

Morgan Stefik, PhD

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Assistant Professor, Department of Chemistry and Biochemistry, University of South Carolina
Founder and Director of the South Carolina Small-Angle X-ray Scattering Collaborative

Profile

Physical chemistry of block copolymers
Functional nanomaterial fabrication
Probing of new nanostructure-behavior-performance relationships
publications=45; h-index=23, i-10 index=27, >1600 citations

Education

CORNELL UNIVERSITY in Ithaca, NY
PhD in Materials Science and Engineering, minor in Chemistry, July 2010
Advised by Professor Ulrich Wiesner and Professor Francis J. DiSalvo
Title: Block Sequence Directed Materials
Designed block copolymers for the assembly of multifunctional and complex nanomaterials
M.S. in Materials Science and Engineering, January 2009

CALIFORNIA POLYTECHNIC STATE UNIVERSITY in San Luis Obispo, CA
B.E. in Materials Engineering, graduated Summa Cum Laude, GPA: 3.94, June 2005
Engineering Honor Societies Tau Beta Pi and Alpha Sigma Mu

Research Experience

UNIVERSITY OF SOUTH CAROLINA in Columbia, SC
Tenure-Track Assistant Professor, August 2013 - present
Invented Persistent Micelle Templating, the most tunable nanostructure method with polymers
Developed the first atomic layer deposition of bismuth vanadates for solar energy
Organized a coalition of 5 universities and >20 research groups to successful win NSF-MRI

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE in Lausanne, Switzerland
Post Doctoral Researcher with Professor Michael Grätzel, January 2011 - July 2013
Developed a transparent, conducting oxide thin-film coating by atomic layer deposition
Used non-hydrolytic routes to tune oxide defect chemistry in nanoparticles for photovoltaics
Created a record host-guest nanocomposite for hematite based solar water splitting

STANFORD UNIVERSITY in Palo Alto, CA
Research Fellowship, Summer 2004
Center on Polymer Interfaces and Macromolecular Assemblies (CPIMA)
Used fracture mechanics to characterize the debond energy of human stratum corneum
Studied the influence of pH and surfactant treatments on stratum corneum microstructure

Research Funding

UNIVERSITY OF SOUTH CAROLINA
NSF - Major Research Infrastructure \$584,229 (NSF), \$834,614 (TPC) as PI
“MRI: Acquisition of a Small-angle X-ray Scattering Instrument” DMR-1428620
Acquired a state-of-the-art tool to support rapid and high quality measurements locally
Built a new state-wide facility to serve SAXS needs across the state

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Swiss Commission for Technology and Innovation (KTI) 745,000 CHF as personnel
“Precision Fabric based Dye-Sensitized Solar Cells”

Support for 2.5 researchers over 2 years to develop flexible dye sensitized solar cells

European Commission - Proof of Concept 150,000 Euro as personnel

“Indoor Dye-Sensitized Solar Cells”

Support for 1 researcher over 1 year to demonstrate viability of dye-sensitized solar cells under indoor lighting with subcontracted market research analysis

European Commission (FP7) 495,000 Euro as personnel

“Photogenerated Hydrogen from Organic Catalytic Systems”

Support for 2 researchers over 3 years in partnership with 7 participating partners to develop a recently discovered phenomena of organic catalytic systems

Teaching Summary

2017 Spring. **Nanoscale Behavior and Characterization of Block Copolymers**
CHEM 739 (7 students)

2016 Fall. **General Chemistry** CHEM 111 (211 Students, Student Rating 4.73 out of 5)

2016 Spring. **Nanoscale Behavior and Characterization of Block Copolymers**
CHEM 739 (9 Students, Student Rating 4.75 out of 5)

2015 Fall. **General Chemistry** CHEM 111 (177 Students, Student Rating 4.77 out of 5)

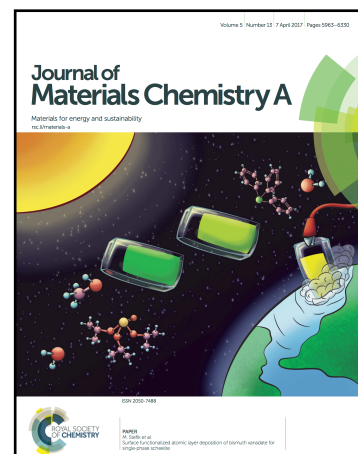
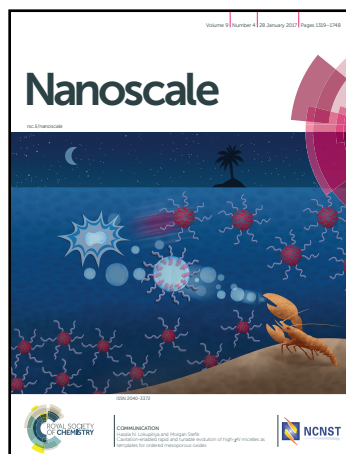
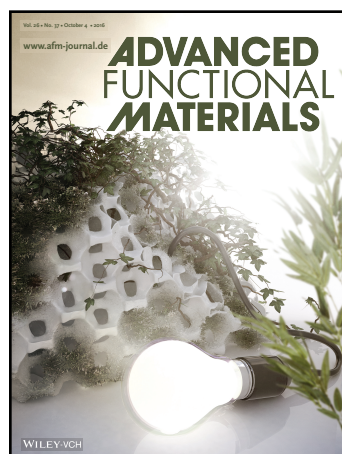
2015 Spring. **Nanoscale Behavior and Characterization of Block Copolymers**
CHEM 739 (12 Students, Student Rating 4.55 out of 5)

2014 Fall. **General Chemistry** CHEM 111 (204 Students, Student Rating 4.47 out of 5)

2013 Fall. **General Chemistry** CHEM 111 (Co-taught 230 Students)

Publications

UNIVERSITY OF SOUTH CAROLINA (2013 to present)



- 45) Sarkar, A.; **Stefik, M.*** How to Make Persistent Micelle Templates in 24 Hours and Know It using X-ray Scattering. *Journal of Materials Chemistry A* 2017, ASAP. 10.1039/C7TA01034F (Invited article)
- 44) Rahman, M. A.; Lokupitiya, H. N.; Ganewatta, M.; Yuan, L.; **Stefik, M.**; Tang, C. Designing Block Copolymer Architectures toward Tough Bioplastics from Natural Rosin. *Macromolecules* **2017**, 50 (5), 2069–2077.
- 43) Sarkar, A.; **Stefik, M.*** Robust Porous Polymers Enabled by Fast Trifluoroacetic Acid Etch with Improved Selectivity for Polylactide. *Material Chemistry Frontiers* **2017**, ASAP. 10.1039/c6qm00266h

- 42) Lamm, B.; Sarkar, A. **Stefik, M.*** Surface Functionalized Atomic Layer Deposition of Bismuth Vanadate for Single-Phase Scheelite. *Journal of Materials Chemistry A* **2017**, 5, 6060 – 6069.
- 41) Bilger, D.; Sarkar, A.; Danesh, C.; Gopinadhan, M.; Braggin, G.; Figueroa, J.; Pham, T.; Chun, D.; Rao, Y.; Osuji, C.; **Stefik, M.***; Zhang, S. Multi-Scale Assembly of Polythiophene-Surfactant Supramolecular Complexes for Charge Transport Anisotropy. *Macromolecules* **2017**, 50(3), 1047–1055.
- 40) Wahab, Z.; Marsh, Z. M.; Tessema, A.; Kidane, A.; **Stefik, M.***; Anneaux, B. L.; Ploehn, H. J. Effect of Nanodiamond Surface Functionalization on the Properties of Nanodiamond/PEEK Composites. *IEEE TCPMT* **2017**, 7(2), 165-177.
- 39) Lokupitiya, H. N.; **Stefik, M.*** Cavitation-Enabled Rapid and Tunable Evolution of High- χ N Micelles as Templates for Ordered Mesoporous Oxides. *Nanoscale* **2016**, In Press. 10.1039/c6nr07313a
- 38) Peters, K.; Lokupitiya, H. N.; Sarauli, D.; Labs, M.; Pribil, M.; Rathousky, J.; Kuhn, A.; Leister, D.*; **Stefik, M.***; Fattakhova-Rohfling, D.* Nanostructured Antimony-Doped Tin Oxide Layers with Tunable Pore Architectures as Versatile Transparent Current Collectors for Biophotovoltaics. *Advanced Functional Materials* **2016**, 26, 6682-6692.
- 37) **Stefik, M.*** Atomic Layer Deposition of Bismuth Vanadates for Solar Energy Materials. *ChemSusChem* **2016**, 9, 1727-1735.
- 36) Lokupitiya, H. N.; Jones, A.; Reid, B.; Guldin, S.; **Stefik, M.*** Ordered Mesoporous to Macroporous Oxides with Tunable Isomorphic Architectures – Solution Criteria for Persistent Micelle Templates. *Chemistry of Materials* **2016**, 28(6), 1653-1667.
- 35) Wang, Z.; Yuan, L.; Trenor, N. M.; Vlaminc, L.; Billiet, S.; Sarkar, A.; Du Prez, F. E.; **Stefik, M.***; Tang, C. Sustainable Thermoplastic Elastomers Derived from Plant Oil and Their “Click-Coupling” via TAD Chemistry. *Green Chemistry* **2015**, 7, 3806-3818.
- 34) Azevedo, J.; Tilley, S. D.; Schreier, M.; **Stefik, M.***; Sousa, C.; Araújo, J. P.; Mendes, A.; Grätzel, M.; Mayer, M. T. Tin oxide as stable protective layer for composite cuprous oxide water-splitting photocathodes. *Nano Energy* **2016**, 24, 10-16.
- 33) **Stefik, M.***; Song, J.; Sai, H.; Guldin, S.; Boldrighini, P.; Orilall, M. C.; Steiner, U.; Gruner, S. M.; Wiesner, U.* Ordered Mesoporous Titania from Highly Amphiphilic Block Copolymers: Tuned Solution Conditions Enable Highly Ordered Morphologies and Ultra-Large Mesopores. *Journal of Materials Chemistry A* **2015**, 3, 11478-11492.
- 32) **Stefik, M.***; Guldin, S.*; Vignolini, S.; Wiesner, U.; Steiner, U. Block Copolymer Self-Assembly for Nanophotonics. *Chemical Society Reviews* **2015**, 44, 5076-5091.
- 31) Guldin, S.; **Stefik, M.***; Sai, H.; Wiesner, U.; Steiner, U. Controlling the Coassembly of Highly Amphiphilic Block Copolymers with a Hydrolytic Sol by Solvent Exchange. *RSC Advances* **2015**, Advanced Article. 10.1039/C5RA00836K
- 30) Lee, Y.H.; **Stefik, M.***; Heiniger, L.-P.; Gao, P.; Seok, S. I.; Grätzel, M.; Nazeeruddin, M. K. Power from the Sun: Perovskite Solar Cells. *IEEE* **2014**, 6925068, 0943-0948.
- 29) Salvatore, S.; Vignolini, S.; Philipott, J.; **Stefik, M.***; Wiesner, U.; Baumberg, J.; Steiner, U. A Higher Transmission Wave-Guide Wire Network Made by Self-Assembly. *Nanoscale* **2014**, 25, 2713–2716.
- 28) Farah, P.; Demetriadou, A.; Salvatore, S.; Vignolini, S.; **Stefik, M.***; Wiesner, U.; Hess, O.; Steiner, U.; Valev, V. K.; Baumberg, J. J. Ultrafast Nonlinear Response of Gold Gyroid Three-Dimensional Metamaterials. *Physical Review Applied* **2014**, 2, 044002.
- 27) Azevedo, J.; Steier, L.; Dias, P.; **Stefik, M.***; Sousa, C. T.; Araújo, J. P.; Mendes, A.; Grätzel, M.; Tilley, D. On the Stability Enhancement of Cuprous Oxide Water Splitting Photocathodes by Low Temperature Steam Annealing. *Energy & Environmental Science* **2014**, 7, 4044-4052.
- 26) Hu, Y.; Yella, A.; Guldin, S.; Schreier, M.; Stellacci, F.; Grätzel, M.; **Stefik, M.***, High-Surface-Area Porous Platinum Electrodes for Enhanced Charge Transfer., *Advanced Energy Materials* **2014**, 4(14), 1400510.

- 25) Tilley, S. D.; Schreier, M.; Azevedo, J.; **Stefik, M.**; Grätzel, M., Ruthenium Oxide Hydrogen Evolution Catalysis on Composite Cuprous Oxide Water-Splitting Photocathodes., *Advanced Functional Materials* **2014**, 24, 303-311.
- 24) **Stefik, M.***; Heiligtag, F. J.; Niederberger, M.; Grätzel, M., Improved nonaqueous synthesis of TiO₂ for dye-sensitized solar cells., *ACS Nano* **2013**, 7, 8981-8989.

Publications

BEFORE UNIVERSITY OF SOUTH CAROLINA

- 23) **Stefik, M.***; Yum, J.-H.; Hu, Y.; Grätzel, M., Carbon-graphene nanocomposite cathodes for improved Co(ii/iii) mediated dye-sensitized solar cells., *Journal of Materials Chemistry A* **2013**, 1, 4982.
- 22) Salvatore, S.; Demetriadou, A.; Vignolini, S.; Oh, S. S.; Wuestner, S.; Yufa, N. A.; **Stefik, M.**; Wiesner, U.; Baumberg, J. J.; Hess, O.; Steiner, U., Tunable 3D extended self-assembled gold metamaterials with enhanced light transmission., *Advanced Materials* **2013**, 25, 2713-2716.
- 21) Kohn, P.; Pathak, S.; **Stefik, M.**; Ducati, C.; Wiesner, U.; Steiner, U.; Guldin, S., Low temperature crystallisation of mesoporous TiO₂., *Nanoscale* **2013**, 5, 10518-10524.
- 20) Guldin, S.; Kohn, P.; **Stefik, M.**; Song, J.; Divitini, G.; Ecarla, F.; Ducati, C.; Wiesner, U.; Steiner, U., Self-cleaning antireflective optical coatings., *Nano Letters* **2013**, 13, 5329-5335.
- 19) Chandiran, A. K.; Yella, A.; **Stefik, M.**; Heiniger, L. P.; Comte, P.; Nazeeruddin, M. K.; Grätzel, M., Low-temperature crystalline titanium dioxide by atomic layer deposition for dye-sensitized solar cells., *ACS Applied Materials and Interfaces* **2013**, 5, 3487-3493.
- 18) **Stefik, M.***; Cornuz, M.; Mathews, N.; Hisatomi, T.; Mhaisalkar, S.; Grätzel, M., Transparent, Conducting Nb:SnO₂ for Host-Guest Photoelectrochemistry. *Nano Letters* **2012**, 12 (10), 5431-5435.
- 17) **Stefik, M.**; Wang, S. T.; Hovden, R.; Sai, H.; Tate, M. W.; Muller, D. A.; Steiner, U.; Gruner, S. M.; Wiesner, U., Networked and Chiral Nanocomposites from ABC Triblock Terpolymer Coassembly with Transition Metal Oxide Nanoparticles. *Journal of Materials Chemistry* **2012**, 22 (3), 1078-1087.
- 16) Rauda, I. E.; Buonsanti, R.; Saldarriaga-Lopez, L. C.; Benjauthrit, K.; Schelhas, L. T.; **Stefik, M.**; Augustyn, V.; Ko, J.; Dunn, B.; Wiesner, U.; Milliron, D. J.; Tolbert, S. H., General Method for the Synthesis of Hierarchical Nanocrystal-Based Mesoporous Materials. *ACS Nano* **2012**, 6 (7), 6386-6399.
- 15) Paracchino, A.; Mathews, N.; Hisatomi, T.; **Stefik, M.**; Tilley, S. D.; Grätzel, M., Ultrathin Films on Copper(i) Oxide Water Splitting Photocathodes: A Study on Performance and Stability. *Energy & Environmental Science* **2012**, 5 (9), 8673-8681.
- 14) Hisatomi, T.; Dotan, H.; **Stefik, M.**; Sivula, K.; Rothschild, A.; Grätzel, M.; Mathews, N., Enhancement in the Performance of Ultrathin Hematite Photoanode for Water Splitting by an Oxide Underlayer. *Advanced Materials* **2012**, 24 (20), 2699-2702.
- 13) Vignolini, S.; Yufa, N. A.; Cunha, P. S.; Guldin, S.; Rushkin, I.; **Stefik, M.**; Hur, K.; Wiesner, U.; Baumberg, J. J.; Steiner, U., A 3D Optical Metamaterial Made by Self-Assembly. *Advanced Materials* **2012**, 24 (10), OP23-OP27.
- 12) Guldin, S.; Docampo, P.; **Stefik, M.**; Kamita, G.; Wiesner, U.; Snaith, H. J.; Steiner, U., Layer-by-Layer Formation of Block-Copolymer-Derived TiO₂ for Solid-State Dye-Sensitized Solar Cells. *Small* **2012**, 8 (3), 432-440.
- 11) Docampo, P.; **Stefik, M.**; Guldin, S.; Gunning, R.; Yufa, N. A.; Cai, N.; Wang, P.; Steiner, U.; Wiesner, U.; Snaith, H. J., Triblock-Terpolymer-Directed Self-Assembly of Mesoporous TiO₂: High-Performance Photoanodes for Solid-State Dye-Sensitized Solar Cells. *Advanced Energy Materials* **2012**, 2 (6), 676-682.

- 10) Guldin, S.; Kolle, M.; **Stefik, M.**; Langford, R.; Eder, D.; Wiesner, U.; Steiner, U., Tunable Mesoporous Bragg Reflectors Based on Block-Copolymer Self-Assembly. *Advanced Materials* **2011**, 23 (32), 3664-3668.
- 9) Guldin, S.; Huettner, S.; Tiwana, P.; Orilall, M. C.; Uelguet, B.; **Stefik, M.**; Docampo, P.; Kolle, M.; Divitini, G.; Ducati, C.; Redfern, S. A. T.; Snaith, H. J.; Wiesner, U.; Eder, D.; Steiner, U., Improved Conductivity in Dye-Sensitized Solar Cells through Block Copolymer Confined TiO₂ Crystallisation. *Energy & Environmental Science* **2011**, 4 (1), 225-233.
- 8) **Stefik, M.**; Mahajan, S.; Sai, H.; Epps, T. H. I.; Bates, F. S.; Gruner, S. M.; Wiesner, U., Networked Nanocomposites Derived from Block Terpolymers. *PMSE Preprints* **2010**.
- 7) Li, L.; Krissanasraanee, M.; Pattinson, S. W.; **Stefik, M.**; Wiesner, U.; Steiner, U.; Eder, D., Enhanced Photocatalytic Properties in Well-Ordered Mesoporous WO₃. *Chemical Communications* **2010**, 46 (40), 7620-7622.
- 6) Docampo, P.; Guldin, S.; **Stefik, M.**; Tiwana, P.; Orilall, M. C.; Huettner, S.; Sai, H.; Wiesner, U.; Steiner, U.; Snaith, H. J., Control of Solid-State Dye-Sensitized Solar Cell Performance by Block-Copolymer-Directed TiO₂ Synthesis. *Advanced Functional Materials* **2010**, 20 (11), 1787-1796.
- 5) **Stefik, M.**; Sai, H.; Sauer, K.; Gruner, S. M.; DiSalvo, F. J.; Wiesner, U., Three-Component Porous-Carbon-Titania Nanocomposites through Self-Assembly of ABCBA Block Terpolymers with Titania Sols. *Macromolecules* **2009**, 42 (17), 6682-6687.
- 4) **Stefik, M.**; Mahajan, S.; Sai, H.; Epps, T. H.; Bates, F. S.; Gruner, S. M.; DiSalvo, F. J.; Wiesner, U., Ordered Three- and Five-ply Nanocomposites from ABC Block Terpolymer Microphase Separation with Niobia and Aluminosilicate Sols. *Chemistry of Materials* **2009**, 21 (22), 5466-5473.
- 3) **Stefik, M.**; Lee, J.; Wiesner, U., Nanostructured Carbon-Crystalline Titania Composites from Microphase Separation of Poly(ethylene oxide-*b*-acrylonitrile) and Titania Sols. *Chemical Communications* **2009**, (18), 2532-2534.
- 2) **Stefik, M.**; DiSalvo, F. J.; Wiesner, U., Block Copolymer Derived Nanocomposites towards Designer Electrode Materials. *Prepr. Symp. Am. Chem. Soc., Div. Fuel Chem.* **2009**, 54 (2), 673.
- 1) Wu, K. S.; **Stefik, M.**; Ananthapadmanabhan, K. P.; Dauskardt, R. H., Graded Delamination Behavior of Human Stratum Corneum. *Biomaterials* **2006**, 27 (34), 5861-5870.

Presentations

UNIVERSITY OF SOUTH CAROLINA (2013 to present)

- 43) **Precision Nanomaterials for Energy Applications.** Presentation at Winthrop College, Rock Hill, SC. Apr 20 2017.
- 42) **Precision tunable nanomaterials from persistent micelle templates.** Presentation at the American Chemical Society National Meeting, San Francisco, CA. Apr 6 2017.
- 41) **Phase-pure and Photoactive Scheelite from Atomic Layer Deposition.** Presentation at the American Chemical Society National Meeting, San Francisco, CA. Apr 3 2017.
- 40) **Precision Nanomaterials for Energy Applications.** Presentation at the University of Oregon, Eugene, Or. Mar 31 2017.
- 39) **Precision Nanomaterials for Energy Applications.** Presentation at Oregon State University, Corvallis, Or. Mar 30 2017.
- 38) **Precision Nanomaterials for Energy Applications.** Presentation at Pacific Northwest National Lab, Richland, WA. Mar 29 2017.
- 37) **Atomic Layer Deposition of Bismuth Vanadate.** Presentation at the Materials Research Society, Boston, MA. Dec 2016.
- 36) **Persistent Micelles as Versatile Nanomaterial Templates.** Invited talk at the University of Akron, Akron, OH. Nov. 2016.
- 35) **Precision Functional Materials Derived from Block Copolymers.** Presentation at the South Eastern Regional ACS Meeting, Columbia, SC. Oct 2016.

- 34) **Design and Fabrication of Precision Nanomaterials for Energy Applications.** Invited talk at the Worcester Polytechnic University, Worcester, MA. Oct 2016.
- 33) **Bismuth Vanadate by Atomic Layer Deposition.** Presentation at NanoGE Solar Fuels 2016, Berlin, Germany. Sept 2016.
- 32) **Design of Novel Block Copolymers for Solution Processing of Advanced Nanomaterials.** Invited talk at Organic Chemistry 2016, Las Vegas, NV. Aug 2016
- 31) **Micelle Entrapment for Precision Nanomaterials from Block Copolymers.** Presentation at the Gordon Conference on Polymer Physics at Mount Holyoke College, Holyoke, MA .July, 2016.
- 30) **Atomic Layer Deposition of Bismuth Vanadates for Solar Energy Materials.** Presentation at ICMOVPE, San Diego, CA. July 2016.
- 29) **The Materials Chemistry of Precision Nanomaterials.** Invited talk at University of California at Santa Cruz, Santa Cruz, CA. July 2016.
- 28) **Physics of Block Copolymer Solutions for Precision Nanomaterials.** Invited talk at Howard University, Washington DC. Apr 2016.
- 27) **Precision Nanomaterials from Block Copolymers.** Invited talk at the University of Connecticut, Storrs, Ct. Mar 2016.
- 26) **Precision Nanomaterials from Block Copolymers.** Invited talk at the University of South Carolina, Columbia, SC. Feb 2015.
- 25) **The Materials Chemistry of Self-Assembly to Enable the Next Generation of Alternative Energy Devices.** Invited talk at California Polytechnic State University, San Luis Obispo, CA. Nov 2015.
- 24) **Life as a University Researcher.** Invited talk at annual meeting of McNair students, Columbia, SC. June 2015.
- 23) **Design of Novel Block Copolymer Assembly Systems.** Paper presented at the European Materials Research Society, Lille, France. May 2015.
- 22) **Self-Assembly Methods for Nano-Enabled Materials.** Invited talk at the University of Munich, Germany. May 2015.
- 21) **High Performance Porous Platinum Counter Electrodes for Co(II/III) based Dye-Sensitized Solar Cells.** Paper presented at the Electrochemical Society meeting in Orlando, FL. May 2014.
- 20) **Anhydrous Oxide Nanoparticle Synthesis for Tunable Optoelectronic Properties.** Paper presented at the Materials Research Society meeting in San Francisco, CA. April 2014.

- 19) **Nanocomposite Carbon-Graphene Electrodes for Dye-Sensitized Solar Cells.** Paper presented at the European Materials Research Society meeting in Strasbourg, France. May 2013.
- 18) **New Composite Hematite Architectures for Solar Fuels.** Paper presented at the Materials Research Society meeting in San Francisco, CA. April 2013.
- 17) **Polymers for Nanodevices: Tailored Materials Chemistry.** Invited talk at the University of South Carolina, Department of Chemistry and Biochemistry. January 2013.
- 16) **Towards Nanonetworked Energy Devices from Block Copolymers.** Invited talk at the University of Oxford, Department of Physics, United Kingdom. July 2012.
- 15) **Solar Water Splitting with Hematite Heteronanostructures.** Invited speaker at The Rank Prize Funds in Grasmere, United Kingdom. June 2012.
- 14) **Host-Guest Composite Architectures towards High Efficiency Water Splitting with Fe_2O_3 .** Paper presented at Nanostructured Systems for Solar Fuel Production in Mallorca, Spain. March 2012.
- 13) **Networked Nanocomposites Derived from Block Terpolymers.** Paper presented as a finalist for the 2010 AkzoNobel Student Award at the American Chemical Society meeting in Boston, MA. August 2010.
- 12) **Gyroid Nanocomposites from ABC polymers.** Poster presented at the Cornell High Energy Synchrotron Source User meeting at Cornell University. June 2010.
- 11) **Three-Dimensionally Networked Nanocomposites.** Paper presented at the Materials Research Society meeting in San Francisco, CA. April 2010.
- 10) **Networked Oxide Nanocomposites from Evaporative Coassembly with ABC Polymers.** Paper presented at the Materials Research Society meeting in San Francisco, CA. April 2010.
- 9) **Ordered Three-Dimensional Oxide Nano-Networks from ABC Polymers.** Poster presented at the Materials Research Society meeting in San Francisco, CA. April 2010.
- 8) **Three-Domain Nanocomposites from Block Terpolymer Microphase Separation.** Paper presented at the Materials Research Society meeting in Boston, MA. December 2009.
- 7) **Block Terpolymer Derived Nanocomposites Towards Designer Electrode Materials.** Poster presented at the Materials Research Society meeting in Boston, MA. December 2009.
- 6) **Block Terpolymer Derived Nanocomposites.** Paper presented at the Materials Science and Engineering Seminar at Cornell University. September 2009.
- 5) **Block Terpolymer Derived Nanocomposites toward Designer Electrode Materials.** Paper presented at the American Chemical Society meeting in Washington DC. August 2009.
- 4) **Use of a Block Copolymer as Structure Directing Agent and Carbon Source for the Spatially Confined Growth of Transition-Metal Oxides.** Paper presented at the Materials Research Society meeting in San Francisco, CA. April 2009.
- 3) **Three-Component Porous-Carbon-Titania Nanocomposites through Self-Assembly of ABCBA Block Terpolymers with Titania Sols.** Poster presented at the Polymer Outreach Program and Cornell Fuel Cell Symposium at Cornell University. May 2009.
- 2) **Mesostructured Graphitic Carbon-Crystalline Titania Composites.** Poster presented at the Polymer Outreach Program at Cornell University. May 2008.
- 1) **Using Fracture Mechanics to Characterize the Debond Energy of Human Stratum Corneum: Influence of pH Treatment.** Poster presented at the Center on Polymer Interfaces and Macromolecular Assemblies forum at the IBM Almaden Research Center. August 2004.

Community Service

SCSC Outreach Program, Summer 2016
Judge for USC Discovery Day, April 22, 2016
Judge for ASBMB Science Fair, March 1, 2016
Judge for Graduate Students Awards Competition, Feb. 19, 2016
SCSC Outreach Program, Summer 2015
Educational SAXS program served more than 20 students from 4 local universities
Judge for USC Discovery Day, April 24, 2015
Judge for USC Wi-Sci, Women in Science Poster Competition, April 23, 2015
Judge for USC Science and Engineering Fair, March 13, 2015
Judge for Society for Applied Spectroscopy Poster Competition, February 20, 2015
Judge for USC Science and Engineering Fair, March 2014

Other Research Experiences

CALIFORNIA POLYTECHNIC STATE UNIVERSITY in San Luis Obispo, CA

Research for Senior Project, September 2004 - June 2005

Used a self-assembly process to tune mesoporous titania for solar-cell applications
Characterized porosity with small-angle X-ray scattering and nitrogen physisorption

Research for Lockheed Martin, Winter 2004

Analyzed irradiated microchip plastics with Fourier Transform Infrared Spectroscopy
Determined suitability of a range of plastic materials for use in outerspace

Personal Grants

EPFL Prestations d'une Valeur Exceptionnelle, 2012

Cornell Center for Nanoscale Systems Fellowship 2006 and 2007

Materials Information Society (ASM, Santa Clara Valley Chapter) and The Society for the Advancement of Material and Process Engineering (SAMPE, Northern California Chapter)
ASM-SAMPE Scholarship 2005

Center on Polymer Interfaces and Macromolecular Assemblies (CPIMA) NSF
Summer Undergraduate Research Experiences (SURE) Fellowship 2004

Adele and Aldo Alessio Scholarship 2004

Golden State ScholarShare Trust 2001

Honors and Awards

UNIVERSITY OF SOUTH CAROLINA:

Identified as a "rising star of materials chemistry" by RSC April 2017

Cottrell Scholars Collaborative New Faculty Workshop July 2014

CORNELL UNIVERSITY:

MSE Graduate Student Presentation Competition Winner 2009

CALIFORNIA POLYTECHNIC STATE UNIVERSITY:

Engineering College Recognition of Academic Excellence May 2005

President's Honors List 2002, 2003, 2004, 2005

Dean's Honor List (Fall) 2001, (Spring, Winter) 2002, (Fall, Spring, Winter) 2003,
(Fall, Spring, Winter) 2004, (Fall, Spring, Winter) 2005

Alpha Sigma Mu Materials Science and Engineering Honor Society 2004

Tau Beta Pi Engineering Honor Society 2004

Tenaya Hall Living/Learning Program Honor Society 2001, 2002

