AMANDA J. MORRIS, Ph.D.

231 DAVIDSON HALL • VIRGINIA TECH • BLACKSBURG, VA 24061

PHONE 540-231-5585 • E-MAIL ajmorris@vt.edu

CAREER

Professor: Virginia Polytechnic Institute and State University (August 2020 – present)

Patricia Caldwell Faculty Fellow: Virginia Polytechnic Institute and State University (August 2019 – present)

Office of Vice President for Research and Innovation Faculty Fellow: Virginia Polytechnic Institute and State University (March 2019 – June 2020)

Associate Chair: Virginia Polytechnic Institute and State University, Department of Chemistry (August 2018 – present)

Associate Professor: Virginia Polytechnic Institute and State University, Department of Chemistry (July 2017 – August 2020)

Assistant Professor: Virginia Polytechnic Institute and State University, Department of Chemistry (August 2011 – June 2017)

Postdoctoral Research Associate: Princeton University with Professor Andrew B. Bocarsly (September 2009 – July 2011)

Ph.D., August 2009, **Johns Hopkins University**, Department of Chemistry with Professor Gerald J. Meyer

M.A., February 2007, **Johns Hopkins University**, Department of Chemistry with Professor Gerald J. Meyer

B.S., May 2005, **Pennsylvania State University**, Department of Chemistry

Summer Intern: Rohm and Haas Company (Summer 2002, 2003, 2005)

HONORS AND AWARDS

ACS Gay and Transgender Chemists and Allies (GTCA) Committee Chair-Elect – 2021
InterAmerican Photochemical Society – United States Advisory Board Member - 2021
GRC Photochemistry Vice-Chair – 2021
ACC Academic Leaders Network – 2019-2020
Patricia Caldwell Faculty Fellowship – 2019
Virginia Tech College of Science Outreach Award – 2019
Office of Vice President of Research and Innovation Faculty Fellow – 2019
Virginia Tech Principles of Community Award – 2018
Energy Subdivision Chair – Physical Chemistry – American Chemical Society – 2018/2019 (competed August 2019)
Inter-American Photochemical Society Young Investigator Award – 2017
John C Schug Research Award – 2016
Dreyfus Teacher Scholar Award – 2016
Alfred P. Sloan Research Fellow – 2016
Finalist Virginia Rising Star Award – 2016, 2017
NSF Career Award – 2016
Chair Solid State Sub-Division Chair – Inorganic Chemistry – American Chemical Society - 2017
Selected Talk GRC Electron Donor Acceptor Interactions – 2014
Alfred F. Clifford Faculty Service Award – 2014
College of Science Diversity Award – 2013

Diversity Development Institute – Diversity Ally Certificate, Diversity Advocate Certificate, Diversity Ambassador
Virginia Tech Scholar of the Week
Ralph E. Powe Junior Faculty Award – 2012
Selected Talk GRC Solar Fuels – 2011
Ada Sinz Hill Scholar – Johns Hopkins – 2009
ACS Inorganic Chemistry Travel Award Winner – 2009
Selected Talk GRC Electron Donor Acceptor Interactions – 2008
Marks Award – Johns Hopkins – 2005

JOURNAL PUBLICATIONS (2011 – present)

1. Bonnett, B.L.; Illic, S.; Flint, K.; Cai, M.; Yang, X.; Cornell, H.D.; Taylor, A.; Morris, A.J.* "Mechanistic Investigations into and Control of Anisotropic Metal-Organic Framework Growth." Inorg. Chem. 2021, 60, 14, 10439-10450.
2. Yang, X.; Bonnett, B.L.; Spiering, G.A.; Cornell, H.D.; Gibbons, B.J.; Moore, R.B.; Foster, E.J.; Morris, A.J.* "Understanding the Mechanical Reinforcement of Metal-Organic Framework Polymer Composites: The Effect of Aspect Ratio." ACS Appl. Mater. Inter. 2021, ASAP. – ***Invited Contribution***
3. Sose, A.T.; Cornell, H.D.; Gibbons, B.J.; Burris, A.A.; Morris, A.J.*; Deshmukh, S.A.* "Modeling Drug Adsorption in Metal-Organic Frameworks: the role of solvent." RSC Adv. 2021, 11, 17064-17071.
4. Johnson, E.; Illic, S.; Morris, A.J.* "Design Strategies for Enhanced Conductivity in Metal-Organic Frameworks." ACS Cent. Sci. 2021, 7, 3, 445–45. – ***Invited Article***
5. An, Y.; Kleinhammes, A.; Doyle, P.; Chen, E-Y.; Song, Y.; Morris, A.J.; Gibbons, B.; Cai, M.; Johnson, K.J.; Shukla, P.B.; Vo, M.N.; Wei, X.; Wilmer, C.E.; Ruffley, J.P.; Huang, L.; Tovar, T.M.; Mahle, J.J.; Karwacki, C.J.; Wu. Y. "In Situ Nuclear Magnetic Resonance Investigation of Molecular Adsorption and Kinetics in Metal-Organic Framework UiO-66." J. Phys. Chem. Lett. 2021, 12, 892-899.
6. Chakraborty, A.; Illic, S.; Cai, M.; Gibbons, B.J.; Yang, X.; Slamowitz, C.C.; Morris, A.J.* "Role of Spin-Orbit Coupling in Long Range Energy Transfer in Metal-Organic Frameworks." J. Am. Chem. Soc. 2020, 142, 48, 20434–20443.
7. Guiton, Beth S.; Stefik, M.; Augustyn, V.; Banerjee, S.; Bardeen, C.J.; Bartlett, B.M.; Li, J.; Lopez-Mejias, V.; MacGillivray, L.R.; Morris, A.; Rodriquez, E.E.; Samia, A.S.; Sun, H.; Sutter, P.; Talham, D.R. "Frontiers in Hybrid and Interfacial Materials Chemistry Research." MRS Bull. 2020, 45, 951-964.
8. Cai, M.; Ding, S.; Gibbons, B.; Yang, X.; Kessinger, M.C.; Morris, A.J.* "Nickel(II)-Modified Covalent-Organic Framework Film for Electrocatalytic Oxidation of 5-Hydroxymethylfurfural (HMF)." Chem. Commun. 2020, 56, 14361-14364.
9. Kessinger, M.C.; Brillhart, C.; Vaissier Welborn, V.; Morris. A.J.* "The Effect of Inner-Sphere Reorganization on Charge Separated State Lifetimes at Sensitized TiO_2 Interfaces." J. Chem. Phys. 2020, 153, 124711. – ***Invited, Special Issue on 65 Years of Electron Transfer***
10. Newsome, W.J.; Chakraborty, A.; Ly, R.T.; Pour, G.S.; Fairchild, D.C.; Morris, A.J.; Uribe-Romo, F.J. "J-dimer Emission in Interwoven Metal-Organic Frameworks." Chem. Sci, 2020, 11, 4391-4396.
11. Lin, S.Y.; Cairnie, D.R.; Chakraborty, A.; Cai, M.; Morris, A.J.* "Photoelectrochemical Alcohol Oxidation by Mixed-Linker Metal-Organic Frameworks." Faraday Discussions, 2021, 225, 371-383.

12. Bonnett, Brittany L.; Smith, E.D.; De La Garza, M.; Cai, M.; Haag IV, J.M.; Serrano, J. M.; Cornell, H.D.; Gibbons, B.; Martin, S.M.; Morris, A.J.* "PCN-222 Metal–Organic Framework Nanoparticles with Tunable Pore Size for Nanocomposite Reverse Osmosis Membranes." ACS Appl. Mater. Interfaces, 2020, 12, 13, 15765-15773.

13. Cai, M.; Loague, Q.; Morris, A.J.* "Design Rules for Efficient Charge Transfer in Metal-organic Frameworks: The Pore Size Effect." J. Phys. Chem. Lett., 2020, 1, 3, 702-709.

14. Celis-Salazar, P.; Cai, M.; Cucinell, C.; Ahrenholtz, S.R.; Epley, C.C.; Usov, P.M.; Morris, A.J.* "Independent Quantification of Electron and Ion Diffusion in Metal-Organic Frameworks Thin Films." J. Am. Chem. Soc., 2019, 141, 11947-11953.

15. Landaverde-Alvarado, C.; Morris, A.J.; Martin, S.M. "Characterization of Gas Permeation in the Pores of Zn(II)-Based Metal Organic Framework (MOF)/Polymer Composite Membranes." Sep. Sci. Technol., 2019. DOI: 10.1080/01496395.2019.1646283

16. Shaikh, S. M.; Chakraborty, A.; Alatis, J.; Cai, M.; Danilov, E.; Morris, A.J.* "Light Harvesting and Energy Transfer in a Porphyrin-based Metal Organic Framework." Faraday Discussions, 2019, 216, 174-90. DOI: 10.1039/C8FD00194D

17. Grissom, T.G; Driscoll, D.M.; Troya, D.; Sapienza, N.S.; Usov, P.M.; Morris, A.J.; Morris, J.R.* "Molecular-Level Insight into CO_2 Adsorption on the Zirconium-Based Metal–Organic Framework, UiO-66: A Combined Spectroscopic and Computational Approach." J. Phys. Chem. C., 2019, 123, 22, 13731-13738.

18. Shaikh, S. M.; Usov, P.M.; Zhu, J.; Cai, M.; Alatis, J.; Morris, A.J.* "Synthesis and Defect Characterization of Phase-Pure Zr-MOFs Based on Meso-tetracarboxyphenylporphyrin." Inorg. Chem., 2019, 58, 5145.

19. Driscoll, D. M.; Troya, D.; Usov, P.M.; Maynes, A.J.; Morris, A.J.; Morris, J.R. "Geometry and Energetics of CO Adsorption on Hydroxylated UiO-66." Phys Chem. Chem. Phys., 2019, 21, 5078-5085. DOI: 10.1039/C8CP07778A

20. Wu, C.; Wang, K.; Yan, Y.; Yang, D.; Jiang, Y.; Chi, B.; Liu, J.; Esker, A.R.; Rowe, J.; Morris, A.J.; Sanghadasa, M.; Priya, S. "Fullerene Polymer Complex Inducing Dipole Electric Field for Stable Perovskite Solar Cells." Adv. Func. Mater., 2019, 29, 1804419.

21. Huang, J.; Zhu, J.; Morris, A.J.; Turner, S.R. "Nanoporous Highly Crosslinked Polymer Networks with Covalently Bonded Amines for CO_2 Capture Polymer." Polymer, 2018, 154, 55-61.

22. Grissom, T.G.; Sharp, C.H.; Usov, P.M.; Troya, D.; Morris, A.J.; Morris, J.R. "Benzene, Toluene, and Xylene Transport through UiO-66: Diffusion Rates, Energetics, and the Role of Hydrogen Bonding." J. Phys. Chem. C., 2018, 122 (28), 16060-16069.

23. Serra-Maia, R.; Bellier, M.; Chastka, S.; Tranhuu, K.; Subowo, A.; Rimstidt, J.; Usov, P.; Morris, A.; Michel, F. "Mechanisms and Kinetics of Hydrogen Peroxide Decomposition on Platinum Nanocatalysts." ACS Appl. Mater. and Interfaces., 2018, 10 (25), 21224-21234.

24. Driscoll, D.; Troya, D.; Usov, P.; Maynes, A.; Morris, A.J.; Morris, J. "Characterization of Undercoordinated Zr Defect Sites in UiO-66 with Vibrational Spectroscopy of Adsorbed CO." J. Phys. Chem. C., 2018, 122 (26), 14582-14589.

25. Li, Z.; Omidvar, N.; Chin, W.S.; Robb, E.; Morris, A.; Achenie, L.; Xin, H. "Machine-Learning Energy Gaps of Porphyrins with Molecular Graph Representations." J. Phys. Chem. A., 2018, 122 (18), 4571-4578.

26. Kessinger, M. C.; Langlois, R.; Roof, J.; Shaikh, S. M.; Tanko, J. M.; Morris, A. J.* "Improving the Efficiency of the $Mn^{2+/3+}$ Couple in Quantum Dot Solar Cells: The Role of Spin Crossover." J. Phys. Chem. C., 2018, 122 (25), 14135-14149.

27. Zhu, J.; Usov, P.; Xu, W.; Celis-Salazar, P.J.; Lin, S.; Kessinger, M.C.; Landaverde-Alvardo, C.; Cai, M.; May, A.M.; Slebodnick, C.; Zhu, D.; Senanyake, S.D.; Morris, A.J.* "A New Class of Metal-Cyclam based Zirconium Metal-Organic Frameworks for CO_2 Adsorption and Chemical Fixation." J. Am. Chem. Soc., 2018, 140, 993-1003.

28. Zhu, J.; Liu, J.; Machain, Y.; Bonnett, B.; Lin, S.; Cai, M.; Kessinger, M.C.; Usov, P.M.; Xu, W.; Senanayake, S.D.; Troya, D.; Esker, A.R.; Morris, A.J.* "Insights into CO_2 Adsorption and Chemical Fixation Properties of VPI-100 Metal-Organic Frameworks." J. Mater. Chem. A., 2018, 6, 22195-22203. DOI: 10.1039/C8TA06383D

29. Cai, M.; Loague, Q.; Zhu, J.; Lin, S. Y.; Usov, P. M.; Morris, A. J.* "Ruthenium(II)-polypyridyl Doped Zirconium(IV) Metal–Organic Frameworks for Solid-State Electrochemiluminescence." Dalton Trans., 2018, 47, 16807-16812.

30. Rowe, J. M.; Zhu, J.; Soderstrom, E.M.; Xu, W.; Yakovenko, A.; Morris, A.J.* "Sensitized Photon Upconversion in Anthracene-Based Zirconium Metal-Organic Frameworks." Chem. Commun., 2018, 54, 7798-7801.

31. Stefaniak, K.R.; Epley, C.C.; Novak, J.L.; McAndrew, M.L.; Cornell, H.; Zhu, J.; McDaniel, D.; Davis, J.; Allen, I.C.; Morris, A.J.*; Grove, T.Z.* "Photo-triggered Release of 5-fluorouracil from a MOF Drug Delivery Vehicle." Chem. Comm., 2018, 54, 7617-7620.

32. Lin, S.; Usov, P.; Morris, A.J.* "The Role of Redox Hopping in Metal-Organic Framework Electrocatalysis." Chem. Comm., 2018, 54, 6965-6974.

33. Lin, S; Ravari, A.K., Zhu, J.; Usov, P.; Cai, M.; Ahrenholtz, S.R.; Pushkar, Y.; Morris, A.J.* "Insights into MOF Reactivity: Chemical Water Oxidation Catalysis $[Ru(tpy)(dcbpy)OH_2]^{2+}$ Modified Metal-Organic Framework." ChemSusChem, 2018, 2018, 11, 463-471.

34. Epley, C.C.; Love, M.D.; Morris, A.J.* "Characterizing Defects in a UiO-AZB Metal-Organic Framework." Inorg. Chem., 2017, 56 (22), 13777-13784.

35. Rowe, J. M.; Soderstrom, E. M.; Zhu, J.; Usov, P. M.; Morris, A. J.* "Synthesis, Characterization and Luminescent Properties of Two New Zr(IV) Metal-Organic Frameworks Based on Anthracene Derivatives." Can. J. Chem. 2017, *Accepted*. – ***Invited Article***

36. Celis-Salazar, P.J.; Epley, C.C.; Ahrenholtz, S.R.; Maza, W.A.; Usov, P.M.; Morris, A.J.* "Proton-Coupled Electron Transport in Anthraquinone-Based Zirconium Metal–Organic Frameworks." Inorg. Chem., 2017, 56 (22), 13741-13747

37. Zhu, J.; Maza, W.A.; Morris, A.J.* "Light-Harvesting and Energy Transfer in Ruthenium(II)-Polypyridyl Doped Zirconium(IV) Metal-Organic Frameworks: a Look Towards Solar Cell Applications." J. Photochem. Photobiol. A. Chem., 2017, 344, 64-77.

38. Landaverde-Alvarado, C.; Morris, A.J.; Martin, S.M.* "Gas Sorption and Kinetics of CO_2 Sorption and Transport in a Polymorphic Microporous MOF with Open Zn(II) Coordination Sites." J. CO_2 Util., 2017, 19, 40-48.

39. Usov, P.M.; Huffman, B.; Epley, C.C.; Kessinger, M.C.; Zhu, J.; Maza, W.A.; Morris, A.J.* "Study of Electrocatalytic Properties of Metal-Organic Framework PCN-223 for the Oxygen Reduction Reaction." ACS Appl. Mater. Inter., 2017, 9, 33539–33543. – ***Invited Article***

40. Rowe, J.M.; Hay, J.M.; Maza, W.A.; Chapleski, R.C.; Soderstrom, R.; Troya, D.; Morris, A.J.* "Systematic Investigation of the Excited-State Properties of Anthracene-Dicarboxylic Acids." J. Photochem. Photobiol. A: Chem., 2017, 337, 207-215.

41. Lin, S.; Pineda-Galvan, Y.; Maza, W.A.; Epley, C.C.; Zhu, J.; Kessinger, M.C.; Pushkar, Y.; Morris, A.J.* "Electrochemical Water Oxidation by a Catalyst-Modified Metal Organic Framework Thin Film." ChemSusChem, 2017, 10, 514-522. – ***Cover Article***

42. Epley, C.C.; Roth, K.R.; Lin, S.; Ahrenholtz, S.R.; Grove, T.Z.; Morris, A.J.* "Cargo Delivery on Demand from Photodegradable MOF Nano-Cages." Dalt. Trans., 2017, 4917-4922. – ***Cover Article***

43. Barr, T.J.; Morris, A.J.; Taheri, A.; Meyer, G.J. "Charge Rectification at Molecular Nanocrystalline TiO_2 Interfaces: Overlap Optimization to Promote Vectorial Electron Transfer." J. Phys. Chem. C. 2016, 120 (48), 27173-27181.

44. Padilla, R.; Maza, W.A.; Dominijanni, A.J.; Winkel, B.S.J; Morris, A.J.*; Brewer, K.J. "Pushing the Limits of Structurally-Diverse Light-Harvesting Ru(II) Metal-Organic Chromophores for Photodynamic Therapy." J. Photochem. Photobiol. A.: Chem., 2016, 322, 67-75.

45. Usov, P.M.; Ahrenholtz, S.R.; Maza, W.A.; Stratakes, B.; Epley, C.C.; Kessinger, M.C.; Zhu, J.; Morris, A.J.* "Cooperative Electrochemical Water Oxidation by Zr Nodes and Ni-porphyrin Linkers of a PCN-224 MOF Thin Film." J. Mater. A., 2016, 4, 16818-16823.

46. Maza, W.A.; Haring, A.J.; Ahrenholtz, S.R.; Epley, C.C.; Lin, S.Y.; Morris, A.J.* "Ruthenium(II)-polypyridyl Zirconium(IV) Metal-Organic Frameworks as a New Class of Sensitized Solar Cells." Chem. Sci. 2016,7, 719-727

47. Qin, M.; Maza, W.A.; Stratakes, B.M.; Ahrenholtz, S.R.; Morris, A.J.*; He, Z.* "Nanoparticulate $Ni(OH)_2$ Films Synthesized from Macrocyclic Nickel(II) Cyclam for Hydrogen Production in Microbial Electrolysis Cells." J. Electro. Soc., 2016, 163 (5), F437-F442.

48. Maza, W.A.; Padilla, R.; Morris, A.J.* "Concentration Dependent Dimensionality of Resonance Energy Transfer in a Post-synthetically Doped Morphologically Homologous Analogue of UiO-67 MOF with a Ruthenium(II) Polypyridyl Complex." J. Am. Chem. Soc., 2015, 137, 8161–8168.

49. Ahrenholtz, S.R.; Landaverde-Alvarado, C.; Whiting, M.; Lin, S.; Slebodnick, C.; Marand, E.; Morris, A.J.* "Thermodynamic Study of CO_2 Sorption by Polymorphic Microporous MOFs with Open Zn(II) Coordination Sites." Inorg. Chem., 2015, 54, 4328-4336.

50. Haring, A.J.; Pomatto, M.E.; Thornton, M.R.; Morris, A.J.* "$Mn^{II/III}$ Complexes as Promising Redox Mediators in Quantum-Dot-Sensitized Solar Cells." ACS Appl. Mater. Interfaces, 2014, 6, 15061–15067.

51. Maza, W.A.; Ahrenholtz, S.R.; Epley, C.C.; Day, C.; Morris, A.J.* "Solvothermal Growth and Photophysical Characterization of a Ruthenium(II) Tris-(2,2'-Bipyridine)-Doped Zirconium UiO-67 Metal Organic Framework Thin Film." J. Phys. Chem. C. 2014, 118, 14200–14210.

52. Maza, W.A.; Morris, A.J.* "Photophysical Characterization of a Ruthenium(II) Tris-(2,2'-Bipyridine)-Doped Zirconium UiO-67 Metal Organic Framework." J. Phys. Chem. C. 2014, 118, 8803-8817.

53. Haring, A.J.; Ahrenholtz, S.R.; Morris, A.J.* "Rethinking Band Bending at the P3HT-TiO_2 Interface" ACS Appl. Mater. Interfaces, 2014, 6 (6), 4394-4401.

54. Ahrenholtz, S.R.; Epley, C.C.; Morris, A.J.* "Solvothermal Preparation of an Electrocatalytic Metalloporphyrin MOF Thin Film and its Redox Hopping Charge Transfer Mechanism" J. Am. Chem. Soc. 2014, 136, 2464-2472.

55. Chen, B.; Haring, A.J.; Beach, J.A.; Li, M.; Doucette, G.S.; Morris, A.J.; Moore, R.B.; Priya, S. "Visible Light Induced Photocatalytic Activity of Fe(III)/Ti(III) Co-doped TiO_2 Nanostructures." RSC Adv., 2014, 4, 18033-18037.

56. Haring, Andrew; Morris, A.J.*; Hu, M.* "Controlling Morphological Parameters of Anodized Titania Nanotubes for Optimized Solar Energy Applications" Materials, 2012, 5, 1890-1909.

EXTERNAL RESEARCH GRANTS

16) National Science Foundation, Solid State Materials Chemistry (7/1/2021 – 6/30/2024), "Fundamental Investigations into the Metal-Organic Framework Redox-Hopping Charge Transport." Single PI – Amanda Morris, 100% Participation, Total Budget $480,528

15) Department of Energy, Basic Energy Sciences (6/1/20 – 5/31/23), "Electrochemical and Spectroscopic Investigations of H_2O Oxidation by Porous Coordination Network Catalysts." Single PI – Amanda Morris, 100% Participation, Total Budget $570,000

14) DOE-NETL University Coalition for Fossil Energy Research (UCFER) Program (8/1/2020 – 7/31/2022), "Development and Optimization of Metal Organic Framework (MOF) Sorbents for Direct Air Capture (DAC) of CO_2" PI, 50% Participation, Total Budget $350,000

13) Army Research Office (2/19/2020 – 2/18/2021; with options for 2022-2023), "Small Clusters to Single Atoms for Next-generation CWA Sorbents and Catalytic Materials" Co-PI, 33% Participation, Total Budget $1,400,000

12) NanoSonic (09/01/2019 – 08/31/2023), "Metal-Organic Framework-Sensitized ChemFET Sensors for Spacecraft Water Monitoring Systems." PI, 100% Participation, Total Budget $35,000.

11) Army Research Office (5/01/2019 – 4/30/2021), "Tuning Metal Organic Framework Structure for Efficient Diffusion and Degradation of Chemical Warfare Agents." PI, 100% Participation, Total Budget $225,000

10) NanoSonic (12/21/2018 – 6/22/2019), "Electronic Switching of Light Transmission Intensity through Helmet Visors." PI, 100% Participation, Total Budget $45,000

9) Thomas F & Kate Miller Jeffress Memorial Trust (7/31/18 – 7/30/19), "Machine-Learning Accelerated Computational Design of MOFs for Drug Delivery." Co-PI – Sanket Deshmukh and Amanda Morris, 50% Participation, Total Budget $100,000

8) Department of Energy, Basic Energy Sciences (6/1/17 – 5/31/20), "Electrochemical and Spectroscopic Investigations of H_2O Oxidation by Porous Coordination Network Catalysts." Single PI – Amanda Morris, 100% Participation, Total Budget $540,000

7) The Camille and Henry Dreyfus Foundation (5/10/2016 – 5/9/2021). "Mechanistic Investigations of Charge Transport through Artificial Photosynthetic Metal Organic Framework Thin Film Arrays." Single PI – Amanda Morris, 100% Participation, Total Budget $75,000

6) Alfred P. Sloan Foundation, Sloan Fellowship (4/1/2016 – 3/31/2018), "Sloan Research Fellowship - Amanda Morris." Single PI – Amanda Morris, 100% Participation, Total Budget $55,000

5) National Science Foundation, CAREER Award (2/1/2016 – 1/31/2021), "CAREER: Electron Transport Mechanisms in Metal Organic Framework Thin Films." Single PI – Amanda Morris, 100% Participation, Total Budget $605,000

4) National Science Foundation, REU (3/1/2016 – 2/28/19) "Materials Innovation at the Intersection of Food-Energy-Water Systems (MII-FEWS)." Senior Personnel (1 of 12), Total Budget $350,000

3) National Science Foundation, Major Research Instrumentation (9/1/15 – 8/31/18), "MRI: Acquisition of an X-ray Photoelectron Spectrometer for the Development of Materials and Catalysts for Next Generation Energy Solutions." Lead PI – Amanda Morris (3 co-PIs – John Morris, Louis Madsen, Kathy Lu), 75% Participation, Total Budget $750,000

2) Department of Energy, Basic Energy Sciences (6/1/14 – 5/31/17), "Electrochemical and Spectroscopic Investigations of H_2O Oxidation by Porous Coordination Network Catalysts." Single PI – Amanda Morris, 100% Participation, Total Budget $450,000

1) Oak Ridge Associated Universities, Ralph E. Powe Junior Faculty Enhancement Award (5/12 – 6/12), "Maximizing the Potential of Next Generation Solar Cells: Mechanistic Charge Transfer Studies of Spin Crossover Redox Mediators." Single PI – Amanda Morris, 100% Participation, Total Award $10,000

PROFESSIONAL MEMBERSHIPS

Royal Society of Chemistry 2019-present
Sigma Xi, National Research Honor Society 2019-present
Materials Research Society 2019-present
Chemistry Women Mentorship Network (Chem WMN) 2014-present
American Chemical Society Expert – Sustainable Energy 2013-present
American Chemical Society 2006-present, Chair Solid State Division Chair Inorganic Chemistry (2017), Chair Energy Division Physical Chemistry (2019)
The Electrochemical Society 2012-present
Alpha Chi Sigma Professional Chemistry Fraternity 2002-present
InterAmerican Photochemical Society 2017 - present

UNIVERSITY SERVICES

Committees:

Institute for Critical Technology and Applied Science Review Committee 2020-present
Chemistry Experiential Learning Working Group – 2020-present
Chemistry Department Laboratory Fee Working Group – 2020-present
Climate Action Commitment Committee – Energy Systems Subcommittee 2019-2020
Chemical Engineering Program Review Committee 2019-present
College of Science Educational Working Group 2019-2020
Analytical Services and Facilities Advisory Group 2018-present
HHMI Inclusive Pedagogy Chemistry Cohort 2018-present
Undergraduate Education Committee 2017-present
Destination Area Cluster Operations and Hiring Committee 2017-2018

Economical and Sustainable Materials Strategic Growth Area, Faculty Lead 2016-2019
Physics Faculty Position Search Committee 2016
College of Science Dean Search Committee 2015
Chemistry Faculty Position Search Committee 2014, 2015, 2016, 2018, 2019
Chemical Engineering Position Search Committee 2015
InclusiveVT Advisory Group 2015-2018
Executive Committee 2013, 2018-2019
Chair Committee 2013, 2017
Graduate Education Committee 2012-present
Building Committee 2012
Graduate Admissions Committee 2011-2016
LGBT Caucus 2012-present, Caucus Co-chair 2015-2018
Safe Zone 2011-2018

Student Organization Advisor:

Alpha Chi Sigma 2012-2018
oSTEM 2013-2018
West Ambler Johnston Residential College Senior Fellow 2012-2018

Courses Taught:

Chem 6464: Special Topics in Inorganic Chemistry: Photochemistry
Chem 1056: General Chemistry II for Majors Spring 2020
Chem 5414: Methods and Applications in Inorganic Chemistry Spring 2018
Chem 4404: Physical Inorganic Chemistry Fall 2017, Fall 2018
Chem 2114: Analytical Chemistry for Non-Majors Summer I 2015, Summer I 2016, Summer I 2017, Summer I 2018
Chem 2124: Analytical Chemistry Laboratory for Non-Majors Summer I 2015, Summer I 2016, Summer I 2017, Summer I 2018
Chem 5114: Advanced Electrochemistry Fall 2011, Spring 2014, Spring 2015, Spring 2017, Spring 2019
Chem 2154: Analytical Chemistry for Majors Fall 2012, Fall 2013, Fall 2014, Fall 2015
Chem 5124: Analytical Spectroscopy Spring 2013
Chem 6464: Physical Methods in Inoganic Chemistry (Vibrational Spectroscopy) Spring 2012

Students Advised:

Post-doctoral (5): Eric Johnson, Stefan Illic, Arnab Chakraborty, William Maza, Pavel Usov

Graduate (24): Afroza Alam, Spencer Arhenholtz (Ph.D. 2016), Brittany Bonnett, Meng Cai (Ph.D. 2020), Daniel Cairnie, Tzu-Ching Cheng, Hannah Cornell, Charity Epley (Ph.D. 2017), Bradley Gibbons, Andrew Haring (M.S. 2016), Jennifer Hay (M.S. 2014), Seth Keith (M.A. 2020), Matthew Kessinger (Ph.D. 2020), Carlos Landaverde-Alvarado (Ph.D. 2016), Shaoyang Lin (Ph.D. 2019), Jennifer Rowe (Ph.D. 2018), Paula Celis Salazar (Ph.D. 2018), Shaunak Shaikh (Ph.D. 2021), Benjamin Thompson, Miranda Thornton (M.A. 2013), Macauley Whiting III (M.A. 2013), Minliang Yan, Xiaozhou Yang, Jie Zhu (Ph.D. 2018)

Undergraduate (52): Jamie Alatis (B.S. 2019), Yered Arias-Machain (B.A. 2018), Jared Arkfeld, Emily Askew, Caitlin Augustin (B.S. 2013), Eamon Bartlett, Camille

Bridgewater, Cameron Brillhart (B.S. 2020), Ashley Burris, Miranda De La Garza (REU 2018, Texas A&M), Kathleen Chan (B.A. 2016), Deaton Conner (B.S. 2017), Nicholas Conte (B.S. 2014), Clark Cucinell (B.A. 2018), Dylan Davis (B.S. 2020), Tu Du, Katie Flint (B.S. 2020), Taylor Gaillot (B.A. 2015), Brittany Huffman (REU 2016, UVA), Abigail Icenhour (B.S. 2017), Hunter Jacobs (B.S. 2017), Edward Jensen (B.A. 2016), Catherine Kefauvner (B.A. 2015), Benjamin Kolb (B.S. 2017), Terrie Kweifio (B.S. 2012), Julia LaFortune, Rachael Langlois (B.S. 2019), Jennie Lee, Rachel Lewis (B.S. 2017), Naomei Lidman, Madeline Love (B.S. 2015), Quentin Loague (B.S. 2019), Maha Malik (B.S. 2016), David Marshall (B.S. 2013), Daniel Martell, Ann Marie May (B.S. 2019), Jared May (REU 2017, PSU), Colin McCain (B.S. 2015), Michael McHale, Cole McManus (B.A. 2018), Jennifer Neuhard (B.A. 2018), Joshua Novak (B.A. 2018), Stephen O'Connor (B.S. 2014), Michelle Pomatto (B.A. 2016), Jonathan Roof (B.S. 2019), Erick Sadler (B.S. 2016), Connor Slamowitz (B.S. 2019), Erin Soderstrom (B.A. 2018), Rei Sturm (B.S. 2016), Bethany Stratakes (B.S. 2016), David Strickland (B.S. 2015), Ashleigh Taylor (B.S. 2021)

OUTREACH & COMMUNITY SERVICES

Associate Editor – Chemical Physics Reviews 2020
Editorial Board Member – ChemCatChem, ACS Applied Energy Materials, EnergyChem
ACS Physical Division Energy Chair 2019
ACS Inorganic Division Solid State Chemistry Chair 2017
Virginia Science Festival – Science Demonstrations 2015 (& Lecture), 2016, 2017
Blue Ridge Science Fair Judge – 2012-present
ChemFest "Energy Now and Forever", "The Sweet Side of Chemistry", "Solving Mysteries with Chemistry" – 2013, 2015, 2016
Girl Scout and Boy Scout Chemistry Merit Badge – 2012, 2014, 2015, 2016, 2017
Session Chair InterAmerican Photochemical Society – 2018
Session Chair NC Photochemistry – 2013
Session Chair American Chemical Society – Environmental and Energy-Related Inorganic Chemistry (2015), Molecular Catalysts for Solar Fuels (2015)
Organized ACS Symposium San Francisco 2014 – "Renewable Energy Generation at the Interface between Theory and Experiment"
Organized ACS Symposium Denver 2015 – "Theoretical and Experimental Synergies at the Frontiers of Renewable Energy Catalysis"
Organized ACS Symposium Washington, D.C. 2017 – "Fundamentals of MOF Catalysis"
Organized FUSION Conference 2018 (Cancun, MX) and 2020 (Nassau, Bahamas) – "Frontiers of Photochemistry"
Organized InterAmerican Photochemical Society Meeting Sarasota, FL 2019
Manuscript Reviewer for 35+ Journals including ACS Applied Materials and Interfaces, Angewandte Chemie International Edition, Catalysts, Catalysis Science and Technology, ChemElectroChem, Chemistry of Materials, ChemElectroChem, ChemSusChem, Dalton Transactions, Environmental Science and Technology, Inorganic Chemistry, International Journal of Hydrogen Energy, Journal of the American Chemical Society, Journal of Biomedical Materials Research, Journal of Carbon Dioxide Utilization, Journal of Materials Chemistry, Journal of Physical Chemistry C, Journal of Physical Letters, Journal of Porphyrins and Phthalocyanines, Materials, Nature Chemistry, Nature Materials, Nature Communications, PNAS, Scientific Reports

PRESENTATIONS (2012 – present)

Universities, Colleges, and Companies: Appalachian State University, Arizona State University, Binghamton University, Bowling Green State University, Christopher Newport University, Concord University (2), Dow-Corning, Eastern Mennonite University, Elon University, Emory University, George Washington University, Johannes Kepler University in Linz (Austria), Johns Hopkins University, KTH Royal Institute of Technology (Sweden), Lehigh University, Marquette University, Michigan State University, NC State, Northwestern University (2), Ohio State, Oregon State, Princeton University, Radford University, Roanoke College, Rutgers Newark, Southern Illinois University Carbondale, University of Houston, University of California Irvine, University of California Riverside, University of Illinois Urbana-Champaign, University of New Hampshire, UNC Chapel Hill, UNC Charlotte, UNC Greensboro, University of Oregon, University of Richmond, University of South Carolina, University of Toledo, Truman State, Uppsala University (Sweden), Virginia Commonwealth University, Virginia Tech Chemistry (2), Virginia Tech Physics, Waseda University (Japan), West Virginia University, William and Mary

Professional Presentations:

68) American Chemical Society – San Antonio, TX (virtual) – "Engineered MOFs for the Filtration and Degradation of Chemical Agents." – April, 14, 2021 – ***Invited Talk***

67) Catalysis Society of New York – virtual – "Beyond Nanostructured Supports: Maximizing Catalyst Potential with Porous Metal-Organic Framework Catalysts" – March 30, 2021 – ***Invited Talk***

66) Material Research Society – virtual – "Sensitized Photon Upconversion in Metal Organic Frameworks: The Role of 3D Structure." – November 29, 2020 – ***Invited Talk***

65) Faraday Discussions, Cooperative Phenomena in Framework Materials – virtual – "Photoelectrochemical Alcohol Oxidation by Mixed-Linker Metal-Organic Frameworks." – October 15, 2020 – ***Invited Talk***

64) 5th International Conference on Bioinspired and Biobased Chemistry and Materials (N.I.C.E. 2020) – Nice, France (virtual) – "Metal Organic Framework Artificial Photosynthetic Arrays – Design Rules for Efficient Energy Transfer" – October 12, 2020 – ***Invited Talk***

63) NCPhotoChem – virtual – "Dizzy Photochemistry: The Role of Spin (Forbidden) Processes in MOF Energy Transfer" – October 9, 2020 – ***Invited Talk***

62) American Chemical Society – San Francisco, CA (virtual) – "Design Parameters for Energy and Electron Transport through Metal-Organic Frameworks" – August 18, 2020 – ***Invited Talk***

61) Telluride Summer Lecture Series – Breaking and Making Bonds with Light – Telluride, CO (virtual) – "Light-Harvesting, Energy Transfer, and Catalysis in Metal-Organic Frameworks." – July 10, 2020 – ***Invited Talk***

60) U. S. Army Futures Command, Combat Capabilities Development Command Soldier Center – Virtual Seminar – "Defects, Size, and Topology – Controlling Metal Organic Framework Synthetic Conditions to Systematically Tune Reactivity" – April 6, 2020 – ***Invited Talk***

59) Frontiers in Photochemistry – Nassau, Bahamas – "Spin and Orientation – Playing Synthetic Games to Mimic Natural Light-Harvesting Proteins" – February 25, 2020 – ***Organizer***

58) InterAmerican Photochemical Society – Sarasota, FL – "The Role of Spin Orbit Coupling on Long Range Energy Transfer through Metal Organic Frameworks" – January 2, 2020 – ***Invited Talk, Conference Opening Talk***

57) Next Generation Smart Materials – Savannah, GA – "Metal-Organic Framework Polymer Composites: Bridging the Functionality of Tunable Inorganic Chemistry and Polymer Science" – December 16, 2019 – ***Invited Talk***

56) Nature Conference on Physical Properties of Metal–Organic Frameworks – Tianjin, China – "Toward Artificial Photosynthetic MOFs: Energy and Electron Transfer in Metal Organic Frameworks" – November 20, 2019 – ***Invited Talk***

55) MII Technical Review and Conference – Blacksburg, VA – "Metal-Organic Framework Polymer Composites: Toward Next-Generation Smart Materials" – November 5, 2019

54) Surface Science of Filtration/Decontamination Materials and Multifunctional Materials for Protection Science Review – Edgewood, MD – "Defect Engineering in Zirconia Metal Organic Frameworks" – September 17, 2019

53) American Chemical Society – San Diego, CA – "Metal-organic Frameworks in Light Harvesting and Energy Transfer" – August 27, 2019 – ***Invited Talk***

52) American Chemical Society – San Diego, CA – "Redox Hopping Electron and Ion Transport in Metal-organic Framework Materials" – August 27, 2019 – ***Invited Talk***

51) International Conference of Photochemistry – Boulder, CO – "Spin-Orbit Coupling Induced Energy Transfer in UiO-67 MOFs Doped with Photoactive Transition Metal Complexes" – July 24, 2019 – ***Invited Talk***

50) Canadian Chemistry Conference and Exhibition – Quebec, Canada – "Energy and Electron Transport in Metal-Organic Frameworks - Homogeneous Chemistry in the Solid State" – June 7, 2019 – ***Invited Talk***

49) Materials Research Society – Phoenix, AZ – "Carbon Dioxide Utilization by a Cyclam-based Metal Organic Framework" – April 24, 2019 – ***Invited Talk***

48) Faraday Discussions, Ultrafast Photoinduced Energy and Charge Transfer – Ventura, CA – "Light Harvesting and Energy Transfer in a Porphyrin-based Metal Organic Framework" – April 9, 2019 – ***Invited Talk***

47) American Chemical Society – Orlando, FL – "Redox Hopping Electron Transport toward Efficient Electrocatalysis by Metal-organic Frameworks" – April 2, 2019 – ***Invited Talk***

46) American Chemical Society – Orlando, FL – "Photo-electrocatalytic Alcohol Oxidation by a Multi-component Metal Organic Framework" – April 2, 2019 – ***Invited Talk***

45) American Chemical Society – Orlando, FL – "Metal Organic Frameworks for Electrocatalytic Water Oxidation" – April 1, 2019 – ***Invited Talk***

44) American Chemical Society – Orlando, FL – "Metallo-cyclam Metal Organic Frameworks for CO_2 Utilization" – April 1, 2019 – ***Invited Talk***

43) American Chemical Society – Orlando, FL – "Bridging Biological Inspiration and Materials Synthesis: Metal-organic Framework Artificial Photosynthetic Arrays" – March 31, 2019 – ***Plenary Speaker***

42) Gordon Research Conference, Inorganic Reaction Mechanisms – ""Taking the Molecular to the Macromolecular: Inorganic Electron Transfer Catalysis in Metal Organic Frameworks" – March 12, 2018 – ***Invited Talk***

41) MOF2018 – Auckland, NZ – "Metal Organic Frameworks for Artificial Photosynthetic Applications - Energy and Electron Transport" – December 10, 2018 – ***Keynote Speaker***

40) American Chemical Society – Boston, MA – "Metal Organic Framework Catalysts: opportunities and challenges" – August 21, 2018 – ***Invited Talk***

39) American Chemical Society – Boston, MA – "Metal Organic Framework Incorporated Chromophores for Enhances Sunlight Capture: the role of chromophore distance on energy transfer" – August 21, 2018 – ***Invited Talk***

38) American Chemical Society – Boston, MA – "Carbon Dioxide Utilization within Tetra-azamacrocyclic Metal Organic Frameworks" – August 19, 2018 – ***Invited Talk***

37) American Chemical Society – Boston, MA – "Graduate School Information Session" – August 19, 2018 – ***Symposium Organizer***

36) Breaking and Making Bonds with Light – Telluride, CO – "Photo-degradable Metal Organic Framework Nanocages for the Controlled Delivery of Therapeutics" – July 11, 2018 – ***Invited Talk***

35) American Chemical Society – New Orleans, LA – "PCET in Metal Organic Frameworks: Toward Photoinduced Water Oxidation" – March 18, 2018 – ***Invited Talk***

34) American Chemical Society – New Orleans, LA – "Design Strategies to Coupling Chemistries in Dual/Multi-Function MOF Arrays" – March 20, 2018 – ***Invited Talk***

33) American Chemical Society – New Orleans, LA – "The Synthesis and Characterization of Metal Organic Frameworks for CO_2 Utilization" – March 18, 2018 – ***Invited Talk***

32) Frontiers of Photochemistry Conference, FUSION – Cancun, MX – "Mechanistic Insight into Energy Transfer Processes in MOFs" – February 20, 2018 – ***Conference Organizer***

31) Electrochemical Society Meeting – Washington, DC – "Energy Transfer and Catalysis in Metal Organic Framework Arrays" – October 2, 2017 – ***Invited Talk***

30) Waseda University Workshop – Tokyo, Japan – "Exploring Metal Organic Frameworks for use as Integrated Artificial Photosynthetic Assemblies" – September 12, 2017

29) American Chemical Society – Washington, DC – "Enhancement in Molecular Catalysis through Redox Hopping Metal Organic Framework Scaffold" – August 22, 2017 – ***Symposium Organizer***

28) American Chemical Society – Washington, DC – "Bridging the Divide – Metal Organic Frameworks as Molecular Solids and their Solution Reactivity" – August 21, 2017 – ***Invited Talk***

27) Gordon Research Conference Photochemistry – Lewiston, ME – "Structural Implications for Efficient Energy Transfer in Metal Organic Frameworks" – July 27, 2017 – ***Invited Talk***

26) American Chemical Society Meeting – San Francisco, CA – "Structural Insight into Electronic Communication and Energy Transfer in Metal Organic Framework Arrays" – April 5, 2017 – ***Invited Talk***

25) American Chemical Society Meeting – San Francisco, CA – "Metal Organic Frameworks for Carbon Dioxide Activation and Conversion" – April 4, 2017

24) American Chemical Society Meeting – San Francisco, CA – " Stimuli-responsive Metal Organic Framework Nanoparticles" – April 3, 2017 – ***Invited Talk***

23) InterAmerican Photochemical Society Conference – Sarasota, FL – "Light Harvesting through Energy Transfer in Metal Organic Frameworks" – January 3, 2017 – ***Invited Talk***

22) Solar Energy Research Conference – Chapel Hill, NC – "Fundamental Aspects of Metal Organic Framework Artificial Photosynthetic Arrays" – October 20, 2016 – ***Invited Talk***

21) 5th International Conference on Metal-Organic Frameworks & Open Framework Compounds (MOF2016) – Long Beach, CA – "Harnessing the Power of the Sun through Efficient Energy Transfer in MOF-Sensitized Solar Cells" – September 11-15, 2016 – ***Invited Talk***

20) American Chemical Society Meeting – Philadelphia, PA – " Photo- and Electro-Catalytic Water Oxidation by Metal Organic Frameworks" – August 24, 2016

19) American Chemical Society Meeting – Philadelphia, PA – "Structural Insight into Redox Hopping Electron Transport in Metal Organic Frameworks" – Augusy 22, 2016

18) American Chemical Society Meeting – San Diego, CA – "Photochemistry of metal organic frameworks: Ruthenium polypyridyl excited state chemistry in a new type of supramolecular material" – March 13-17, 2016 – ***Highlighted as Must See Talk in C&E News***

17) Solar Solutions to Energy and Environmental Problems – Telluride, CO – "Exploring Metal Organic Frameworks for Use as Integrated Artificial Photosynthetic Assemblies" – August 2-7, 2015

16) Gordon Research Conference Photochemistry – Stonehill College – "Metal Organic Framework Light Harvesting Arrays" – July 19-23, 2015

15) American Chemical Society National Meeting – Denver, CO. – "Toward Electrochemical Carbon Dioxide Reduction by Porous Coordination Networks." – March 25, 2015

14) American Chemical Society National Meeting – Denver, CO. – "Exploring charge transfer induced spin cross-over redox mediators in quantum dot sensitized solar cells." – March 22, 2015

13) American Chemical Society National Meeting – Denver, CO. – "Controlling interfacial energetics for efficient hybrid bulk heterojunction solar cells." – March 22, 2015

12) Third Biennial CO_2 Workshop – Princeton, NJ – "Metal Organic Framework Thin Films for Carbon Capture and Conversion" – March 16, 2015 – ***Invited Talk***

11) NC Photochem – Raleigh, NC – "Photophysical Investigations of Light-Harvesting Porous Coordination Network Thin Films" – October 11, 2014 – ***Invited Talk***

10) ECS and SMEQ Joint International Meeting – Cancun, MX – "The Effect of Band-Bending on Hybrid Bulk Heterojunction Solar Cell Performance" – October 5-10, 2014

9) ECS and SMEQ Joint International Meeting – Cancun, MX – "New Redox Mediators for Quantum Dot Sensitized Solar Cells" – October 5-10, 2014

8) ECS and SMEQ Joint International Meeting – Cancun, MX – "Porous Coordination Networks for Artificial Photosynthesis" – October 5-10, 2014

7) American Chemical Society National Meeting – San Francisco, CA – "Controlling electron transport properties of PCNs for Solar Water Splitting." – August 12, 2014

6) Gordon Research Conference Electron Donor Acceptor Interactions – Newport, RI – "Metal Organic Frameworks (MOFs) for Photoelectrochemical Solar Energy Conversion" – August 7, 2014 – ***Awarded Talk***

5) Gordon Research Conference Solar Fuels – Ventura, CA – "Metal Organic Frameworks (MOFs) for Photoelectrochemical Solar Fuel Generation." – January 19-24, 2014

4) Gordon Research Conference Photochemistry – Stonehill College – "Solar Energy Harvesting and Storage by Metal Organic Frameworks." – July 14-19, 2013 – ***Invited Talk***

3) Gordon Research Conference Photosynthesis – Davidson College – "Electrocatalytic Carbon Dioxide Reduction and Water Oxidation by Metal Organic Frameworks." – July 8-12, 2012

2) American Chemical Society National Meeting – Philadelphia, PA – "MOF Thin Films Semiconductors." – August 23, 2012

1) Second Biennial CO_2 Workshop at Princeton – "Electrocatalytic Carbon Dioxide Reduction by Metal-organic Frameworks." – November 9, 2012