Xinyu Zhang, Ph.D., P.E.

PROFESSIONAL EMPLOYMENT

Assistant Professor of Engineering Practice, Environmental and Ecological Engineering (EEE), Purdue University 6/2024-Present

Teaching Assistant Professor, Fundamentals of Engineering Program (FEP), West Virginia University (WVU) 6/2019-6/2024

Postdoctoral Teaching Scholar, Biomanufacturing Training and Education Center (BTEC), North Carolina State University (NCSU) 10/2015-5/2019

Chief Scientist & Business Development Chief, HYX Biotech, LLC 6/2013-6/2015

Environmental Engineer, Waterborne Environmental, Inc. 10/2012-5/2013

Teaching Assistant, Department of Civil & Environmental Engineering, University of Illinois at Urbana-Champaign (UIUC) 8/2011-12/2012

Research Assistant, Department of Civil & Environmental Engineering, UIUC 8/2007-12/2012

Research Assistant, Environmental Science & Engineering, Tsinghua University, China 8/2005-6/2007

Research Assistant, Environmental Engineering, DUT, China 12/2004-6/2005

Research Assistant, Biological Engineering, DUT, China 8/2003-12/2004

AREAS OF SPECIALIZATION

Engineering education, biomanufacturing and biotechnology, civil, environmental, chemical and biological engineering, current Good Manufacturing Practice (cGMP), water-energy-environment nexus

EDUCATION

Ph.D., Environmental Engineering 2012
University of Illinois at Urbana-Champaign (UIUC)

Advisor: Professor Eberhard Morgenroth

Dissertation: Enhanced biohydrogen production from wastes (lignocellulose) using co-culture fermentation

M.Sc., Environmental Science and Engineering 2007
Tsinghua University

Advisor: Professor Miao He

Thesis: Recombinant bioluminescent bacteria (*E. coli*) as a biosensor to detect toxic pollutants in water

B.S., Environmental Engineering in Chemical Engineering (*Summa cum laude*) 2005
Dalian University of Technology (DUT)

Advisor: Professor Fenglin Yang

Thesis: Enhanced nutrient (nitrogen and phosphorus) removal in sequencing batch membrane bioreactor (SBMBR)

GRANTSMANSHIP

External Funding

Xinyu Zhang (PI), Justin Hess (Co-PI). NSF, #2533640, Collaborative Research: NLI: Forming Ethical Engineers: Integrating Embodied Carbon Education to Foster Ethical Responsibility in Environmental and Social Sustainability, $213,925

11/1/2025-10/31/2028

Xinyu Zhang (PI). NSF, #2320120, 2450295, BCSER-IID: Effective Strategies to Recruit Underserved Students to Baccalaureate Engineering Success and Transition Programs (Recruit-BEST), $350,000
10/1/2023-9/30/2026

Academy of Engineering Success (AcES), Halliburton Foundation, Inc., FirstEnergy Foundation, TC Energy, $52,875 **7/2022; 8/2023; 10/2023; 11/2023; 8/2024**

- Worked with WVU Foundation to submit proposals and received funding from private donors for the operation and institutionalization of AcES program when NSF S-STEM grant phased out.

Robin Hensel (PI), David Wyrick (co-PI). NSF, #1644119, S-STEM: Statler Increasing Access and Diversity in Engineering Program (ADE), $954,040 **9/15/2016-9/30/2023**

- Xinyu's role ($5,328.89 & one course/year, 2021-2023): led the summer bridge program and taught the Professional Development in Engineering course for S-STEM recipients from 2021 to 2023

Karen Rambo-Hernandez (PI at Texas A&M and WVU), Melissa Morris, Robin Hensel (co-PIs at WVU), Rebecca Atadero (PI at Colorado State), Christina Paguyo (PI at University of Denver) Jody Paul (PI at Metro State). NSF Collaborative Research: IUSE-EHR: Cultivating Inclusive Identities of Engineers and Computer Scientists: Expanding Efforts to Infuse Inclusive Excellence in Undergraduate Curricula, $2,135,000 7/15/2017-6/30/2025

- Xinyu's role ($1500, 2021): Created teaching and learning materials for WVU FEP courses for P4E: STEM project (Partnership for Equity: STEM, Cultivating Inclusive Professional Identities in Engineering and Computer Science), including new materials for the "Bias in Algorithms" and "Important Factors Reflecting on ABET Engineering Project Objectives (public health, safety, and welfare, global, cultural, social, environmental, and economic factors)".

Professional Development Grant

Intercultural Pedagogy Grant, Purdue University; $2,000 **2024**

- Advanced knowledge in intercultural competence and curriculum design for a study abroad program in environmental engineering and sustainability

Nason Pritchard Travel Award, Statler College of Engineering and Mineral Resources, WVU **7/2022**

Thriving Women Program Award, Statler College, WVU; $2,000 **4/2021**

- Advanced my career trajectory by obtaining my professional engineering license and engaging in Society of Women Engineers (SWE) and American Society for Engineering Education (ASEE)
- Worked with other faculty and SWE advisers to engage in broader impact activities

Internal STEM Education Grant (as PI)

Teaching & Learning Commons Technology Integration Grant (TLC TIG), WVU **6/2022**

- Applied DocCam to online MATLAB and first-year engineering problem solving courses

Virtual reality to enhance bioprocessing course curriculum **8/2018**
DELTA (Distance Education and Learning Technology Applications) Grant, NCSU; $8,000
Co-PI: Emil Polyak
- Developed virtual reality (VR) for bioprocessing training (bioreactor and anaerobic digester).
- Developed blended course curriculum (traditional classroom & virtual reality education).

Optimization of video games for bioprocessing labs, BTEC Internal Grant, NCSU; $4,500 **8/2018**
- Optimized video games for engineering labs (30 L bioreactor).

VR environment and video games for bioprocessing labs **1/2018**
BTEC Internal Grant, NCSU; $2,000
- Initiated virtual reality (VR) environment and video games for engineering labs (30 L bioreactor).

Peer teaching in engineering courses **5/2017**
Scholarship of Teaching and Learning (SoTL) Grant, Office of Faculty Development, NCSU; $1,250
- Designed peer teaching activities using backwards design and retrieval, spaced, and varied design.
- Implemented the peer teaching activities into the undergraduate fermentation course and lab.

STEM concept dramatization with animated characters **5/2016**
Scholarship of Teaching and Learning (SoTL) Grant, Office of Faculty Development, NCSU; $1,250
Co-PI: Emil Polyak
- Lead student-centered design projects that dramatize biotechnology concepts with animated characters.
- Developed nine prototypes of dramatization with animated characters for biotechnology courses.
- Evaluated the prototypes by assessments from both students and faculty.

CERTIFICATIONS & LICENSES
(selected)

ABET Evaluator, 6/2024

Professional Engineer (No. 052332), State of North Carolina, 5/28/2021

Certificate of Safe Zone Training, WVU, 12/2022

Certificate of FY22 Academic Leadership for Women in Engineering, Society of Women Engineer, 6/2022

Certificate of Inclusive STEM Teaching, 7/2021

Certificate of Effective Teaching Practices, The Association of College and University Educators and the American Council on Education (ACUE), 12/2020

Certificate of National Effective Teaching Institute Online Edition, ASEE, 9/2020

Certificate of Reflective Teaching, Office of Faculty Development, NCSU, 4/2017

Certificate of Downstream Biopharmaceutical Processes: Fundamentals and Design, NCSU, 6/2017

Certificate of Microbial Contamination Control in Bioprocessing Operations, NCSU, 12/2015

Certificate of Hands-on Single-Use Processing for Biopharmaceuticals, NCSU, 10/2015

TEACHING & ADVISING & MENTORING EXPERIENCE

Academic Advising
- Advised ~120 engineering students (majority are from Honors College) each semester as an academic advisor in Fundamentals of Engineering Program (FEP) in Engineering College

Courses/Summer Bridge Program Taught or Optimized

Environmental and Ecological Engineering (Purdue)

CE/EEE 35000 Introduction to Environmental and Ecological Engineering, 3 credits, ~110 students

EEE 48000 Environmental and Ecological Engineering Senior Design, 3 credits, ~70 students

EEE 36002 Environmental Sustainability For Industry, Laboratory, 3 credits, ~20 students

Fundamentals of Engineering (WVU)

ENGR 101H (Honors) Engineering Problem Solving I, 2 credits, varies from 20~150 students

ENGR 102H (Honors) Engineering Problem Solving II (MATLAB), 3 credits, 20~150 students

ENGR 112 Professional Development in Engineering, 2 credits, ~20 students

ENGR 150 Academic Success Skills (for students on probation), 1 credit, ~50 students

ENGR 191 First Year Seminar (Engineering), 1 credit, ~135 students

Academy of Engineering Success (AcES), Summer Bridge Program, 18~35 students

Undergraduate Courses in Civil Engineering and Environmental Engineering (UIUC & NCSU)

CE 382 Hydraulics, 3 credits, ~20 students

CE 378 Environmental Chemistry and Microbiology, 4 credits, ~30 students

CEE 202 Engineering Risk and Uncertainty (Statistics), 3 credits, ~100 students

CEE 330 Environmental Engineering, 3 credits, ~100 students

CEE 437 Water Quality Engineering, 3 credits, ~30 students

Undergraduate & Graduate Courses (70% Labs) in Bioprocessing & Biomanufacturing (NCSU):

BEC 463/563 Fermentation of Recombinant Microorganisms (Bench Scale), 2 credits, ~30 students

BEC 426/526 Upstream Biomanufacturing Laboratory (Pilot Scale), 2 credits, ~30 students

BEC 480/580 cGMP Fermentation Operations (Industry Scale), 2 credits, ~30 students

FDA Investigators, Scientists, & Engineers Professional Development Training Short Course (NCSU):

Upstream Bioprocessing: Intermediate Scale Bioreactor, ~12 participants

Professional Science Master's (PSM) Courses in Biomanufacturing (NCSU):

BEC 590 Industry Case Studies in Therapeutic Antibody Development & cGMP Manufacture, 3 credits, ~30 students

BEC 577 Advanced Biomanufacturing and Biocatalysts, 3 credits, ~30 students

Capstone Design Courses Mentored or Reviewed

CE 479 Integrated Civil Engr Design

CE 481 Environmental Engineering Project

BBS FS 475 Problems and Design in Food and Bioprocessing Science

Courses Reviewed as a Peer Evaluator

MAE 241 Statics

CE483C SPTP: Air Pollution Climate Change

New Course Design-in-Progress

Study abroad program: Cross-disciplinary Engineering Project in China/Singapore

Online Workshops Given

How to Read a Scholarly Article, 2 hours, ~100 participants

Online Short Courses Designed

For underrepresented undergraduate students seeking advanced education in western countries but struggling with difficulties because they are non-native English speakers and unfamiliar with research styles within western education systems.

1. Introduction to Research in Environmental Engineering, 10 hours
2. Fermentation Engineering: Industrial Enzymes in Our Lives, 20 hours
3. Introduction to Academic Writing (Engineering focused), 10 hours

Graduate Student Dissertation Committee

- Wenjuan Mo, doctoral candidate in Education Theory & Practice, Dissertation Proposal "Reckoning with Equitable Education in Appalachian Public Elementary Schools: Perspectives from Chinese Immigrant Mothers", WVU, Committee Chair Dr. Melissa Sherfinski 2024-Present

Industrial Student Research Projects Supervised

- ***Plant Biotechnology PSM***: Analyze key players and research collaboration opportunities in the glucoamylase and phytase enzyme markets.
- Propose potential profitable biochemical production using given fermentation production lines.
- Evaluate potential profitable enzymes to be used in advanced biofuel industry (i.e., cellulosic ethanol production) around the world using given fermentation production lines
- Evaluate the potential of M Corporation and its consolidated bioprocessing (CBP) technology in advanced biofuel industry (from both technical & business points of view) using SWOT analysis.
- Evaluate the feasibility of producing conjugated linoleic acid in animal feed using isomerase (from both technical & business points of view).
- Evaluate major products and players in the detergent enzyme industry and propose a market-entering strategy.

Students Mentored

- Cheyenne Mie Huggins, NSF BCSER project: Effective Strategies to Recruit Underserved Students to Baccalaureate Engineering Success and Transition Programs (Recruit-BEST)
- N'Diya Harris, NSF BCSER project: Effective Strategies to Recruit Underserved Students to Baccalaureate Engineering Success and Transition Programs (Recruit-BEST)
- Ansley Shamblin, Research Apprenticeship Program (RAP) project: effective recruitment strategies to diffuse information of engineering summer bridge programs to prospective students from diverse background
- Isabel Perez, undergraduate research (NASA WV Space Grant Fellowship) project: effective methods to recruit underserved students into an engineering summer bridge program
- Angela Caraballo (from St. Augustine's University), undergraduate research (Virginia-North Carolina Alliance for Minority Participation, NSF S-STEM Scholarship) & BTEC summer intern project: robust green fluorescent protein (GFP) production by *E. coli* in large scale bioreactors
- Danjing Yin, undergraduate research: sustainable vaccine production in developing countries
- Yifan Zhang, graduate (masters) research: integration of algal biofuel/biochemical production with wastewater treatment
- Sara Fisher, BTEC intern project: VR for bioreactor orientation and operation training

- Jason Haskins, undergraduate research & BTEC intern project: VR driven simulation for the training of sterilization procedure on 30 L bioreactors.

RESEARCH EXPERIENCE

Scholarship of Teaching and Learning (SoTL) Projects on STEM Education

- Understand effective recruitment methods for students from diverse background for engineering summer bridge programs
- Designed and incorporated a multidisciplinary engineering project experience into a first-year engineering course for educationally disadvantaged students
- Integrated a conflict resolution session into the freshman engineering problem solving course to improve students' ability to solve interpersonal team conflicts
- Reviewed the effects of employment on undergraduate student academic performance (collaborated with Illinois State University)
- Led multidisciplinary collaboration with College of Design, College of Engineering and Department of Statistics.
- Developed advanced teaching technologies (e.g., virtual reality, augmented reality, virtual dramatization, and video games) for STEM courses and labs
- Designed and implemented active learning and critical thinking scenarios into STEM education.
- Assessed the factors affecting student performances in STEM disciplines.

Professional Engineer Projects in Chemical and Environmental Engineering

- Mentor of capstone design project: retrofit of the wastewater treatment system at BTEC
- Mentor of capstone design project: scale up of fluorescent protein (red, blue, etc.) fermentation
- Leader of process development project and undergraduate research experience: robust green fluorescence protein (GFP) production by *E. coli* in 2 L, 30 L, and 300 L bioreactors
- Capstone design of distillation process (propene – propane)

Academic Research in Chemical, Biological, and Environmental Engineering

- Sustainability of biopharmaceutical manufacturing via life cycle assessment (LCA) of single-use bioprocessing, 2017
- Green water system in wastewater treatment plants (WWTPs) for intelligent energy management in a city, 2012
- Enhanced biohydrogen production from wastes (lignocellulose) using co-culture fermentation, National Science Foundation grant, 2008-2012
- Biofuel (ethanol) production from brewery wastewater by mixed cultures from anaerobic digester, Illinois Council on Food & Agricultural Research Program, 2007-2008
- Recombinant bioluminescent bacteria (*E. coli*) as a biosensor to detect toxic pollutants in water, National Program of Science-Technology Support in China, 2005-2007
- Enhanced nutrient (nitrogen and phosphorus) removal in sequencing batch membrane bioreactor (SBMBR), National Natural Science Foundation of China projects, 2004-2005

Industrial Projects in Agricultural and Environmental Assessment

- Identification of important pathways contributing to the movement of insecticide pyrethroids away from the application site and into urban waterways in California via modeling and statistical

analysis using R and T-SQL.

- Identification of key parameters affecting the environmental fate of herbicide Atrazine in the watershed samples and prediction of Atrazine response in the future via statistical modeling (linear/logistic regression and linear discriminant analysis)

  Identification of different taxa in periphyton or phytoplankton samples to examine the diversity of algal communities in six Eco sites and the factors that drove variation in them

SCHOLARSHIP ACCOMPLISHMENTS

Peer Reviewed Book Chapters:

1) Miller, P. S., Andrus, J. M., Davidson, P. C., Jones, R. L., Harbourt, C. M., & **Zhang, X.** (2014). Determining critical factors controlling off-site transport of pyrethroids in the urban environment. In R. L. Jones, M. Shamim & S. H. Jackson (Eds.), *Describing the behavior and effects of pesticides in urban and agricultural settings* (Vol. 3, pp. 27–64): American Chemical Society. https://doi.org/10.1021/bk-2014-1168.ch003

Peer Reviewed Journal & Conference Proceedings:

1) **Zhang, X.,** & Worthy, R. (2025, June), Applying Engineering for One Planet (EOP) Framework to teach environmental risk in two institutions. *Paper accepted by 2025 ASEE Annual Conference & Exposition*

2) **Zhang, X.,** Michaluk, L., Harris N., & Shamblin, A., (2025, June), Progress of an NSF BCSER Grant: Effective Strategies to Recruit Underserved Students to Engineering Bridge and Success Programs. *Paper accepted by 25 ASEE Annual Conference & Exposition*

3) **Zhang, X.,** DiBacco, R., Kmetz, J., & May, J. (2025, April), Development and Implementation of Escape Rooms for an Engineering Summer Bridge Program. *Paper accepted ASEE IL-IN 2025 Conference*

4) **Zhang, X.,** Michaluk, L., Harris N., & Shamblin, A., (2025, February), *WIP: investigate recruitment strategies used by engineering bridge and success programs to recruit underserved students* Paper presented at 2025 Collaborative Network for Engineering & Computing Diversity (CoNECD), San Antonio, Texas. https://peer.asee.org/54129

5) Hulcher, C., Oppong-Anane, A., **Zhang, X.,** Santiago, L., Hamrick, T., & Almasri, A., (2024, July), *Full Paper: Gender and First-Generation Status Impacts on the Perceived Importance of Technical and Non-Technical Skills for Upper-Level Undergraduate Engineering and Computer Science Courses.* Paper presented at 15th Annual First-Year Engineering Experience Conference (FYEE), Boston, Massachusetts. 10.18260/1-2--48600, https://peer.asee.org/48600

6) Almasri, A., Oppong-Anane, A., Hulcher, C., Hamrick, T., **Zhang, X.,** & Santiago, L., (2024, July), *Full Paper: The Professional and Technical skills that engineering students find most important for success in their major.* Paper presented at 15th Annual First-Year Engineering Experience Conference (FYEE), Boston, Massachusetts. 10.18260/1-2--48605, https://sftp.asee.org/48605

7) Hensel, R. A., & **Zhang, X.**, (2024, June), *Institutionalization Challenges for an NSF S-STEM Program*. Paper presented at 2024 ASEE Annual Conference & Exposition, Portland, Oregon. 10.18260/1-2--47638, https://peer.asee.org/47638

8) Almasri, A., Hamrick, T. R., Hulcher, C., Oppong-Anane, A. B., **Zhang, X.**, & Santiago, L. (2024, June), Student Perspectives on Skills Required in Engineering and Computing Sciences Courses Paper presented at 2024 ASEE Annual Conference & Exposition, Portland, Oregon. 10.18260/1-2--48017, https://peer.asee.org/48017

9) **Zhang, X.,** Wang, L., Hensel, R. A., Perez, I., Hammond, C., Bush, I., & Cao, R. (2023, August). WIP: Investigation of recruitment communication channels and student awareness of an engineering summer bridge program via a cross-disciplinary undergraduate research collaboration. Paper presented at 2023 First-Year Engineering Experience, Knoxville, Tennessee. https://peer.asee.org/44858

10) **Zhang, X.,** Roberts, J.G., & Parrish, A (2023, March). Using a multidisciplinary engineering project in a first-year engineering course for educationally disadvantaged students. Paper presented at 2023 ASEE North Central Section conference, Morgantown, West Virginia. https://peer.asee.org/44695

11) **Zhang, X.,** Santiago, L., & Hines, S. P. (2022, July). WIP: Effectiveness of Recruitment Strategies for Underrepresented Groups in an Engineering Bridge Program. Paper presented at 2022 First-Year Engineering Experience, East Lansing, Michigan. https://peer.asee.org/42256

12) Zhang, Y., & **Zhang, X.** (2021, June). Integration of algal biofuel production with municipal wastewater treatment: a review. In IOP Conference Series: Earth and Environmental Science (Vol. 798, No. 1, p. 012011). IOP Publishing. https://iopscience.iop.org/article/10.1088/1755-1315/798/1/012011

13) Cen, T., **Zhang, X.**, Xie, S., & Li, D. (2020). Preservatives accelerate the horizontal transfer of plasmid-mediated antimicrobial resistance genes via differential mechanisms. Environment international, 138, 105544.

14) **Zhang, X.**, & Roberts, J. G. (2020, March). Integrate a conflict resolution session into the freshman engineering problem solving course to improve students' ability to solve interpersonal team conflicts, Paper presented at 2020 ASEE North Central Section conference, Morgantown, West Virginia. https://peer.asee.org/35739

15) **Zhang, X.**, & Yang, L. (2020, March), The effects of employment on undergraduate student academic performance. Paper presented at 2020 ASEE North Central Section conference, Morgantown, West Virginia. https://peer.asee.org/35748

16) Yin, D. J., & **Zhang, X.** (2019). China's progress and challenges of sustainable vaccine production following international Good Manufacturing Practice standards. *World Latest Medicine Information*, 55, 205-207.

17) Fisher, S., Polyak, E., & **Zhang, X.** (2019). A bioreactor in virtual reality and video games to enhance the learning experience in bioprocess labs. *EDULEARN19 Proceedings*, 5294-5303. doi:10.21125/edulearn.2019.1300

18) **Zhang, X.,** Polyak, E., Ariana, E., Haskins, J. (2019). Incorporating an interactive 360 degree video game into a university-level biomanufacturing lab curriculum, *International Journal of Management and Applied Science (IJMAS)*, 55(3), 39-43

19) **Zhang, X.** (2018). Designing peer teaching using the backward design strategy and retrieval, spaced, and varied practices in undergraduate courses. *10th Annual Conference on Higher Education Pedagogy Proceedings*, 258. Blacksburg, Virginia.

20) **Zhang, X.**, & Polyak, E. (2017). Stories for science classes: Experimental interactive metaphors. *EDULEARN17 Proceedings*, 1332-1339. doi:10.21125/edulearn.2017.1282

21) **Zhang, X.**, Ye, X., Guo, B., Finneran, K. T., Zilles, J. L., & Morgenroth, E. (2013). Lignocellulosic hydrolysates and extracellular electron shuttles for H_2 production using co-culture fermentation with *Clostridium beijerinckii* and *Geobacter metallireducens*. *Bioresource Technology, 147*, 89-95. doi:10.1016/j.biortech.2013.07.106

22) **Zhang, X.**, Ye, X., Finneran, K. T., Zilles, J. L., & Morgenroth, E. (2013). Interactions between

Clostridium beijerinckii and *Geobacter metallireducens* in co-culture fermentation with anthrahydroquinone-2, 6-disulfonate (AH2QDS) for enhanced biohydrogen production from xylose. *Biotechnology and Bioengineering, 110*(1), 164-172. doi:10.1002/bit.24627

23) Ye, X., **Zhang, X.**, Morgenroth, E., & Finneran, K. T. (2013). Exogenous anthrahydroquinone-2,6-disulfonate specifically increases xylose utilization during mixed sugar fermentation by *Clostridium beijerinckii* NCIMB 8052. *International Journal of Hydrogen Energy, 38*(6), 2719-2727. doi:10.1016/j.ijhydene.2012.11.149

24) Ye, X., **Zhang, X.,** Morgenroth, E., & Finneran, K. T. (2012). Anthrahydroquinone-2,6-disulfonate increases the rate of hydrogen production during *Clostridium beijerinckii* fermentation with glucose, xylose, and cellobiose. *International Journal of Hydrogen Energy, 37*(16), 11701-11709. doi:10.1016/j.ijhydene.2012.05.018

25) Ye, X., Morgenroth, E., **Zhang, X.**, & Finneran, K. T. (2011). Anthrahydroquinone-2,6,-disulfonate (AH2QDS) increases hydrogen molar yield and xylose utilization in growing cultures of *Clostridium beijerinckii*. *Applied Microbiology and Biotechnology, 92*(4), 855-864. doi:10.1007/s00253-011-3571-1

26) Zhang, J., **Zhang, X.**, Zhang, D., & Xiu, Z. (2009). A systematic study of preparing alginate microspheres containing BSA by spraying. *Journal of Dalian University of Technology, 49*(6), 822-826.

27) **Zhang, X.**, He, M., Huang, X., & Shi, H. (2007). Construction of recombinant luminescent bacteria for genetic toxicity evaluation of environmental pollutants. *Proceedings of International Workshop on Monitoring and Sensor for Water Pollution Control*, 266-276.

28) Dai, W., Zhang, H., Xiao, J., Yang, F., Zhang, X., & **Zhang, X.** (2007). Enrichment of denitrifying phosphate accumulating organisms in sequencing batch membrane bioreactors. *Huanjing Kexue/Environmental Science, 28*(3), 517-521.

29) Zhang, J., **Zhang, X.**, Guo, N., Zhang, D., & Xiu, Z. (2004). Preparation of alginate microspheres and in vitro releasing behavior of encapsulated bovine serum albumin. *Proceedings of 1st Chinese National Chemical and Biochemical Engineering Annual Meeting*, 1068.

Invited Presentations, Science Talks, Panels, Workshops, Conference Presentations & Posters:

1) **Zhang, X.**, Transforming Education in Sustainability and Environmental Engineering: Technology and Curriculum Perspectives, School of Engineering Education Research Seminar, Purdue University, Oct 2, 2025

2) **Zhang, X.**, Advancing Education in Sustainability and Environmental Engineering through Technological and Curricular Innovation, School of Sustainability Engineering and Environmental Engineering Graduate Research Seminar, Purdue University, Sep 2, 2025

3) **Zhang, X.,** Effective Recruitment Strategies for Engineering Bridge and Pathway Programs, SWE Women in Academia Committee Inaugural Belonging Symposium, Virtual

4) **Zhang, X.**, Polyak, E., Roberts, J., & Sheppard, J., Development and application of a bioreactor in virtual reality (VR) for undergraduate courses, *presented in 25 AEESP Research and Education Conference*

5) Shamblin, A., Harris, N., & **Zhang, X**. Creating an Effective Communicative Channel for Underserved Students, WVU 8th Annual Spring Undergrad Research Symposium, Morgantown, WV, Apr 20, 2024

6) Almasri, A., Hulcher, C., Hamrick, T., **Zhang, X.** & Oppong-Anane, A., Workshop: Tips for Top

Tier Team Teaching, 2023 First-Year Engineering Experience, Knoxville, TN, Jul 30 - Aug 1, 2023

7) **Zhang, X.**, Encourage non-tenure track faculty collaborations for Scholarship of Teaching and Learning (SoTL), 2023 Hills and Hollers Virtual Conference, Virtual, June 29-30, 2023

8) **Zhang, X.**, Santiago, L., & Almasri, A., A cargo airplane project to teach the engineering design process to first year engineering students in online and HyFlex teaching environments. AAC&U's 2021 Virtual Conference on Transforming STEM Higher Education, Virtual, Nov 4-6, 2021, https://www.eventscribe.net//2021/stem/index.asp

9) **Zhang, X.,** DeVries, Z, & Erwin, S., Panel: Job Search Advice from NC State Postdoc Alumni - Focus on faculty careers and working at a national lab, Office of Postdoctoral Affairs, North Carolina State University, Nov 20, 2020

10) **Zhang, X.**, Polyak, E., & Fisher, S., Hybrid biomanufacturing labs: virtual bioreactor (virtual reality and video game). Lilly-Asia Conference: Evidence-based Teaching & Learning, Hong Kong, China, May 16-18, 2019

11) **Zhang, X.**, Caraballo A., & Hetzler Z., Determining fermentation parameters for a robust large-scale green fluorescent protein (GFP) production in recombinant *E. coli*. BioProcess International Conference & Exhibition (BPI), Boston, MA, Sep 4-7, 2018

12) **Zhang, X.** Designing peer teaching using the backward design strategy and retrieval, spaced, and varied practices in undergraduate courses. Conference on Higher Education Pedagogy, Blacksburg, VA, Feb 12-14, 2018.

13) **Zhang, X.**, Energy-water-environment nexus: synergy between environmental engineering and biomanufacturing, Environmental, Water Resources, and Coastal Engineering (EWC) seminar, Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Sep 29, 2017

14) **Zhang, X.**, & Polyak, E. Stories for science classes: Experimental interactive metaphors. EDULEARN17 (9th annual International Conference on Education and New Learning Technologies), Barcelona, Spain, Jul 3-5, 2017

15) **Zhang X.**, & Levis J., Development of life-cycle assessment tools for emerging single-use biomanufacturing systems, AEESP Research and Education Conference, Ann Arbor, MI, Jun 20-22, 2017

16) **Zhang X.**, & Polyak E., Storytelling and narrative for STEM education: interactive metaphors for bioprocess classes, Lilly Conference: Evidence-based Teaching & Learning, Bethesda, MD, Jun 1-4, 2017

17) **Zhang X.**, Bring the magic of active learning to the undergrad fermentation course, Science on Stage Talk, Raleigh, NC, Sep 21, 2016

18) Miller P. S., Davidson P. C., Harbourt C. M., **Zhang X.**, Boast C. C., Jones R. L., Goodwin G. E., & Sliz B. A., Determining critical factors controlling off-site transport of pyrethroids in the urban environment. 246th ACS National Meeting & Exposition, Indianapolis, IN, Sep 8-12. 2013

19) **Zhang X.**, Ye X. F., Finneran K. T., Zilles J. L., & Morgenroth E., Syntrophy of *Clostridium beijerinckii* and *Geobacter metallireducens* in co-culture fermentation with extracellular electron shuttles addition for enhanced biohydrogen production. SIM Annual Meeting, New Orleans, LA, Jul 24-28. 2011

20) Ye X. F., **Zhang X.**, Haluska A., Morgenroth E., & Finneran K. T., Metabolic approach to increase Bio-hydrogen and Bio-butanol production from carbohydrates. WEFTEC 2010, New Orleans, LA, Oct 2-6. 2010

21) **Zhang X.**, Ye X. F., Finneran K. T., & Morgenroth E., Enhanced hydrogen production and substrate utilization in binary culture fermentation with extracellular electron shuttles addition. ASM General Meeting, San Diego, CA, May 23-27. 2010

22) Ye X. F., **Zhang X.**, Morgenroth E., & Finneran K. T., Increased xylose utilization and hydrogen production by adding extracellular hydroquinones in pure culture *Clostridium* fermentation. ASM General Meeting, San Diego, CA, May 23-27. 2010

Supervised Student Technical Consultant Project Reports:

1) Recommended fermentable biochemicals using existing fermentation production lines in the field.
2) Recommended profitable enzymes for advanced biofuel industry using existing fermentation production lines in the field.
3) In-depth evaluation and SWOT analysis of the prospect of M Corporation and its consolidated bioprocessing (CBP) technology in advanced biofuel industry.
4) Feasibility of producing conjugated linoleic acid in animal feed using isomerase.
5) Analysis of major technologies and products in the detergent enzyme industry and market entry strategy for a start-up company.
6) Key players and potential research partners in the glucoamylase and phytase enzyme markets.

LEADERSHIP

Director of Academy of Engineering Success (AcES) Program, WVU Statler College 1/2021-6/2024

- Led the AcES program team with graduates and undergraduate student workers, staff, and faculty to develop new program curricular materials and execute the program
- Sought funding and managed budgets and personnel
- Collaborated with faculty and staff from different fields (STEAM and business), units (e.g., recruitment, advising, departments, student success, leadership program, WVU Foundation, research office, startup incubator), and campuses (WVU Main campus and Beckley campus)

PI of STEM Education and Engineering Education Projects, NCSU & WVU 5/2016-Present

- Initiated several research projects including NSF projects on effective recruitments and technology applications (VR, animation, gamification, DocCam, etc.) in engineering classes and labs
- Built teams including tenure track and non-tenure track faculty, staff, and students, and led projects, capable of leading and managing a team of members with higher titles since a teaching postdoc
- Applied and received several internal grants as a PI to support the project and student researchers since a teaching postdoc
- Managed the budget of the grants and student research employment as a PI
- Completed the projects timely, published/presented findings in several international conferences, and disseminated the outcomes online (https://virtualbioreactor.wordpress.ncsu.edu/)

Leader of bioprocess project and undergraduate research experience, BTEC, NCSU 5/2018-9/2018

- Led a team of a laboratory manager and an undergraduate researcher to complete a process development project and undergraduate research experience on robust green fluorescence protein

(GFP) production by *E. coli* in 2 L, 30 L, and 300 L bioreactors
- Designed the research and supervised the student and staff to complete experiments
- Mentored the team on poster design and presented findings in a conference

PROFESSIONAL SERVICES

Major Committee Assignments:

AEESP Education Committee 3/2025-Present
ASEE Environmental Engineering & Sustainability Division Sponsorship Delegate 1/2025-Present
Society of Women Engineers (SWE) Women in Academia Committee Member 11/2024-Present
Sustainability Education Work Group for Campus Self-study in Sustainability, Institute for a Sustainable Future, Purdue 11/2024-Present
EEE Academics Committee Member, Purdue 8/2024-Present
EEE ABET Program Coordinator, Purdue 8/2024-Present
Engineering Student Pathway Taskforce, WVU Statler College 8/2023-1/2024
Inclusion and Diversity Committee, WVU Faculty Senate 10/2021-5/2024
Advisory Board Member, Faculty Justice Network, WVU 1/2021-5/2024
FEP Representative to Honors College Advisory Committee, WVU 8/2020-5/2024
Women of Color Committee, WVU Council for Gender Equity 8/2020-5/2024
FEP Academic Standard Committee Member, WVU Statler College 8/2019-5/2020, 8/2021-5/2024
FEP Representative to Statler College Computer Committee, WVU Statler 8/2019-5/2022
FEP Program Coordinator Search Committee Member, WVU Statler 9/2022-12/2022
FEP Teaching Assistant Professor Search Committee Member, WVU Statler 9/2019-12/2019, 9/2022-12/2022
Voluntary Faculty Advisor, SWE Student Chapter, WVU 8/2020-5/2022
FEP ABET Committee Member, WVU Statler College 8/2020-12/2021
Outstanding Advisor/Mentor Selection Committee, WVU Statler College 3/2021
FEP Academic Affairs Committee Member, WVU Statler College 8/2019-5/2020
Coordinator, Accelerate to Industry™ (A2i), NCSU Graduate School 4/2018-5/2019
Diversity Officer, NC State Postdoctoral Association 2016-2018
Planning Committee Member, Proposal & Judge Committee, NCSU Postdoctoral Research Symposium 5/2017
Judge, Proposal & Judge Committee, NCSU Postdoctoral Research Symposium 5/2016
Chair, Cultural Awareness and Speech Enhancement (CASE) Seminar, UIUC 2010-2011

Conference Session Chair, Co-chair or Moderator:

- Session Moderator, 2025 ASEE CoNECD Conference
- Session Co-chair & Abstract Reviewer, Innovation in Environmental Engineering and Science Education through Emerging Technologies and Experiential Learning Track, 2025 Association of Environmental Engineering and Science Professors (AEESP) Conference
- Session Moderator, 2023 Hillsand Hollers Virtual Conference
- Session Moderator, 2023 ASEE NCS Conference

Professional and Scholarly Organizations:

Member, Association of Environmental Engineering and Science Professors (AEESP)
Member, American Academy of Environmental Engineers and Scientists (AAEES)
Member, American Society for Engineering Education (ASEE)
Member, Society of Women Engineers (SWE)
Past Member, Society for Industrial Microbiology and Biotechnology (SIMB)
Past Member, American Society for Microbiology (ASM)
Past Member, Illinois Biotechnology Industry Organization (iBIO)
Past Member, Water Environment Federation (WEF)

Panelist/Reviewer:

Ad hoc reviewer for technical journals and conferences 2008-Present

- American Society for Engineering Education
- Water Research
- Biomass & Bioenergy (Outstanding Reviewer)
- BioEnergy Research
- Anaerobe
- Agricultural Engineering International CIGR Journal
- Journal of Sustainable Bioenergy Systems
- Physics of Fluids

Reviewer for professional review service 2014-2019

- American Journal Experts/Rubriq

Panelist/Reviewer for scholarly organization 2014-Present

- Chinese Young Environmental Professionals Association (CYEPA)

Subject Matter Expert and Professional Instructor in Biomanufacturing and Engineering 2016-2017

- Global Training Initiative Program, Senior Vice Provost for Office of Global Engagement, NCSU

Services Related to Student Recruitment, K-12 Connections, and Graduate Student Training:

- WVU High School Visit Day and Decide WVU
- ISPE-CaSA 22nd Annual Life Sciences Technology Conference
- NCSU Engineering Career Fair
- SciTech Expo at NC Museum of Natural Sciences
- ISPE BTEC Student Chapter events
- Microteaching Leader for UIUC Graduate Academy for College Teaching

AWARDS & RECOGNITION

IMPACT Fellow, Purdue University 2025

Teaching for Tomorrow Fellowship Award, Purdue University 2025

Academic Leadership for Women in Engineering, SWE 2022, 2024

Statler College's Educator of the Year Award (Outstanding Teaching), Statler College, WVU 4/2024

Statler College's Advisor/Mentor of the Year Award, Statler College, WVU 4/2022

Outstanding Honors Advisor, Honors College, WVU 5/2021

Travel Awards/Grant for Postdocs and House Officers, Graduate School and the Office of Postdoctoral Affairs, NCSU 9/2018

Professional Development Award/Grant for Postdocs, Graduate School and the Office of Postdoctoral Affairs, NCSU 9/2017

Second Place Award, Schneider Electric (Global 500) Go Green in the City International Competition
Next-generation biofuels in wastewater treatment plants for intelligent city energy management 6/2012

- Integrated algae cultivation into wastewater treatment for nutrient removal and biofuel production.
- Saved up to 50% of operation cost for wastewater treatment plants and produced algae for industrial bio-oil/chemicals production.
- Won 2nd place in the international competition out of almost 600 teams worldwide.

Entrepreneurial Challenge Winner, Graduate Entrepreneurship Course, UIUC 5/2011
Achieved 32.2% profit margin and 34.3% return of investment (ROI), highest in the competition.

Design Competition Winner, Water Environment Federation (WEF) 5/2008
AECOM: Retrofit of Wastewater Facilities

- Proposed the final report to upgrade a wastewater treatment plant for biological nitrogen removal.
- Performed process design, cost evaluation, sensitivity analysis, and dynamic modeling for different scenarios.