

Shakira Renee Hobbs, Ph.D.

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EDUCATION

- PhD. 2017 Civil Engineering, Clemson University
Advisor: Amy E. Landis
Title: “Strategic Sustainability Assessment of Enhanced Anaerobic Digestion of Food and Bioplastic Waste for Municipalities”
- M.S. 2014 Engineering (Environmental), Arizona State University
- B.S. 2012 Environmental Science and Technology, University of Maryland

PROFESSIONAL APPOINTMENTS

- 2022-present Assistant Professor, Samueli Faculty Development Endowed Chair, Civil & Environmental Engineering, University of California, Irvine
- 2019-2022 Assistant Professor, Civil Engineering, University of Kentucky
- 2017-2019 Postdoctoral Research, Department of Engineering Systems and Environment, University of Virginia
- 2015-2017 Graduate Research Assistant, Clemson University, Civil Engineering
- 2014-2015 Graduate Research Assistant, Arizona State University, Sustainable Engineering
- 2015 Instructor, Massachusetts Institute of Technology, 5th Rowe Leadership Programme at Singapore University of Technology and Design
- 2012-2014 Graduate Research Assistant, Arizona State University, Engineering (Environmental)
- 2007-2012 Undergraduate Research Assistant, University of Maryland, Environmental Science and Technology

HONORS

- 2020 NSF EPSCoR RII Track 4: Limited submission nomination for Technology, UKY
- 2019 Johnson & Johnson WiSTEM2D: Limited submission nomination for Technology, UKY
- 2016 Ford Foundation Fellowship Dissertation Competition Honorable Mention
- 2015 Water Association 88th Annual Conference Cash Awardee
- 2014 Dean’s Graduate Award for Academic Excellence

AWARDS

*Principal Investigator, †Co-PI
(Tenure-Track Awards: **\$635,792**)

University of California, Irvine

- 2022- present “ADVANCE Partnership: Strategic Partnership for Alignment of Community Engagement in STEM (SPACES)” NSF ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions Award No. 2245181 **\$1,250,000 (\$79,403 to Hobbs)**†

2023 UCI Dependent Care Trave Award **\$1,000 (\$1,000 to Hobbs) ***

University of Kentucky

2021-2022 “RII Track 4: Development of Rigorous Techniques to Detect Polar Pesticides at Low concentrations” NSF EPSCoR Research Infrastructure Program Award No. 2032938 **\$258,686***

2020 “WACKY: Wastewater Assessment for Coronavirus in Kentucky” UK-CURE COVID-19 Pilot Program UL1TR001998 NIH **\$48,488 (\$13,000 to Hobbs) †**

2020 “Estimation of Watershed Glyphosate Exports in Karst Landscapes” UK-CARES Grant P30 ES026529 NIEHS **\$15,202***

2020 “Acquisition of a LC-MS/MS Dedicated to Environmental Engineering Research” Vice President of Research 2019 Equipment Grant **\$269,501***

University of Virginia

2017-2018 “Sustainable Energy Recovery from Waste from Sittee River Belize” NSF-IGERT Sun: Competitive Innovation Fund **\$14,690***

Clemson University

2016-2017 “Strategic Sustainability Assessment of Enhanced Aerobic and Anaerobic Digestion of Food and Bioplastic Waste for Municipalities” Environmental Research & Education Foundation **\$14,400***

2016-2017 “Evaluating Sustainable Disposal for Compostable Biopolymers” Graduate Student Preparedness Supplement. NSF-IGERT Sun: Competitive Innovation Fund **\$10,000**

2016-2017 “Evaluating Sustainable Disposal for Compostable Biopolymers” Research Experience for Undergraduate Supplement. NSF-IGERT Sun: Competitive Innovation Fund **\$10,000**

Arizona State University

2015-2016 “Sustainable Energy Recovery from Waste for Sittee River, Belize” NSF-IGERT Sun: Competitive Innovation Fund **\$8,000***

2014-2015 NSF IGERT Fellow, Award No. 1144616 **\$30,000***

2014 ASU Graduate Educational Doctoral Enrichment Fellowship **\$25,000***

2014 ASU JumpStart Research Grant Awardee **\$2,000***

2012-2014 More Graduate Education @Mountain State Alliance Scholar **\$2,000***

PUBLICATIONS

*Student advised papers

** Last name formerly McCall

Peer-Reviewed Publications

8. Martin P*, He K, Blaney L, Hobbs SR (2023). Advanced Liquid Chromatography with Tandem Mass Spectrometry Method for Quantifying Glyphosate, Glufosinate, and Aminomethylphosphonic Acid Using Pre-Column Derivatization. *Environmental Science & Technology Water*. <https://doi.org/10.1021/acsestwater.3c00094>
7. **Hobbs SR**, Harris TM, Barr WJ, and Landis AE (2021). Life Cycle Assessment of Bioplastics and Food Waste Disposal Methods. *Sustainability*. 13 (12), 6894 <https://doi.org/10.3390/su13126894>
6. Dixon P*, Mihelcic J, Ergas S, and **Hobbs SR** (2019). Effects of Substrate to Inoculum Ratio on Bioenergy Recovery from Food Waste, Yard Waste and Biosolids via High Solids Anaerobic Digestion. *Environmental Engineering Science* 36 (12), 1459-1465. <https://doi.org/10.1089/ees.2019.0078>
5. **Hobbs SR**, Gordon B, Morton EV, and Klotz L (2019). Black Women Engineering as Allies in Adoption of Environmental Technology: Evidence from a Developing Community in Belize. *Environmental Engineering Science* 36 (8), 851-862. <https://doi.org/10.1089/ees.2018.0463>
4. **Hobbs SR**, Parameswaran P, Astmann B, Devkota J, and Landis AE (2019). Anaerobic Co-digestion of Food Waste and Polylactic Acid: Effect of Pretreatment on Methane Yield and Solid Reduction. *Advances in Material Science and Engineering*, 1-6, <https://doi.org/10.1155/2019/4715904>
3. **Hobbs SR**, Landis AE, Rittmann BE, Young M, and Parameswaran P (2018). Enhancing Anaerobic Digestion of Food Waste through Biochemical Methane Potential Assays at Different Substrate: Inoculum Ratios. *Waste Management*, 71, 612-617. <https://doi.org/10.1016/j.wasman.2017.06.029>
2. **Hobbs SR**, Morton EV, Barclay N, and Landis AE (2018). Sustainability Approach: Food Waste to Energy Solutions for Small Rural Developing Communities. *International Journal of Environmental, Cultural, Economic, and Social Sustainability: Annual Review*. 13 (1) 21-37. <https://doi.org/10.18848/1832-2077/CGP/v13i01/21-37>
1. Unger S, Hottle TA, **Hobbs SR**, Thiel CL, Champion N, Bilec MM, and Landis AE (2017). Do Single-use Medical Devices Containing Biopolymer Reduce the Environmental Impacts of Surgical Procedures Compared with their Plastic Equivalents? *Journal of Health Services Research and Policy*. 22 (4), 218-225. <https://doi.org/10.1177/1355819617705683>

Peer-Reviewed Conference Proceedings

7. Astmann B*, Martin P*, and **Hobbs SR** (2020). Monitoring and Modeling Glyphosate Transport in the Belize River Watershed. *2020 IEEE Global Humanitarian Technology Conference (GHTC)* (pg. 1-8). IEEE.
6. Morton EV and **Hobbs SR** (2018). *Sustainable Waste Management Strategies for Sittee River, Belize*. *7th International Symposium on Energy from Biomass and Waste*. International Waste Working Group.
5. **Hobbs SR**, Harris TM, Barr WJ, Landis AE (2018). The World's Environmental Problem: Causes, Effects and Solutions of Food and Plastic Pollution. *International Conference on Environmental Science and Technology*. American Academy of Sciences.
4. **Hobbs SR**, Devkota J, Parameswaran P, and Landis AE (2016). Environmental Implications of Food and PLA Waste Management Options. *International Conference on Environmental Science and Technology*. American Academy of Sciences.
3. **Hobbs SR**, Parameswaran P, Astmann B, Devkota J, and Landis AE (2016). Enhanced Anaerobic Digestion of Bioplastic and Food Waste. *6th International Symposium on Energy from Biomass and Waste*, International Waste Working Group (***Paper selected for publication in Waste Management***)
2. ****McCall SR** and Dalrymple OO (2015). Research to Practice: Teaching Energy Concepts using Chain Reaction Machines. *121 ASEE Annual Conference & Exposition*. American Society of Engineering Education.
1. ****McCall SR** and Dalrymple OO (2015). Curriculum Exchange: Teaching Energy Concepts using Chain Reaction Machines. *121 ASEE Annual Conference & Exposition*. American Society of Engineering Education.

Book Chapter Publications

1. Landis, A. E., **Hobbs, S. R.**, Newby, D., Wilson, J. M., & Pincus, T. (2022). Environmental Footprint and Life Cycle Assessment of Poly (Lactic Acid). In L.-T. L. Rafael A. Auras, Susan E.M. Silke, Hideto Tsuji (Ed.), *Poly (lactic acid): Synthesis, Structures, Properties, Processing, Applications, and End of Life* (2nd ed., pp. 688): Wiley.

Pending Publications

1. Martin P*, **Hobbs SR** (Pending). Spatial Modeling and Mapping of Glyphosate Potential Exposure Zones Using GIS and Remote Sensing for Sustainable Environmental Management.

PRESENTATIONS

** Moved to online format due to COVID-19*

Invited Presentations

- “Responsible Engineering for Intentionally Marginalized Communities.” University of Michigan, Ann Arbor, MI. April 17, 2023.

- “Environmental & Social Sustainability: Analysis of ‘Black Gold.’” Carnegie Mellon University. Pittsburgh, PA. March 25, 2022.
- “Food-Energy-Water Nexus: A Systems Approach to Resolving Health Disparities in Marginalized Communities.” University of California-Irvine, Irvine, CA. February 2, 2022.
- “Utilization of Waste PLA and Assessment of its Environmental Sustainability.” Advancing Synergistic Waste Utilization as Biofuels Feedstocks: Preprocessing, Co-products, and Sustainability Workshop, Department of Energy- Bioenergy Technologies Office 2021. *
- “Working with Communities & Innovating with Food Waste and Wastewater.” AEESP Converging COVID-19, environment, health, and equity. November 13, 2020. *
- “The Intersection of Wastewater, Food and Human Waste.” University at Buffalo, Buffalo, NY, December 4, 2020. *
- “Systems Approach to Sustainable Engineering at the Food-Energy-Water Nexus.” University of Delaware, Newark, DE, November 20, 2020. *
- “Systems Thinking for Method Development and Sustainable Applications.” Colorado School of Mines, Golden, CO, October 30, 2020. *
- “Engineering for Sustainability and Enhanced Technology Integration with Anthropogenic Waste.” Purdue University, West Lafayette, IN, October 15, 2020. *
- “To Be Young, Gifted And Black: Open Your Heart To What I Mean.” University of San Diego, San Diego, California, September 10, 2020. *
- “Understanding the Value in Waste to Make a Global Impact.” University of California, Berkeley, Berkeley, California, January 31, 2020.
- “Optimizing End-Use Application of Bioplastics and Food Waste by Recovering VFAs” United States Department of Agriculture–Agriculture Research Service Albany, California, January 30, 2020.
- “Application of Sustainable Engineering for the Global Village” Syracuse University. Syracuse, New York, February 8, 2019.
- “Novel Approaches to the Food-Energy-Water Nexus Challenges” University of Missouri. Columbia, Missouri, November 30, 2018.
- “Addressing Humanitarian and Global Issues at the Food-Energy-Water Nexus” University of Kentucky. Lexington, Kentucky, November 19, 2018.

- “Engage First, Engineer Together” Clemson University. Clemson, South Carolina, October 5, 2018.
- “Biodigesters, Belize, and Black Women Engineers: The intersection of knowledge and global partnership” University of South Florida. Tampa, FL, April 13, 2018.
- “Waste to Energy: A Systems Approach to Managing Bioplastics and Food Waste.” University of Virginia. Charlottesville, VA, March 2, 2018.
- “What to do with them: Food waste and Bioplastics.” Rochester Institute of Technology. Rochester, NY, June 2, 2017.
- “Innovative Waste Techniques for Food waste and Bioplastics.” Wayne State University. Detroit, MI, May 31, 2017.
- “Waste to resources: capturing methane production for fuel and aggregates for soil amendments.” University of Southern California. Los Angeles, CA, April 20, 2017.
- “Sustainable Food Waste and Bioplastic to Energy Resources.” North Dakota State University. Fargo, ND, March 23, 2017.

Departmental Presentations

- “Adaptive Strategies for Co-creating with Historically and Intentionally Marginalized Communities.” April 2023.
- “The Intersection of Wastewater, Food and Human Waste” Seminar, Department of Chemical Engineer, University of Kentucky, December 2020. *
- “Global Sanitation and Waste Management Abroad” Global Health Delivery Seminar, College of Medicine, University of Kentucky, November 2019.

CONFERENCE ACTIVITIES

** graduate student presenter; † undergraduate student presenter; §Moved to online format due to COVID-19; ‡cancelled due to COVID-19*

Conference Presentations

1. “Selecting the Optimal Column and Conditions for Liquid Chromatography-Mass Spectrometry Detection of Glyphosate and Other Compounds in Roundup.” American Chemical Society Fall 2023 Meeting. August 2023. *†
2. “Predicting the Transport of Glyphosate in Karst Geology: A Case Study Impact on Water Quality and Public Health.” American Chemical Society Fall 2023 Meeting. August 2023. *†
3. “Evaluation and Selection of Offline Solid Phase Extraction Cartridges for Multi-Residue Determination of Organophosphorus Pesticides.” Association of Environmental Engineering and Science Professors. June 2023. *

4. "Assessment of Glyphosate, Glufosinate, & Aminomethylphosphonic Acid: Presence in Central Kentucky Watersheds Using Liquid Chromatography-Tandem Mass Spectrometry." American Chemical Society Spring 2023 Meeting. March 2023. *
5. "HPLC-UV Determination of Glyphosate, Aminomethylphosphonic Acid, and Glufosinate." American Chemical Society Spring 2023 Meeting. March 2023. *
6. "Spatial Modeling of Potential Zones for Glyphosate and Glufosinate Occurrence in Karstic Agricultural Watershed." Association of Environmental Engineering and Science Professors. June 2022. *
7. "Modeling Glyphosate Potential Zones in the Belize River Watershed Using GIS Remote Sensing Techniques.: 29th International Symposium on Sustainable Systems and Technology. June 2022. *
8. "Poly(lactic acid) Production Plant in Belize" Poster presentation at University of Kentucky Sustainability Showcase. (Placed 2nd in competition) October 5, 2021. *
9. "Persistence of Glyphosate, Glufosinate, and AMPA in Karstic Central Kentucky Watersheds" Oral Presentation at American Chemical Society Spring Meeting 2021. August 2021. *
10. "Investigating Agricultural Runoff in the Belize River Watershed" Poster presentation at National Conference on Undergraduate Research May 2020. ^{†‡}
11. "Life Cycle Assessment of Polylactic Acid Industrial Waste Management Techniques in Belize" Oral Presentation at AIChE 2nd Sustainable Waste Management Conference. September 2020. *[§]
12. "Monitoring and Modeling Glyphosate Transport in Belize River Watershed" Oral presentation at IEEE Global Humanitarian Technology Conference. November 2020. *[§]
13. "Evaluating Soil & Water Assessment Tool (SWAT) Capabilities to: Stimulate Glyphosate Transport on a Watershed Scale" Oral Presentation at Society of Environmental Toxicology and Chemistry 40th Annual Meeting. November 2019. *
14. "Enabling Engineering Projects through Community Engagement: A Workshop Approach" Poster Presentation at Workshop: Ethics and Responsible Innovation in STEM. March 2018.
15. "Sustainable Waste Management Strategies for Sittee River, Belize" Oral presentation at 7th International Symposium on Energy for Biomass and Waste. October 2018.
16. "Renewable Energy Production Strategies for Promoting Environmental and Social Sustainability for Sittee River Belize" Poster Presentation at 2nd Academic Research Leadership Network Symposium. March 2016.

17. “Methane Recovery from the Anaerobic Digestion of Food and Pretreated Bioplastic Waste”
Oral presentation at 20th Annual Green Chemistry & Engineering Conference. American Chemical Society. June 2016.
18. “Anthropogenic Waste to Energy: Food Waste and Bioplastic as Renewable Energy Sources”
Oral Presentation at NSBE 41st Annual Convention. March 2015.
19. “Feasibility Study of Food Waste and Bioplastic to Energy” Poster Presentation at 88th Annual Conference & Exhibition. May 2015.
20. “Optimizing Plug-flow Anaerobic Digester to teach K-12 Basic Processes of Anaerobic Digestion. Oral Presentation at 10th Annual Gatekeeper Regulatory Roundup. February 2014.
21. “Experimental Design to Improve Biogas Production from Cow Manure” Poster Presentation at ASU Innovation Showcase. April 2014.

TEACHING ACTIVITIES

** Developed new course; † Undergraduate course; ° Graduate course; § Moved to online format due to COVID-19*

University of California, Irvine

Ph.D. Graduate Student Advisee

2023-present	Alexis Woods
2022-present	Pedro Martin

Undergraduate Student Mentorship

2023-present	Brooke Medina
2023-present	Maya Al Ajouz
2023-present	Sophia Marie Koelsch
2022-present	Kendrick Pham
2022-2023	Alexander Ramirez, B.S. Biological Sciences & B.A. Classics
2022-2023	Yvonne Wen, B.S. Civil & Environmental Engineering

University of Kentucky

Ph.D. Graduate Student Advisee

2019-2022	Pedro Martin
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Graduated M.S. Thesis

2021-2022	Ja'Maya Wilson
2019-2021	Dennis Newby, M.S. Civil Engineering
2019-2020	Barbara Astmann, M.S. Civil Engineering

Undergraduate Student Mentorship

2021-2022	Alexis Woods, B.S. Material Science Engineering
2021	Daniel Honeycutt, B.S. Civil Engineering
2020-2021	Tamunoemi Braide, B.S. Chemical Engineering

Course Instruction

Fundamentals and Applications of Sustainable Engineering*†§ (co-taught)	Spr 22
Fundamentals and Applications of Sustainable Engineering*†§ (co-taught)	Spr 21
Sustainable Development Engineering *†ø§	Spr 2020
Humanitarian Engineering Principles, Processes, and Modeling *†ø §	Fall 2019 & 20

University of Virginia

Graduate Student Mentorship

2017-2019	Bethany Gordon
2018-2019	Barbara Astmann

Course Instruction

Introduction to Environmental Engineering †	Fall 2018
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Clemson University

Undergraduate Student Mentorship

2016-2017	Barbara Astmann
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Course Instruction

Applications of Sustainability †	Fall 2016
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Arizona State University

Undergraduate Mentor for Shades Program

Underrepresented students in STEM fields

Undergraduate Student Mentorship

2015	Rikin Patel
2014-2015	Roquesan Luckett

Course Instruction

Make Your Ideas Happen †	Fall 2014
Critical Inquiry in Engineering †	Spr 2013

Massachusetts Institute of Technology

Singapore University of Technology and Design

5 th Rowe Leadership Programme †	Sum 2014
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Other Institutions

2013-2014	STEAM Machines Camp Instructor, Red Mountain High School (Gilbert, AZ) Tonto Creek Camp (Payson Arizona) and Bishop Anstey High School (Trinidad & Tobago)
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SERVICE

Professional Service

2023	ASEEP Community Engaged Research Workshop Co-Chair
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2023	BioGals Sustainability Experience
2022	NSF Reviewer: Broadening Participation in Engineering (BPE)
2020 & 2021	DOE Reviewer: Bioenergy Technologies Office (BETO)
2020	Conference Steering Committee Member, AIChE 2 nd Sustainable Waste Management Conference
2019 & 2020	NSF Reviewer: Chemical, Bioengineering, Environmental and Transport Systems (CBET)
2020	AEESPConvergingCOVID19 Workshop Panelist
2019	Panelist for conference ASEEP Workshop
2018	NSF Reviewer: Engineering Research Center (ERC)
2014-present	Reviewer: ES&T, Journal of the Air & Waste Management Association, Applied Energy, International Journal of Environmental Sustainability, ASEE Conference proceedings

Departmental and College Service

2023	UCI Department of Civil and Environmental Engineering Teaching Quality Committee
2022	UKY Department of Civil Engineering Chair Search Committee Member
2019-2021	College of Engineering Diversity and Inclusion Committee Member
2019- 2022	UKY Department of Civil Engineering Research Committee Member
2019- 2022	UKY Department of Civil Engineering Humanitarian Engineering Faculty Member
2019	UKY Women in Engineering (WiE) Explore Sumer Camp Facilitator
2019	UKY Recruiter at National Society of Black Engineers (NSBE) Conference
2016-2017	Clemson Graduate Professional Development Coordinator
2016	Co-created and lead Clemson REU Consortium
2014-2015	Vice President of ASU National Society of Black Engineers Chapter
2010-2011	Regional Membership Chair of National Society of Black Engineers
2009-2010	President of University of Maryland National Society of Black Engineers Chapter

University Service

2021	Panelist for UKY CELT Panel: Dynamic Teaching and Learning Activities Online
2020	Created and Hosted UKY “You Belong Here: Black Students in Engineering Event”
2017	Co-hosted Faculty and Graduate Women Communicating Science at Clemson
2016-2017	President of Clemson Black Graduate Student Association
2011-2012	University of Maryland Solar Decathlon Team Member

Community Service

2021	Suds and Science Presentation at WestSix Brewery
2020	Science is Everything Presentation at Creaux Restaurant

2019 Urban League of Lexington-Fayette 2019 Empowerment Banquet
 2015-present President & CEO of BioGals (www.biogals.com)

MEDIA

<http://www.shakirahobbs.com/media/> for links

2023 “New Product Turns Food Waste Into Renewable Energy” *Public News Service*
 2022 “Gardeners transform food waste into fuel” *The Farmville Herald*
 2022 “Engineering alum empowers women of color to engineer solutions for sustainable development” *ASU News*
 2021 “Shakira Hobbs awarded NSF Grant to Develop Analytical Methods for Detecting Pesticides” *UKY College of Engineering*
 2020 “UK Researchers Advancing Wastewater Testing to Track COVID-19” *UKNOW University of Kentucky News*
 2020 “UK Researchers Working on Study to See How COV-19 Virus Survives in Water” *WKYT Lexington, Kentucky*
 2020 “Researchers: Testing Sewage could detect COVID-19 early” *WKYT Lexington, Kentucky*
 2020 “Biodegradable,” a Magic Word for Environmentally-Minded Consumers, Isn’t Always a Green Panacea” *FairWarning*
 2019 “Humanitarian Engineering with Shakira Hobbs” *UKY College of Engineering*
 2019 “Our Journey with BioGals-Creating a Non-Profit to Build Waste to Energy Systems in Central America” *Earth Shift Global*
 2019 “From Biowaste to Biogas: Empowering this community to Fuel itself” *UVA Today*
 2018 “A sense of belonging: Black American women engineers and biodigesters” *Stabroek News*
 2017 “Today’s STEM Leaders, Tomorrow’s Innovators” *Women of Color Magazine Volume 16 Issue 1*

PROFESSIONAL MEMBERSHIPS

2020-present American Institute of Chemical Engineers
 2015-present Association of Environmental & Science Professor
 2012-present Academic Research Leadership Network
 2009-present National Society of Black Engineers