Karin J. (Kari) Young

600 W. Walnut St.
Danville, KY 40422

(859) 238-5323
karin.young@centre.edu

Current Position

Associate Professor of Chemistry Centre College, Danville, KY August 2013-Present

Courses Taught at Centre College (as of Fall 2021):

CHE 131: General Chemistry I and lab
CHE 132: General Chemistry II and lab
CHE 135: Accelerated General Chemistry and lab
CHE 242L: Organic Chemistry II Lab
CHE 250: Introduction to Inorganic and Analytical Chemistry (Laboratory)
CHE 332: Inorganic Chemistry and lab
CHE 405: Advanced Research Topics

ENS 240: Alternative Energy Technology
FYS 101: Renewable Energy: Technology, Policy, and Centre
FYS 189: Powering the Planet
NSC 110L: Natural Science I Lab

Research Mentoring at Centre College

Name	***Current Position***	***Research Dates***
Max Gordinier (’23)	Centre College Student	May 2021-Present
Claire Tinkler (’23)	Centre College Student	August 2021-December 2021
Khanh Tran (’19)	Ph.D. Program in Chemistry, Georgetown University	August 2018-May 2019
Chase Slowey (’19)	Ph.D. Program in Chemistry, University of North Carolina-Chapel Hill	May 2018-August 2018
Emma Huckestein (’20)	Centre College Student	August 2017-December 2018
Griffin Perry (’19)	Ph.D. Program in Chemistry, Vanderbilt University	May 2017-May 2019
Christian Apel (’18)	Proctor & Gamble, Cincinnati, OH	May 2017-May 2018
Emily Brown (’20)	Ph.D. Program in Chemistry, University of California	February 2017-May 2019
Walker Morrell (’19)	M.S. in Bioethics Program, Harvard Medical School	February 2017-May 2017
Cole Alsip (’18)	ALS Environmental, Cincinnati, OH	Feburary 2015-December 2016
Haidar Khan (’17)	St. George’s University of Medicine, West Indies	February 2015-December 2016
Perry Sharma (’16)	Graduate Researcher, California State University, Northridge	February 2015-May 2015
Kristin Bublitz (’15)	Lincoln Memorial University College of Medicine	September 2015-May 2015
Carly Jewell (’15)	Ph.D. Program in Chemistry, University of Maryland	September 2015-May 2015
Megan Cavagnini (’17)	University of Kentucky College of Pharmacy	February 2015-July 2015
Leili Niu (’17)	Seeking admission to Ph.D. programs	February 2015-May 2016
James Martin (’15)	Celanese Corporation, Cincinnati, OH	September 2014-December 2014
Karan Aletty (’17)	University of Louisville College of Medicine	May 2014-May 2017
Bryce Rowland (’17)	Ph.D. Program in Biostatistics, University of North Carolina	May 2014-August 2014

Funding Activities

Centre College Faculty Development Committee Award May-September 2021
" Understanding electronic properties of platinum-aluminum complexes" Funded $6100

National Science Foundation Chemistry Disciplinary Research Program October 2020
"Tunable incorporation of polar comonomers into polyolefins using a redox-switchable catalyst" Co-PI with Prof. Tim Brewster, University of Memphis and Prof. Christopher Graves, Swarthmore College. Budget for Centre College: $70,744 over 3 years. Not funded.

Centre College Faculty Development Committee Award May-September 2019
"Antibacterial Reactivity of Ag(I) Cyanoximate Complexes: An Inorganic Chemistry Laboratory Experiment" Funded $2500

May-September 2018
Centre College Faculty Development Committee Award
"Bioinspired lignin oxidation with iron, manganese, and cobalt catalysts." Funded $8815

Centre College Center for Teaching and Learning Course Development Grant June-August 2017
"Development of Alternative Energy Course for ENS Majors." Funded $1500

Centre College Faculty Development Committee Award May-September 2017
"Bioinspired lignin oxidation with iron and manganese catalysts." Funded $7941

Centre College Faculty Development Committee Award May-September 2016
"Bioinspired lignin oxidation with iron and manganese catalysts." Funded $8150

Centre College Center for Teaching and Learning Course Development Grant June-August 2015
"Course Redesign of CHE 135L, Accelerated General Chemistry Laboratory" Co-PI with Prof. Leonard Demoranville. Funded $1500

Centre College Faculty Development Committee Award May-September 2015
"Bioinspired lignin oxidation with iron and manganese catalysts." Funded $8700

National Science Foundation-Major Research Instrumentation Program January 2015
"Acquisition of High Performance Liquid Chromatograph coupled with Electrospray Mass Spectrometer for Research and Research Training at Undergraduate Institution" Co-PI with Prof. Leonard Demoranville, Prof. Jeffrey E. Fieberg, and Prof. Kerry A. Pickin Paumi. Not funded.

Associated Colleges of the South Faculty Development Program January 2015-May 2016
"Improving Inorganic Chemistry Pedagogy Workshop." Co-PI with Prof. Laurel Habgood, Rollins College. Funded $11,911

Associated Colleges of the South Faculty Development Program September 2014
"Enhancing Student Learning in the General Chemistry Laboratories at Centre College" Co-PI with Prof. January Haile. Invited for full proposal, but I could only serve as PI on one full proposal. Not funded.

Centre College Faculty Development Committee Award May-September 2014
"Bioinspired lignin oxidation with iron and manganese catalysts." Funded $8532

Centre College Service

Committee on Tenure and Reappointment	September 2021-Present
Phi Beta Kappa, Beta Chapter of Kentucky *President (2017-2018), Vice-President (2016-2017)*	September 2013-Present
Writing Committee	September 2021-Present September 2014- May 2015
Centre College Steering Committee	September 2019-December 2021
Ad-Hoc Committee on Faculty Evaluation	September 2019-May 2020
Committee on Curriculum and Academic Standards *Chair of Course Approvals Subcommittee 2017-2019*	September 2017-May 2019
Centre College Council Member-at-Large	September 2014- May 2017
General Education Committee	September 2014- May 2017
QEP Curriculum Working Group	December 2014-April 2015

Search committees in chemistry, philosophy, and economics and finance.

Education

Ph. D. Inorganic Chemistry	Yale University, New Haven, CT	May 2013
Dissertation: *Manganese catalysts and photosensitized polyoxotitanates as synthetic models for light-driven water oxidation*		
M. S. Chemistry	Yale University, New Haven, CT	December 2010
B. A. Chemistry, English	The University of Tulsa, Tulsa, OK	May 2008

Other Research Experience

Graduate Research Assistant Advisor: Gary W. Brudvig	Yale University, New Haven, CT	2009-2013
Summer Undergraduate Research Fellowship Advisor: Arno Laesecke	NIST, Boulder, CO	Summer 2007
Tulsa Undergraduate Research Challenge Advisor: Gordon H. Purser	The University of Tulsa, Tulsa, OK	2005-2008

Professional Memberships

American Chemical Society

Interactive Online Network of Inorganic Chemists (www.IONiCVIPEr.org)

Fellowships and Awards

Kirk Award for Excellence in Teaching, Centre College, 2021

VIPEr Fellow, 2018-2020

One of twenty faculty members selected to participate in the first cohort of an NSF-IUSE-funded program to improve the teaching of inorganic chemistry by developing a community of practice and incorporating active learning pedagogies.

Centre Scholar Award, Centre College, 2016-2018

NIH Biophysical Training Grant, Yale University, 2010-2011

Iota Sigma Pi Undergraduate Excellence Award, 2008

One national award is given annually to a female undergraduate student.

Phi Beta Kappa, Beta Chapter of Oklahoma, 2007

Presidential Scholarship, The University of Tulsa, 2004-2008.

Presentations: *Undergraduate collaborators in italics*. *Indicates presenter if not KJY

20. "Will this be on the test? Test blueprints as a tool for communicating learning expectations." (Contributed oral presentation) **Kari Young**. Biennial Conference on Chemical Education, South Bend, IN. August 2018.

19. "Kinetics and product characterization of the oxidation of veratryl alcohol catalyzed by an iron coordination complex" *Emily Brown*, Karan Aletty, Leili Niu,* **Karin Young**. 255th National Meeting of the American Chemical Society, New Orleans, LA. March 2018.

20. "Analysis and characterization of iron, manganese, and cobalt catalysts for oxidation of a lignin model compound" *Griffin Perry*, Emily Brown, Karan Aletty,* **Karin Young**. 255th National Meeting of the American Chemical Society, New Orleans, LA. March 2018.

19. "Influence of test blueprint publication on student perceptions and performance in an inorganic chemistry course." (Poster) **Karin J. Young,** Sarah Lashley, Sarah Murray. 255th National Meeting of the American Chemical Society, New Orleans, LA. March 2018.

18. "Integrating synthesis and application in the inorganic chemistry laboratory at Centre College." (Invited oral presentation) **Kari Young**. Southeastern Regional Meeting of the American Chemical Society, Charlotte, NC. November 2017.

17. "Bioinspired oxidation of lignin model compounds catalyzed by iron, manganese, and cobalt complexes." (Invited seminar) **Kari Young**. Eastern Kentucky University, October 2017.

16. "Oxidation of a lignin model compound by iron, manganese, and cobalt complexes of a pentadentate ligand." *Karan Aletty*, Leili Niu,* **Karin Young**. 251st American Chemical Society National Meeting, San Diego, CA. March 2016.

15. "Leveraging collegiate consortia to develop literature-based inorganic laboratory experiments." (Poster) Laurel G. Habgood and **Karin J. Young**. 251st American Chemical Society National Meeting, San Diego, CA. March 2016.

14. "IONiC VIPEr Workshops at the Frontiers of Inorganic Chemistry" (Poster) Sheila R. Smith, Laurel G. Habgood, Shaun E. Schmidt, **Karin J. Young**. 249th American Chemical Society National Meeting, Denver, CO. March 2015.

13. "Team Teaching: Models, Strategies, and Lessons Learned" (Discussion) Robin Cutright, Ellen Swanson, Lesley Wiglesworth, and **Kari Young**. Centre College Pedagogy Luncheon Series, Danville, KY. March 2015.

12. "Make-it-Stick: The Science of Successful Learning" (Discussion) Lenny Demoranville, January Haile, Sarah Lashley, Jennifer Muzyka, Marie Nydam, Kerry Paumi, and **Kari Young**. Centre College Pedagogy Luncheon Series, Danville, KY. November 2014.

11. "Powering the Planet: Exploring Renewable Energy in an Interdisciplinary First-Year Seminar" (Contributed oral presentation) **Karin J. Young**. 2014 Biennial Conference on Chemical Education, Grand Valley State University, Allendale, MI. August 2014.

10. "Tracking Light-induced Charge Separation in Polyoxotitanate Clusters" (Invited o) **Karin J. Young**, Robert C. Snoeberger III, Jiji Tang, Laura J. Allen, Robert H. Crabtree, Victor S. Batista, Phillip Coppens, Jason B. Benedict, and Gary W. Brudvig. Eastern Analytical Symposium, Somerset, NJ. November 2012.

9. "Make like a leaf: manganese water oxidation catalysis for solar fuels" (Invited seminar) **Karin J. Young**, Connecticut College, November 2012

Presentations, continued.

8. "Make like a leaf: manganese water oxidation catalysis for solar fuels" (Invited seminar) **Karin J. Young**, The University of Tulsa, October 2012

7. "Modeling light-induced charge separation in polyoxotitanate clusters" (Poster) **Karin J. Young**, Robert C. Snoeberger III, Jiji Tang, Laura J. Allen, Robert H. Crabtree, Victor S. Batista, Phillip Coppens, Jason B. Benedict, and Gary W. Brudvig. Renewable Energy: Solar Fuels Gordon Research Conference, Barga, Italy. May 2012.

6. "Using EPR spectroscopy to characterize charge separation in Ti17 clusters" (Poster) **Karin J. Young**, Robert C. Snoeberger III, Jiji Tang, Laura J. Allen, Robert H. Crabtree, Victor S. Batista, Phillip Coppens, Jason B. Benedict, and Gary W. Brudvig. Natural and Artificial Photosynthesis Conference at RPI, Troy, NY. November 2011.

5. "Photocatalysis of manganese compounds immobilized in Nafion polymer membranes" (Poster) **Karin J. Young**, Yunlong Gao, and Gary W. Brudvig. Eastern Regional Photosynthesis Conference, Woods Hole, MA. April 2011.

4. "Creatine as an antioxidant: Mechanism of the reaction between creatine and hypochlorous acid" (Poster) **Karin J. Brumback (Young)**, Matthew R. Thomas, John C. DiCesare, Gordon H. Purser. 235th ACS National Meeting, New Orleans, LA. April 2008.

3. "Fate of creatine in the reaction with hypochlorous acid" (Poster) **Karin J. Brumback (Young)**, Matthew R. Thomas, John C. DiCesare, Gordon H. Purser. 233rd ACS National Meeting, Chicago, IL. March 2007.

2. "Evaluating the capacity of creating to deactivate the reactive chlorine atom in hypochlorous acid" (Poster) **Karin J. Brumback (Young)**, John C. DiCesare, Gordon H. Purser. 62nd Southwest Regional Meeting of the American Chemical Society, Houston, TX. October 2006.

1. "Stoichiometry and product characterization of the reaction between creatine and hypochlorous acid" (Poster) **Karin J. Brumback (Young)**, Ryan J. Vierling, Alex L. Fry, John C. DiCesare, and Gordon H. Purser. 231st ACS National Meeting, Atlanta, GA. March 2006.

Peer-Reviewed Journal Articles and Book Chapters. *Undergraduate collaborators in italics*

17. “Synthesis, Antimicrobial Properties, and Biomedical Applicability of Ag(I) Cyanoximate Complexes” **Karin J. Young.**, Laurel G. Habgood, Kristina L. Stensaas, Omar Villanueva, Willis Weigand; (2021) *J. Chem. Educ.* **98**, 2997–3003

16. #StayCentred: Maintaining Personal Education at Centre College During COVID-19” Kristen D. Fulfer. Erin Wacher, Jennifer L. Muzyka, Leonard T. Demoranville, Jeffrey E. Fieberg, January D. Haile, Daniel Scott, Yang Song, José M. Workman, **Karin J. Young**. (2020) *J. Chem. Educ.* **97**, 2783-2787.

15. “Effect of an Application-Based Laboratory Curriculum on Student Understanding of Societal Impact of Chemistry in an Accelerated General Chemistry Course” Leonard T. Demoranville, *Olivia R. Kane*, and **Karin J. Young.** (2020) *J. Chem. Educ*. **97**, 66-71

14. “Influence of Exam Blueprint Distribution on Student Perceptions and Performance in an Inorganic Chemistry Course.” **Karin J. Young**, Sarah Lashley, Sarah Murray. (2019) *J. Chem. Educ.* **96**, 2141-2148.

13. “Surfactant-mediated Electrodeposition of a Water-oxidizing Manganese Oxide”, Wojciech T. Osowiecki, Stafford W. Sheehan, **Karin J. Young**, Alec C. Durrell, Brandon Q. Mercado and Gary W. Brudvig* (2015) *Dalton Trans.* **44**, 16873-16881.

12. "Photosynthetic Water Oxidation: Insights from Manganese Model Chemistry", **Karin J. Young**, Bradley J. Brennan, Ranitendranath Tagore and Gary W. Brudvig (2015) *Acc. Chem. Res.* **48**, 567-574.

11. "Photoelectrochemical Hole Injection Revealed in Polyoxotitanate Nanocrystals Functionalized with Organic Adsorbates", Christian F. A. Negre‡, **Karin J. Young**‡, Ma. Belén Oviedo, Laura J. Allen, Cristián G. Sánchez, Katarzyna N. Jarzembska, Jason B. Benedict, Robert H. Crabtree, Philip Coppens, Gary W. Brudvig and Victor S. Batista (2014) *J. Am. Chem. Soc.* **136**, 16420-16429. ‡Authors contributed equally.

10. "Linker Rectifiers for Covalent Attachment of Transition-Metal Catalysts to Metal-Oxide Surfaces", Wendu Ding, Christian F. A. Negre, Julio L. Palma, Alec C. Durrell, Laura J. Allen, **Karin J. Young**, Rebecca L. Milot, Charles A. Schmuttenmaer, Gary W. Brudvig, Robert H. Crabtree and Victor S. Batista (2014) *ChemPhysChem* **15**, 1138-1147.

9. "Photoelectrochemical Oxidation of a Turn-On Fluorescent Probe Mediated by a Surface Mn^{II} Catalyst Covalently Attached to TiO_2 Nanoparticles", Alec C. Durrell, Gonghu Li, Matthieu Koepf, **Karin J. Young**, Christian F. A. Negre, Laura J. Allen, William R. McNamara, Hee-eun Song, Victor S. Batista, Robert H. Crabtree and Gary W. Brudvig (2014) *J. Catal.* **310**, 37-44.

8. “Guided Inquiry and Project-Based Learning in Biophysical Spectroscopy.” Guo, Ying; **Young, Karin J**.; Yan, Elsa C.Y. (2013) In *Teaching Bioanalytical Chemistry*; Hou, H. J. M., Ed.; ACS Symposium Series 1137; American Chemical Society: Washington, DC; pp 261-291.

7. “An Anionic N-donor Ligand Promotes Manganese-catalyzed Water Oxidation”, **Karin J. Young**, Michael K. Takase and Gary W. Brudvig (2013) *Inorg. Chem.* **52**, 7615-7622.

6. “Light-driven Water Oxidation for Solar Fuels”, **Karin J. Young**, Lauren A. Martini, Rebecca L. Milot, Robert C. Snoeberger III, Victor S. Batista, Charles A. Schmuttenmaer, Robert H. Crabtree and Gary W. Brudvig (2012) *Coord. Chem. Rev.* **256**, 2503-2520.5.

5. “Interfacial Electron Transfer into Functionalized Crystalline Polyoxotitanate Nanoclusters”, Robert C. Snoeberger III, **Karin J. Young**, Jiji Tang, Laura J. Allen, Robert H. Crabtree, Gary W. Brudvig, Philip Coppens, Victor S. Batista and Jason B. Benedict (2012) *J. Am. Chem. Soc.* **134**, 8911–8917.

4. “Photocatalytic Water Oxidation Using Manganese Compounds Immobilized in Nafion Polymer Membranes”, **Karin J. Young**, Yunlong Gao and Gary W. Brudvig (2011) *Australian J. Chem.* **64**, 1219–1226.

3. “Comparison of Jet Fuels by Measurements of Density and Speed of Sound of a Flightline JP-8” Stephanie L. Outcalt, Arno Laesecke, and **Karin J. Brumback (Young)** (2010) *Energ. Fuel*. **24**. 5573-5578.

2. “Thermophysical properties measurements of rocket propellants RP-1 and RP-2”, Stephanie L. Outcalt, Arno Laesecke, and **Karin J. Brumback (Young)** (2009) *J. Propul. Power*. **25**, 1032-1040.

1. “Density and Speed of Sound Measurements of Methyl- and Propylcyclohexane”, Arno Laesecke, Stephanie L. Outcalt, and **Karin J. Brumback (Young)** (2008) *Energ. Fuel*. **22**, 2629-2636.