Drug Delivery Using Porous Silicon: Towards Minimally Invasive Medicine. Materials Research Society Fall Meeting, Boston, MA, November 30- December 4, 2009.

J. S. Andrew, E. J. Anglin, F. Cunin, C. Tourne-Peteilh, L. Cheng, W. R. Freeman, J.-M. Devoisselle, M. J. Sailor. Sustained Release of a Monoclonal Antibody from Electrochemically Prepared Porous Silica for the Treatment of Age Related Macular Degeneration; Northeastern University NSF ADVANCE Workshop, Boston, MA, June 17-19, 2009.

J. S. Andrew, E. J. Anglin, E. C. Wu, L. Cheng, W. R. Freeman, M. J. Sailor. Porous Silica-based Materials for the Treatment of Age Related Macular Degeneration; Shiley Eye Center Annual Residents, Fellows and Alumni Meeting, San Diego, CA, June 5-6, 2009.

J. S. Andrew, E. J. Anglin, F. Cunin, C. Tourne-Peteilh, L. Cheng, W. R. Freeman, J.-M. Devoisselle, M. J. Sailor. Sustained Release of a Monoclonal Antibody from Electrochemically Prepared Porous Silica for the Treatment of Age Related Macular Degeneration; The Association for Research in Vision and Opthamology Annual Meeting, Fort Lauderdale, FL, May 3-7, 2009.

E. Wu, **J. S. Andrew**, J.-H. Park, L. Cheng, W. R. Freeman, M. J. Sailor. Sustained and Observable Release of Daunorubicin usin Porous Si Particles: A Portential Treatment for Proliferative Vitreo-Retinopathy; The Association for Research in Vision and Opthamology Annual Meeting, Fort Lauderdale, FL, May 3-7, 2009.

J. S. Andrew and D. R. Clarke. Enhanced Ferroelectric Properties of Electrospun Polyvinylidene Difluoride-based Nanocomposites: Towards Multiferroic Materials. Materials Research Society Fall Meeting, Boston, MA, December 1-5, 2008.

J. J. Mack, A. A. Corrin, S. Lucato, B. N. Cox, **J. S. Andrew**, D. R. Clarke, M. Lam, J. C. Y. Dunn, B. W. Wu. Magnetically Actuable Scaffolds for Tissue Regeneration; American Society of Mechanical Engineers Conference on Smart Materials, Adaptive Structures & Intelligent Systems, Ellicott City, MD, October 28-30, 2008.

***J. S. Andrew** and D. R. Clarke. Electrospinning of Polyvinylidene Difluoride-based Nanocomposites: A Route to Multiferroic Materials. Teledyne Scientific Invited Seminar, Thousand Oaks, CA, March 5, 2008.

J. S. Andrew and D. R. Clarke. Enhanced Properties of Electrospun Polyvinylidene Difluoride-Based Nanocomposites. Gordon Research Conference: Composites, Ventura, CA, January 13–18,2008.

J. S. Andrew and D. R. Clarke. Electrospinning of Polyvinylidene Difluoride-based Nanocomposites: A Route to Multiferroic Materials. Materials Department Structural Seminar, Santa Barbara, CA, October 12, 2007.

J. S. Andrew and D. R. Clarke. Electrospinning Polymer Nanocomposites: A Route to Multiferroic Materials. Materials Research Society Spring Meeting, San Francisco, CA, April 9–13, 2007.