

Steven M. Boyer Ph.D.

Department of Chemistry, Geology and Physics

Ashland University, Ashland OH

Email: sboyer5@ashland.eduLinkedin: www.linkedin.com/in/sboyer2**Current:**

Assistant Professor of Chemistry and Biochemistry at East Stroudsburg University, East Stroudsburg, PA 18301

Education:

Ph.D., Inorganic Chemistry with a Certificate in Teaching College Chemistry

Thesis Title: Harnessing Solar Energy: Vapor Phase Polymerized Poly(3,4-ethylenedioxythiophene) for Solid State Dye-Sensitized Solar Cells and the Photodegradation of Organic Toxicants

Thesis Advisor: Prof. Wayne E. Jones Jr.

Binghamton University, State University of New York, Binghamton, NY (2017)

B.S., Chemistry (ACS Certified)

Elizabethtown College, Elizabethtown, PA, 2012.

Research Experience:

2012-2017 Graduate Research with Prof. Wayne E. Jones Jr., Binghamton University, Binghamton, NY

- Dissertation Title-Harnessing Solar Energy: Vapor Phase Polymerized Poly(3,4-ethylenedioxythiophene) for Solid State Dye-Sensitized Solar Cells and the Photodegradation of Organic Toxicants

2010-2012 Undergraduate Research with Prof. Jeff Rood Elizabethtown

- Synthesis of metal-organic frameworks with phosphonic acid ligands

Academic Experience:

2020 – present Assistant Professor of Chemistry and Biochemistry, East Stroudsburg University

2017-2020 Visiting Assistant Professor of Chemistry, Ashland University

2017 Instructor CHEM 107, Binghamton University

2016 Instructor of Record CHEM 101, Binghamton University

2014-2016 Grader for Intermediate Inorganic Chemistry, Binghamton University

2013-2014 Head TA General Chemistry, Binghamton University

2012-2013 Teaching Assistant General Chemistry, Binghamton University,

2009-2012 Teaching Assistant, Elizabethtown College

Awards and Affiliations:

- Secretary for the Wooster Local Section American Chemical Society, 2018-2020
- Binghamton University Graduate Student Excellence in Service and Outreach, Binghamton University, 2017
- Department of Chemistry Graduate Student Excellence in Service and Outreach, Binghamton University, 2017
- Department of Education Graduate Assistance in Areas of National Need (GAANN) Fellow, Binghamton University, 2016-present
- Binghamton University Graduate Student Excellence in Teaching Award, Binghamton University, 2016
- Department of Chemistry Graduate Student Excellence in Teaching Award, Binghamton University, 2016
- Keith Innes Summer Research Award, Binghamton University, 2015
- Summer Teaching Graduate Fellowship, Binghamton University, 2013, 2014
- Lois D. Mackey First Year Teaching Award, Binghamton University, 2013
- American Chemical Society, 2011-present

Awarded Grants

1. Professional Development Committee's Teaching and Learning Mini-Grant for FLIR One Pro IR Camera, Ashland University, Fall 2017

Peer Reviewed Publication

1. Boyer, S.M.; Tong, L.; Schreffler, F.H.; Fisher, D.A.; Dhakal, T.; Bernier, W.E.; Jones Jr., W.E. Solid-state dye-sensitized solar cells using vapor phase polymerized poly(3,4-ethylenedioxythiophene) as a hole transport layer (In preparation)
2. Dwyer, D.B., Lee, D.T., Boyer, S.M., Bernier, W.E., Parsons, G.N., Jones Jr., W.E. Toxic organophosphate hydrolysis using nanofiber-templated UiO-66NH₂ metal-organic framework polycrystalline cylinders. *ACS Applied Materials & Interfaces* **2018**, *10*, 25794-25803.
3. McCarthy, D.L., Liu, J., Dwyer, D.B., Troiano, J.L., Boyer, S.M., DeCoste, J.B., Bernier, W.E., Jones, W.E. Electrospin metal-organic framework polymer composites for the catalytic degradation of methyl paraxon. *New Journal of Chemistry* **2017**, *41*, 8748-8753.
4. Tong, L. Liu, J. Boyer, S.M. Sonnenburg, L. Fox, M. Ji, D. Feng, J. Bernier, W.E. Jones Jr., W.E. Vapor-phase polymerized poly(3,4-ethylenedioxythiophene) (PEDOT)/TiO₂ composite fibers as electrode materials for supercapacitors. *Electrochimica Acta* **2016**, *224*, 133-141.
5. Liu, J., McCarthy, D.L., Tong, L., Cowan, M.J., Kinslet, J.M., Sonnenberg, L., Skorenko, K.H., Boyer, S.M., DeCoste, J.B., Bernier, W.E., Jones Jr., W.E. Poly(3,4-ethylenedioxythiophene) (PEDOT) infused TiO₂ nanofibers: the role of hole transport layer in photocatalytic degradation of phenazopyridine as a pharmaceutical contaminant. *RSC Advances* **2016**, *115*, 113884-113892.

6. Boyer, S.M., Liu, J., Zhang, S., Ehrlich, M.I., McCarthy, D.L., Tong, L., DeCoste, J.B., Bernier, B.E., Jones Jr., W.E. The role of ruthenium photosensitizers in the degradation of phenazopyridine with TiO₂ electrospun fibers. *Journal of Photochemistry and Photobiology A:Chemistry* **2016**, 329, 46-53.
7. Ding, J.; Li, Z.; Cui, K.; Boyer, S.; Karpuzov, D.; Mitlin, D., Heteroatom enhanced sodium ion capacity and rate capability in a hydrogel derived carbon give record performance in a hybrid ion capacitor. *Nano Energy* **2016**, 23, 129 - 137.
8. Liu, J.; McCarthy, D. L.; Cowan, M. J.; Obuya, E. A.; DeCoste, J. B.; Skorenko, K. H.; Tong, L.; Boyer, S. M.; Bernier, W. E.; Jones Jr., W. E., Photocatalytic activity of TiO₂ polycrystalline sub-micron fibers with variable rutile fraction. *Applied Catalysis B: Environmental* **2016**, 187, 154 - 162.
9. Tong, L.; Skorenko, K. H.; Faucett, A. C.; Boyer, S. M.; Liu, J.; Mativetsky, J. M.; Bernier, W. E.; Jones Jr., W. E., Vapor-phase polymerization of poly(3,4-ethylenedioxythiophene) (PEDOT) on commercial carbon coated aluminum foil as enhanced electrodes for supercapacitors. *Journal of Power Sources* **2015**, 297, 195 - 201.
10. Rood, J. A.; Boyer, S.; Oliver, A. G., One- and two-dimensional Cd(II) coordination polymers incorporating organophosphinate ligands. *Acta Crystallographica Section C* **2014**, 70 (11), 1069--1074.

Other Publications

1. Linyue Tong, Kenneth H. Skorenko, Austin C. Faucett, Steven M. Boyer, Jian Liu, Jefferey M. Mativetsky, William E. Bernier, Wayne E. Jones Jr Supercapacitor Electrodes Prepared with Vapor Phase Polymerization of Poly(3,4-ethylenedioxythiophene). *Prepr. Pap.-Am. Chem. Soc., Div. Energy Fuels* **2015**.

Invited Presentations

1. "Working Towards a Solid-State Dye Sensitized Solar Cell using Vapor Phase Polymerized PEDOT with Polymerizable Ruthenium Dyes" , Chemistry Department Colloquium, Binghamton, NY, Fall 2015
2. "Design and synthesis of ruthenium-EDOT based coordination polymers for use in inorganic organic hybrid dye sensitized solar cells", Disappearing Boundaries, Lebanon Valley College, PA 2015

Other Presentations

1. "Investigation of metal-organic frameworks incorporating carboxycoumarin linkers" 2019 Undergraduate Research and Creative Activity, Ashland, OH Spring 2019 (student poster)
2. "Solid-state dye sensitized solar cells using vapor phase polymerized poly(3,4-ethylenedioxythiophene) as a hole transport layer" 2016 Northeast Regional Meeting, Binghamton, NY, Fall 2016
3. "Working towards a solid-state dye sensitized solar cell using vapor phase polymerized PEDOT", 252nd ACS National Meeting, Philadelphia, PA, Fall 2016 (oral)

4. "Design and synthesis of ruthenium-EDOT based coordination polymers for use in inorganic-organic hybrid dye sensitized solar cells" , 250th ACS National Meeting, Boston MA, Fall 2015 (oral)
5. "Design and Synthesis of Ruthenium Coordination Polymers for use in Solid State Dye Sensitized Solar Cells" SUNY 4E Network of Excellence: Smart Energy & Sustainability, Binghamton, NY 2014 (Poster)
6. "Design and Synthesis of Ruthenium Coordination Polymers for use in Dye Sensitized Solar Cells." DAAD, Leipzig, Germany 2014 (Oral)
7. "Design and Synthesis of Ruthenium Coordination Polymers for use in Dye Sensitized Solar Cells.", 247th ACS National Meeting Dallas, TX, Spring 2014 (Poster)
8. "Metal-Organic Frameworks Constructed with Phosphinic Acid Ligands." 243rd ACS National Meeting San Diego, CA, Fall 2014 (Poster)
9. "Metal-Organic Frameworks Constructed with Phosphinic Acid Ligands." Intercollegiate Student Chemists Convention, Bloomsburg, PA 2012 (Oral)
10. "Metal-Organic Frameworks Constructed with Phosphinic Acid Ligands." 14th Annual Undergraduate Research Symposium in Chemical and Biological Sciences UMBC, Baltimore, MA 2011 (Poster)

Career Development Events:

- NSF Sponsored cCWCS Renewable Energy Workshop presented by Kevin Braun and George Lisensky, Beloit College, South Beloit, WI, Summer 2016
- DAAD Science and Engineering Exchange Program, Binghamton University, Binghamton, NY, 2014

Students Mentored:

- Ashland University
 - Tracy Morgan 21' Co-advised with Nick Johnson)
 - Taylor Bunce 22' (Awarded 2018 Student Research Grant for \$500)
 - Caleigh Desko 19' (Awarded 2017 Student Research Grant for \$500)
- Binghamton University
 - John Kinsley 18'
 - Matthew Erhlich 17': Honors Thesis
 - Frank Schreffler 16': Honors Thesis
 - Sandy Zhang 15': Honors Thesis
 - Kevin Fischer 14'
 - Parth Lalkiya: Summer volunteer from Vestal High School 14'

Consulting:

- Battelle
- Advanced Pierre Foods
- Asbury Carbon

Department, College and University Service:

- Faculty Senator, Ashland University, Ashland, OH, 2019-2020
- College of Arts and Science Curriculum Committee, Ashland University, Ashland, OH, 2018- 2020
- Graduate Chemistry Club Vice President, Binghamton University, State University of New York, Binghamton, NY, 2014-2016
- Graduate Chemistry Club President, Binghamton University, State University of New York, Binghamton, NY, 2013

Community and Public Service:

- Mohican District Science Council 2019-2020
- Chemistry Olympiad Coordinator for Wooster Local Section, 2019-2020
- Assistant Director Ashland University Summer Science Camp, Ashland University, Ashland, OH 2019
- Session Chair at Ohio Inorganic Weekend Conference, Ohio University, Athens, OH, 2018
- Assistant Director Go Green, Binghamton University, State University of New York, Binghamton, NY, 2017-2018
- Audio and Visual Coordinator for the ACS NERM, Binghamton, NY, 2016
- NSF Smart Energy REU Coordinator, Binghamton University, State University of New York, Binghamton, NY, 2014 & 2016
- Physical Science Track Leader Go Green, Binghamton University, State University of New York, Binghamton, NY, 2016
- Assistant Director Go Green, Binghamton University, State University of New York, Binghamton, NY, 2015
- Regional Science Olympiad Volunteers Coordinator, Binghamton University, State University of New York, Binghamton, NY, 2015

Technical and Experimental Skills:

SEM, TEM, EDX, FTIR, ATR, Raman, NMR, UV-Vis, Fluorescence, Sputtering, Solar Simulator, Conductivity measurements