

Emily Pentzer, PhD

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Education

Ph.D. Northwestern University (Evanston, IL): August 2005-May 2010. Thesis title: RCM and ROMP: Metathesis routes to novel monomers and degradable polymers (Advisor: Prof. SonBinh T. Nguyen).

B.S. Butler University (Indianapolis, IN): Aug 2001-May 2005. Highest honors in chemistry, summa cum laude. Thesis title: Isolation and identification of compounds in caramelized carbohydrates (Advisor: Prof. Anne Wilson).

Professional Experience

Frank Hovorka Assistant Professor of Chemistry, Case Western Reserve University (Cleveland, OH): July 2017-Present.

Adjunct Professor, Macromolecular Science and Engineering, Case Western Reserve University (Cleveland, OH): July 2016-Present.

Assistant Professor of Chemistry, Case Western Reserve University (Cleveland, OH): July 2013-June 2017.

Postdoctoral Associate, University of Massachusetts Amherst Polymer Science and Engineering (Amherst, MA): July 2010-May 2013. Project title: Synthesis and assembly of n-type and p-type materials for organic photovoltaic applications (Advisor: Prof. Todd Emrick).

Current Research Areas

Tailoring organic materials properties using chemical modification to improve energy management and interconversion

<http://caslabs.case.edu/pentzer/>

1. 2D materials at interfaces
2. Novel polymer backbone chemistries from chain growth polymerizations
3. Responsive conjugated molecules

Selected Awards & Honors

2017	CWRU Outstanding Professor Award from Engineering Groups
2017	PMSE Young Investigator
2016	NSF CAREER Award
2015	CWRU Glennan Fellowship
2014	CWRU Carl Wittke Award for Undergraduate Teaching (nominee)
2014	ACS Petroleum Research Fund New Investigator Award
2009	Northwestern Univ. Gelewitz Award for outstanding chemistry graduate student
2006	National Science Foundation Graduate Research Fellow
2005	Butler University Corrine Welling Scholarship

2003 Eli Lilly Science Scholar

Professional Memberships

2016-present	Royal Society of Chemistry (RSC)
2015-present	International Polymer Colloids Group (IPCG)
2015-present	Microscopy Society of Northeast Ohio (MSN)
2013-2015	American Association for the Advancement of Science (AAAS)
2006-present	American Chemical Society (ACS, PMSE and POLY divisions)
2004-present	Iota Sigma Pi National Honor Society of Women in Chemistry

Publications

Undergraduate co-authors are underlined. *High school co-authors are italicized.*

In preparation

- (1) Controlling Functionalization of Graphene Oxide by pH: Two Routes to modification with Thiols. De Leon, A.; Mellon, M.; **Pentzer, E.**
- (2) Compositional Changes Associated with the Chemical Exfoliation of Two-Dimensional Transition Metal Oxides, Pachuta, K. G.; **Pentzer, E. B.**; Sehirlioglu, A.
- (3) Perylene diimide bearing different trialkyl silyl ethers: Impact of asymmetric functionalization on self-assembly into nanostructures. Matthews, R.; Swisher, J.; Glasser, E.; **Pentzer, E.**
- (4) 2D Materials at Fluid-Fluid Interfaces. Wei, P.; Luo, Q.; Rodier, B.; Hemmingsen, C.; **Pentzer, E.**
- (5) Carbon Capsules of Ionic Liquid for Enhanced Supercapacitor Performance. Luo, Q.; Wei, P.; Huang, Q.; Gurkan, B.; **Pentzer, E.**

Submitted

- (1) Polymer-Free Microencapsulation of Phase Change Materials Using Carbon Nanoparticle-Based Surfactants. Advincula, P. B. A.; de Leon, A.; Advincula, R.; **Pentzer, E.**
- (2) A Plastic Metal-Free Electric Motor by 3D Printing of Graphene-Polyamide Powder. De Leon, A.; Rodier, B.; Bajamundi, C.; Espera, A.; Kwon, J.; *Williams, J.*; *Ilijasic, F.*; Advincula, R.; **Pentzer, E.**

Independent Career

- (1) Polymerizations in Oil-in-Oil Emulsions using 2D Nanoparticle Surfactants. Rodier, B. J.; de Leon, A.; Hemmingsen, C.; **Pentzer, E.** *Polymer Chemistry*, **2017**, accepted. (*Emerging Investigator Issue*)
- (2) Stabilization of Oil-in-Oil Emulsions Using 2D Materials. Rodier, B.; de Leon, A.; Hemmingsen, C.; Advincula, R.; **Pentzer, E.** *ACS Macro Letters*, **2017**, 6, 1201-1206. DOI: 10.1021/acsmacrolett.7b00648
- (3) Polymerization of Silyl Ketenes: A Combined Computational and Experimental Approach. Xiang, Y.; Albrecht, B. J.; Tragesser, L.E.; McCaffrey, J.; Lambrecht, D.; **Pentzer, E.** *Polymer Chemistry*, **2017**, 8, 5381-5387. DOI: 10.1039/C7PY00858A

- (4) Distinct Chemical and Physical Properties of Janus Graphene Oxide. De Leon, A.; Rodier, B.; Luo, Q.; Wei, P.; Hemmingsen, C.; Abbasi, K.; Advincula, R.; **Pentzer, E.** *ACS Nano*, **2017**, *11*, 7485-7493. DOI:10.1021/acsnano.7b04020
- (5) Organofunctional Silanes for Stabilization of Aluminum-Doped Zinc Oxide Surfaces. Matthews, R.; Glasser, E.; Sprawls, S. C.; French, R. H.; Peshek, T.; **Pentzer, E.**; Martin, I. *ACS Appl. Mat. & Int.* **2017**, *9*, 17620-17628. DOI:10.1021/acsami.7b02638
- (6) Beyond Binary: Data Storage in Polymer Films with 0, 1, 2, and 3. Wei, P.; Li, B.; de Leon, A.; **Pentzer, E.** *J. Mat. Chem. C* **2017**, *5*, 5780-5786. (*Emerging Investigators Issue*). Highlighted in Chemistry World, Highlighted by AAAS. DOI:10.1039/C7TC00929A
- (7) Simultaneous Reduction and Functionalization of Graphene Oxide via Ritter Reaction. De Leon, A.; Alonso, L.; Magdalena, J.; Advincula, R.; **Pentzer, E.** *ACS Appl. Mat. & Int.* **2017**, *9*, 14265-14272. DOI:10.1021/acsami.7b01890
- (8) Polymer Composites with Photo-Responsive Phthalocyanine for Patterning in Colour and Fluorescence. Li, B.; Wei, P.; de Leon, A.; Frey, T.; **Pentzer, E.** *European Polymer Journal*, **2017**, *89*, 399-405. DOI:10.1016/j.eurpolymj.2017.02.042
- (9) Hollow microcapsules via stitching together of graphene oxide nanosheets with a di-functional small molecule. Luo, Q., Wei, P.; **Pentzer, E.** *Carbon*. **2016**, *106*, 125-131. DOI: 10.1016/j.carbon.2016.05.024
- (10) Polythioether Particles Armored with Graphene Oxide Nanosheets. Rodier, B. J.; Mosher, E. P.; Burton, S. T.; Matthews, R.; **Pentzer, E.** *Macromol. Rap. Comm.*, **2016**, *37*, 894-899. DOI: 10.1002/marc.201600093
- (11) Selective Mono-facial Modification of Graphene Oxide Nanosheets in Suspension. McGrail, B.T.; Magdalena, J.; Rodier, B.J.; Swisher, J.; Advincula, R.; **Pentzer, E.** *Chem Comm.* **2016**, *52*, 288-291. DOI: 10.1039/C5CC05596B
- (12) Interfacial Trapping in an Aged Discotic Liquid Crystal Semiconductor. Dawson, N.; Patrick, M. S.; Paul, S.; Ellman, B.; Semyonov, A. R.; Twieg, R. J.; Matthews, R.; **Pentzer, E.**; Singer, K. D. *Journal of Applied Physics*, **2015**, *118*, 085502. DOI:10.1063/1.4929749
- (13) Polymer Composites for Thermoelectric Applications. McGrail, B.T.; Sehirlioglu, A.; **Pentzer, E.** *Angewandte Chemie*, **2015**, *54*, 1710-1723. DOI: 10.1002/anie.201408431
- (14) Rapid Covalent Functionalization of Graphene Oxide in Water. McGrail, B. T.; Rodier, B. J.; **Pentzer, E.** *Chem. Mater.* **2014**, *26*, 5806-5811. DOI: 10.1021/cm5031409

As Post Doc, Graduate, and Undergraduate Student

- (1) Selective Nucleation of Poly(3-hexyl thiophene) Nanofibers on Multilayer Graphene Substrates. Acevedo-Cartagena, D.E.; Zhang, Y.; Trabanino, E.; **Pentzer, E.**; Emrick, T.; Briseno, A.L.; Hayward, R.C. *ACS Macro Letters*, **2015**, *4*, 483-487. DOI: 10.1021/acsmacrolett.5b00038
- (2) Morphology-Dependent Electronic Properties in Cross-linked (P3HT-b-P3MT) Block Copolymer Nanostructures. Baghgar, M.; Barnes, A.M.; **Pentzer, E.**, Wise, A.J.; Emrick, T.; Dinsmore, T.; Barnes, M.D. *ACS Nano*, **2014**, *8*, 8344-8349.
- (3) Preparation of Low Band Gap Fibrillar Structures by Solvent Induced Crystallization. Wang, H.W.; **Pentzer, E.B.**; Emrick, T.; Russell, T. *ACS Macro Letters*, **2014**, *3*, 30-34. DOI: 10.1021/mz400431s
- (4) Cross-Linked Functionalized Poly(3-hexylthiophene) Nanofibers with Tunable Excitonic Coupling. Baghgar, M.; **Pentzer, E.**; Wise, Adam; Labastide, Joelle; Emrick, Todd; Barnes, Mike. *ACS Nano*, **2013**, *7*, 8917-8923. DOI: 10.1021/nn403392b
- (5) Nanoscale Assembly into Extended and Continuous Structures and Hybrid Materials. Emrick, T.; **Pentzer, E.** *NPG Asia Materials*, **2013**, *5*, e43. DOI:10.1038/am.2012.73

- (6) Growth of Polythiophene/Perylene Tetracarboxydiimide Donor/Acceptor Shish-Kebab Nanostructures by Coupled Crystallization Modification. Bu, L.; **Pentzer, E.**; Bokel, F.; Emrick, T.; Hayward, R. *ACS Nano*, **2012**, *6*, 10924-10929. DOI: 10.1021/nn3043836
- (7) Probing Inter- and Intrachain Exciton Coupling in Isolated Poly(3-hexylthiophene) Nanofibers: Effect of Solvation and Regioregularity. Baghgar, M.; Labastide, J.; Bokel, F.; Dujovne, I.; McKenna, A.; Barnes, A. M.; **Pentzer, E.**; Emrick, T.; Hayward, R.; Barnes, M. D. *J. Phys. Chem. Lett.*, **2012**, *3*, 1674-1649.
- (8) Nanocomposite "Superhighways" by Solution Assembly of Semiconductor Nanostructures with Ligand-Functionalized Conjugated Polymers. **Pentzer, E.**; Bokel, F.; Hayward, R.; Emrick, T. *Advanced Materials*, **2012**, *24*, 2254-2258. DOI: 10.1002/adma.201104788
- (9) Sterically-Stabilized Nanoparticles in Solutions and at Interfaces. Miesch, C.; **Pentzer, E.**; Emrick, T. In *Comprehensive Polymer Science*, **2011**. doi:10.1016/B978-0-444-53349-4.00183-7
- (10) Assembly of Poly(3-Hexylthiophene)/CdSe Hybrid Nanowires by Co-crystallization. Bokel, F.; Sudeep, P.; **Pentzer, E.**; Emrick, T.; Hayward, R. *Macromolecules*, **2011**, *44*, 1768-1770.
- (11) Substrate Encapsulation: An Efficient Strategy for the RCM Synthesis of Unsaturated ϵ -Lactones. **Pentzer, E. B.**; Gadzikwa, T.G.; Nguyen, S.T. *Organic Letters*, **2008**, *10*, 5613-5615. (Highlighted in organic chemistry portal: <http://www.organic-chemistry.org/Highlights/2009/15June.shtm>)
- (12) Bioactive and Therapeutic ROMP Polymers. Smith, D.; **Pentzer, E. B.**; Nguyen, S. T. *Polymer Reviews*, **2007**, *47*, 419-459.
- (13) The Distribution of Fox Squirrel (*Sciurus niger*) Leaf Nests within Forest Fragments in Central Indiana. Salsbury, C. M.; Dolan, R. W.; **Pentzer, E. B.** *American Midland Naturalist*, **2004**, *151*, 369-377.

Collaborators

- Prof. Rigoberto Advincula (CWRU, Department of Macromolecular Science and Engineering)
- Prof. Daniel Lambrecht (University of Pittsburgh, Department of Chemistry)
- Prof. Alp Sehirlioglu (CWRU, Department of Materials Science)
- Dr. Ina Martin (CWRU, Department of Physics and Director of Materials for Optoelectronic Research and Education Center)
- Prof. Per Zetterlund (University of New South Wales, Australia, Centre for Advanced Macromolecular Design)
- Prof. Burcu Gurkan (CWRU, Department of Chemical Engineering)

Oral Presentations

2017: Cleveland State University (Chemistry); ACS COLL division (Washington, DC); ACS ENFL division (Washington, DC); ACS POLY division (Washington, DC); GPC2017 (Atlanta, GA, invited); 3rd Functional Polymeric Materials Conference (Rome, Italy, invited); Emergent Macromolecular Systems at CUNY (New York, NY, invited); Cleveland State University (Cleveland, OH); Cal Poly San Luis Obispo (San Luis Obispo, CA); National Meeting of the American Chemical Society (San Francisco, CA, invited); UMass Amherst (Amherst, MA); Penn State University (State College, PA); Butler University (Indianapolis, IN); Hunter College (New York, NY); University of Akron (Akron, OH).

2016: Australasian Polymer Symposium (Lorne, Australia, **Keynote**); Denison University (Granville, OH); Wright State University (Dayton, OH); PC2016 (Changchun, China, invited); 5th Zing Polymer Chemistry Conference (Malahide, Ireland, invited); ACS Workshop on Polymer Composites and High Performance Materials (Sonoma, CA, invited); Warwick Polymers

Conference (Warwick, UK, invited); USA-Japan Conference on Polymer Chemistry (Niseko, Japan, invited); Regional Meeting of the American Chemical Society (Cincinnati, OH, invited); Tosoh Bioscience Polymer Characterization Symposium (Akron, OH, invited); The Ohio State University (Columbus, OH); National Meeting of the American Chemical Society (San Diego, CA, invited); University of Maine (Orono, ME); University of New Hampshire (Durham, NH).

2015: Pacifichem 2015 (Honolulu, HI, invited); CWRU (Materials Science and Engineering, Cleveland, OH, invited); University of Southern Mississippi (Hattiesburgh, MS, invited); Tulane University (New Orleans, LA, invited); University of Mississippi (Oxford, MS, invited); University of Memphis (Memphis, TN, invited); National Meeting of the American Chemical Society (Boston, MA, invited); Fusion conference on Functional Polymeric Materials (Ascot, England, invited); International Polymer Colloids Group Conference (Durham, NH, invited); Wright Patterson Air Force base (Fairborn, OH); National Meeting of the American Chemical Society (Denver, CO, invited)

2014: Fusion Conference on Functional Polymeric Materials (Cancun, Mexico, invited); National Meeting of the American Chemical Society (Dallas, TX, invited); University of Florida (Gainesville, FL, student chapter seminar speaker); CWRU (Chemical Engineering Department, Cleveland, OH); National Meeting of the American Chemical Society (San Francisco, CA, invited); John Carroll University (Cleveland, OH); Youngstown State University (Youngstown, OH); International Symposium on Stimuli Responsive Materials (Sonoma, CA, invited); Zing Polymer Chemistry Conference (Cancun, Mexico, invited)

2013: CWRU (Physics Department, Cleveland, OH); University of Pittsburgh (Pittsburgh, Pennsylvania); National Meeting of the American Chemical Society (Indianapolis, Indiana); University of Zimbabwe (Harare, via Skype); Case Western Reserve University (Cleveland, Ohio); University of Georgia (Athens, Georgia); University of Maine (Orono, Maine); Washington University (St. Louis, Missouri)

2012: New Mexico Institute of Mining and Technology; (Socorro, New Mexico); University of Washington (Seattle, Washington); National Meeting of the American Chemical Society (San Diego, CA)

2011: Oak Ridge National Lab (Oak Ridge, Tennessee); Energy Frontiers Research Summit and Forum (Washington, DC)

2010: Clean Energy Connections Conference and Opportunity Fair (Springfield, MA)

2009: Graduate Research Symposium of the Gordon Research Conference on Macromolecular Materials (Ventura, CA)

2008: NATO Advanced Summer Institute on New Materials via Metal Mediated Macromolecular Engineering: From Complex to Nano Structures (Antalya, Turkey)

Journal Referee

Journal of the American Chemical Society, Polymer Chemistry, Advanced Materials, Angewandte Chemie, Journal of Materials Chemistry A, Journal of Materials Chemistry C, Chemistry: an Asian Journal, Chemical Communications, Chemistry of Materials, Macromolecules, Chemical Science, Macromolecular Materials and Engineering, ACS Macro Letters, ACS Applied Materials and Applied Interfaces, European Polymer Journal

Ad Hoc Reviewer and Panelist

- National Science Foundation-PREM (2017)
- National Science Foundation- Division of Solid State and Materials Chemistry
- National Science Foundation- Division of Chemical, Bioengineering, Environmental, and Transport Systems
- CWRU School of graduate studies panel on Writing a Thesis (panelist, 2017)
- American Chemical Society Petroleum Research Fund
- National Science Foundation- Division of Materials Research
- National Science Foundation- Division of Chemistry
- American Chemical Society- POLY division Henkel award
- NASA NSPIRES
- AIAA Propulsion and Energy Forum on Advanced Terrestrial Energy Technologies (panelist, 2014)
- Careers in academic chemistry at Northwestern University chemistry (panelist, 2014)

National and International Service

- Associate Editor, Polymer Chemistry (a journal of the RSC), 2015-present
- Guest Editor, Polymer Chemistry special issue *Pioneering Investigators*, 2017
- Mentor for NSF sponsored *Future Faculty Workshop: Grooming Diverse Leaders for the Future*, 2016-present (co-organizer 2017)
- Scientific advisory board: GPC2017 conference (co-organizer 2019)
- Organizer of Symposium at national ACS meetings
 - *Design Principles of Functional Macromolecular Materials* (ACS Denver, PMSE division, spring 2015) with Luis Campos, Karen Wooley, AJ Boydston
 - *Polymer Chemistry (RSC) Lectureship Series* (ACS San Francisco, POLY division, spring 2017), with Jeremiah Johnson, Wei You
 - *Janus Particles: Synthesis, Characterization, and Application* (ACS San Francisco, PMSE division, spring 2017), with Daeyeon Lee, Stefan Bon, Steffano Saccana
- Discussion leader
 - Gordon Conference for Polymers (Mt. Holyoke, MA, summer 2015)
 - Gordon Conference for Polymers (Mt. Holyoke, MA, summer 2017)
 - Power Hour Leader at GRC on Polymers (Mt. Holyoke, MA, summer 2017)
- ACS POLY division Publicity Chair, 2015-present
- ACS POLY and PMSE student chapter coordinator, 2014-2017
- Cleveland ACS Meeting in Miniature, Judge (Baldwin Wallace, spring 2014)
- ShowCASE, Judge (CWRU, spring 2014)
- Chemistry Women Mentorship Network, 2013-present

University and Department Service

- Seminar coordinator, department of chemistry, 2017-present
- Swagelock Center for Surface Analysis of Materials internal advisory board member, 2016-present
- University Safety Committee, 2015-present
- Department of Chemistry Safety Committee, 2016-present
- Graduate Recruitment and Admissions Committee, Chemistry Department CWRU, 2013-present

- Co-organizer and presenter: lunch-and-learn on “How to Apply to Graduate School”, 2015-present
- ShowCASE program board member, CWRU, 2014-2015
- Case Western Reserve University Innovation Summit, attendee, 2015
- Presenter: Organic electronics summer school in northeast Ohio, 2015, 2016
- Institute for Advanced Materials (IAM) internal advisory board member, CWRU, 2014-2016
- ARPA-e summit in Washington, D.C., CWRU representative, 2014
- UC Center for Laboratory Workshop, CWRU representative, 2014

Student Awards and Fellowships

- NASA, *Harriet G. Jenkins Graduate Research Fellowship* for Mr. Bradley Rodier
 - 2013-2017; \$172,000
- CWRU, *PSURG Summer Research Scholarship* for
 - Mr. Spencer Burton 2015, \$4,000
 - Mr. Eric Mosher 2016, \$4,000
 - Ms. Christina Hemmingsen 2017, \$4,000
- ShowCASE poster award for graduate student, honorable mention for Ms. Rachael Matthews
 - 2015
- ShowCASE poster award for undergraduate student, honorable mention Ms. Riki Drout
 - 2016

PhD Committee Member

- **Chemistry**
 - Christopher McCleese (PhD, 2016)
 - Andrew Kollar (chair, MS 2016)
 - Regina DiScipio
 - Jeremy Hesse
 - Jerod Kinser
 - Chunlai Wang (chair)
 - Angel Placeres-Beltran
 - Joseph Mihay
 - Jayvic Jiminez
- **Other Departments**
 - Melanie Hutnik (Macromolecular Science and Engineering, PhD 2017)
 - Mingze Sun (Macromolecular Science and Engineering, PhD 2017)
 - Lindsey Montak (Macromolecular Science and Engineering, PhD 2017)
 - Joey Magdalena (Macromolecular Science and Engineering, PhD 2016)
 - Abdulkarim Gok (Materials Science and Engineering, MS 2015)
 - Brian Michal (Macromolecular Science and Engineering, PhD 2016)
 - Qiong Wu (Macromolecular Science and Engineering, PhD 2016)

Mentees

Current Mentees

- Postdocs:
- PhD students

- Ms. Rachael Matthews (2013-present),
- Mr. Bradley Rodier (2013-present)
- Mr. Yuanhui Xiang (2013-present)
- Mr. Peiran Wei (2013-present)
- Ms. Qinmo Luo (2016-present)
- Ms. Sarah Mitchell (2016-present)
- Ms. Katelynn Edgehouse (2017-present)
- Mr. Bowen Li (2017-present)
- Masters Students:
 - Mr. Kevin Pachuta (2016-present)
 - Mr. Nolan Kovach (2017-present)
- Undergraduate Students:
 - Mr. Paul Advincula (2016-present)
 - Mr. Blaise Whitesell (2016-present)
 - Ms. Christina Hemmingsen (2016-present)
 - Mr. John Kwon (2016-present)
 - Ms. Ester Yoo (2017-present)

Past Mentees

- Postdocs:
 - Dr. Brendan McGrail (2013-2015), now at Sartomer
 - Dr. Al de Leon (2016-2017), now postdoc in BME at CWRU
- MS Students:
 - Mr. Bowen Li (2014-2017)
- Undergraduate Students:
 - Mr. Jordan Swisher (2013-2015, now PhD student at UPitt Chemistry)
 - Mr. Edward Peng (2013-2015, now MD student at Indiana University)
 - Ms. Mar Tickerhoof (2014-2015)
 - Mr. Denny Chen (2014-2015, joint with Mohan Sankaran in Chemical Engineering)
 - Ms. Kelly Peterson (2013-2015, joint with Roger French in Materials Science, now PhD student at UCSB)
 - Ms. Jennifer Tang (2014-2015, joint with Alp Sehirlioglu in Materials Science)
 - Ms. Riki Drout (2014-2016, now PhD student at Northwestern University)
 - Mr. Tyler Densmore (2014-2016, now MD student at Ohio University)
 - Ms. Emily Young (2013-2016, now MD student at Dartmouth)
 - Ms. Hayley Yocum (2016-2016)
 - Ms. Emily Glasser (2015-2016)
 - Mr. Spencer Burton (2013-2017, now PhD student at Northwestern University)
 - Mr. Eric Mosher (2013-2017, now PhD student at Johns Hopkins University)
 - Ms. Taylor Frey (2015-2017, now PhD student at UC Irvine)
- REU Students:
 - Ms. Laura Abelquist (2015)
 - Ms. Anna Davies (2015)
 - Ms. Laura Alfonso (2016)
 - Mr. Michael Mellon (2016)
 - Mr. Michael Lu-Diaz (2017)
- High school students:

- Ms. Kim Gliebe (2013-2014, now UG in chemical engineering at U Dayton)
- Ms. Jillian Wilkerson (2013-2014)
- Ms. Daphney Bonner (summer 2014, 2015, through ACS SEED program, 2016, now UG biology major at Howard University)
- Ms. Stasha Vaden (summer 2015, through ACS SEED program)
- Mr. Jaylen Williams (summer 2016, 2017 through ACS SEED program, now UG biology major at University of Miami, Ohio)
- Ms. RhayAuna Dent (summer 2017, through ACS SEED program)
- Mr. Fisher Ilijasic (summer 2017)

Courses Taught

- CHEM435: Synthetic Methods in Organic Chemistry (CWRU: Fall 2013, 2014, 2017)
- CHEM398: Senior Capstone in Chemistry (CWRU: Spring 2014, 2016)
- CHEM397: Undergraduate Independent Research (CWRU: Fall 2013,2014, 2015, 2016, 2017; Spring 2014, 2015, 2016)
- CHEM324: Organic Chemistry (CWRU: Spring 2014, 2015, 2016)
- CHEM323: Organic Chemistry (CWRU: Fall 2015, 2016, 2017)
- Guest lecturer:
 - CHEM316/416: Frontiers in Inorganic Chemistry (CWRU: Spring 2016)
 - USNA288S: Silicon: From Sand to Smartphone (CWRU: Spring 2016)

Research Support

Current Funding

- NSF CAREER: *Asymmetric Functionalization of 2-D Nanomaterials for Tailored Assemblies* (Award #1551943)
 - 2016-2021; \$550,000
- CWRU, Start up funds
 - 2013-2018

Pending Funding

- *Advanced Energy Storage by Architecting Electrode-Electrolyte Interfaces using Pickering Emulsion Templates* (submitted to NSF CBET, Energy for Sustainability, PI)
- *Collaborative Research: Next Generation Rigid Rod Materials through Combined Computation and Experimentation* (submitted to NSF Chem, MSN, PI)
- *Enabling Long Lived Earth Abundant Transparent Conductive Oxides by Surface Modification* (submitted to NSF DMR, EPM, co-PI)
- *Chemical Instrument Development: Nanomechanics of Chemically Heterogeneous Materials on the Nanometer Scale Using Atomic Force Microscopy* (NSF CMI, co-PI)
- *Enabling the Next Generation of Data Storage using a Quaternary Code* (Johnson and Johnson)

Completed Funding

- NSF REU: *Case Chemistry REU Site* (Co-PI, Grant #1359022)
 - 2015-2018; \$212,519
- ACS PRF DNI: *A Radical Approach to Conjugated Polymers* (Award #55563-DNI7)
 - 2015-2017; \$110,000