

DEPARTMENT OF CHEMISTRY & PHYSICS
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JOHN J. KIERNICKI

EMPLOYMENT AND EDUCATION

Drury University Assistant Professor	Aug. 2021 - Present
University of Michigan Lecturer I	Aug. 2020 - May 2021
University of Michigan Postdoctoral Associate; Advisor - Nathaniel K. Szymczak	Dec. 2016 - Aug. 2021
Purdue University Ph. D. in Chemistry; Advisor - Suzanne C. Bart	Aug. 2011 - Dec. 2016
Ripon College A. B. in Chemistry and History; Advisor - Masanori Iimura	Aug. 2007 - May 2011

HONORS AND AWARDS

National Institutes of Health NIGMS F32 Research Fellowship	2018-2020
U.S. Department of Energy Innovations in Fuel Cycle Research	2016
Bililand Dissertation Fellowship, Purdue University	2016
Ian P. Rothwell Inorganic Seminar Award, Purdue University	2014
ACS Division of Inorganic Chemistry Student Travel Award	2014
Phi Lambda Upsilon, Purdue University	2012
Eka Francian Honors, Ripon College	2010-2011
McNair Scholar, Ripon College	2010-2011

TEACHING EXPERIENCE

a) Drury University

7. CHM 338 (Advanced Inorganic Chemistry) Fall 2022.
Enrollment: pending; Sections: 1.
6. CHM 338-L (Advanced Inorganic Chemistry) Fall 2022.
Enrollment: pending; Sections: 1.

5. CHM 115 (General Chemistry Lab) Fall 2022.
Enrollment: pending; Sections: 1.
4. CHM 238 (Inorganic Chemistry) Spring 2022.
Enrollment: 85; Sections: 3.
3. CHM 115-L (General Chemistry Lab) Spring 2022.
Enrollment: 14; Sections: 1.
2. CHM 315-L (Organic Chemistry Lab) Fall 2021.
Enrollment: 16; Sections: 1.
1. CHM 115-L (General Chemistry Lab) Fall 2021.
Enrollment: 44; Sections: 2.

b) University of Michigan

3. Instructor, CHM 216 (Synth. and Char. of Organic Compounds) Spring 2021.
Enrollment: 837; Sections: 46; Teaching Assistants: 27.
Team taught with Prof. Ginger Shultz.
2. Instructor, CHM 216 (Synth. and Char. of Organic Compounds) Fall 2020.
Enrollment: 348; Sections: 22; Teaching Assistants: 12
1. Guest Lecturer, U. Michigan, CHM 302, CHM 515.

c) Purdue University

3. Guest Lecturer, Purdue U., CHM 136.
2. Teaching assistant, CHM 136 (Honors Gen. Chemistry, Purdue U.), Fall 2012 and Fall 2013.
1. Teaching assistant, CHM 115 (Gen. Chemistry, Purdue U.), Fall 2011.

PUBLICATIONS

31. Nasrallah, Daniel J.; Zehnder, Troy E.; Ludwig, Jacob R.; Kiernicki, John J.; Steigerwald, Daniel C.; Szymczak, Nathaniel K.; Schindler, Corinna S. "Hydrazone and Oxime Olefination via Ruthenium Alkylidenes" *in revision*.
30. Kiernicki, John J.; Zeller, Matthias; Szymczak, Nathaniel K.* "Requirements for Late-Stage Hydroboration of Pyridine N-Heterocyclic Carbene Iron(0) Complexes: The Role of Ancillary Ligands" *Organometallics* **2021**, *40*, 2658-2665.
29. Kiernicki, John J.; Norwine, Emily E.; Zeller, Matthias; Szymczak, Nathaniel K.* "Substrate Specific Metal-Ligand Cooperative Binding: Considerations for Weak Intramolecular Lewis Acid/Base Pairs" *Inorganic Chemistry* **2021**, *60*, 13806-13810. Invited submission for forum on "Advances in Small Molecule Activation."

28. Kiernicki, John J.; Norwine, Emily E.; Lovasz, Myles A.; Zeller, Matthias; Szymczak, Nathaniel K.* “Mobility of Lewis Acids within the Secondary Coordination Sphere: Toward a Model for Cooperative Substrate Binding” *Chemical Communications* **2020**, *56*, 13105-13108. Invited submission for themed collection: “Bioinspired Metal Complexes for Chemical Transformations and Catalysis.”
27. Kiernicki, John J.; Zeller, Matthias; Szymczak, Nathaniel K.* “Examining the Generality of Metal-Ligand Cooperativity Across a Series of First-Row Transition Metals: Capture, Bond Activation, and Stabilization” *Inorganic Chemistry* **2020**, *59*, 9279-9286.
26. Tatebe, Caleb J.; Matson, Ellen M.; Clark, Christopher L.; Kiernicki, John J.; Fanwick, Phillip E.; Zeller, Matthias; Bart, Suzanne C.* “Low- and Mid-Valent Uranium Species Supported by Phenyltris(oxaolanyl)borate Ligands” *Organometallics* **2020**, *39*, 353-360.
25. Kiernicki, John J.; Norwine, Emily E.; Zeller, Matthias; Szymczak, Nathaniel K.* “Tetrahedral Iron Featuring an Appended Lewis Acid: Distinct Pathways for the Reduction of Hydroxylamine and Hydrazine” *Chemical Communications* **2019**, *55*, 11896-11899.
24. Kiernicki, John J.; Shanahan, James P.; Zeller, Matthias; Szymczak, Nathaniel K.* “Tuning Ligand Field Strength with Pendent Lewis Acids: Access to High Spin Iron Hydrides” *Chemical Science* **2019**, *10*, 5539-5545. Selected by Associate Editor Professor Serena DeBeer as part of a web collection highlighting outstanding contributions in (bio)inorganic chemistry, catalysis and spectroscopy.
23. Tatebe, Caleb J.; Kiernicki, John J.; Higgins, Robert F.; Ward, Robert J.; Natoli, Sean N.; Langford, James C.; Clark, Christopher L.; Zeller, Matthias; Wenthold, Paul; Shores, Matthew P.; Walensky, Justin R.; Bart, Suzanne C.* “Investigation of the Electronic Structure of Aryl-Bridged Dinuclear U(III) and U(IV) Compounds” *Organometallics* **2019**, *38*, 1031-1040.
22. Kiernicki, John J.; Zeller, Matthias; Szymczak, Nathaniel K.* “Requirements for Lewis Acid-Mediated Capture and N-N Bond Cleavage of Hydrazine at Iron” *Inorganic Chemistry* **2019**, *58*, 1147-1154.
21. Dahl, Eric W.;[†] Kiernicki, John J.;[†] Zeller, Matthias; Szymczak, Nathaniel K.* “Hydrogen Bonds Dictate O₂ Capture and Release within a Zinc Tripod” *Journal of the American Chemical Society* **2018**, *140*, 10075-10079.
20. Tatebe, Caleb J.; Tong, Zhengjia; Kiernicki, John J.; Coughlin, Ezra C.; Zeller, Matthias; Bart, Suzanne C.* “Activation of Triphenylphosphine Oxide Mediated by Trivalent Organouranium Species” *Organometallics* **2018**, *37*, 934-940.
19. Kiernicki, John J.; Tatebe, Caleb J.; Zeller, Matthias; Bart, Suzanne C.* “Tailoring the Electronic Structure of Uranium Mono(imido) Species through Ligand Variation” *Inorganic Chemistry* **2018**, *57*, 1870-1879.
18. Kiernicki, John J.; Zeller, Matthias; Szymczak, Nathaniel K.* “Hydrazine Capture and N-N Bond Cleavage at Iron Enabled by Flexible Appended Lewis Acids” *Journal of the American Chemical Society* **2017**, *139*, 18194-18197.
17. Kiernicki, John J.; Zeller, Matthias; Bart, Suzanne C.* “Facile Reductive Silylation of UO₂²⁺ to Uranium(IV) Chloride” *Angewandte Chemie, International Edition* **2017**, *56*, 1097-1100.
16. Kiernicki, John J.; Staun, Selena L.; Zeller, Matthias; Bart, Suzanne C.* “A Uranium(IV) Triamide Species with Brønsted Basic Ligand Character: Metal-Ligand Cooperativity in the f Block” *Organometallics* **2017**, *36*, 665-672.

15. Kiernicki, John J.; Higgins, Robert F.; Kraft, Steven J.; Zeller, Matthias; Shores, Matthew P.; Bart, Suzanne C.* "Elucidating the Mechanism of Uranium Mediated Diazene N=N Bond Cleavage" *Inorganic Chemistry* **2016**, *55*, 11854-11866.
14. Kiernicki, John J.; Ferrier, Maryline G.; Lezama Pacheco, Juan S.; La Pierre, Henry S.; Stein, Benjamin W.; Zeller, Matthias; Kozimor, Stosh A.; Bart, Suzanne C.* "Examining the Effects of Ligand Variation on the Electronic Structure of Uranium Bis(imido) Species" *Journal of the American Chemical Society* **2016**, *138*, 13941-13951.
13. Matson, Ellen M.; Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* "Expanding the Family of Uranium(III) Alkyls: Synthesis and Characterization of Mixed Ligand Derivatives" *European Journal of Inorganic Chemistry* **2016**, *2016*, 2527-2533. Invited submission for Cluster Issue: "The Significance of Scorpionate Ligands 50 Years on."
12. Kiernicki, John J.; Harwood, John S.; Fanwick, Phillip E.; Bart, Suzanne C.* "Reductive Silylation of Cp*UO₂(^{Mes}PDI^{Me}) Promoted by Lewis Bases" *Dalton Transactions* **2016**, *45*, 3111-3119. Winner of the 2016 Department of Energy Innovations in Fuel Cycle Research Award.
11. Natoli, Sean N.; Cook, Timothy D.; Abraham, Tara R.; Kiernicki, John J.; Fanwick, Phillip E.; Ren, Tong* "Cobalt(III) Bridged by gem-DEE: Facile Access to a New Type of Cross-Conjugated Organometallics" *Organometallics* **2015**, *34*, 5207-5209.
10. Kiernicki, John J.; Cladis, Dennis P.; Fanwick, Phillip E.; Zeller, Matthias; Bart, Suzanne C.* "Synthesis, Characterization, and Stoichiometric U-O Bond Scission in Uranyl Species Supported by Pyridine(diimine) Ligand Radicals" *Journal of the American Chemical Society* **2015**, *137*, 11115-11125. *Spotlight article*.
9. Johnson, Sara A.; Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* "New Benzylpotassium Reagents and Their Utility for the Synthesis of Homoleptic Uranium(IV) Benzyl Derivatives" *Organometallics* **2015**, *34*, 2889-2895.
8. Anderson, Nickolas H.; Haolin, Yin; Kiernicki, John J.; Fanwick, Phillip E.; Schelter, Eric J.; Bart, Suzanne C.* "Investigation of Uranium Tris(imido) Complexes: Synthesis, Characterization, and Reduction Chemistry of [U(NDIPP)₃(THF)₃]" *Angewandte Chemie, International Edition* **2015**, *54*, 9386-9389.
7. Matson, Ellen M.; Breshears, Andrew T.; Kiernicki, John J.; Newell, Brian S.; Fanwick, Phillip E.; Shores, Matthew P.; Walensky, Justin R.; Bart, Suzanne C.* "Trivalent Uranium Phenylchalcogenide Complexes: Exploring the Bonding and Reactivity with CS₂ in the Tp*₂UEPh series (E = O, S, Se, Te)" *Inorganic Chemistry* **2014**, *53*, 12977-12985.
6. Anderson, Nickolas H.; Odoh, Samuel O.; Yao, Yiyi; Williams, Ursula J.; Shaefer, Brian A.; Kiernicki, John J.; Lewis, Andrew J.; Goshert, Mitchell D.; Fanwick, Phillip E.; Schelter, Eric J.; Walensky, Justin R.; Gagliardi, Laura; Bart, Suzanne C.* "Harnessing Redox Activity for the Formation of Uranium Tris(imido) Compounds" *Nature Chemistry* **2014**, *6*, 919-926.
5. Matson, Ellen M.; Kiernicki, John J.; Anderson, Nickolas H.; Fanwick, Phillip E.; Bart, Suzanne C.* "Isolation of a Uranium(III) Benzophenone Ketyl Radical That Displays Redox-Active Ligand Behaviour" *Dalton Transactions* **2014**, *43*, 17885-17888.

4. Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “Utility of a Redox-Active Pyridine(diimine) Chelate in Facilitating Two Electron Oxidative Addition Chemistry at Uranium” *Chemical Communications* **2014**, *50*, 8189-8192. Invited submission for themed collection: “Non-Innocent Ligands.”
3. Kiernicki, John J.; Newell, Brian S.; Matson, Ellen M.; Anderson, Nickolas H.; Fanwick, Phillip E.; Shores, Matthew P.; Bart, Suzanne C.* “Multielectron C-O Bond Activation Mediated by a Family of Reduced Uranium Complexes” *Inorganic Chemistry* **2014**, *53*, 3730-3741.
2. Matson, Ellen M.; Goshert, Mitchell D.; Kiernicki, John J.; Newell, Brian S.; Fanwick, Phillip E.; Shores, Matthew P.; Walensky, Justin R.; Bart, Suzanne C.* “Synthesis of Terminal Uranium(IV) Disulfide and Diselenido Compounds by Activation of Elemental Sulfur and Selenium” *Chemistry – A European Journal* **2013**, *19*, 16176-16180.
1. Cladis, Dennis P.; Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “Multi-Electron Reduction Facilitated by a Trianionic Pyridine(diimine) Ligand” *Chemical Communications* **2013**, *49*, 4169-4171. Invited submission for themed collection: “Emerging Investigators 2013.”

ORAL PRESENTATIONS

16. Kiernicki, John J.; Szymczak, Nathaniel K.* “Reactivity Dictated by Lewis Acids: Mobility within the Secondary Coordination Sphere of Metal Complexes” *Drury University*, Springfield, MO. December, 15, 2020, *invited*.
15. Kiernicki, John J.; Szymczak, Nathaniel K.* “Boron Lewis acids within the Secondary Coordination sphere: Directed reactivity and a General Approach to Stabilization” ACS Fall Virtual Meeting & Exposition. August 17-20, 2020.
14. Kiernicki, John J.; Szymczak, Nathaniel K.* “Boron Lewis Acids within the Secondary Coordination Sphere of Iron: Directed Reactivity and Ligand Field Leveling” *The Pennsylvania State University*, University Park, PA. December, 12, 2019, *invited*.
13. Kiernicki, John J.; Szymczak, Nathaniel K.* “Boron Lewis Acids within the Secondary Coordination Sphere of Iron: Directed Reactivity and Ligand Field Leveling” *University of Mississippi*, Oxford, MS. December, 9, 2019, *invited*.
12. Kiernicki, John J.; Szymczak, Nathaniel K.* “Boron Lewis Acids within the Secondary Coordination Sphere of Iron: Directed Reactivity and Ligand Field Leveling” *Tulane University*, New Orleans, LA. December, 2, 2019, *invited*.
11. Kiernicki, John J.; Szymczak, Nathaniel K.* “Boron Lewis Acids within the Secondary Coordination Sphere of Iron: Directed Reactivity and Ligand Field Leveling” *Auburn University*, Auburn, AL. November, 25, 2019, *invited*.
10. Kiernicki, John J.; Szymczak, Nathaniel K.* “Boron Lewis Acids within the Secondary Coordination Sphere of Iron: Directed Reactivity and Ligand Field Leveling” *Southern Methodist University*, Dallas, TX. November, 19, 2019, *invited*.
9. Kiernicki, John J.; Szymczak, Nathaniel K.* “Tuning Ligand Field Strength with Pendent Boron Lewis Acids: Access to High Spin Iron Hydrides” Retirement Symposium Honoring David R. McMillin, *Purdue University*, West Lafayette, IN. April 12, 2019, *invited*.

8. Kiernicki, John J.; Szymczak, Nathaniel K.* “High-Spin Fe(II) Dihydride and Reduced Complexes Stabilized by Flexible Boron Lewis Acids” Organometallic Sigma Seminar, *University of Michigan*, Ann Arbor, MI. December 7, 2018, *invited*.
7. Kiernicki, John J.; Szymczak, Nathaniel K.* “Hydrazine Capture and N-N Bond Cleavage at Iron Enabled by Flexible Appended Lewis Acids” Ohio Inorganic Weekend, Columbus, OH. November 4, 2017, *invited*.
6. Kiernicki, John J.; Bart, Suzanne C.* “Bond Activation Reactions Mediated by Uranium Complexes bearing Redox-Active Ligands” *University of Cincinnati*, Cincinnati, OH. September 15, 2016, *invited*.
5. Kiernicki, John J.; Bart, Suzanne C.* “Activation of Diazenes by Uranium Complexes Bearing Redox-Active Ligands” Inorganic Chemistry Gordon Research Symposium, Biddeford, ME. June 18, 2016, *invited*.
4. Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “Oxidative Addition Facilitated by Uranium Complexes Bearing Redox Active Pyridine(diimine) Ligands” 49th Midwest Regional Meeting of the American Chemical Society, Columbia, MO. November 12-15, 2014.
3. Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “A Mechanistic Investigation into Bond Activation Reactions Mediated by Uranium Complexes bearing Redox-Active Ligands” PINDU Inorganic Conference, Bloomington, IN. November 1, 2014, *invited*.
2. Kiernicki, John J.; Bart, Suzanne C.* “Fundamental Organometallic Reactions Mediated by Low-Valent Uranium: Synthesis, Characterization, and Reactivity of Uranium Complexes with Alkyl and Redox-Active Ligands” *Ripon College* Ripon, WI. February 27, 2014, *invited*.
1. Kiernicki, John J.; Cladis, Dennis P; Fanwick, Phillip E.; Bart, Suzanne C.* “Reactivity of Highly Reduced Uranium Complexes Bearing Redox Active Pyridine(diimine) Ligands” 246th ACS National Meeting & Exposition, Indianapolis, IN. September 8-12, 2013.

POSTER PRESENTATIONS

9. Kiernicki, John J.; Zeller, Matthias; Szymczak, Nathaniel K.* “Small Molecule Activation at Iron Enabled by Flexible Appended Boron Lewis Acids” Metals in Biology Gordon Research Conference, Ventura, CA. January 27-February 3, 2019.
8. Kiernicki, John J.; Zeller, Matthias; Bart, Suzanne C.* “Activation of Diazenes by Uranium Complexes Bearing Redox-Active Ligands” PINDU Inorganic Conference, West Lafayette, IN. November 5, 2016.
7. Kiernicki, John J.; Zeller, Matthias; Bart, Suzanne C.* “Activation of Diazenes by Uranium Complexes Bearing Redox-Active Ligands” Inorganic Chemistry Gordon Research Conference, Biddeford, ME. June 19-23, 2016.
6. Kiernicki, John J.; Fanwick, Phillip E.; Zeller, Matthias; Bart, Suzanne C.* “Reductive Silylation of UO_2^{2+} ” PINDU Inorganic Conference, Notre Dame, IN. December 5, 2015.
5. Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “Bond Activation Reactions Mediated by Uranium Complexes Bearing a Redox-Active Pyridine(diimine) Ligand” Herbert C. Brown Lectures in Organic Chemistry, West Lafayette, IN. April 3, 2015.

4. Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “Bond Activation Reactions Mediated by Uranium Complexes Bearing a Redox-Active Pyridine(diimine) Ligand” Inorganic Reaction Mechanisms Gordon Research Conference, Galveston, TX. March 1-6, 2015.
3. Kiernicki, John J.; Fanwick, Phillip E.; Bart, Suzanne C.* “Reactivity of Highly Reduced Uranium Complexes Bearing Redox Active Pyridine(diimine) Ligands” PINDU Inorganic Conference, West Lafayette, IN. November 16, 2013.
2. Kiernicki, John J.; Cladis, Dennis P.; Fanwick, Phillip E.; Bart, Suzanne C.* “Reactivity of Highly Reduced Uranium Complexes bearing Redox Active Pyridine(diimine) and Bulky Ancillary Ligands” PINDU Inorganic Conference, Notre Dame, IN. November 14, 2012.
1. Kiernicki, John J.; Van Zeeland, Ryan G.; Iimura, Masanori; Guan, Hairong;* Zhang, Jie; Krause, Jeanette. “Preparation of Complexes of Group 8 and 9 Metals in Sulfur-Rich Coordination Environments” 241st ACS National Meeting & Exposition, Anaheim, CA. March 27-31, 2011.

PROFESSIONAL DEVELOPMENT

3. *Course Design Workshop Series*, Hosted by the Univ. Michigan Center for Academic Innovation to assist instructors in designing more effective online instructional techniques, Apr. 20-28, 2020.
2. *ACS's 2019 Postdoc to Faculty (P2F) Workshop*, Atlanta, GA, July 26-28, 2019.
1. *Innovators' Forum*, Innovation in Nuclear Technology R&D, Nashville, TN, May 21-23, 2018.

MENTORING (Prior to Drury Univ.)

Rotating Graduate Students

2. Michela Maiola – Current: Univ. Michigan, Graduate Student (Buss Lab).
1. Emily Norwine – Current: Univ. Michigan, Ph. D. Candidate (Szymczak Lab).

Undergraduate Students

4. Myles Lovasz – University of Utah, Chemistry Ph. D. Program (Roberts Lab).
3. Zhengjia Tong – Cal Tech, Chemistry Ph. D. Program (Reisman Lab).
2. Selena Staun – UC Santa Barbara, Chemistry Ph. D. Program (Hayton Lab).
1. Justin Carter – University of Iowa, Ph. D. Chemistry (Bowden Lab), 2018.

High School Students

1. Sam Showalter – DePauw University, B.A., 2018.