Ellen M. Matson

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Professional Experience

July, 2023 – present	**Marshall D. Gates Jr. Associate Professor of Chemistry,** *University of Rochester*
July, 2021 – present	**Faculty Development and Diversity Officer,** *University of Rochester*
July, 2021 – June 2023	**Associate Professor of Chemistry,** *University of Rochester*
July, 2019 – June 2021	**Wilmot Assistant Professor of Chemistry,** *University of Rochester*
July, 2015 – June 2019	**Assistant Professor of Chemistry,** *University of Rochester* *Developing the synthesis and reactivity of electroactive, metal oxide cluster complexes for applications in energy storage and conversion.*
May, 2013 – May 2015	**Postdoctoral Researcher,** *University of Illinois at Urbana-Champaign* Advisor: Alison R. Fout *Synthesis, characterization and reactivity of first-row transition metal complexes supported by redox-active ligands.*

Education

August 2009 – May 2013	**Doctor of Philosophy**, Chemistry, *Purdue University* Advisor: Suzanne C. Bart *"Synthesis of Low-Valent Uranium Alkyl Complexes: Exploring the Reactivity of the Uranium Carbon Bond for the Activation of Small Molecules"*
August 2005 – May 2009	**B.A. in Chemistry** – *Boston University* *Magna Cum Laude* *Research conducted in the laboratory of John P. Caradonna focusing on the development of an undergraduate inorganic chemistry teaching lab based on room temperature spin cross-over Fe(III) complexes.*
August 2005 – May 2009	**B.S. in Science Education** – *Boston University* *Cum Laude,* MA State Initial Teacher's License

Research Awards and Recognitions

- Kavli Foundation Emerging Leader in Chemistry Award, 2022
- University of Rochester G. Graydon and Jane W. Curtis Award for Nontenured Faculty Teaching, 2021
- Post Lithium Storage Cluster of Excellence Award for Excellence in Female Research, 2020
- Research Corporation for Science Advancement Scialog Fellow for Negative Emissions Science, 2020-22
- Camille Dreyfus Teacher-Scholar Award, 2020
- Arthur E. Martell Early Career Author Prize, *Journal of Coordination Chemistry*, 2020
- Kavli Frontiers of Science Fellow, 2020
- Thieme Chemistry Journals Award, 2020
- Department of Energy Early Career Award, 2019
- University of Rochester Wilmot Assistant Professorship, 2019-21
- Alfred P. Sloan Research Fellowship in Chemistry, 2019
- Research Corporation for Science Advancement Cottrell Scholar, 2019
- Research Corporation for Science Advancement Scialog Fellow for Advanced Energy Storage, 2018-19
- Humboldt-Universität zu Berlin CRC 1109 Edith Flanigen Award, 2018
- Course Hero – Woodrow Wilson Fellowship for Excellence in Teaching, 2018
- University of Rochester Furth Fund Award, 2017
- National Science Foundation CAREER Award, 2017
- American Chemical Society Dan Su Travel Award, 2014
- American Chemical Society Division of Inorganic Chemistry Young Investigator Award, 2014
- Iota Sigma Pi Anna Louise Hoffman Award for Outstanding Achievement in Graduate Research, 2013

Featured as part of the "Emerging Investigator" issues in the following journals: *Chem. Commun.* (2018); *J. Coord. Chem.* (2019); *Dalton Trans.* (2020); *Inorg. Chem.* (2020), *Nanoscale* (2021), *ACS Appl. Mat. Interfaces* (2022), *Inorg. Chem. Front.* (2023).

Publications

Independent Career (University of Rochester):

[#] DENOTES UNDERGRADUATE COAUTHOR; * DENOTES CORRESPONDING AUTHOR(S); [‡] DENOTES EQUAL CONTRIBUTIONS

[58] Proe, K. R.; Schreiber, E.; **Matson E. M.*** "Proton-coupled electron transfer at the surface of polyoxovanadate-alkoxide clusters" *Acc. Chem. Res.* **2023**, *Accepted Article.*

[57] Dagar, M.; Corr, M.[#]; Mckone, J. R.*; **Matson, E. M.***; "Solvent mixtures for improved electron transfer kinetics of heterometallic charge carriers in nonaqueous redox flow batteries" *J. Mater. Chem. A.* **2023**, *Accepted Article.*

[56] Cooney, S. E.[‡]; Schreiber, E.[‡]; Brennessel, W. W.; **Matson, E. M.*** "Accelerated rates of proton coupled electron transfer to an oxygen deficient polyoxovanadate alkoxide cluster" *Inorg. Chem. Front.* **2023**, *10*, 2754-2765 (invited article: *Inorg. Chem. Front.* Emerging Investigators Special Issue).

[55] Dagar, M.[‡], Schreiber, E.[‡]; Cooney, S. E.[‡]; **Matson, E. M.*** "Molecular Engineering of Clusters and Coordination Cages" *Inorg. Chem.* **2023**, *62*, 1763-1765.

[54] Wilson, S. M.; Petel, B. E.; Schreiber, E.; Maiola, M. L.[#]; **Matson, E. M.***; Laskin, J.* "Electrochemical and structural characterization of tungsten-substituted Lindqvist-type polyoxovanadate-alkoxides using ion soft landing" *Chem. Eur. J.* **2023**, *29*, e202203440.

[53] Schreiber, E.; Brennessel, W. W.; **Matson, E. M.*** "Regioselectivity of hydrogen-atom uptake at the surface of reduced polyoxovanadate clusters" *Chem. Sci.* **2023,** *14*, 1386-1396 (selected by editor as "ChemSci Pick of the Week").

[52] Cooney, S. E.; Fertig, A. A.*; Buisch, M.R.[#]; Brennessel, W. W.; **Matson, E. M.*** "Coordination-induced bond weakening of water at the surface of an oxygen-deficient polyoxovanadate" *Chem. Sci.* **2022**, *13*, 12726-12737.

[51] Valerio, L. R.; Hakey, B. D.; Brennessel, W. W.; **Matson, E. M.*** "Quantitative U=O bond activation via silyl radical transfer" *Chem. Commun.* **2022**, *58*, 11244-11247 (selected by editor as "Hot Article").

[50] Fertig, A. A.; **Matson, E. M.*** "Connecting Thermodynamics and Kinetics of Proton Coupled Electron Transfer at Polyoxovanadate Surfaces using the Marcus Cross Relation" *Inorg. Chem.* **2023**, *62,* 1958-1967.

[49] Beidelman, B. A.; Zhang, X.[#]; Sanchez-Lievanos, K. R.; Selino, A. V.[#]; **Matson, E. M.***; Knowles, K. E. "Influence of water concentration on the solvothermal synthesis of VO_2(B) nanocrystals" *Cryst. Eng. Commun.* **2022**, *24*, 6008-6017.

[48] Garwick, R. E.[‡]; Schreiber, E.[‡]; Brennessel, W. W.; McKone, J. R.*; **Matson, E. M.*** "Surface ligands influence the selectivity of cation uptake in polyoxovanadate-alkoxide clusters" *J. Mat. Chem. A* **2022**, *10*, 12070-12078 (invited article: In Memoriam of Susan Odom).

[47] Fertig, A. A.; Cooney, S. E.; Meyer, R. L.; Brennessel, W. W.; **Matson, E. M.*** "Accelerated rates of oxygen-atom transfer in polyoxovanadate clusters" *Chem. Commun*. **2022**, *58*, 6004-6007 (invited article: Pioneering Investigators Forum).

[46] Hakey, B. D.; Leary, D. C.; Lopez, L.[#]; Valerio, L. R.; Brennessel, W. W.; Milsmann, C.*; **Matson, E. M.*** "Synthesis and characterization of pyridine dipyrrolide uranyl complexes" *Inorg. Chem.* **2022**, *61*, 6182-6192.

[45] Schreiber, E.[‡]; Fertig, A. A.[‡]; Brennessel, W. W.; **Matson, E. M.*** Oxygen-atom defect formation in polyoxovanadate clusters via proton-coupled electron transfer *J. Am. Chem. Soc.* **2022**, *144*, 5029-5041.

[44] Schreiber, E.; Garwick, R. E.; Baran, M. J.; Baird, M. A.; Helms, B. A.*; Matson, E. M.* "Molecular engineering of polyoxovanadate-alkoxide clusters and microporous polymer membranes to prevent crossover in redox-flow batteries" *Appl. Mater. Interfaces,* **2022**, *14*, 22965-22972 (invited article: Emerging Investigators Forum).

[43] Schreiber, E.; Brennessel, W. W.; **Matson, E. M.*** "Charge-state dependence of proton uptake in polyoxovanadate-alkoxide clusters" *Inorg. Chem.* **2022,** *61*, 4789-4800 (ACS Editor's Choice, selected by editor to be featured as cover article).

[42] Fertig, A. A.; Brennessel, W. W.; McKone, J.R.; **Matson E. M.*** "Concerted multiproton-multielectron transfer for the reduction of O_2 to H_2O with a polyoxovanadate cluster" *J. Am. Chem. Soc.* **2021**, *143*, 15756-15768.

[41] Chakraborty, S.; **Matson, E. M.*** "Reductive silylation for defect formation in polyoxovanadate-alkoxide clusters" *Inorg. Chem. Front.* **2021**, *8*, 4507-4516 (invited article).

[40] Chakraborty, S.[‡]; Schreiber, E.[‡]; Sanchez-Lievanos, K. R.; Tariq, M.; Brennessel, W. W.; Knowles, K. E.; **Matson, E. M.*** "Modelling local structural and electronic consequences of proton- and hydrogen-uptake in VO_2 with polyoxovanadate clusters" *Chem. Sci.*, **2021**, 12, 12744-12753.

[39] Meyer, R. L.; Miro, P.; Brennessel, W. W.; **Matson, E. M.*** "O_2 activation with a sterically-encumbered, oxygen-deficient polyoxovanadate-alkoxide cluster" *Inorg. Chem.*, **2021**, *60*, 13833-13843 (invited article: Forum on Small Molecule Activation).

[38] Auvray, T.; Nachtigall, O.; Brennessel, W. W.; Jones, W. D.; **Matson, E. M.*** "Development of sterically hindered siloxide-functionalized polyoxotungstates for the complexation of 5d-metals" *Dalton Trans.* **2021**, *50*, 4300-4310.

[37] Fertig, A. A.; Rabbani, S. M. G.; Brennessel, W. W.; Miro, P.*; Matson, E. M.* "Physicochemical implications of surface alkylation of high-valent, Lindqvist-type polyoxovanadate-alkoxide clusters" *Nanoscale*, **2021**, *13*, 6162-6173 (invited article: Nanoscale Emerging Investigators Issue).

[36] Burke, R.[‡]; Chakraborty, S.[‡]; McClelland, K. P.; Jelušic, J.[#]; **Matson, E. M.**; Bren, K. L.*; Krauss, T. D.* "Light-driven hydrogen production with CdSe quantum dots and a cobalt glutathione catalyst" *Chem. Commun.* **2021**, *57*, 2053-2056.

[35] Chakraborty, S.[‡]; Petel, B. E.[‡]; Schreiber, E.[‡]; **Matson, E. M.*** "Atomically precise vanadium oxide clusters" *Nanoscale Advances,* **2021**, *3*, 1293-1318 (invited article).

[34] Petel, B. E.; **Matson, E. M.*** "Physicochemical factors that influence the deoxygenation of oxyanions in atomically-precise, oxygen-deficient vanadium oxide assemblies" *Inorg. Chem.* **2021**, *60*, 6855-6864 (invited article: Heterogeneous Interfaces Through the Lens of Inorganic Chemistry).

[33] Meyer, R. L.; Greer, S. M.; Blake, A. V.; Cary, S. K.; Ditter, A. S.; Daly, S. R.; Li, F.; Kozimor, S. A.*; **Matson, E. M.***; Mocko, V.; Seidler, G. T.; Stein, B. W.*; Weinstein, S. D. "Characterizing polyoxovanadate-alkoxide clusters using vanadium K-edge X-ray absorption spectroscopy" *Chem. Eur. J.*, **2021**, *27*, 1592-1597.

[32] Stroka, J. R.; Kandemir, B.; **Matson, E. M.***; Bren, K. L.* "Electrocatalytic multielectron nitrite reduction in water by an iron complex" *ACS Catal.* **2020**, *10*, 13968-13972.

[31] Petel, B. E.*; **Matson, E. M.*** "Oxygen-atom Vacancy Formation and Reactivity in Polyoxovanadate Clusters" *Chem. Commun.* **2020**, *56*, 13477-13490 (invited article*).*

[30] Auvray, T.*; **Matson, E. M.*** "Polyoxometalate-based complexes as platforms for the study of actinide chemistry" *Dalton Trans.* **2020**, *49*, 13917-13927 (selected by editor as "Hot Article").

[29] Dissanyake, D. M. M. M.; Petel, B. E.; Brennessel, W. W.; Bren, K. L.*; **Matson, E. M.*** "Hydrogen bonding promotes diversity in nitrite coordination modes at a single iron(II) center" *J. Coord. Chem.* **2020***, 73*, 2664-2676 (invited article: Enbo Wang Memorial Issue).

[28] Edwards, E. H.[‡]; Fertig, A. A.[‡]; McClelland, K. P.; Tilahun, M.; Chakraborty, S.; Krauss, T. D.*; Bren, K. L.*; **Matson, E. M.*** "Enhancing the activity of photocatalytic hydrogen production from CdSe quantum dots with polyoxovanadate clusters" *Chem. Commun.* **2020**, *56*, 8792-8795.

[27] Meyer, R. L.; Love, R.[#]; Brennessel, W. W.; **Matson, E. M.*** "Conversion of a cyclic polyoxovanadate-alkoxide cluster to its Lindqvist congener: Insights into thermodynamic and kinetic products in polyoxovanadate clusters" *Chem. Commun.* **2020**, *56*, 8607-8610 (selected by editor as "Hot Article").

[26] Schreiber, E.; Petel, B. E.; **Matson, E. M.*** "Acid-induced, oxygen-atom vacancy formation in reduced polyoxovanadate-alkoxide clusters" *J. Am. Chem. Soc.* **2020**, *142*, 9915-9919.

[25] Maiola, M. L.[#]; Petel, B. E.; Brennessel, W. W.; **Matson, E. M.*** "Synthetic insights into the site-selective halogenation of mixed-valent polyoxovanadate-alkoxide clusters" *Dalton Trans.*, **2020,** *49*, 16184-16192 (invited article: Dalton Transactions New Talents: Americas).

[24] Meyer, R. L.; Anjass, M. H.*; Petel, B. E.; Brennessel, W. W.; Streb, C.*; **Matson, E. M.*** "Electrochemical consequences of ligand substitution at heterometal centers in polyoxovanadium clusters: Controlling the redox properties via heterometal coordination number" *Chem. Eur. J.*, **2020***, 26*, 9905-9914 (invited article: Young Chemists 2020).

[23] Petel, B. E.[‡]; Meyer, R. L.[‡]; Maiola, M. L.[#]; Brennessel, W. W.; Müller, A. M.*; **Matson, E. M.*** "Site-selective halogenation of polyoxovanadate clusters: Atomically precise models for electronic effects of anion doping in VO_2" *J. Am. Chem. Soc.* **2020**, *143*, 1049-1056.

[22] Petel, B. E.; **Matson, E. M.*** "Conversion of NO_x^{1-} (x = 2, 3) to NO using an oxygen-deficient polyoxovanadate-alkoxide cluster" *Chem. Commun.*, **2020**, *56*, 555-558.

[21] Schreiber, E.[‡]; Hartley, N. A.[#‡]; Cook, T. R.; McKone, J. P.*; **Matson, E. M.*** "Cation interactions with molecular vanadium oxide clusters: Observations of capacitive and pseudocapacitive behavior within a single complex" *ACS Appl. Energ. Mat.*, **2019**, *2*, 8985-8993.

[20] VanGelder, L. E.; Schreiber, E.; Wind, M.-L.; Brennessel, W. W.; Limberg, C.; **Matson, E. M.*** "Investigation of cubic Fe_4M_4 frameworks for application in nonaqueous electrochemical energy storage" *Chem. Eur. J.*, **2019**, *25*, 14421-14430.

[19] VanGelder, L. E.; Pratt III, H. D.; Anderson, T. M.; **Matson, E. M.*** "Surface functionalization of polyoxovanadium clusters: Generation of highly soluble charge carriers for nonaqueous energy storage" *Chem. Commun.* **2019**, *55*, 12247-12250.

[18] Petel, B. E.; Meyer, R. L.; Brennessel, W. W.; **Matson, E. M.*** "Oxygen atom transfer with organofunctionalized polyoxovanadium clusters: O-atom vacancy generation with tertiary phosphines and deoxygenation of styrene oxide" *Chem. Sci.* **2019**, *10*, 8035-8045.

[17] VanGelder, L. E.; Brennessel, W. W.; **Matson, E. M.*** "Ligand derivatization of titanium-functionalized polyoxovanadium-alkoxide clusters" *Polyhedron*, **2019**, *167*, 119-126 (invited article: Women with MOxy: Metal Oxide Chemistry from Female Investigators).

[16] Petel, B. E.; Fertig, A. A.; Maiola, M. L.[#]; Brennessel, W. W.; **Matson, E. M.*** "Controlling metal-to-oxygen ratios via M=O bond cleavage in polyoxovanadate-alkoxide clusters" *Inorg. Chem.*, **2019**, *58*, 10462-10471 (invited forum article: Celebrating the Year of the Periodic Table: Emerging Investigators in Inorganic Chemistry Issue).

[15] Schurr, B. E.; Nachtigall, O.; VanGelder, L. E.; Drappeau, J.[#]; Brennessel, W. W.; **Matson, E. M.*** "Consequences of ligand derivatization on the electronic properties of polyoxovanadate-alkoxide clusters" *J. Coord. Chem.*, **2019**, *72*, 1267-1286 (invited article: Emerging Leader Issue).

[14] VanGelder, L. E.; Cook, T. R.; **Matson, E. M.*** "Progress in the design of polyoxovanadate-alkoxides as charge carriers for nonaqueous redox flow batteries" *Comments on Inorganic Chemistry*, **2019**, *39*, 51-89 (invited article).

[13] VanGelder, L. E.; Schreiber, E.; **Matson, E. M.*** "Physicochemical implications of alkoxide 'mixing' in polyoxovanadate clusters for nonaqueous energy storage" *J. Mat. Chem. A,* **2019***, 7*, 4893-4902.

[12] Kosswattaarachchi, A. M.; VanGelder, L. E.; Nachtigall, O.; Hazelnis, J.[#]; Brennessel, W. W.; **Matson, E. M.***; Cook, T. R.* "Transport and electron transfer kinetics of polyoxovanadate-alkoxide clusters" *J. Electrochem. Soc.* **2019***, 166*, A464-A472.

[11] VanGelder, L. E.; Petel, B. E.; Nachtigall, O.; Martinez, G.[#]; Brennessel, W. W.; **Matson, E. M.*** "Organic functionalization of polyoxovanadate-alkoxide clusters: Improving the solubility of multimetallic charge carriers for non-aqueous redox flow batteries" *ChemSusChem*, **2018**, *13*, 4139-4149.

[10] Meyer, R. M.; Brennessel, W. W.; **Matson, E. M.*** "Synthesis of a gallium-functionalized polyoxovanadate-alkoxide cluster: Toward general routes for heterometal installation" *Polyhedron*, **2018**, *156*, 303-311.

[9] Li, F.; Meyer, R.; Carpenter, S.H.; VanGelder, L.E.; Nichols, A.W.; Machan, C.W.; Neidig, M.L.; **Matson, E. M.*** "Nitric oxide activation facilitated by the cooperative multimetallic reactivity of iron-functionalized polyoxovanadate-alkoxide clusters" *Chem. Sci.*, **2018**, *9*, 6379-6389.

[8] Petel, B.E.; Brennessel, W.W.; **Matson, E.M.*** "Oxygen-atom vacancy formation at polyoxovanadate-alkoxide clusters: Homogeneous models for reducible metal oxides" *J. Am. Chem. Soc.*, **2018**, *140*, 8424-8428.

[7] VanGelder, L.E.; **Matson, E.M.*** "Heterometal-functionalization of polyoxovanadate-alkoxides for improved performance in non-aqueous redox flow batteries" *J. Mat. Chem. A*, **2018**, *6*, 13874-13882.

[6] Petel, B.E.; Purak, M.[#]; **Matson, E.M.*** "Manganese catalyzed cross-coupling reactions of aliphatic Grignard reagents with N-heterocyclic chlorides" *Synlett*, **2018**, *29*, 1700-1706.

[5] VanGelder, L.E.; Forrestel, P.L.[#]; Brennessel, W.W.; **Matson, E.M.*** "Site-selectivity in the halogenation of titanium-functionalized polyoxovanadate-alkoxide clusters" *Chem. Comm.*, **2018**, *54*, 6839-6842 (invited article: Emerging Investigators Issue).

[4] VanGelder, L.E.; Kosswattaarachchi, A.M.; Forrestel, P.L.[#]; Cook, T.R.*; **Matson, E.M.*** "Polyoxovanadate-alkoxide clusters as multi-electron charge carriers for symmetric non-aqueous redox flow batteries" *Chem. Sci.,* **2018**, *9*, 1692-1699 (selected as part of the themed collections "Most popular 2018-2019 main group, inorganic and organometallic chemistry articles" and "Most popular 2018-2019 energy articles").

[3] VanGelder, L.E.; Brennessel, W.W.; **Matson, E.M.*** "Tuning the redox profiles of polyoxovanadate-alkoxide clusters via heterometal installation: Toward designer redox reagents" *Dalton Trans.,* **2018**, *47*, 3698-3704 (cover article).

[2] Li, F.; Carpenter, S.H.; Higgins, R.F.; Hitt, M.G; Brennessel, W. W.; Ferrier, M.G.; Cary, S.K.; Lezama Pacheco, J.S.; Wright, J.T.; Stein, B.W.; Shores, M.P.; Kozimor, S.A.; Neidig, M.L.; **Matson, E. M.*** "Polyoxovanadate-alkoxide clusters: A new class of redox-active metalloligands" *Inorg. Chem.*, **2017**, *56*, 7065-7080.

[1] Li, F.; VanGelder, L. E.; Brennessel, W. W.; **Matson, E. M.*** "Self-assembled, iron-functionalized polyoxovanadate alkoxide clusters" *Inorg. Chem.* **2016**, *55*, 7332-7334.

Before University of Rochester (Postdoctoral and Graduate Research):

[28] Lin, N. J.; Pearles, D.; **Matson, E. M.**; Zeller, M.; Bart, S. C.* "Lewis base activation by uranium(III) complexes" *Organometallics* **2023**, *accepted article.*

[27] Tatebe, C.; **Matson, E. M.**; Clark, C.; Kiernicki, J. J.; Fanwick, P. E.; Zeller, M.; Bart, S. C.* "Low- and mid-valent uranium species supported by phenyltris(oxazolinyl)borate ligands" *Organometallics* **2020**, *39*, 353-360.

[26] Gordon, Z.; Miller, T. J.; Leahy, C. A.; **Matson, E.M.**: Burgess, M.; Drummond, M. J.; Popescu, C.; Smith, C. M.; Lord, R. L.; Rodriguez-Lopez, J.; Fout, A. F.* "Characterization of terminal iron(III)-oxo and iron(III)-hydroxo complexes derived from O_2 activation" *Inorg. Chem.* **2019**, *58*, 15801-15811.

[25] Jackson, B. J.; Najera, D.; **Matson, E. M.**; Woods, T.; Bertke, J. A.; Fout, A. R.* "Synthesis and characterization of (DIPPCCC)Fe complexes: A zwitterionic metalation method and CO_2 reactivity" *Organometallics,* **2019**, *38*, 2943-2952.

[24] Gordon, Z.G.; Drummond, M.J.; **Matson, E.M.**; Bogart, J.A.; Schelter, E.J.; Lord, R.L.; Fout, A.R.* "Tuning the Fe(II/III) redox potential in nonheme Fe(II)-hydroxo complexes through primary and secondary coordination sphere modifications" *Inorg. Chem.*, **2017**, *56*, 4852-4863.

[23] Ford, C. L.; Park, Y. P.; **Matson, E. M.**; Gordon, Z.; Fout, A. R.* "A bio-inspired iron catalyst for nitrate and perchlorate reduction" *Science*, **2016**, *354*, 741-743.

[22] **Matson, E. M.**; Kiernicki, J. J.; Fanwick, P. E.; Bart, S. C.* "Expanding the family of uranium(III) alkyls: Synthesis and characterization of mixed ligand derivatives" *Eur. J. Inorg. Chem.*, **2016**, 2527-2533.

[21] Ibrahim, A; Tokmic, K.; Brennan, M. R.; Kim, D.; **Matson, E. M.**; Nilges, M. J.; Bertke, J. A.; Fout, A. R.* "Monoanionic bis(carbene) pincer complexes featuring cobalt(I-III) oxidation states" *Dalton Trans.*, **2016**, *45* 9805-9811.

[20] Konkol, A. J.; Richad, A. J.; **Matson, E. M.**; Caradonna, J. P.; O'Donnell, J. L.*; Karr, J. W.* "Synthesis and characterization of thermochromic metal complexes with a near room temperature high-spin to low-spin crossover" *Chem. Educator*, **2015**, *20*, 299-233.

[19] **Matson, E. M.;** Park, Y. J.; Bertke, J. A.; Fout, A. R.* "Synthesis and characterization of M(II) (M = Mn, Fe, Co) azafulvene complexes and their X_3^- derivatives" *Dalton Trans.*, **2015**, *44*, 10377-10384.

[18] **Matson, E. M.**; Park, Y. J.; Fout, A. R.* "Exploring Mn-O bonding in the context of an electronically flexible secondary coordination sphere: Synthesis of a Mn(III)-oxo" *Chem. Commun.*, **2015**, *51*, 5310-5313.

[17] **Matson, E. M.**; Espinoza Martinez, G.; Ibrahim, A.; Jackson, B. J.; Bertke, J. A.; Fout, A. R.* "Nickel(II) pincer complexes: Oxidative addition of C-H bond to form Ni(II)-H" *Organometallics*, **2015**, *34*, 399-407.

[16] **Matson, E. M.**; Park, Y. J., Fout, A. R.* "Facile nitrite reduction in a non-heme iron system: Formation of an iron(III)-oxo" *J. Am. Chem. Soc.*, **2014**, *136*, 17398-17401.

[15] **Matson, E. M.**; Breshears, A. T.; Newell, B. S.; Fanwick, P. E.; Shores, M. P.; Walensky, J.; Bart, S. C. "Structure, bonding, and insertion chemistry of trivalent uranium chalcogenide complexes" *Inorg. Chem.,* **2014**, *53*, 12977-12985.

[14] **Matson, E. M**.; Kiernicki, J. J.; Anderson, N. H.; Fanwick, P. E.; Bart, S. C.* "Reactivity of U(III) complexes with benzophenone: Formation of a trivalent uranium ketyl radical species" *Dalton Trans*., **2014**, *43*, 17885-17888.

[13] **Matson, E. M.**; Gordon, Z.; Fout, A. R.*, "Meridional vs. facial coordination geometries of a dipodal ligand framework featuring a secondary coordination sphere" *Dalton Trans*, **2014**, *43*, 16992-16995.

[12] **Matson, E.M.**; Bertke, J. A.; Fout, A. R.* "Isolation of iron(II) aqua and hydroxo complexes featuring a tripodal hydrogen-bond donor and acceptor ligand" *Inorg. Chem.*, **2014**, *53*, 4450-4458.

[11] Kiernicki, J. J.; Newell, B. S.; **Matson, E. M.**; Fanwick, P. E.; Shores, M. P.; Bart, S. C.* "Multi-electron C-O bond activation mediated by a family of reduced uranium complexes" *Inorg. Chem.*, **2014**, *53*, 3730-3741.

[10] **Matson, E. M.**; Franke, S.; Anderson, N. H.; Cook, T. D.; Fanwick, P. E.; Bart, S. C.* "Reductive elimination from tetrabenzyluranium mediated by an iminoquinone ligand" *Organometallics*, **2014**, *33*, 1964-1971.

[9] Napoline, J. W.; Kraft, S. J.; **Matson, E. M.**; Fanwick, P. E.; Bart, S. C.*; Thomas, C. M.* "Tris(phosphinoamide)-supported uranium-cobalt heterobimetallic complexes featuring Co→U dative interactions" *Inorg. Chem.,* **2013**, *52*, 12170-12177.

[8] **Matson, E. M.**; Goshert, M. D.; Kiernicki, J. J.; Newell, B. S.; Fanwick, P. E.; Shores, M. P.; Walensky, J.*; Bart, S.* C. "Synthesis of terminal uranium(IV) disulfido and diselenido compounds by activation of elemental sulfur and selenium" *Chem. Eur. J.*, **2013**, *19*, 16176-16180.

[7] **Matson, E. M.**; Opperwall, S. R.; Fanwick, P. E.; Bart, S. C.* "Oxidative addition of halogens to U(IV) bis(amidophenolate) complexes" *Inorg. Chem.*, **2013**, *52*, 7295-7304.

[6] **Matson, E. M.**; Forrest, W. P.; Fanwick, P. E.; Bart, S. C.* "Synthesis and reactivity of trivalent Tp*U($CH_2Ph)_2$(THF): Insertion vs oxidation at low-valent uranium" *Organometallics*, **2013**, *32*, 1484-1492.

[5] **Matson, E. M.**; Fanwick, P. E.; Bart, S. C. "Diazoalkane reduction for the synthesis of uranium hydrazonido complexes" *Eur. J. Inorg. Chem.*, **2012**, *33*, 5471-5478.

[4] **Matson, E. M.**; Forrest, W. P.; Fanwick, P. E.; Bart, S. C.* "Use of alkylsodium reagents for the synthesis of trivalent uranium alkyl complexes" *Organometallics*, **2012**, *31*, 4467-4473.

[3] **Matson, E. M.**; Crestani, M. G.; Fanwick, P. E.; Bart, S. C.* "Synthesis of U(IV) imidos from Tp*$_2$UCH$_2$Ph by extrusion of bibenzyl" *Dalton Trans.,* **2012**, *41*, 7952-7958.

[2] **Matson, E. M.**; Fanwick, P. E.; Bart, S. C.* "Formation of trivalent U-C, U-N, and U-S bonds and their reactivity towards carbonyls" *Organometallics*, **2011**, *30*, 5753-5762.

[1] **Matson, E. M.**; Forrest, W. P.; Fanwick, P. E.; Bart, S. C.* "Functionalization of carbon dioxide and carbon disulfide using a uranium(III) alkyl complex" *J. Am. Chem. Soc.*, **2011**, *133*, 4948-4954.

Synergistic Activities

Teaching Activities: *Courses taught since joining the faculty at University of Rochester:* General Chemistry (CHEM 132; 2021 – present); Advanced Laboratory Techniques (CHM 234; 2019 – 2020); Inorganic Chemistry (CHM 211; 2017 – 2018); Organometallic Chemistry (CHM 422; 2015 – present); Small Molecule Activation (CHM 418; 2016 – 2018); Group Theory (CHM 415; 2015 – 2017); Science Engagement in the Rochester City School District (CAS 207/208; 2017 – 2019).

Course/Laboratory design: Awarded teaching innovation grant for the development of two laboratory modules contemporary inorganic chemistry and course-based undergraduate research (CHM 234); Designed graduate special topics course focused on the activation of small molecules the production of chemical fuels (CHM 418);

Designed community engagement course for undergraduate students focused on STEM education through outreach and service (CAS 207/208).

University Activities: University of Rochester, College Diversity Roundtable (2018 – present), University of Rochester Research Compliance Committee (2016 – present), Dept. of Chemistry Diversity, Equity and Inclusion Committee (2020 – present, chair), Dept. of Chemistry Graduate Recruiting Committee (2015 – present), Dept. of Chemistry Graduate Studies Committee (2016 – present).

National Activities: Vice-chair, Gordon Research Conference on Inorganic Chemistry (2024), Co-organizer, Symposium on Multimetallic Molecular and Extended Platforms for Energy Applications, ACS National Meeting (2022); Co-organizer, Symposium on Metal Oxide Clusters and Materials, ACS Northeast Regional Meeting (2022); Co-organizer, Symposium honoring Jillian L. Dempsey, 257th ACS National Meeting (2019); Facilitator, ACS Postdoc to Faculty Workshop (2016 – present); Members at Large Coordinator, Iota Sigma Pi National Board (2017 – present).

Reviewer Activities: *Nature, Nature Chemistry, Journal of the American Chemical Society*, *Chemical Science*, *Inorganic Chemistry, Nanoscale, Nano Letters, Organometallics*, *Dalton Transactions, Chemistry of Materials, ChemElectroChem, ACS Applied Energy Materials, Journal of Coordination Chemistry, Polyhedron,* Department of Energy, National Science Foundation, American Chemical Society Petroleum Research Fund, Research Corporation for Science Advancement.

Outreach Activities: Organizer of National Chemistry Week Activities, University of Rochester (2016-present); Co-Organizer of the Western New York Inorganic Symposium (2016-present); Participant in YMCA STEM-night (2016-present); Co-Organizer of Bonding Camp for Girls, University of Illinois at Urbana-Champaign (2014); Co-Organizer of National Chemistry Week, Purdue University (2010-2013), Co-Organizer of Girl Scout Day, Purdue University (2012), Curriculum Development for Chem Teens, Purdue University (2011 – 2013).

Professional Affiliations: American Chemical Society (2010 – present), American Academy of Arts and Sciences (2017 – present), Materials Research Society (2018 – present).

Presentations

Invited Lectures and Seminars (since joining faculty at University of Rochester)

University of Cincinnati, Department of Chemistry (April 14, 2023), Cincinnati, OH
Simon Frasier University, Department of Chemistry (January 25, 2023), Vancouver, Canada
University of British Columbia, Department of Chemistry (January 24, 2023), Vancouver, Canada
Johns Hopkins University, Department of Chemistry (January 10, 2023), Baltimore, MD
University of Illinois at Urbana Champaign, Department of Chemistry (December 13, 2022), Urbana, IL
Cornell University, Department of Chemistry (December 8, 2022), Ithaca, NY
Texas A&M University, Department of Chemistry (November 30, 2022), College Station, TX
University of Kentucky, Department of Chemistry Odom Lecture (October 7, 2022), Lexington, KY
University of Washington, Department of Chemistry (May 24, 2022), Seattle, WA.
University of Oldenberg (November 22, 2021; virtual talk)
University of Göttingen (June 1, 2021; virtual talk).
California Institute of Technology (May 28, 2021; virtual talk).
New Jersey Institute of Technology (February 24, 2021; virtual talk).
University of California, Santa Barbara (January 8, 2021; virtual talk).
Columbia University, Department of Chemistry (November 13, 2020; virtual talk)
Harvard University, Department of Chemistry & Chemical Biology (September 17, 2020; virtual talk).
Boston University, Department of Chemistry (September 14, 2020; virtual talk).
Indiana University, Department of Chemistry (August 11, 2020; virtual talk).
University of North Carolina Chapel Hill, Department of Chemistry (March 3, 2020), Chapel Hill, NC.
Johns Hopkins University, Department of Chemistry (February 18, 2020), Baltimore, MD.
Florida State University, Department of Chemistry (February 4, 2020), Tallahassee, FL.
University of Florida, Department of Chemistry (February 3, 2020), Gainesville, FL.
Colorado State University, Department of Chemistry (January 28, 2020), Fort Collins, CO.
Juniata College, Department of Chemistry & Biochemistry (November 21, 2019), Huntingdon, PA.
Pennsylvania State University, Department of Chemistry (November 20, 2019), State College, PA.
D'Youville College, Department of Chemistry (November 8, 2019), Buffalo, NY.
Michigan State University, Department of Chemistry (October 24, 2019), East Lansing, MI.
University of Michigan, Department of Chemistry (October 23, 2019), Ann Arbor, MI.

Dartmouth College, Department of Chemistry (October 10, 2019), Hanover, NH.
University of California, Berkeley, College of Chemistry (October 4, 2019), Berkeley, CA.
University of California at Davis, Department of Chemistry (October 3, 2019), Davis, CA.
University of Minnesota, Department of Chemistry (October 1, 2019), Minneapolis, MN.
Ohio State University, Department of Chemistry (September 3, 2019), Columbus, OH.
Alfred University, Department of Chemistry (May 3, 2019), Alfred, NY.
University of Wisconsin, Department of Chemistry (February 20, 2019), Madison, WI.
University of Pittsburgh, Department of Chemistry (February 5, 2019), Pittsburgh, PA.
University of Pennsylvania, Department of Chemistry (January 8, 2019), Philadelphia, PA.
University of California at San Diego, Department of Chemistry (November 30, 2018), San Diego, CA.
University of Vermont, Department of Chemistry (November 12, 2018) Burlington, VT.
Los Alamos National Laboratory, Chemistry Colloquium (October 25, 2018), Los Alamos, NM.
Humboldt Universität zu Berlin, CRC 1109 Annual Meeting (October 10, 2018), Berlin, Germany.
Ulm University, Institute of Inorganic Chemistry (October 8, 2018), Ulm, Germany.
SUNY Brockport, Department of Chemistry (September 27, 2018), Brockport, NY.
Iowa State University, Department of Chemistry (September 13, 2018), Ames, IO.
St. Bonaventure University, Department of Chemistry (February 23, 2018), Allegany, NY.
Canisius College, Department of Chemistry (February 2, 2018), Buffalo, NY.
UMass Amherst, Materials Colloquium (December 8, 2017), Amherst, MA.
Hamilton College, Department of Chemistry (November 4, 2017), Clinton, NY.
SUNY Fredonia, Department of Chemistry (October 28, 2017), Fredonia, NY.
SUNY Geneseo, Department of Chemistry (December 4, 2016), Geneseo, NY.

Conference and Workshop Proceedings (since joining faculty at University of Rochester)

*Proton Coupled Electron Transfer 4, Tarragona, Spain, June 5 – June 9, 2023, oral.
*264th American Chemical Society National Meeting, Indianapolis IN, March 26-30, 2023, oral.
*264th American Chemical Society National Meeting, Indianapolis IN, March 26-30, 2023, oral.
*International Conference on Coordination Chemistry, Rimini, Italy, August 28 – September 2, 2022, oral.
*263rd American Chemical Society National Meeting, Chicago IL, August 21-25, oral.
*Gordon Research Conference on Inorganic Chemistry, Newport, RI, May 28-June 3, 2022, oral.
Gordon Research Conference on Inorganic Chemistry, Newport, RI, May 28-June 3, 2022, poster.
*Post Lithium Storage Cluster of Excellence Conclave Meeting, June 24-25, 2021, oral.‡
*Beyond Lithium Ion XIII Symposium, June 9-11, 2021, oral.‡
*International Conference on Energy Conversion & Storage, September 10-11, 2020, oral.‡
*CBET 2020 Energy Storage Workshop, August 13-14, 2020, oral.‡
*Kavli Frontiers of Science Symposium, July 20-22, 2020, poster.‡
*Global Inorganic Discussion Weekend, June 22, 2020, oral
*Gordon Research Conference on Atomically Precise Nanomaterials, Galveston, TX, February 9-12, 2020, oral.
Gordon Research Conference on Atomically Precise Nanomaterials, Galveston, TX, February 9-12, 2020, poster.
*Frontiers in Metal Oxide Clusters Symposium, Corvallis, OR, August 19 – 23, 2019 oral.
*256th American Chemical Society National Meeting, Orlando, FL, March 31 – April 4, 2019, oral.
*256th American Chemical Society National Meeting, Orlando, FL, March 31 – April 4, 2019, oral.
*256th American Chemical Society National Meeting, Orlando, FL, March 31 – April 4, 2019, oral.
*Boston Regional Inorganic Colloquium, Boston College, Chestnut Hill, MA, March 2, 2019, oral.
256th American Chemical Society National Meeting, Boston, MA, August 19 – 23, 2018, oral.
*International Symposium on Metal-oxo Cluster Sciences: Exploring Novel Possibilities, Tokyo, Japan, August 5 – 8, 2018, oral.
International Conference on Coordination Chemistry, Sendai, Japan, July 30 – August 4, 2018, oral.
Gordon Research Conference on Inorganic Chemistry, Biddeford, ME, June 17-22, 2018, poster.
*Graduate Research Seminar on Inorganic Chemistry (Discussion Leader), Biddeford, ME, June 16-17, 2018.
**Keynote Speaker* ACS WNY Undergraduate Research Symposium, Buffalo, NY, April 28, 2018, oral.
Materials Research Society Spring Meeting, Phoenix, AZ, April 2-6, 2018, oral.
*253rd American Chemical Society National Meeting, San Francisco, CA, April 2-6, 2017, oral.
*Gordon Research Conference on Inorganic Reaction Mechanisms, Galveston, TX, March 5-10, 2017, oral.

Gordon Research Conference on Inorganic Reaction Mechanisms, Galveston, TX, March 5-10, 2017, poster.
*Workshop on Catalyst and reaction design of non-precious metals from fundamentals to applications, Princeton, NJ, September 2-3, 2016, oral.
*252nd American Chemical Society National Meeting, Philadelphia, PA, August 21-25, 2016, oral.
*Gordon Research Conference on Inorganic Chemistry, Biddeford, ME, June 19-24, 2016, oral.
Gordon Research Conference on Inorganic Chemistry, Biddeford, ME, June 19-24, 2016, poster.
Gordon Research Conference on Organometallic Chemistry, Newport, RI, July 12-17, 2015, poster.

** Indicates invitation for presentation of independent research; ‡indicates virtual meeting due to COVID-19.*

Research Personnel Supervised: Advisory Activities

Postdoctoral Researchers (current): Dr. Zhou Lu, Dr. Kamaless Patra
(former): Dr. Thomas Auvray, Dr. Sourav Chakraborty, Dr. Mevan Dissanayake, Dr. Brett Hakey, Dr. Kevin McClelland, Dr. Olaf Nachtigall, Dr. Feng Li

Graduate Students (current): Shannon Cooney, Mamta Dagar, Alex Fertig, Robert Lewis, Chari Peter, Eric Schreiber, Leyla Valerio, Madelyn (Becca) Walls.
(former): Brittney Petel (PhD, 2020), Rachel Meyer (PhD, 2021), Lauren VanGelder (PhD, 2019), Rachel Garwick (MS, 2022), Bradley Schurr (MS, 2019), Samuel Weinstein (MS, 2018).

Undergraduate Students (current): Thompson Marinho ('23), Erin Stockdale ('24), Molly Corr ('24), Daniel Kessler ('25).
(former): Ahshabibi Ahmed, Niera Bakar, Ian Brodka, Lauren Bolz, Justine Drappeau, Lujain Felemblan, Patrick Forrestel, Lily Huntoon, Zachary Kaye, James Kostka, Lauren Lopez, Robert Love, Michela Maiola, Megan Ngai, Renee Niles, Merjema Purak, Robert Scappaticci.

Visiting International Students (former): Louise Byrne (United Kingdom), Daniela Carmona Perez (Mexico), Niamh Hartley (United Kingdom), Gabriel Santiago Martinez Alvarez (Colombia), Sebastián Reyes De Aa Lanza (Mexico).

Current & Pending Support

Project / Proposal Title: Modelling Electronic Interactions and Multielectron Reactivity of Actinide Ions on Metal-oxide Surfaces: Synthesis, Characterization, and Reactivity of Actinide-functionalized Polyoxovanadates (PI)
Source of Support: Department of Energy (Basic Energy Sciences, Heavy Element Chemistry)
Total Award Amount: $846,995 Total Award Period Covered: 09/01/2019 – 08/31/2024

Project / Proposal Title: Collaborative Research: Designing Soluble Inorganic Nanomaterials for Flowable Energy Storage (Co-PI)
Source of Support: National Science Foundation (Engineering Division, Chemical, Bioengineering, Environmental and Transport Systems).
Total Award Amount: $598,249 ($182,625 to UR). Total Award Period Covered: 08/01/2020 – 07/31/2023

Project / Proposal Title: SISGR: Modular Nanoscale and Biomimetic Assemblies for Photocatalytic Hydrogen Generation (Co-PI)
Source of Support: Department of Energy (Basic Energy Sciences, Solar Photochemistry)
Total Award Amount: $1,200,000 Total Award Period Covered: 07/16/2021 – 07/15/2024

Project / Proposal Title: Multimetallic Metal Oxide Clusters for Electrochemical Energy Storage and the Production of Chemical Fuels (PI)
Source of Support: The Camille and Henry Dreyfus Foundation (Camille Dreyfus Teacher-Scholar Award)
Total Award Amount: $100,000 Total Award Period Covered: 08/01/2020 – 07/30/2025

Project / Proposal Title: Synthesis and Reactivity of Oxygen-atom Defects in Molecular Vanadium Oxide Assemblies (PI)
Source of Support: National Science Foundation (Chemistry Division, Synthesis)
Total Award Amount: $489,899 Total Project Period: 07/01/2022 – 06/30/2025

Project/Proposal Title: From Molecules to Materials: Understanding Hydrogen Activation and Transfer in Metal Oxides (Co-PI)
Source of Support: Department of Energy (Basic Energy Sciences, Catalysis)
Total Award Amount: $530,157 Total Project Period: 09/01/2022 – 08/31/2025