

# Karin J. (Kari) Young

600 W. Walnut St.  
Danville, KY 40422

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

## Current Position

H.W. Stodghill, Jr., and Adele H. Stodghill  
Associate Professor of Chemistry

Centre College, Danville, KY

August 2013-Present

## 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

## Courses Taught at Centre College (as of Spring 2025):

**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

**NSC 263:** Science and the Museum

## Centre College Service

Committee on Tenure and Reappointment

Health Professions Advising Committee

Co-Director, Centre-in-London Program

Phi Beta Kappa, Beta Chapter of Kentucky

*President (2017-2018, 2024-2025), Vice-President (2016-2017)*

Writing Committee

EAB Navigate Implementation Team

Centre College Steering Committee

Ad-Hoc Committee on Faculty Evaluation

Committee on Curriculum and Academic Standards

*Chair of Course Approvals Subcommittee 2017-2019*

Centre College Council Member-at-Large

General Education Committee

QEP Curriculum Working Group

September 2021-Present

September 2023-Present

February 2023-April 2023

September 2013-Present

September 2021-Present

January 2022-December 2022

September 2019-December 2021

September 2019-May 2020

September 2017-May 2019

September 2014- May 2017

September 2014- May 2017

December 2014-April 2015

## Other Research Experience

Undergraduate Research Mentor for >20 students	Centre College Danville, KY 40422	2014-Present
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, Division of Inorganic Chemistry

Interactive Online Network of Inorganic Chemists ([www.IONiCVIPer.org](http://www.IONiCVIPer.org))

National Association of Health Professions Advisors

## 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.

## Internal and External Funding Activities

National Science Foundation Chemistry Disciplinary Research Program	Oct 2024
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*"Structure-Function Relationships in Late Transition Metal Catalyzed Olefin Polymerization Catalysts" Co-PI with PI Prof. Tim Brewster, University of Memphis and Co-PI Dr. Brian Long, University of Tennessee. Budget for Centre College \$129,722 over 3 years. Result pending.*

National Science Foundation Chemistry Disciplinary Research Program	Oct 2023
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*"Structure-Function Relationships in Late Transition Metal Catalyzed Olefin Polymerization Catalysts" Co-PI with PI Prof. Tim Brewster, University of Memphis and Co-PI Dr. Brian Long, University of Tennessee. Budget for Centre College \$104,822 over 3 years. Not Funded*

Kentucky Council on Postsecondary Education Healthcare Bridge Program	Jan-Sept 2025
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*Funded \$28,416 for Summer Health Immersion Program*

Kentucky Council on Postsecondary Education Bridge Program	May-Dec 2023
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*Total award \$48,603 for three bridge programs. ~\$27,000 for Summer Health Immersion Program.*

Kentucky Council on Postsecondary Education Bridge Program	May-Dec 2022
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*Total award \$158,180 for three bridge programs. ~\$40,000 for Summer Health Immersion Program.*

Associated Colleges of the South Faculty Development Program	May-Aug2022
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*"Advancing STEM equity by emphasizing integrating quantitative literacy and reasoning before and during STEM gateway courses" Funded \$42,000 total shared between Centre, Furman, and Trinity.*

## Internal and External Funding Activities, Continued

Centre College Faculty Development Committee Award “Understanding electronic properties of platinum-aluminum complexes” Funded \$6100	May-September 2021
National Science Foundation Chemistry Disciplinary Research Program “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.	October 2020
Centre College Faculty Development Committee Award “Antibacterial Reactivity of Ag(I) Cyanoximate Complexes: An Inorganic Chemistry Laboratory Experiment” Funded \$2500	May-September 2019
Centre College Faculty Development Committee Award “Bioinspired lignin oxidation with iron, manganese, and cobalt catalysts.” Funded \$8815	May-September 2018
Centre College Center for Teaching and Learning Course Development Grant “Development of Alternative Energy Course for ENS Majors.” Funded \$1500	June-August 2017
Centre College Faculty Development Committee Award “Bioinspired lignin oxidation with iron and manganese catalysts.” Funded \$7941	May-September 2017
Centre College Faculty Development Committee Award “Bioinspired lignin oxidation with iron and manganese catalysts.” Funded \$8150	May-September 2016
Centre College Center for Teaching and Learning Course Development Grant “Course Redesign of CHE 135L, Accelerated General Chemistry Laboratory” Co-PI with Prof. Leonard Demoranville. Funded \$1500	June-August 2015
Centre College Faculty Development Committee Award “Bioinspired lignin oxidation with iron and manganese catalysts.” Funded \$8700	May-September 2015
National Science Foundation-Major Research Instrumentation Program “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.	January 2015
Associated Colleges of the South Faculty Development Program “Improving Inorganic Chemistry Pedagogy Workshop.” Co-PI with Prof. Laurel Habgood, Rollins College. Funded \$11,911	January 2015-May 2016
Associated Colleges of the South Faculty Development Program “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.	September 2014
Centre College Faculty Development Committee Award “Bioinspired lignin oxidation with iron and manganese catalysts.” Funded \$8532	May-September 2014

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

22. “Grading for Equity: Lessons Learned in Chemistry Courses.” (Contributed oral presentation.) January Haile, Jennifer Muzyka, Erin Wachter, **Kari Young**. Building Bridges and Community Day, Centre College. November 2022.
21. “Chemistry Coins: A grading system based on Bloom’s taxonomy in an inorganic chemistry course.” (Contributed oral presentation.) **Kari Young**. Biennial Conference on Chemical Education, West Lafayette, IN. August 2022.
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” (Poster) *Emily Brown\**, *Karan Aletty*, *Leili Niu*, **Karin Young**. 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA. March 2018.

## Presentations, continued

20. "Analysis and characterization of iron, manganese, and cobalt catalysts for oxidation of a lignin model compound" (Poster) *Griffin Perry\**, *Emily Brown*, *Karan Aletty*, **Karin Young**. 255<sup>th</sup> 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. 255<sup>th</sup> 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." (Poster) *Karan Aletty\**, *Leili Niu*, **Karin Young**. 251<sup>st</sup> 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**. 251<sup>st</sup> 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**. 249<sup>th</sup> 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 talk) **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
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. 235<sup>th</sup> 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. 233<sup>rd</sup> ACS National Meeting, Chicago, IL. March 2007.
2. "Evaluating the capacity of creatine to deactivate the reactive chlorine atom in hypochlorous acid" (Poster) **Karin J. Brumback (Young)**, John C. DiCesare, Gordon H. Purser. 62<sup>nd</sup> 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. 231<sup>st</sup> ACS National Meeting, Atlanta, GA. March 2006.

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

19. "Donor Ability of Bisphosphinemonoxide Ligands Relevant to Late-Metal Olefin Polymerization Catalysis." Natalie S. Taylor, Maxwell T. Gordinier, Tejaskumar Suhagia, Danna D. Pinto, Demetrius D. Cherry, Dominic S. Verry, Lindsay N. Baker, Nathan J. DeYonker, **Karin J. Young**, Timothy P. Brewster. (2024). *Inorg. Chem.* **63**, 2888–2898.
18. "Adding a Greenhouse Gas Module to a Molecular Modeling Activity in General Chemistry" Leonard T. Demoranville, Jeffrey E. Fieberg, Susan Campbell, Olivia R. Kane, Erin Wachter, **Karin J. Young**. (2023). *J. Chem. Educ.* **100**, 2473-2477.
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 Wachter, 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<sup>‡</sup>, **Karin J. Young**<sup>‡</sup>, Ma. Belén Oviedo, Laura J. Allen, Cristián G. Sánchez, Katarzyna N. Jarzemska, Jason B. Benedict, Robert H. Crabtree, Philip Coppens, Gary W. Brudvig and Victor S. Batista (2014) *J. Am. Chem. Soc.* **136**, 16420-16429. <sup>‡</sup>Authors contributed equally.

## Peer-Reviewed Journal Articles and Book Chapters, Continued.

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<sup>II</sup> Catalyst Covalently Attached to TiO<sub>2</sub> 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.