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Nathaniel K. Szymczak

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| **appointments** |

**Professor of Chemistry. University of Michigan** 2021-present

Ann Arbor, Michigan

**Associate Professor of Chemistry. University of Michigan** 2017-2021

Ann Arbor, Michigan

**Dow Corning Assistant Professor of Chemistry. University of Michigan** 2012-2017

Ann Arbor, Michigan

**Assistant Professor of Chemistry. University of Michigan** 2010-2017

Ann Arbor, Michigan

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| **professional preparation** |

**California Institute of Technology** 2009-2010

Postdoctoral Associate

Advisor: Jonas Peters

**Massachusetts Institute of Technology** 2007-2009

Postdoctoral Associate

Advisor: Jonas Peters

**University of Oregon** 2002-2007

Ph. D. in Chemistry

Advisor: David Tyler

**University of Illinois-Urbana-Champaign** 1998-2002

B.S. in Chemistry

Advisor: Thomas Rauchfuss

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| **Honors and awards** |

*NIH Maximizing Investigators’ Research Award (MIRA)* 2020 *JACS Young Investigator – Virtual Issue* 2019 *Kavli Frontiers of Science Fellow – China* 2018, 2022 *Class of 1923 Memorial Teaching Award* 2017
*Camille Dreyfus Teacher-Scholar Award* 2016 *Emerging Investigator – ACS Virtual Issue in Bioinorganic* 2015 *Distinguished Lectureship Award* – KAIST 2014
*Alfred P. Sloan Research Fellowship* 2014-2016 *NSF-CAREER Award* 2014-2019
*Dow Corning Assistant Professor of Chemistry* 2012-2014

*Young Investigator Award* – ACS Division of Inorganic Chemistry 2006

*IGERT Graduate Fellowship* – National Science Foundation 2004-2006

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|  **publications as corresponding author** |

\*denotes Principal Investigator, underline denotes undergraduate co-author, ǂ denotes shared authorship, non-UM graduate students denoted with a dotted underline, all other co-authors are UM graduate students or post-doctorals

63) Norwine, E. E.; Kiernicki, J. J; Zeller, M.; Szymczak, N. K\* Additive Effects in Metal/Lewis Acid Cooperativity Assessed in a Tetrahedral Copper Hydrazine Complex Featuring an Appended Borane. *Inorg. Chem.* **2024**, *63*, 18519–18523.

62) Song, H.; Szymczak N. K.;\* Lewis Acid-Tethered (cAAC)–Copper Complexes: Reactivity for Hydride Transfer and Catalytic CO2 Hydrogenation. *Angew. Chem. Int. Ed..* **2024**, e202411099.

61) Davies, A. M;ǂ Greene, K. M.; ǂ Allen, A. R.; Farris B. M; Szymczak N. K.;\* Stephenson C. R. J;\* Catalytic Olefin Transpositions Facilitated by Ruthenium N,N,N-Pincer Complexes. *J. Org. Chem.* **2024**, *89*, 9647-9653.

60) Farris B. M; Davies, A. M; Stephenson C. R. J;\* Szymczak N. K.;\* Ethanol Upgrading with *N,N,N*-Pincer-Based Ru Catalysts: Delineating Key Factors Governing Catalyst Evolution and Stability. *ACS Catal.* **2024**, *14*, 8456-8462.

59) Sarkar, W.; LaDuca, A.; Wilson, J. R.; Szymczak, N. K.\* Iron-Catalyzed C-H Oxygenation using Perchlorate Enabled by Secondary Sphere Hydrogen Bonds. *J. Am. Chem. Soc.* **2024,** *146, 10508–10516. \*highlighted in ChemistryViews: chemistryviews.org/perchlorate-used-for-iron-catalyzed-c-h-oxygenations/*

58) Beagan, D. M.; Rivera, C.;; Szymczak, N. K.\* Appended Lewis Acids Enable Dioxygen Reactivity and Catalytic Oxidations with Ni(II). *J. Am. Chem. Soc.* **2024,** *146*, 12375–12385*.*

57) Chakrabarti, K.; Wade Wolfe, M. W.; Guo, S.; Tucker, J. W.; Lee, J.; Szymczak, N. K.\* A Metal‐Free Strategy to Construct Fluoroalkyl‐Olefin Linkages using Fluoroalkanes. *Chem. Sci.***2024**, 15, 1752-1757.

56) Beagan, D. M.; Kiernicki, J. J; Zeller, M.; Szymczak, N. K.\* A Bidentate Ligand Featuring Ditopic Lewis Acids in the Second Sphere for Selective Substrate Capture and Activation. *Angew. Chem. Int. Ed.****2023****, 62,* e202218907 (1 of 6).

55) Guo, S.;ǂ Sun, W.;ǂ Tucker, J. W.; Hesp, K. D.; Szymczak, N. K.\* Preparation and Functionalization of Mono- and Polyfluoroepoxides via Fluoroalkylation of Carbonyl Electrophiles. *Chem. Eur. J.***2023***, 29,* e202203578 (1-6).

54) Wade Wolfe, M. W.; Yu, L. S.; Guo, S.; Vogel, T. R.; Tucker, J. W.; Szymczak, N. K.\* Nucleophilic strategies to construct –CF2– linkages using borazine-CF2Ar reagents. *Chem. Comm.***2022***, 58,* 11705-11708.[*\*Invited manuscript for Boron Chemistry in the 21st Century: From Synthetic Curiosities to Functional Molecules*](https://pubs.rsc.org/en/journals/articlecollectionlanding?sercode=cc&themeid=dfedd3c9-ef9a-4ba4-9a4a-d27e39508203)

53) Wang, B.;ǂ Seo, C. S. G.;ǂ Zhang, C.; Chu, J.;\* Szymczak, N. K.\* A Borane Lewis Acid in the Secondary Coordination Sphere of a Ni(II) Imido Imparts Distinct C-H Activation Selectivity. *J. Am. Chem. Soc.* **2022,** 144, 34, 15793–15802. *\**[*Featured in Chemical & Engineering News,* **2022**,August 26](https://cen.acs.org/acs-news/acs-meeting-news/Functional-group-directly-metal-changes/100/web/2022/08?ref=search_results).

52) Norwine, E. E.; Kiernicki, J. J; Zeller, M.; Szymczak, N. K.\* Distinct Reactivity Modes of a Cuprous Hydride Enabled by an Intramolecular Lewis Acid. *J. Am. Chem. Soc.* **2022,** *144*, 15038–15046

51) Davies, A. M.; Li, Z-Y.; Stephenson, C. R. J.;\* Szymczak, N. K.\* Valorization of Ethanol: Ruthenium-Catalyzed Guerbet and Sequential Functionalization Processes. *ACS Catalysis.* **2022***,* *2022, 12, 6729-6736.*

50) Nasrallah, D. J.; Zehnder, T. E.; Ludwig, J. R.; Steigerwald, D. C.; Kiernicki, J. J.; Szymczak, N. K.\* Schindler, C. S.\* Hydrazone and Oxime Olefination via Ruthenium Alkylidenes. *Angew. Chem. Int. Ed.***2022***, 61, e202112101*.

49) Shanahan, J. P.; Moore, C. M.; Kampf, J.; Szymczak, N. K.\* Modulation of H+/H− Exchange in Iridium-Hydride 2-Hydroxypyridine Complexes by Remote Lewis Acids. *Chem. Comm.***2021***,57,* 5718-5721.

48) Kiernicki, J. J; Zeller, M.; Szymczak, N. K.\* Requirements for Late-Stage Hydroboration of Pyridine N-Heterocyclic Carbene Iron(0) Complexes: The Role of Ancillary Ligands. *Organometallics*, **2021**, *40*, 2658-2665.

47) Kiernicki, J. J; Norwine, E. E.; Zeller, M.; Szymczak, N. K.\* Substrate Specific Metal–Ligand Cooperative Binding: Considerations for Weak Intramolecular Lewis Acid/Base Pairs. *Inorg. Chem.*, **2021**, *60,* 13806-13810.

46) Taher, D.; Wilson, J. R.; Ritch, G. Zeller, M.; Szymczak, N. K.\* Late-stage ligand functionalization ​via the Staudinger reaction using phosphine-appended 2,2′-bipyridine. *Chem. Comm.***2021***,57,* 5718-5721.

45) Wilson, J. R.; Zeller, M.; Szymczak, N. K.\* Hydrogen-Bonded Nickel(I) Complexes. *Chem. Comm.***2021***,57,* 753-756.

44) Wade Wolfe, M.; Shanahan, J. P.; Kampf, J.; Szymczak, N. K.\* Defluorinative Functionalization of Pd (II) Fluoroalkyl Complexes. *J. Am. Chem. Soc.* **2020***, 142,* 18698. \*One of most cited publications in *JACS* from 2020-2021.

43) Kiernicki, J. J; Norwine, E. E.; Lovasz, M. A.; Zeller, M.; Szymczak, N. K.\* Mobility of Lewis Acids within the Secondary Coordination Sphere: Toward a Model for Cooperative Substrate Binding. *Chem. Comm.***2020***, 56,* 13105-13108.

42) Shanahan, J. P.; Szymczak, N. K.\* Lewis Acid Effects on Calculated Ligand Electronic Parameters. *Organometallics* **2020**, *39*, 4297–4306. *\*Special Issue: Organometallic Chemistry of the Main-Group Elements.*

41) Kiernicki, J. J; Zeller, M.; Szymczak, N. K.\* Examining the Generality of Metal-Ligand Cooperativity Across a Series of First-Row Transition Metals: Capture, Bond Activation, and Stabilization. *Inorg. Chem.***2020***, 59,* 9279–9286.

40) Shanahan, J. P.; Mullis, D. M.; Zeller, M.; Szymczak, N. K.\* Reductively Stable Hydrogen-Bonding Ligands Featuring Appended CF2-H Units. *J. Am. Chem. Soc.* **2020,** *142* (19), 8819-8827.

39) Kiernicki, J. J; Norwine, E. E.; Zeller, M.; Szymczak, N. K.\* Tetrahedral Iron Featuring an Appended Lewis Acid: Distinct Pathways for the Reduction of Hydroxylamine and Hydrazine. *Chem. Comm.* **2019***, 55,* 11896-11899.

38) Shanahan, J. P.; Szymczak, N. K.\* Hydrogen Bonding to a Dinitrogen Complex at Room Temperature: Impacts on N2 Activation. *J. Am. Chem. Soc.* **2019***, 141,* 8550-8556.

37) Hale, L. V. A.;ǂ Sikes, N. M.;ǂ Szymczak, N. K.\* Reductive C−C Coupling from α,β‐Unsaturated Nitriles by Intercepting Keteniminates. *Angew. Chem. Int. Ed.* **2019***, 58,* 1-6*. \*Selected as VIP article*

36) Kiernicki, J. J; Shanahan, J. P. Zeller, M.; Szymczak, N. K.\* Tuning Ligand Field Strength with Pendent Lewis Acids: Access to High Spin Iron Hydrides. *Chem. Sci.* **2019***, 10,* 5539-5545
*\*Selected as* [*Editor’s Choice Article*](https://pubs.rsc.org/en/journals/articlecollectionlanding?sercode=sc&themeid=86b02650-945d-4395-ac93-ba6207f98b0d)*.*

35) Geri, J. B.; Aguilera, E. Y.; Szymczak, N. K.\* Difluoromethane as a Precursor to Difluoromethyl Borates. *Chem. Comm.,***2019**, *55*, 5119-5122.

34) Kiernicki, J. J; Zeller, M.; Szymczak, N. K.\* Requirements for Lewis Acid-Mediated Capture and N–N Bond Cleavage of Hydrazine at Iron. *Inorg. Chem.,* **2019***, 58,* 1147-1154.

33) Dahl, E. W.;ǂ Kiernicki, J. J;ǂ Zeller, M.; Szymczak, N. K.\* Hydrogen Bonds Dictate O2 Capture and Release within a Zinc Tripod. *J. Am. Chem. Soc.,***2018***, 140,* 10075-10079.

32) Geri, J. B.; Wade Wolfe, M. M.;Szymczak, N. K.\* The Difluoromethyl Group as a Masked Nucleophile: A Lewis Acid/Base Approach. *J. Am. Chem. Soc.,***2018***, 140,* 9404-9408. *\**[*Featured in JACS Young Investigator Virtual Issue, 2019*](https://pubs.acs.org/page/jacsat/vi/young-investigator2019)*.*

31) Geri, J. B.; Ciatti, J. L.; Szymczak, N. K.\* Charge effects regulate reversible CO2 reduction catalysis. *Chem. Comm.* **2018***, 54,* 7790-7703*.*

30) Hale, L. V. A.; Szymczak, N. K.\* Hydrogen Transfer Catalysis Beyond the Primary Coordination Sphere. *ACS Catalysis.* **2018***, 8,* 6446-6461*.*

29) Dahl, E. W.; Dai, H. T;, T.; Szymczak, N. K.\* Phenylamino Derivatives of Tris(2-pyridylmethyl)amine: Hydrogen-Bonded Peroxodicopper Complexes. *Chem. Comm.* **2018***, 54*, 892-895*.*

28) Kiernicki, J. J; Zeller, M.; Szymczak, N. K.\* Hydrazine Capture and N-N Bond Cleavage at Iron Enabled by Flexible Appended Lewis Acids. *J. Am. Chem. Soc.,***2017***, 139,* 18194-18197.

27) Geri, J. B.; Wade Wolfe, M. M.; Szymczak, N. K.\*Borazine-CF3- Adducts for Rapid, Room Temperature, and Broad Scope Trifluoromethylation *Angew. Chem., Int. Ed.,***2018***, 57,* 1-7*\**[*Featured in Chemical & Engineering News,* **2018**,Jan. 1](https://cen.acs.org/articles/95/web/2017/12/New-reagent-add-trifluoromethyl-groups.html).

26) Geri, J. B.; Szymczak, N. K.\* Recyclable Trifluoromethylation Reagents from Fluoroform. *J. Am. Chem. Soc.,***2017***, 139,* 9811-9814. *\**[*Featured in JACS Spotlights August 1, 2017*](https://pubs.acs.org/doi/10.1021/jacs.7b07974)*.*

25) Geri, J. B.; Shanahan, J. P.; Szymczak, N. K.\* Testing the Push–Pull Hypothesis: Lewis Acid Augmented N2 Activation at Iron. *J. Am. Chem. Soc.,***2017***, 139,* 5952-5956.

24) Dahl, E. W.; Louis-Goff, T.; Szymczak, N. K.\* Second sphere ligand modifications enable a recyclable catalyst for oxidant-free alcohol oxidation to carboxylates. *Chem. Comm.* **2017***, 53,* 2287-2289*.*

23) Hale, L. V. A.; Szymczak, N. K.\* Stereoretentive Deuteration of α-Chiral Amines with D2O. *J. Am. Chem. Soc.,***2016**, 138, 13489-13492.

22) Tseng, K-N T.; Kampf, J.; Szymczak, N. K.\* Modular Attachment of Appended Boron Lewis Acids to a Ruthenium Pincer Catalyst: Metal–Ligand Cooperativity Enables Selective Alkyne Hydrogenation. *J. Am. Chem. Soc.,***2016***, 33,* 10378-10381*.*

21) Hale, L. V. A.;ǂ Malakar, T.; ǂ Tseng, K-N T.; Zimmerman, P. M.; Paul, A.;\* Szymczak, N. K.\* The Mechanism of Acceptorless Amine Double Dehydrogenation by *N,N,N*-Amide Ruthenium (II) Hydrides: A Combined Experimental and Computational Study. *ACS Catalysis,* **2016***, 6*, 4799-4813.

20) Moore, C. M; Bark, B.; Szymczak, N. K.\* Simple Ligand Modifications with Pendent OH Groups Dramatically Impact the Activity and Selectivity of Ruthenium Catalysts for Transfer Hydrogenation: the Importance of Alkali Metals. **2016***, ACS Catalysis, 6,* 1981-1990.

19) Tseng, K-N T.; Lin, S.; Kampf, J.; Szymczak, N. K.\* Upgrading Ethanol to 1-Butanol with a Homogeneous Air-Stable Ruthenium Catalyst. *Chem. Comm.* **2016***, 52,* 2901-2904*. \**[*Featured in Chemistry World (1-13-2016)*](https://www.chemistryworld.com/news/ethanol-to-butanol-conversion-shows-sustainable-potential/9335.article)*.*

18) Dahl, E. W.; Szymczak, N. K.\* Hydrogen Bonds Dictate the Coordination Geometry of Copper: Characterization of a Square Planar Cu(I). *Angew. Chem., Int. Ed.,***2016***, 55,* 3101-3105*.*

17) Geri, J. B.; Szymczak, N. K.\* A Proton-Switchable Bifunctional Ruthenium Complex that Enables Catalytic Nitrile Hydroboration. . *J. Am. Chem. Soc.,***2015***, 137,* 12808-12814.

16) Carter, T. J; Heiden, Z. M.;\* Szymczak, N. K.\*; Discovery of Low Energy Pathways to Metal-Mediated B=N bond Reduction Guided by Computation and Experiment*. Chem. Sci.* **2015***, 6*, 7258-7266.

15) Tseng, K-N T.; Kampf, J.; Szymczak, N. K.\*. Mechanism of N,N,N-Amide Ruthenium(II) Hydride Mediated Acceptorless Alcohol Dehydrogenation: Inner-Sphere β-H Elimination vs. Outer-Sphere Bifunctional Metal-Ligand Cooperativity. *ACS Catalysis,* **2015***, 5,* 5468-5485.

14) Moore, C. M.; Szymczak, N. K.\*. Nitrite Reduction by Copper Through Ligand-Mediated Proton and Electron Transfer. *Chem. Sci.,* **2015***, 6,* 3373-3377

13) Tseng, K-N T.; Kampf, J.; Szymczak, N. K.\*. Regulation of Iron-Catalyzed Olefin Hydroboration by Ligand Modifications at a Remote site. *ACS Catalysis.,* **2015***, 5*, 411-415.

12) Moore, C. M.; Szymczak, N. K.\*. Beyond H2: Exploiting 2-Hydroxypyridine as a Design Element from [Fe]-Hydrogenase for Energy-Relevant Catalysis *Curr. Opin. Chem. Biol.,* **2015***, 25*, 9-17. *\*Invited contribution.*

11) Moore, C. M.; Szymczak, N. K.\*. Redox-induced Fluoride Ligand Dissociation Stabilized by Intramolecular Hydrogen Bonding. *Chem. Comm.,* **2015***, 51,* 5490-5492*.”\*Selected for Journal Cover*

10) Tseng, K-N T.; Szymczak, N. K.\*; Dehydrogenative Oxidation of Primary Amines to Nitriles. *Synlett (Synpacts).* **2014***, 25,* 2385-2389

9) Carter, T. J; Wang, J. Y.; Szymczak, N. K.\*; Manganese-Mediated Hydride Delivery to a Borazine by Stepwise Reduction and Protonation*. Organometallics,* **2014***, 33,* 1540–1543*.*

8) Moore, C. M.; Quist, D. A.; Kampf, J. W.; Szymczak, N. K.\*. A 3-Fold-Symmetric Ligand Based on 2-Hydroxypyridine: Regulation of Ligand Binding by Hydrogen Bonding. *Inorg. Chem.,* **2014***, 53,* 3278 – 3280. *\*Selected as a Highlighted Manuscript on the Inorganic Chemistry homepage.*

7) Tseng, K-N T.; Rizzi, A.; Szymczak, N. K.\*; Oxidant-Free Conversion of Primary Amines to Nitriles. *J. Am. Chem. Soc.,***2013***, 135,* 16352–16355*. \**[*Featured in the Organic Chemistry Portal*](https://www.organic-chemistry.org/Highlights/2014/19May.shtm)

6) Moore, C. M.; Szymczak, N. K.\*. Approaches for the Incorporation of Appended Functionality in Pincer Ligands. In Pincer and Pincer-type Complexes – Application in Organic Synthesis and Catalysis; 1st Ed. Szabó, K. J.; Wendt, O. F., Ed. Wiley-VCH: Weinheim, Germany, **2014**; 117-147.

5) Tseng, K-N T.; Kampf, J. W.; Szymczak, N. K.\*; Base-Free, Acceptorless, and Chemoselective Alcohol Dehydrogenation Catalyzed by an Amide-Derived *NNN*-Ruthenium(II) Hydride Complex. *Organometallics,* **2013***, 32,* 2046-2049. *\*Top 10 Most Read Articles: April-June 2013.*

4) Tutusaus, O.; Ni, C.; Szymczak, N. K.\*; A Transition Metal Lewis Acid-Base Triad System for Cooperative Substrate Binding. *J. Am. Chem. Soc.,* **2013***, 135,* 3403-3406*. \**[*Featured in Chemical & Engineering News,* **2013**, *91*,29](https://cen.acs.org/articles/91/i10/Lewis-Acid-Base-Pair-Assists.html).

3) Moore, C. M.; Szymczak, N. K.\*. 6,6’-Dihydroxy Terpyridine: A Proton-Responsive Bifunctional Ligand and its Application in Catalytic Transfer Hydrogenation of Ketones. *Chem. Comm.,* ***2013****, 49 4,* 400 – 402.

2) Carter, T. J.; Kampf, J. W.; Szymczak, N. K.\*. Reduction of Borazines Mediated by Low-Valent Chromium Species. *Angew. Ch., Int. Ed.,* **2012***, 51,* 13168-13172*. \*Featured in Advances in Engineering*

1) Moore, C. M.; Szymczak, N. K.\*. A Tris(2-quinolylmethyl)amine Scaffold that Promotes Hydrogen Bonding within the Secondary Coordination Sphere. *Dalton Trans.,* **2012***, 41,* 7886-7889*. Invited contribution for “New Talent: The Americas.”* \**Top ten most accessed articles in May 2012\**

**publications not as corresponding author**

18) Jiang, Y.;‡ Han, C.;‡ Guo, Z.; Dai, Z.; Liang, G.;\* Guo, S.;\* Szymczak, N. K.; Tang, P. A General Photocatalytic Hydrodefluorination and Defluoroalkylation of Electronically-Variable ArCF3 by Changing Commercially-Available Arenethiolates. *Green Chemistry* **2024**, *26*, 4518-4527.

17) McCrory, C. C. L.; Szymczak, N. K.; Peters, J. C.\* Evaluating Activity for Hydrogen-Evolving Cobalt and Nickel Complexes at Elevated Pressures of Hydrogen and Carbon Monoxide. *Electrocatalysis,***2016***, 7,* 87-96.

16) Bayram, Ercan; Linehan, John C.\*; Fulton, John L.; Szymczak, Nathaniel K.; Finke, Richard G.\*; Determination of the Dominant Catalyst Derived from the Classic [RhCp\*Cl2]2 Precatalyst System: Is it Single-Metal Rh1Cp\*-Based, Subnanometer Rh4 Cluster-Based, or Rh(0)n Nanoparticle-Based Cyclohexene Hydrogenation Catalysis at Room Temperature and Mild Pressures? *ACS Catalysis*, **2015**, *5*, 3876-3886.

15) Ercan, B.; Linehan, J.; Fulton, J.; Roberts, J.; Szymczak, N.; Smurthwaite, T.; Ozkar, S.; Balasubramanian, M.; Finke, R. Is It Homogeneous or Heterogeneous Catalysis Derived from [RhCp\*Cl2]2? In Operando-XAFS, Kinetic and Crucial Kinetic Poisoning Evidence for Subnanometer Rh4 Cluster-Based Benzene Hydrogenation Catalysis. *J. Am. Chem. Soc*., **2011**, *133,* 18889-18902.

14) Neiner, D.; Karkamamkar, A.; Bowden, M.; Choi, Y. J.; Luedtke, A.; Holladay, J.; Fisher, A.; Szymczak, N.; Autrey, T. Kinetic and Thermodynamic Investigation of Hydrogen Release from Ethane 1,2-Di-Amineborane. *Energy Environ. Sci.,*  **2011**, *4*, 4187-4193

13) Szymczak, N. K.; Berben, L. A.; Peters, J. C. Redox-Rich Dicobalt Macrocycles as Templates for Multi-Electron Transformations. *Chem. Comm,*  **2009**, 6729-6731

12) Szymczak, N. K.; Braden, D. A.; Crossland, J. L.; Turov, Y.; Zakharov, L. N.; Tyler, D. R. Aqueous Coordination Chemistry of H2. Why is Coordinated H2 Inert to Substitution by Water in *trans*-Ru(P2)2(H2)H+-type Complexes (P2 = a Chelating Phosphine)? *Inorg. Chem.,*  **2009**, *48*,2976-2984

11) Yelle, R. B.; Crossland, J. C.; Szymczak, N, K.; Tyler, D. R. Theoretical Studies of N2 Reduction to Ammonia in Fe(dmpe)2N2. *Inorg. Chem.,* **2009**, *48,* 861-871

10) Pons, V; Baker, R. T.; Szymczak, N. K.; Heldebrant, D. J.; Linehan, J. C.; Matus, M. H.; Grant, D. J.; Dixon, D. A. Coordination of Aminoborane, NH2BH2, Dictates Selectivity and Extent of H2 Release in Metal-Catalysed Ammonia Borane Dehydrogenation. *Chem. Comm..*, **2008**, *48*, 6597 - 6599

9) Shaw, W. J; Linehan, J. C.; Szymczak, N. K.; Heldebrant, D. J.; Yonker, C.; Baker, R. T.; Autrey, T. In Situ Multinuclear NMR Spectroscopic Studies of the Thermal Decomposition of Ammonia Borane in Solution. *Angew. Ch., Int. Ed.*, **2008**, *120*, 7603-7606

8) Szymczak, N. K.; Tyler, D. R. Aspects of Dihydrogen Coordination Chemistry Relevant to Reactivity in Aqueous Solution. *Coord. Chem. Rev.,* **2008**,*252(1-2)*, 212-230

7) Fulton, J. L.; Linehan, J. C.; Autrey, T.; Balasubramanian, M.; T.;Chen, Y.; Szymczak, N. K.. When is a Nanoparticle a Cluster? An Operando EXAFS Study of Amine Borane Dehydrocoupling by Rh4-6 Clusters. *J. Am. Chem. Soc*., **2007**, *129*, 11936-11949

6) Gilbertson, J. D.; Szymczak, N, K.; Crossland, J. C.; Miller, W. K.; Lyon, D. K.; Foxman, B. M.; Davis, J.; Tyler, D. R.Water-Soluble Transition Metal Phosphine Complexes: Investigation of the Aqueous Binding and Activation of H2 and N2 in *trans*-FeII(P2)2X2-type Complexes (P2 = a Chelating Phosphine). *Inorg. Chem*., **2007**, *46*, 1205-1214

5) Szymczak, N. K.; Zakharov, L. N.; Tyler, D. R. Solution Chemistry of a Water-Soluble *η*2-H2 Complex: Evidence for H2 acting as a Hydrogen Bond Donor. *J. Am. Chem. Soc.* **2006**,*128*, 15830-15835

4) Szymczak, N. K.; Oelkers, A. B.; Tyler, D. R. Detection of Hydrogen Bonding in Solution: A 2H Nuclear Magnetic Resonance Method Based on Rotational Motion of a Donor/Acceptor Complex. *Phys. Chem. Chem. Phys.* **2006**, *8,* 4002-4008

3) Gilbertson, J. D.; Szymczak, N. K.; Tyler, D. R. Reduction of N2 to Ammonia and Hydrazine Utilizing H2 as the Reductant. *J. Am. Chem. Soc.*, **2005**, *127*, 10184-10185

2) Szymczak, N. K.; Han, F.; Tyler, D. R. Arrested Chloride Abstraction from *trans*-RuCl2(DMeOPrPE)2 with TlPF6; Formation of a 1-D Coordination Polymer having Unusual Octahedral Coordination around Thallium(I). *J. Chem. Soc., Dalton Trans*, **2004**, 3941-3942

1) Gilbertson, J. D.; Szymczak, N. K.; Tyler, D. R. H2 Activation in Aqueous Solution: Formation of *trans*-[Fe(DMeOPrPE)2H(H2)]+ via the Heterolysis of H2 in Water. *Inorg. Chem.*, **2004**, *43*, 3341-3343

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| **Academic Service**  |

*To the Community:*

***Symposium Organizer*:**

2024 *Michigan Inorganic Chemistry Symposium at the University of Michigan.* ~80 attendees.

2020/2021 Pacifichem Meeting, *Metal-Ligand Cooperation for bond activation*, Dec. 15-20, Honolulu, HI.

*19th Chinese-American Symposium. Kavli Frontiers of Science. July, 2022*

*20th Chinese-American Symposium. Kavli Frontiers of Science. November, 2025*

251st ACS Meeting, Philadelphia, *Secondary Coordination Sphere Influences: Stability, Reactivity, and Everything in Between. Aug. 21-25, 2016.*

*2014 Ohio Inorganic Weekend*, Nov. 14-15 at the University of Michigan. ~130 attendees

***Advisory:*** International Advisor for Student Symposium, NAIST, Japan, Nov. 9-10, 2015

***Misc. Outreach:*** Science Week Podcast Contributor (South Sydney High School; 2021), Interactive Collaborative Inorganic Discussion Organizer (iCID, UM, WWU, UC-Irvine; 2019-present), Michigan Inorganic Chemistry Symposium Organizer (MICS, UM, MSU; 2019-present), Science Fair Judge (Keystone Academy; 2013, 2014), Science Saturdays Presenter (2011)

***Manuscript Reviewer:*** ACS Catalysis, Accounts of Chemical Research, Angewandte Chemie an International Journal, AIMS Environmental Science, Catalysis Science and Technology, ChemComm, Chemical Reviews, Chemistry, a European Journal, Chemical Science, Current Opinion in Chemical Biology, Dalton Transactions, Energy and Environmental Science, Green Chemistry, Inorganic Chemistry, Journal of the American Chemical Society, Journal of Chemical Education, Journal of Organic Chemistry, Journal of Inorganic Biochemistry, Nature Chemistry, Organic Chemistry Frontiers, Organometallics, Polyhedron, Science Advances, Science, Tetrahedron

***Proposal Reviewer*:** AFOSR, DOE, ACS-PRF, NSF, SDE/GWIS

***Editorial:*** Volume co-editor for Comprehensive Coordination Chemistry III

Editorial Advisory Board for *Inorganic Chemistry, 2021-2024*

*To the University of Michigan:*

LS&A Safety Committee 2018 – present
U-M Research and Academic Safety Committee 2020 – present
Dept. of Chemistry Art Committee 2018 – 2020
Dept. of Chemistry Safety Committee 2014 – present
Chair of Dept. of Chemistry Safety Committee 2018 – 2022, 2023 – present
Dept. of Chemistry Faculty Search Committee 2018 – 2020
Dept. of Chemistry Executive Committee 2017 – 2019, 2021 – present
Dept. of Chemistry Graduate Committee 2014 – 2017, 2020
Chemistry Facilitator of a structured study group (90 students) 2020
ADVANCE Panelist on running a research lab 2017
CSIE|UM Panelist on managing conflict in the lab 2017
Speaker for Chemistry REBUILD Symposium 2016
CSIE|UM Panelist on hiring postdoctoral candidates 2016
Speaker for Provost’s seminar workshop: REBUILDing STEM Education at Michigan" 2014
Dept. of Chemistry Curriculum Committee 2013 – 2016
Dept. of Chemistry Recruiting Committee 2010 – 2013

Dept. of Chemistry Graduate Student Admissions Committee 2011 – 2016
Graduate Thesis Committees (30) 2010 – present