

# DAVID J. COLLINS

Department of Chemistry, Physics, & Engineering  
 Franciscan University of Steubenville  
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## ACADEMIC APPOINTMENTS

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<b>Franciscan University of Steubenville</b>	<b>2013-present</b>
Chair, Department of Chemistry, Physics, and Engineering	2015-present
Professor	2017-present
Associate Professor	2013-2017
Currently teaching Inorganic Chemistry, General Chemistry, Practicum in Science Education	
Experience teaching General Physics, General/Organic/Biochemistry Chemistry, University Physics, Intro to Physical Science	
<b>State University of New York College at Cortland</b>	<b>2008-2013</b>
Assistant Professor	
General Chemistry I & II lecture and laboratory, Inorganic Chemistry, Advanced Inorganic Chemistry, Advanced Synthesis, Advanced Laboratory I & II	
General Chemistry Laboratory Coordinator, 2011-2013	

## EDUCATION

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<b>Ph.D., Chemistry</b>	<b>2008</b>
Miami University, Oxford, OH	
Dissertation: "Synthesis of heterobimetallic clusters and coordination networks via hard-soft interactions" <a href="#">link</a>	
Houston Baptist University, Houston, TX	<b>1998</b>
Graduate coursework: education technology, curriculum development	
University of St. Thomas, Houston, TX	<b>1997</b>
Graduate coursework: education theory and practice	
<b>B.S., Materials Science and Engineering</b> , with Honors, <i>summa cum laude</i>	<b>1995</b>
Ohio State University, Columbus, OH	
Honors thesis: "Synthesis and characterization of ceramic-based NO <sub>x</sub> sensors"	

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**OTHER TEACHING EXPERIENCE**


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- Graduate Teaching Assistant** **2003-2007**  
 Miami University, Oxford OH  
 Inorganic Chemistry Laboratory, General Chemistry I & II Laboratory
- Secondary Science Teacher** **2002-2003**  
 Colerain High School, Northwest Local School District, Cincinnati OH  
 Physics, Physical/Earth Science
- Secondary Science Teacher** **1995-2002**  
 Stephen F. Austin High School, Fort Bend ISD, Sugar Land TX  
 Advanced Placement Chemistry II, Advanced Placement Physics II,  
 Chemistry I, Physics I, Physical Science

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**RESEARCH & FIELD EXPERIENCE**


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- Franciscan University of Steubenville, Steubenville OH
- Ohio EPA grant** **2017-present**  
 Air Quality Monitoring Stations in Upper Ohio Valley  
 Co-PI (with Dr. Eric Haenni, Biological Science); data collection and daily operations for four air quality monitoring stations in the upper Ohio valley \$45,000/yr grant
- Miami University, Oxford OH
- Graduate Research Assistant** **2003-2008**  
Chemistry Education
- Co-PI, "Symmetry and crystallography in the high-school chemistry classroom." Designed lesson materials and taught one week of high school classes
- Synthetic Inorganic Chemistry
- Synthesis and characterization of heterobimetallic paddlewheel clusters
  - Rational synthesis of metal-organic framework materials containing multiple metal species
  - Evaluation of hydrogen storage in metal-organic frameworks and microporous materials
  - Organic ligand synthesis
  - Lab manager for research group of ~15 students and post-doctoral researchers
  - Directly supervised 3 undergraduate and 2 high school students

Center for Chemistry Education, Miami University-Middletown, Middletown OH

**Graduate Research Assistant**

2003

Chemistry Education

- Develop and evaluate activities for middle-school-age science enrichment programs

## JOURNAL ARTICLES

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1. "Construction of metal-organic frameworks with 1D chain, 2D grid, and 3D porous framework based on a flexible imidazole ligand and rigid benzenedicarboxylates." He, H.; Collins, D.; Dai, F.; Zhao, X.; Zhang, G.; Ma, H.; Sun, D. *Cryst. Growth Des.*, 2010, 10, 895. [link](#)
2. "Designing, Teaching, and Evaluating a Unit of Symmetry and Crystallography in the High School Classroom." Grove, N. P.; Collins, D. J.; Guerin, N. P. \*\*; López, J. J.\*; Bretz, S. L.; Zhou, H.-C. *J. Chem. Ed.*, 2009, 86, 946. [link](#)
3. "After 118 years, the isolation of two common radical anion reductants as simple, stable solids" Scott, T. A.; Ooro, B. A.; Collins, D. J.; Shatruk, M.; Yakovenko, A.; Dunbar, K. R.; Zhou, H.-C. *Chem. Commun.* 2009, 65. [link](#)
4. "Hydrogen storage in metal-organic frameworks." Collins, D. J.; Zhou, H.-C. *J. Mater. Chem.*, 2007, 17, 3154. [link](#)
5. "Construction of robust open metal-organic frameworks with chiral channels and permanent porosity." Sun, D.; Ke, Y.; Collins, D. J.; Lorigan, G. A.; Zhou, H.-C. *Inorg. Chem.*, 2007, 46, 2725. [link](#)
6. "An interweaving metal-organic framework with high hydrogen uptake." Sun, D.; Ma, S.; Ke, Y.; Collins, D. J.; Zhou, H.-C. *J. Am. Chem. Soc.*, 2006, 128, 3896. [link](#)
7. "(10,3)-a non-interpenetrated network built from a Piedfort ligand pair." Ke, Y.; Collins, D. J.; Sun, D.; Zhou, H.-C. *Inorg. Chem.*, 2006, 45, 1897. [link](#)
8. "Construction of metal-organic frameworks based on pre-designed carboxylate isomers: From achiral to chiral nets." Sun, D.; Collins, D. J.; Ke, Y.; Zuo, J.-L.; Zhou, H.-C. *Chem. Eur. J.*, 2006, 12, 3768. [link](#)
9. "Synthesis and structure of cuboctahedral and anticuboctahedral cages containing 12 quadruply-bonded dimolybdenum units." Ke, Y.; Collins, D. J.; Zhou, H.-C. *Inorg. Chem.*, 2005, 44, 4154. [link](#)

\* indicates undergraduate student co-author

\*\* indicates in-service high school teacher co-author

## BOOK CHAPTERS

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1. "Hydrogen and methane storage in metal-organic frameworks." Collins, D. J.; Ma, S.; Zhou, H.-C. In *Metal-Organic Frameworks: Design and Application*; MacGillivray, L. R., Ed.; Wiley: New York, 2010.
2. "Nano/microporous materials: Transition metal cyanide cages." Lu, T; Collins, D. J.; Zhou, H.-C. In *Nanomaterials: Inorganic and Bioinorganic Perspectives*; Lukehart, C. M., Scott, R. A., Eds.; Wiley: New York, 2008.
3. "Nano/microporous materials: Hydrogen storage materials." Collins, D. J.; Zhou, H.-C. In *Nanomaterials: Inorganic and Bioinorganic Perspectives*; Lukehart, C. M., Scott, R. A., Eds.; Wiley: New York, 2008.
4. "Iron-sulfur models of protein active sites." Collins, D. J.; Zhou, H.-C. In *Encyclopedia of Inorganic Chemistry*, 2nd Ed.; King, R. B., Ed.; Wiley: New York, 2006.
5. "Ceramic Oxides as Potential Hydrocarbon and NO<sub>x</sub> Sensors." Akbar, S. A.; Wang, C. C.; Wang, L.; Collins, D. J.\* In *Ceramic Transactions vol 65: Role of Ceramics in Advanced Electrochemical Systems*, American Ceramic Society: Westerville OH, 1997.

## SELECTED PRESENTATIONS

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1. "Augmenting in-lab demonstrations with QR Codes in the General Chemistry Laboratory." D. J. Collins, T. Lee\*. 245<sup>th</sup> ACS National Meeting, New Orleans, LA (April 2013)
2. "Turning X-ray vision on the "Gold Penny" activity." D. J. Collins, T. Narby\*, D. McCarthy\*. 240<sup>th</sup> ACS National Meeting, Boston, MA (August 2010)
3. "Introducing advanced inorganic chemistry concepts in the high school classroom." D. J. Collins, N. P. Grove, N. P. Guerin\*\*, and H.-C. Zhou. 234<sup>th</sup> ACS National Meeting, Boston, MA (August 2007)
4. "Symmetry and crystallography in the high school chemistry classroom." D. J. Collins, N. P. Grove, N. P. Guerin\*\*, and H.-C. Zhou. 39<sup>th</sup> ACS Central Regional Meeting, Covington, KY (May 2007)
5. "Synthesis, structure, and bonding in novel heterobimetallic paddlewheel complexes." D. J. Collins and H.-C. Zhou. 7<sup>th</sup> Ohio Inorganic Meeting, Athens, OH (November 2006)
6. "Extending the family of heterobimetallic paddlewheel complexes." D. J. Collins and H.-C. Zhou. 232<sup>nd</sup> ACS National Meeting, San Francisco, CA (September 2006)

\* indicates undergraduate student co-author and presenter

\*\* indicates in-service high school teacher co-author and presenter

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## INSTITUTIONAL and COMMUNITY SERVICE

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### Franciscan University of Steubenville:

- Faculty Welfare Committee, 2018-present
- Health Insurance Committee, 2018-present
- Curriculum Committee, 2016-present
- Faculty Standards Committee, 2015-present
- Faculty Search Committee chair (Chemistry), 2018-2019
- Faculty Search Committee chair (Physics), 2017-2018
- Faculty Search Committee chair (Physics), 2015-2016

### SUNY Cortland:

- Curriculum committee, College of Arts & Sciences, 2011-2013
  - Chair, 2012-13
- Faculty Search Committee chair (Chemistry), 2013
- NCATE SPA committee, Adolescent Science Education, 2008-11

### Miami University:

- Co-organizer, 8<sup>th</sup> Ohio Inorganic Meeting, 2007
- Southwest Ohio Science Fair judge, 2003

### Fort Bend Independent School District:

- Houston-area Science Fair judge, 1999-2001
- Curriculum writer and trainer (Physics), 1998–2002

### Eagle Scout

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## AFFILIATIONS, CERTIFICATIONS and LICENSURES

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- Society of Catholic Scientists, 2018-present
- American Chemical Society (ACS), 2004–present
  - Pittsburgh Local Section
  - Division of Chemistry Education, Division of Inorganic Chemistry
- Texas Educator Certificate, Secondary Science Composite (Grades 6-12), 1996-present (inactive)
- Texas Educator Certificate, Secondary Mathematics (Grades 6-12), 2002-2007
- Ohio Teaching License (Provisional), AYA Comprehensive Science, 2002-2003