

ADAM L. SMITH

University of Southern California
Civil and Environmental Engineering
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EDUCATION

University of Michigan, Ann Arbor, Michigan

Ph.D. in Environmental Engineering, August 2014

Dissertation: "Low-Temperature Anaerobic Membrane Bioreactor Treatment of Domestic Wastewater"

Advisors: Dr. Lutgarde Raskin and Dr. Steven Skerlos

M.S.E. in Environmental Engineering, 2011

Advisors: Dr. Lutgarde Raskin and Dr. Steven Skerlos

Marquette University, Milwaukee, Wisconsin

B.S. in Civil Engineering, May 2009

Advisor: Dr. Daniel Zitomer

POSITIONS HELD

- **Associate Professor**, University of Southern California (2020-present)
- **Assistant Professor**, University of Southern California (2014-2020)
- **Graduate Student Research Assistant**, University of Michigan (2009-2014)
- **Graduate Student Instructor**, University of Michigan (Fall 2010)
- **Environmental Technician**, URS Corporation, Milwaukee, Wisconsin (2008-2009)
- **Undergraduate Student Research Assistant**, Marquette University, Milwaukee, Wisconsin (2008)

TEACHING & MENTORING EXPERIENCE

- Course Instructor** CE 110, Introduction to Environmental Engineering, F20, F21, F22 (co-taught with Drs. Amy Childress, Dan McCurry, Kelly Sanders, and George Ban-Weiss)
- CE 410L, Introduction to Environmental Engineering Microbiology, F19, S21, F21, F22
- CE 210L, Introduction to Environmental Engineering Microbiology, F17, F18
- CE 503, Microbiology for Environmental Engineers, S16, S17
- CE 553, Biological Processes in Environmental Engineering, F14, F15, F16, S18, S19, S20, S21, F22
- Graduate Student Instructor** CEE 360 Environmental Process Engineering, University of Michigan, Fall 2010 (Instructor: Lutgarde Raskin)
- Postdoctoral Advising**
- Moustapha Harb, 2017-2018
 - Syeed Md Iskander, 2019-2020
 - Ali Zarei-Baygi, 2020-2021

Graduate Advising

Ph.D. Students:

- Michael Saldana, 2022-present
- Christelle Bou Nehme Sawaya, 2022-present
- Harmita Golwala, 2021-present
- Raven Althouse, 2020-present
- Connor Saucedo, 2020-present
- Bianca Costa, 2019-present
- Phillip Wang, 2017-2022
- Jia (Iris) Wang, 2017-2018
- Tranice' Warner, 2017-2019
- Stephanie Gee, 2016-2019
- Ali Zarei-Baygi, 2016-2020
- Yamrot Amha, 2015-2019
- Siming Chen, 2015-2019

Master's Students:

- Jiayu Geng, 2022-present
- Bhavik Shah, 2022-present
- Yuan Xu, 2022
- Litao Shen, 2021-2022
- Wensi Liu, 2021-2022
- Hanlin Cui, 2020-2021
- Harmita Golwala, 2020
- Yushu Cheng, 2019-2020
- Juhe Liu, 2019-2020
- Qin Dong, 2019-2020
- Wenjun Zhao, Fall 2018
- Jewls Lagman, Summer 2018
- Karim Taha, 2017
- Jia (Iris) Wang, Fall 2016
- Pooja Sinha, 2016-2017
- Barbara Hollo de Andrade, Spring 2015
- Adilson Becker Jr., 2015-2016
- Kevin Yu, 2015-2016

Dissertation Committee

- Phillip Wang, 2022 (CEE; advisor)
- Esther Lou, 2022 (Rice University)
- Rintaro Moriyasu (Dornsife Ocean Sciences)
- Jiaming Shi, 2021 (CEE)
- Xin Wei, 2021 (CEE)
- Allyson McGaughey, 2020 (CEE)
- Ali Zarei Baygi, 2020 (CEE; advisor)
- Hong Cheng, 2019 (KAUST)
- Siming Chen, 2019 (CEE; advisor)
- Yamrot Amha, 2019 (CEE; advisor)
- Christopher Morrow, 2018 (CEE)
- Alon Chapovetsky, 2018 (Chemistry)
- Ryan Gustafson, 2018 (CEE)

Qualifying Committees

- Phillip Wang, 2022
- Esther Lou, 2021 (Rice University)
- Jiaming Shi, 2020
- Xin Wei, 2020
- An Xin, 2020
- Rintaro Moriyasu, 2020
- Ali Zarei-Baygi, 2019
- Allyson McGaughey, 2019
- Sophia Plata, 2019
- Siming Chen, 2018
- Yamrot Amha, 2018
- Ryan Gustafson, 2018
- Christopher Morrow, 2017
- Alon Chapovetsky, 2015

Screening Committees

- Haotian Cai, 2023
- Michael Saldana, 2023
- Christelle Bou Nehme Sawaya, 2023
- Raven Althouse, 2022
- Connor Saucedo, 2022
- Harmita Golwala, 2022
- Marella Schammel, 2022
- Bana Dahdah, 2022
- Shounak Joshi, 2020
- Bianca Costa, 2020
- Xin Wei, 2018
- Jiaming Shi, 2018
- Phillip Wang, 2018
- Jia Wang, 2018
- Stephanie Gee, 2018
- Ali Zarei, 2017
- Lauren Crawford, 2017
- Ryan Gustafson, 2016
- Siming Chen, 2016
- Yamrot Amha, 2016
- Christopher Morrow, 2015

Undergraduate Advising in Research

- Dani Fedele, 2022-present
- Anette Sandoval, 2021-present
- Ciara Anderson, 2022
- Lauren Anderson, 2021-2022
- Noor Al-Riyami, 2021-2022
- Rajuan Nelson, 2018 – 2019
- Christina Najm, 2018 - 2020
- Eli Kotelov, 2018
- Jacob Totaro, 2018 - 2019
- Jake Lam, 2017 - 2018
- Alexis Barge, 2016 - 2018
- Ben Johnson, 2015 - 2016
- Jewls Lagman, 2015 - 2017

- Jeremy Pathmanabhan, 2015

High School Student Advising in Research

- Ana Baena Chavez, Summer 2022
- Gizel Lee Morales, Summer 2022
- Kevin Zaldana Mejia, Summer 2022
- Terence Mathews II, Summer 2022
- Miriam Garcia, Summer 2021
- Roberto Camacho, Summer 2021
- Chiara Nandapurkar, Summer 2021
- Joseph Chen, Summer 2020
- Nicholas Luo, Summer 2020
- Sarah Burke, Summer 2019 and 2021
- Anouk Braun, Summer 2018
- Noel Ermer, Summer 2017 and 2018
- Caroline Kim, 2015 - 2017
- Garret Kageyama, Summer 2015
- Chloe Huang, Summer 2015

Guest Lectures

CE 110 Introduction to Environmental Engineering, University of Southern California, Fall 2016

ENGR 102 Engineering Freshman Academy, University of Southern California, Fall 2014

CEE 465 Environmental Process Engineering, University of Michigan, Winter 2014

CEE 360 Environmental Process Engineering, University of Michigan, Winter 2011, 2012, and 2014

CEE 582 Environmental Microbiology, University of Michigan, Fall 2011

Workshops Attended

Viterbi Engaged Learning Retreat, University of Southern California, 2014

Graduate Student Instructor Training, University of Michigan, 2010

PUBLICATIONS

Wang, P., and **A.L. Smith**, 2023. Emergence of mobile colistin resistance genes within Los Angeles County wastewater. *Environmental Science & Technology Letters* 10, 4, 316-321.

Knyazev S. K. Chhugani, V. Sarwal, R. Ayyala, H. Singh, S. Karthikeyan, D. Deshpande, P.I. Baykal, Z. Comarova, A. Lu, Y. Porozov, T.I. Vasylyeva, J.O. Wertheim, B.T. Tierney, C.Y. Chiu, R. Sun, A. Wu, M.S. Abedalthagafi, V.M. Pak, S.H. Nagaraj, **A.L. Smith**, P. Skums, B. Pasaniuc, A. Komissarov, C.E. Mason, E. Bortz, P. Lemey, F. Kondrashov, N. Beerwinkel, T. Tsan-Yuk Lam, N.C. Wu, A. Zelikovsky, R. Knight, K.A. Crandall, and S. Mangul, 2022. Unlocking capacities of genomics for the COVID-19 response and future pandemics. *Nature Methods* 19, 374-380.

Wang, P., A. Zarei-Baygi, J Delgado Vela, and **A.L. Smith**, 2022. Metagenomic analysis of the antibiotic resistance risk between an aerobic and anaerobic membrane bioreactor. *Environmental Science & Technology: Water*.

Al-Faliti, M., N. Kotlarz, C. McCall, A.R. Harris, **A.L. Smith**, L.B. Stadler, F.L. de los Reyes, and J. Delgado Vela, 2022. Comparing rates of change in SARS-CoV-2 wastewater load and clinical cases in 19 sewersheds across four major metropolitan areas in the United States. *Environmental Science & Technology: Water*, 2(11), 2233-2242.

- Cui, H., and **A.L. Smith**, 2021. Impact of engineered nanoparticles on the fate of antibiotic resistance genes in wastewater and receiving environments: A comprehensive review. *Environmental Research*, 204.
- Yang, S., B. Zhao, I.A. Aravind, Y. Wang, B. Zhang, S. Weng, Z. Cai, R. Li, A. Zarei-Baygi, **A.L. Smith**, M.A. Gundersen, and S.B. Cronin, 2021. CO₂ reduction to higher hydrocarbons by plasma discharge in carbonated water. *ACS Energy Letters*.
- Wang, P., A. Zarei-Baygi, C. Saucedo, S.M. Iskander, and **A.L. Smith**, 2021. Long-term surveillance of wastewater SARS-CoV-2 in Los Angeles County. *Environmental Science: Water Research & Technology*, 12.
- Iskander, S.M., Y.M. Amha, P. Wang, Q. Dong, J. Liu, M. Corbett, and **A.L. Smith**, 2021. Investigation of fats, oils, and grease co-digestion with food waste in anaerobic membrane bioreactors and the associated microbial community using MinION sequencing. *Frontiers in Bioengineering and Biotechnology*.
- Harb, M., A. Zarei-Baygi, P. Wang, C. BouNehme Sawaya, D.L. McCurry, L.B. Stadler, and **A.L. Smith**, 2021. Antibiotic transformation in an anaerobic membrane bioreactor linked to membrane biofilm microbial activity. *Environmental Research*.
- Golwala, H., X. Zhang, S.M. Iskander, **A.L. Smith**, 2021. Solid waste: An overlooked source of microplastics to the environment. *Science of the Total Environment*.
- Zarei-Baygi, A. and **A.L. Smith**, 2020. Intracellular versus extracellular antibiotic resistance genes in the environment: Prevalence, horizontal transfer, and mitigation strategies. *Bioresource Technology*.
- Zarei-Baygi, A., M. Harb, P. Wang, L.B. Stadler, and **A.L. Smith**, 2020. Membrane fouling inversely impacts intracellular and extracellular antibiotic resistance gene abundances in the effluent of an anaerobic membrane bioreactor. *Environmental Science: Water Research & Technology*.
- Bivins, et al., 2020. Wastewater-based epidemiology: Global collaborative to maximize contributions in the fight against COVID-19. *Environmental Science & Technology* 54(13), 7754-7757.
- Rice, E.W., P. Wang, **A.L. Smith**, and L.B. Stadler, 2020. Determining hosts of antibiotic resistance genes: A review of methodological advances. *Environmental Science & Technology Letters*.
- Lou, E.G., M. Harb, **A.L. Smith**, L.B. Stadler, 2020. Livestock manure improved antibiotic resistance gene removal during co-treatment of domestic wastewater in an anaerobic membrane bioreactor. *Environmental Science: Water Research & Technology*.
- Harb, M., N. Emer, Christelle BouNehme Sawaya, and **A.L. Smith**, 2020. Increased applied voltage in the presence of GAC enhances microbial activity and methane production during anaerobic digestion of food waste. *Environmental Science: Water Research & Technology*.
- Zarei-Baygi, A., M. Harb, P. Wang, L.B. Stadler, and **A.L. Smith**, 2020. Microbial community and antibiotic resistance profiles of biomass and effluent are distinctly affected by antibiotics addition to an anaerobic membrane bioreactor. *Environmental Science: Water Research & Technology*.
- Harb, M., P. Wang, A. Zarei-Baygi, M. Plumlee, and **A.L. Smith**, 2019. Background antibiotic resistance and microbial communities in an urban aquifer influence advanced purified water after groundwater recharge. *Environmental Science & Technology Letters*.
- Chen, S. and **A.L. Smith**, 2019. Performance and microbial ecology of methane-driven microbial fuel cells at temperatures ranging from 25 to 5°C. *Water Research* 166, 115036.
- Amha, Y.M., M. Corbett, and **A.L. Smith**, 2019. Two-phase improves performance of anaerobic membrane bioreactor treatment of food waste at high organic loading rate. *Environmental Science & Technology* 53(16), 9572-9583.
- Harb, M., E. Lou, **A.L. Smith**, and L.B. Stadler, 2019. Perspectives on the fate of micropollutants in mainstream anaerobic wastewater treatment. *Current Opinion in Biotechnology* 57, 94-100.

- Zarei-Baygi, A., M. Harb, P. Wang, L.B. Stadler, and **A.L. Smith**, 2019. Evaluating antibiotic resistance gene correlations with antibiotic exposure conditions in anaerobic membrane bioreactors. *Environmental Science & Technology* 53(7), 3599-3609.
- Chen, S., M. Harb, P. Sinha, and **A.L. Smith**, 2018. Emerging investigator series: Revisiting greenhouse gas mitigation from conventional activated sludge and anaerobic-based wastewater treatment systems. *Environmental Science: Water Research & Technology* 4(11), 1739-1758.
- Gee, S., B. Johnson, and **A.L. Smith**, 2018. Optimizing electrospinning parameters for piezoelectric PVDF nanofiber membranes. *Journal of Membrane Science* 563, 804-812.
- Cho, K., Y. Jeong, K.W. Seo, S. Lee, **A.L. Smith**, S.G. Shin, S. Cho, and C. Park, 2018. Effects of changes in temperature on treatment performance and energy recovery at mainstream anaerobic ceramic membrane bioreactor for food waste recycling wastewater treatment. *Bioresource Technology* 256, 137-144.
- Chen, S. and **A.L. Smith**, 2018. Methane-driven microbial fuel cells recover energy and mitigate dissolved methane emissions from anaerobic effluents. *Environmental Science: Water Research & Technology* 4(1), 67-79.
- Amha, Y.M., Z. Anwar, C. Jacobsen, L. Stadler, T.M. Webster, and **A.L. Smith**, 2017. Inhibition of anaerobic digestion processes: Application of molecular tools. *Bioresource Technology* 247, 999-1014.
- Amha, Y.M., P. Sinha, J. Lagman, M. Gregori, and **A.L. Smith**, 2017. Elucidating microbial community adaptation to anaerobic co-digestion of fats, oils, and grease and food waste. *Water Research* 123, 277-289.
- Smith, A.L.**, T. Shimada, and L. Raskin, 2017. A comparative evaluation of community structure in full-scale digesters indicates that two-phase digesters exhibit greater microbial diversity than single-phase digesters. *Environmental Science: Water Research & Technology* 3(2), 304-311.
- Becker Jr., A.M., Yu, K., Stadler, L.B., and **Smith, A.L.**, 2017. Co-management of domestic wastewater and food waste: A life cycle comparison of alternative food waste diversion strategies. *Bioresource Technology* 233, 131-140.
- Webster, T.M., **Smith, A.L.**, Reddy, R., Pinto, A.J., Hayes, K., and L. Raskin, 2016. Anaerobic microbial community response to methanogenic inhibitors 2-bromoethanesulfonate and propynoic acid. *Microbiology Open* 5(4), 537-550.
- Smith, A.L.**, S.J. Skerlos, and L. Raskin, 2015. Membrane biofilm development improves COD removal in anaerobic membrane bioreactor wastewater treatment. *Microbial Biotechnology* 8(5), 883-894.
- Smith, A.L.**, S.J. Skerlos, and L. Raskin, 2015. Anaerobic membrane bioreactor treatment of domestic wastewater at psychrophilic temperatures ranging from 15 to 3°C. *Environmental Science: Water Research & Technology* 1(1), 56-64.
- Smith, A.L.***, L.B. Stadler*, L. Cao, N.G. Love, L. Raskin, and S.J. Skerlos, 2014. Navigating wastewater energy recovery strategies: A life cycle comparison of anaerobic membrane bioreactor and conventional treatment systems with anaerobic digestion. *Environmental Science & Technology* 48(10), 5972-5981.
- *These authors contributed equally to this work.
- Smith, A.L.**, S.J. Skerlos, and L. Raskin, 2013. Psychrophilic anaerobic membrane bioreactor treatment of domestic wastewater. *Water Research* 47(4), 1655-1665.
- Smith, A.L.**, L.B. Stadler, N.G. Love, S.J. Skerlos, and L. Raskin, 2012. Perspectives on anaerobic membrane bioreactor treatment of domestic wastewater: A critical review. *Bioresource Technology* 122, 149-159.

Shimada, T., E. Morgenroth, M. Tandukar, S.G. Pavlostathis, **A.L. Smith**, L. Raskin, and R.E. Kilian, 2011. Syntrophic acetate oxidation in two-phase (acid-methane) anaerobic digesters. *Water Science and Technology* 64(9), 1812-1820.

CONFERENCE PRESENTATIONS (presenter underlined)

Golwala, H., and **A.L. Smith**, 2022. Fate of antibiotic resistance genes and microplastics during anaerobic membrane bioreactor treatment of low-strength wastewater. 17th World Conference on Anaerobic Digestion, June 19-22, University of Michigan, Ann Arbor, MI, USA.

Wang, P., A. Zarei-Baygi, J. Delgado Vela, and **A.L. Smith**, 2022. Metagenomic based comparison of the antibiotic resistance risk between an AeMBR and AnMBR. 17th World Conference on Anaerobic Digestion, June 19-22, University of Michigan, Ann Arbor, MI, USA.

Costa, B., S.M. Iskander, A. Zarei-Baygi, and **A.L. Smith**, 2021. Antibiotic resistance fate during food waste treatment—A comparison among pyrolysis, composting, and anaerobic membrane bioreactor treatment. 9th IWA Microbial Ecology and Water Engineering Conference, October 18-20, Delft, Netherlands.

Smith, A.L., 2019 (*invited speaker*). A case for pipe-to-pipe reuse over groundwater recharge: An evaluation of antibiotic resistance and the microbial community. Groundwater Protection Council Annual Forum, September 16-17, Oklahoma City, Oklahoma.

Amha, Y.M., W. Zhao, M. Corbett, and **A.L. Smith**, 2019. Two-phase improves energy recovery from food waste at high organic loading rate in anaerobic membrane bioreactors. 16th World Congress on Anaerobic Digestion, June 23-27, Delft, The Netherlands.

Harb, M., N. Ermer, and **A.L. Smith**, 2019. Impact of applied voltage on methane production and microbial activity in anaerobic digesters in the presence of granular activated carbon (GAC). 16th World Congress on Anaerobic Digestion, June 23-27, Delft, The Netherlands.

Zarei-Baygi, A., **P. Wang**, M. Harb, L. Stadler, and **A.L. Smith**, 2019. Evaluating antibiotic resistance proliferation in anaerobic membrane bioreactors under different antibiotic exposure conditions. 16th World Congress on Anaerobic Digestion, June 23-27, Delft, The Netherlands.

Lou, E., L. Baker, **A.L. Smith**, and L. Stadler, 2019. Antibiotic resistance gene fate during co-digestion of livestock manure and domestic wastewater in an anaerobic membrane bioreactor. 16th World Congress on Anaerobic Digestion, June 23-27, Delft, The Netherlands.

Gee, S., **A.L. Smith**, 2019. Development of electrospun membranes for anaerobic membrane bioreactors. 16th World Congress on Anaerobic Digestion, June 23-27, Delft, The Netherlands.

Smith, A.L., and L.B. Stadler, 2018. Mitigating human health risks and enhancing water sustainability: evaluating antibiotic resistance in anaerobic wastewater treatment. *FY18 Soil and Water PD Annual Meeting for National Institute of Food and Agriculture*, October 1-3, Newark, Delaware.

Zarei-Baygi, A., M. Harb., **P. Wang**, L.B. Stadler, and **A.L. Smith**, 2018. Investigation of anaerobic membrane bioreactor (AnMBR) potential to reduce antibiotic resistance proliferation and promote wastewater reuse. ACS National Meeting & Exposition (Nanoscience, Nanotechnology & Beyond), August 19-21, Boston, Massachusetts.

Gee, S., **A.L. Smith**, 2018. Piezoelectric nanofiber membranes as a potential fouling control method in membrane processes. American Chemical Society National Meeting, Aug 19-23, Boston, Massachusetts.

Gee, S., **A.L. Smith**, 2018. Piezoelectric nanofiber membranes as a potential biofouling control method in anaerobic membrane bioreactors. *North American Membrane Society Annual Meeting*, June 9-13, Lexington, Kentucky.

- Gee, S., **A.L. Smith**, 2018. Piezoelectric nanofiber membranes as a potential fouling control method in AnMBRs. *IWA Leading Edge Conference on Water and Wastewater Treatment*, May 27-31, Nanjing, China.
- Smith, A.L.**, E. Rice, A. Zarei-Baygi, M. Harb, P. Wang, E. Lou, and L.B. Stadler, 2018. Fate of antibiotic resistance genes and bacteria in bench-scale anaerobic membrane bioreactors for agricultural reuse. *Water Research Foundation Conference*, May 6-8, Atlanta, Georgia.
- Chen, S. and **A.L. Smith**, 2017. Mitigation of fugitive methane emissions from anaerobic treatment processes using microbial fuel cells. *15th World Congress on Anaerobic Digestion*, October 18-20, Beijing, China.
- Amha, Y., J. Wang, K. Samy, A. Barge, M. Corbett, and **A.L. Smith**, 2017. Performance and microbial ecology of bench- and full-scale anaerobic membrane bioreactor treatment of food waste. *15th World Congress on Anaerobic Digestion*, October 18-20, Beijing, China.
- Zarei Baygi, A., L.B. Stadler, and **A.L. Smith**, 2017. Comparative evaluation of antibiotic resistance in full-scale activated sludge systems and bench-scale anaerobic membrane bioreactor. *AEESP Conference*, June 20-22, Ann Arbor, Michigan.
- A. Becker, K. Yu, L.B. Stadler, and **A.L. Smith**, 2017. Life cycle evaluation of the co-management of domestic wastewater and food waste using anaerobic membrane bioreactors. *14th IWA Leading Edge Conference on Water and Wastewater Technologies*, May 30-June 1, Florianopolis, Brazil.
- Smith, A.L.**, 2016 (*invited speaker*). Striving for eco-efficiency in wastewater management: Are anaerobic membrane bioreactors the right path forward?, Singapore International Water Week, July 13.
- Smith, A.L.**, 2016 (*invited keynote speaker*). Striving for eco-efficiency in wastewater management: Are anaerobic membrane bioreactors the right path forward?, *13th IWA Leading Edge Conference on Water and Wastewater Technologies*, Jerez de la Frontera, Spain, June 15.
- Becker, A., K. Yu, and **A.L. Smith**, 2016. Life cycle evaluation of the co-management of domestic wastewater and food waste using anaerobic membrane bioreactors. *251st American Chemical Society National Meeting and Exposition*, March 13-17, San Diego, California.
- Yu, K., A. Becker, and **A.L. Smith**, 2015. Life cycle evaluation of the co-management of domestic wastewater and food waste using anaerobic membrane bioreactors. Towards Food-Energy-Water (FEW) Security in California under Changing Conditions: the Nexus Perspective (UCAL-NSF workshop), December 2-4, Los Angeles, California.
- Amha, Y., M. Gregori, B. Johnson, R.N. Palacios, and **A.L. Smith**, 2015. Bench-scale anaerobic co-digestion of fats, oils, and grease and food waste for enhanced biogas production. Towards Food-Energy-Water (FEW) Security in California under Changing Conditions: The Nexus Perspective (UCAL-NSF workshop), December 2-4, Los Angeles, California.
- Smith, A.L.**, T. Shimada, and L. Raskin, 2015. Microbial community characteristics of full-scale two-phase and conventional anaerobic digesters. *14th World Congress on Anaerobic Digestion*, November 16-18, Vina del Mar, Chile. International Water Association.
- Gregori, M., Y. Amha, B. Johnson, R.N. Palacios, and **A.L. Smith**, 2015. Enhancing biogas production with FOG, food waste, and vegetable cooking oil. *BioCycle REFOR15*, October 19-21, Boston, Massachusetts.
- Amha, Y., M. Gregori, B. Johnson, R.N. Palacios, and **A.L. Smith**, 2015. Bench- and full-scale anaerobic co-digestion of fats, oil, and grease; food waste; and vegetable cooking oil for enhanced biogas production. *Water Environment Federation Technical Exhibition and Conference*, September 26-30, Chicago, Illinois.

- Chen, S. and **A.L. Smith**, 2015. Methane-driven microbial fuel cell for dissolved methane management in anaerobic effluents. *250th American Chemical Society National Meeting and Exposition*, August 16-20, Boston, Massachusetts.
- Smith, A.L.**, Q. Imran, J. Pierce, S. Skerlos, and L. Raskin, 2014. Membrane biofilm development for improved domestic wastewater treatment at low temperatures using anaerobic membrane bioreactor. *87th Annual Water Environment Federation Technical Exhibition and Conference*, September 27 - October 1, New Orleans, Louisiana.
- Shimada, T.**, D. Epperson, **A.L. Smith**, and L. Raskin, 2014. Relationship between performance and microbial community structure in two-phase anaerobic digestion. *Residuals Biosolids*, May 18-21, Austin, Texas.
- Stadler, L.B.**, **A.L. Smith**, A.K. Jain, K.J. Martin, J. Delgado Vela, P. Puente, L. Cao, S. Frenette, C. Bott, T. Rauch-Williams, T. Shimada, A. Salvesson, N.G. Love, L. Raskin, and S.J. Skerlos, 2014. Integrating life cycle assessment and experimental research: Evaluating anaerobic membrane bioreactors in domestic wastewater treatment for energy recovery. *Borchardt Conference*, February 25-26, Ann Arbor, Michigan.
- Stadler, L.B.**, **A.L. Smith**, L. Cao, N.G. Love, L. Raskin, and S.J. Skerlos, 2013. Energy recovery from wastewater: Life cycle comparison of carbon removal technologies upstream of autotrophic nitrogen removal. *WEF/IWA Nutrient Removal and Recovery 2013: Trends in Resource Recovery and Use*, July 28-31, Vancouver, British Columbia, Canada.
- Smith, A.L.**, T. Shimada, and L. Raskin, 2013. Syntrophic interactions in full-scale two-phase anaerobic digesters determined by pyrosequencing. *5th International Conference on Microbial Ecology and Water Engineering Conference*, July 7-10, Ann Arbor, Michigan.
- Smith, A.L.**, A. Hammerbeck, S. Skerlos, and L. Raskin, 2012. Psychrophilic anaerobic membrane bioreactor treatment of domestic wastewater: Evaluation of performance and methanogenic activity at varying temperatures and hydraulic retention times. *85th Annual Water Environment Federation Technical Exhibition and Conference*, September 29 - October 3, New Orleans, Louisiana.
- Smith, A.L.**, N.G. Love, S. Skerlos, and L. Raskin, 2012. Effects of changes in temperature and hydraulic retention time on performance and environmental impacts of anaerobic membrane bioreactors for domestic wastewater treatment. *Leading-Edge Conference on Water and Wastewater Technologies*, June 3-7, Brisbane, Australia.
- Smith, A.L.**, H. Dorer, N.G. Love, S. Skerlos, and L. Raskin, 2011. Role of membrane biofilm in psychrophilic anaerobic membrane bioreactor for domestic wastewater treatment. *84th Annual Water Environment Federation Technical Exhibition and Conference*, October 15-19, Los Angeles, California.
- Smith, A.L.**, N.G. Love, S. Skerlos, and L. Raskin, 2011. Analysis of microbial communities in an anaerobic membrane bioreactor for domestic wastewater treatment at psychrophilic conditions. *2011 Biogas Microbiology Conference*, September 14-16, Leipzig, Germany.
- Smith, A.L.**, H. Dorer, N.G. Love, S. Skerlos, and L. Raskin, 2011. Psychrophilic anaerobic membrane bioreactor for domestic wastewater treatment. *2011 AEESP Education & Research Conference*, July 10-12, Tampa, Florida.
- Smith, A.L.**, Z. Li, H. Dorer, N.G. Love, S. Skerlos, and L. Raskin, 2011. Energy recovery from domestic wastewater using anaerobic membrane bioreactors. *2011 Borchardt Conference*, February 23-24, Ann Arbor, Michigan.
- Smith, A.L.**, N.G. Love, S. Skerlos, and L. Raskin, 2010. Anaerobic membrane bioreactors for sustainable domestic wastewater treatment at psychrophilic temperatures. *12th World Congress on Anaerobic Digestion*, October 31 - November 4, Guadalajara, Mexico. International Water Association.

Shimada, T., E. Morgenroth, M. Tandukar, S. Pavolstathis, **A.L. Smith**, L. Raskin, and R.E. Kilian, 2010. Homoacetogenic acetate utilization in two-phase (acid-methane) anaerobic digesters, 12th World Congress on Anaerobic Digestion, October 31 - November 4, Guadalajara, Mexico.

Smith, A.L., H. Dorer, N.G. Love, S. Skerlos, and L. Raskin, 2010. Biogas production from domestic wastewater using anaerobic membrane bioreactors. *Biogas Summit*, October 29, Kettering University, Flint, Michigan.

CONFERENCE POSTERS

Althouse, R., V.C. Lanclos, C.J. Hider, J.C. Thrash, J. Amend, and **A.L. Smith**, 2022. Isolating 'microbial dark matter' to breathe greenhouse gases. 18th International Symposium on Microbial Ecology, August 14-19, Lausanne, Switzerland.

Costa, B.F., and **A.L. Smith**, 2022. Evaluation of the potential for anaerobic biotransformation of PFAS during anaerobic digestion. 18th International Symposium on Microbial Ecology, August 14-19, Lausanne, Switzerland.

Sauceda, C., and **A.L. Smith**, 2022. Bio-electrochemical method development for monitoring anaerobic digestion. 18th International Symposium on Microbial Ecology, August 14-19, Lausanne, Switzerland.

Costa, B.F., and **A.L. Smith**, 2022. Evaluation of the potential for anaerobic biotransformation of PFAS during anaerobic digestion. 17th World Conference on Anaerobic Digestion, June 19-22, University of Michigan, Ann Arbor, MI, USA.

Sauceda, C., and **A.L. Smith**, 2022. Bio-electrochemical method development for monitoring anaerobic digestion. 17th World Conference on Anaerobic Digestion, June 19-22, University of Michigan, Ann Arbor, MI, USA.

Wang, P., M. Harb, A. Zarei-Baygi, L.B. Stadler, and **A.L. Smith**, 2019. Cell-associated and extracellular antibiotic resistance gene profile in AnMBR effluent under elevated antibiotic conditions. 16th World Congress on Anaerobic Digestion, June 23-27, Delft, The Netherlands.

Amha, Y.M., W. Zhao, M. Corbett, and **A.L. Smith**, 2019. Energy recovery from food waste at high organic loading rate with two-phase anaerobic membrane bioreactors. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

Chen, S., and **A.L. Smith**, 2019. Effluent dissolved methane management by methane-driven microbial fuel cells: impact of temperature and sulfide addition. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

Gee, S., and **A.L. Smith**, 2019. Investigation of electrospun nanofiber membranes in a bench-scale anaerobic membrane bioreactor. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

Lou, E., L. Baker, **A.L. Smith**, and L.B. Stadler, 2019. Evaluating the fate of antibiotic resistance in an AnMBR co-treating domestic wastewater and livestock manure. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

Wang, P., M. Harb, A. Zarei-Baygi, L.B. Stadler, and **A.L. Smith**, 2019. The effect of elevated antibiotic levels on intracellular and extracellular antibiotic resistance genes in AnMBR effluent. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

Warner, T., A. Childress, and **A.L. Smith**, 2019. Molybdenum disulfide/polyethersulfone nanocomposite membranes: Fabrication and performance during filtration of synthetic biofouling solution. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

Zarei-Baygi, A., M. Harb, P. Wang, L.B. Stadler, and **A.L. Smith**, 2019. Role of membrane foulant layers in antibiotic resistance gene fate from anaerobic membrane bioreactors. AEESP Research and Education Conference, May 14-16, Tempe, Arizona.

- Amha, Y.M., Wang, J., Barge, A., and **A.L. Smith**, 2018. Evaluation of food-waste treatment with two-phase (acid/methane) anaerobic membrane bioreactor. 17th International Symposium on Microbial Ecology, August 12-17, Leipzig, Germany.
- Zarei-Baygi, A., M. Harb, P. Wang, and **A.L. Smith**, 2018. Potential reduction of antibiotic resistance proliferation in anaerobic membrane bioreactor (AnMBR) microbial communities. 17th International Symposium on Microbial Ecology, August 12-17, Leipzig, Germany.
- Chen, S. and **A.L. Smith**, 2018. Elucidating impact of temperature on microbial community activity and extracellular electron transfer in methane-driven microbial fuel cells. 17th International Symposium on Microbial Ecology, August 12-17, Leipzig, Germany.
- Smith, A.L.**, and L.B. Stadler, 2018. Mitigating human health risks and enhancing water sustainability: evaluating antibiotic resistance in anaerobic wastewater treatment. *FY17 Soil and Water PD Annual Meeting for National Institute of Food and Agriculture*, January 29-31, Washington D.C.
- Chen, S. and **A.L. Smith**, 2017. Impact of hydraulic retention time and temperature on microbial fuel cells treating methane-rich anaerobic effluent. *AEESP Conference*, June 20-22, Ann Arbor, Michigan.
- Gee, S. and **A.L. Smith**, 2017. Fabrication and bench-scale testing of piezoelectric nanofiber membranes for anaerobic membrane bioreactors. *AEESP Conference*, June 20-22, Ann Arbor, Michigan.
- Amha, Y.M. and **A.L. Smith**, 2017. Elucidating microbial community adaptation to anaerobic co-digestion of fats, oils, and grease and food waste. *AEESP Conference*, June 20-22, Ann Arbor, Michigan.
- Amha, Y.M. and **A.L. Smith**, 2016. Elucidating microbial community adaptation to anaerobic co-digestion of fats, oils, and grease and food waste. *ISME 2016 Conference*, August 21-26, Montreal, Canada.
- Chen, S. and **A.L. Smith**, 2016. Elucidating the anodic community structure of a methane-powered microbial fuel cell. *ISME 2016 Conference*, August 21-26, Montreal, Canada.
- Stadler, L.B., **A.L. Smith**, L. Cao, N.G. Love, L. Raskin, and S.J. Skerlos, 2013. Life cycle comparison of emerging and established wastewater energy recovery systems. *2013 AEESP Education & Research Conference*, July 14-16, Denver, Colorado.
- Shimada, T., **A.L. Smith**, R.E. Kilian, and L. Raskin, 2013. Microbial community structure in two-phase (acid-methane) anaerobic digesters. *13th World Congress on Anaerobic Digestion*, June 25-28, Santiago de Compostela, Spain.
- Smith, A.L.**, L.B. Stadler, L. Raskin, and S.J. Skerlos, 2012. Comparative life cycle assessment of domestic wastewater treatment strategies. *University of Michigan LCA Symposium*, May 31, Ann Arbor, Michigan.

INVITED SEMINARS (presenter underlined)

- Smith, A.L.**, 2022. Antibiotic Resistance during Wastewater Management: Emerging Biotechnologies and Surveillance, National University of Ireland Galway, November 22.
- Smith, A.L.**, 2021. Trace Biological Contaminants in Wastewater: Antibiotic Resistance and SARS-CoV-2, Department of Civil and Environmental Engineering, Stanford University, February 5.
- Smith, A.L.**, 2019. Anaerobic Membrane Bioreactors for Energy Recovery from Dilute Wastewaters, Advancing a Circular Water Economy NSF Workshop, University of Minnesota, June 10.
- Smith, A.L.**, 2019. Can Mainstream Anaerobic Treatment Reduce Antibiotic Resistance Dissemination in the Environment? Department of Civil and Environmental Engineering, University of California Los Angeles, April 16.
- Smith, A.L.**, 2018. New research directions for mainstream anaerobic membrane bioreactors: evaluating antibiotic resistance and novel membrane materials. Department of Civil and Environmental Engineering, University of Texas, October 5.

- Smith, A.L.**, 2017. Recent developments on anaerobic membrane bioreactor treatment of domestic wastewater. Department of Civil and Environmental Engineering, Rice University, April 7.
- Smith, A.L.**, 2017. Recent developments on anaerobic membrane bioreactor treatment of domestic wastewater. Department of Chemical and Environmental Engineering, Masdar Institute of Science & Technology, March 1.
- Smith, A.L.**, 2017. Recent developments on anaerobic membrane bioreactor treatment of domestic wastewater. Water Desalination and Reuse Center, King Abdullah University of Science & Technology, February 26.
- Smith, A.L.**, 2016. Strategies to improve the environmental sustainability of anaerobic membrane bioreactor domestic wastewater treatment. Department of Civil and Environmental Engineering, University of Illinois Urbana-Champaign, September 15.
- Smith, A.L.**, 2015. Replacing our aging wastewater infrastructure: Are anaerobic membrane bioreactors the core technology to improve eco-efficiency? Department of Civil and Environmental Engineering, Stanford University, October 30.
- Smith, A.L.**, 2015. Improving the eco-efficiency of domestic wastewater treatment with low temperature anaerobic membrane bioreactors. Department of Civil and Environmental Engineering, University of Notre Dame, July 8.
- Clancy, T.M.**, **N. Kotlarz**, **A.L. Smith**, and **L. Raskin**, 2014. Raskin Research Group Presentation, Microbial Ecology Working Group, University of Michigan, May 29.
- Smith, A.L.**, S.J. Skerlos, and L. Raskin, 2014. Low-Temperature Anaerobic Membrane Bioreactor for Energy Recovery from Domestic Wastewater, Department of Civil and Environmental Engineering, University of Southern California, April 9.
- Smith, A.L.**, S.J. Skerlos, and L. Raskin, 2014. Low-Temperature Anaerobic Membrane Bioreactor for Energy Recovery from Domestic Wastewater. Department of Civil, Environmental, and Geo-Engineering, University of Minnesota, February 12.
- Smith, A.L.**, S.J. Skerlos, and L. Raskin, 2014. Low-Temperature Anaerobic Membrane Bioreactor for Energy Recovery from Domestic Wastewater. Department of Civil and Environmental Engineering, Southern Methodist University, January 6.
- Raskin, L.**, **A.L. Smith**, and S.J. Skerlos, 2014. Energy recovery from domestic wastewater using anaerobic membrane bioreactor treatment. Department of Molecular Biosciences and Bioengineering, University of Hawaii at Manoa, April 10.
- Smith, A.L.**, and L. Raskin, 2013. Microbial diversity analysis: methods and tools. *Molecular Biology Tools (specialized short course for 13th World Congress on Anaerobic Digestion)*, University of Minho, Braga, Portugal, June 23-24.
- Smith, A.L.**, **L.B. Stadler**, L. Cao, N.G. Love, L. Raskin, and S.J. Skerlos, 2013. Navigating wastewater energy recovery strategies: A life cycle comparison of anaerobic membrane bioreactor and high rate activated sludge with anaerobic digestion. *Environmental Engineering Departmental Seminar*, University of Michigan, Ann Arbor, Michigan, March 20.
- Raskin, L.**, **A.L. Smith**, S.J. Skerlos, N.G. Love, 2011. Role of membrane biofilms in anaerobic membrane bioreactors for domestic wastewater treatment. *Ohio-Kentucky-Indiana Regional Symposium on Applications of Bio-membranes in Science and Technology*, September 30, Cincinnati, Ohio.
- Smith, A.L.**, N.G. Love, S.J. Skerlos, and L. Raskin, 2011. Analysis of microbial communities in an anaerobic membrane bioreactor for domestic wastewater treatment at psychrophilic conditions. *Geosyntec Consultants Paper Competition Webinar*, September 27, Ann Arbor, Michigan.

Smith, A.L., Z. Li, H. Dorer, S.J. Skerlos, N.G. Love, and L. Raskin, 2011. Energy recovery from domestic wastewater using anaerobic membrane bioreactors. *Environmental Engineering Departmental Seminar*, March 29, University of Michigan, Ann Arbor, Michigan.

Raskin, L., A.L. Smith, S.J. Skerlos, 2011. Energy recovery from domestic wastewater using anaerobic membrane bioreactors. *Carollo Engineers, Inc.*, March 16, Sarasota, Florida.

Raskin, L., A.L. Smith, S.J. Skerlos, 2011. Energy recovery from domestic wastewater using anaerobic membrane bioreactors and molecular biology methods in Environmental Engineering. *Doosan Hydro Technology, Inc.*, March 15, Tampa, Florida.

PUBLISHED REPORTS

Skerlos, S.J., L. Raskin, N.G. Love, **A.L. Smith**, L.B. Stadler, and L. Cao, 2013. Challenge Projects on Low Energy Treatment Schemes for Water Reuse, Phase 1 (WateReuse-10-06D). WateReuse Research Foundation, Alexandria, Virginia.

Raskin, L., S. Skerlos, N.G. Love, and **A.L. Smith**, 2012. Anaerobic Membrane Bioreactors for Sustainable Wastewater Treatment. Water Environment Research Foundation Final Report U4R08, IWA Publishing, London, United Kingdom.

MEDIA COVERAGE

Carolyn Johnson, January 4th, 2022. Testing Toilet Water on Airplanes Could Identify New COVID Variants, on air segment, <https://www.nbclosangeles.com/investigations/cdc-weighs-airplane-wastewater-testing-for-covid/3067101/>

Carolyn Johnson, August 4th and December 23rd, 2020. Research Shows Sewers Could Be Key to Identifying, Stopping COVID-19 Outbreaks, multiple on air segments, <https://www.nbclosangeles.com/investigations/eseach-shows-sewers-could-be-key-to-identifying-stopping-covid-19-outbreaks/2492563/>

Harb et al, 2019 (Environmental Science & Technology Letters) reported on in Science Daily, The Medical News, Lab Manager, CanIndia, Outlook India, The Siasat Daily, Phys.org, Long Room, Medindia, ProKerala, India4u, and Brown and Caldwell's Water News.

Jonathan Lambert, March 27th, 2019. Scientists look for antibiotic-resistant germs in raw sewage, NPR, <https://www.npr.org/sections/health-shots/2019/03/27/707198359/scientists-look-for-antibiotic-resistant-germs-in-raw-sewage>

Alexandru Micu, March 8th, 2019. Treated wastewater could release antibiotic-resistance genes into the wild, ZME Science, <https://www.zmescience.com/science/wastewater-antibiotic-resistance-4235236/>

Outbreak News Today, March 8, 2019. 'We're quickly getting to a scary place that's called a post-antibiotic world': Researchers, <http://outbreaknewstoday.com/quickly-getting-scary-place-thats-called-post-antibiotic-world-researchers-60720/>

James Ives, March 8, 2019. Getting closer to a scary 'post-antibiotic world', News Medical, <https://www.news-medical.net/news/20190308/Getting-closer-to-a-scary-post-antibiotic-world.aspx>

Olivia Rosane, March 7, 2019. Wastewater Treatment Plants Could Contribute To a 'post-antibiotic World,' Study Warns, EcoWatch, <https://www.ecowatch.com/wastewater-treatment-antibiotic-resistance-2630914219.html>

WORKSHOPS

Daigger, G., B.C. Holohan, F. Rogall, C. Shin, and A. Szczuka, 2022. Mainstream Municipal Anaerobic Treatment: Principles to Practice. *17th World Conference on Anaerobic Digestion*, June 18, University of Michigan, Ann Arbor, MI, USA.

- Invited speaker

NSF/WE&RF Expert Workshop: Advancing Anaerobic Digestion of Wastewater Solids and Food Waste for Energy and Resource Recovery: Science and Solutions Workshop

- Invited participant

Robles, Angel and Emerita Jimenez, 2016. Overcoming Barriers of Anaerobic Membrane Bioreactor (AnMBR) Technology: Moving from Wastewater Treatment Plants (WWTPs) to Water Resource Recovery Facilities (WRRFs). *Leading Edge Conference on Water and Wastewater Technologies*, June 13, Jerez de la Frontera, Spain.

- Served as moderator during discussion panel

Smith, A.L., D. Batstone, and L. Raskin, 2012. Workshop on Anaerobic Treatment of Low-Strength Wastewaters, *Leading Edge Conference on Water and Wastewater Technologies*. June 3-7, Brisbane, Australia.

- Organized and co-chaired half-day workshop
- Invited speakers included Dr. David Stuckey, Dr. Perry McCarty, Dr. How Ng, Dr. Hideky Harada, and Dr. Cees Buisman

Bott, C., A. Salvesson, L. Fillmore, and N.G. Love, 2013. Workshop on Mainstream Anaerobic and Nutrient Removal Systems for Energy Neutral Wastewater Management. *86th Annual Water Environment Federation Technical Exhibition and Conference*, October 5-9, Chicago, Illinois.

- Organized activity on sustainability assessment of wastewater treatment processes

GRANTS

<i>PIs</i>	<i>Title</i>	<i>Granting Agency</i>	<i>Date</i>	<i>PI/Co-PI Funding (Total Award)</i>
Amend, Smith, Thrash	Cy Pres: Isolating 'Microbial Dark Matter' to Breathe Greenhouse Gases	Cy Pres	2022-2024	\$500,000; direct cost (\$2,000,000)
Smith, Mosley	Wastewater Surveillance of Residential Buildings on the University Park Campus to Monitor Student Health	Provost (USC)	2022-2023	\$595,400
Smith (USC PI), Aga (SUNY at Buffalo PI), Atilla-Gokcumen	Collaborative Research: ERASE-PFAS: Remediation of Per- and Polyfluoroalkyl Substances in Wastewater using Anaerobic Membrane Bioreactors	NSF	2021-2024	\$150,000 (\$350,000)
Smith, Stadler, Elawwad	A US-Egypt Evaluation of Anaerobic Membrane Bioreactors to Enhance Agricultural Water Reclamation	NAS/USAID and STDF	2021-2023	\$172,805 (\$357,000)

While Mitigating Antibiotic Resistance

Smith, Hochman, Mosley	SARS-CoV-2 Wastewater Sampling Initiative	Provost (USC)	2020-2022	\$668,795
Smith	Surveillance of Houston's Wastewater to Track Community COVID-19 Infection Dynamics	City of Houston	2020	\$50,000
de los Reyes, Smith, Stadler, Degaldo Vela, Kotlarz	RAPID: Monitoring for SARS-CoV-2 in Municipal Wastewater and Sewage to Elucidate Infection Dynamics Across Major Metropolitan Areas of the United States	NSF Environmental Engineering	2020-2021	\$50,000 (\$200,000)
Amend, Smith, Thrash	Isolating 'Microbial Dark Matter' to Breathe Greenhouse Gases	Provost New Direction for Research and Scholarship Award (USC)	2019-2021	\$83,333 (\$249,830)
Childress, Smith	The Effect of Material Properties and Scaling on Wetting of Membranes Used in Membrane Distillation	NSF Chemical and Biological Separation	2018-2020	\$117,637 (\$460,000)
Smith, Corbett	Advancing Decentralized Anaerobic Membrane Bioreactor Treatment of Food Waste	NSF Environmental Engineering	2016-2019	\$330,000 (\$330,000)
Smith, Stadler	Mitigating Human Health Risks and Enhancing Water Sustainability: Evaluating Antibiotic Resistance in Anaerobic Wastewater Treatment	USDA/NIFA	2016-2019	\$485,000 (\$485,000)

AWARDS

- Excellence in Review, *ACS ES&T Engineering* (2021)
- Invited Participant at Arab American Frontiers in Science, Engineering, and Medicine Symposium (2019)
- Best Papers of 2018 for *Environmental Science: Water Research and Technology* (Chen et al., 2018)
- Emerging Investigator Series Feature in *Environmental Science: Water Research and Technology* (2018)
- Nominee for Best Papers from 2018 in the *Environmental Science* family of journals (Chen et al., 2018)
- Outstanding Reviewer for *Environmental Science: Water Research and Technology* (2018)
- Top 10 most downloaded article in *Environmental Science: Water Research and Technology* (2015; Smith, A.L., S.J. Skerlos, and L. Raskin, 2015. Anaerobic membrane bioreactor treatment

of domestic wastewater at psychrophilic temperatures ranging from 15 to 3°C. *Environmental Science: Water Research & Technology*, DOI: 10.1039/c4ew00070f.)

- 1st place in Geosyntec Consultants Paper Competition (2011)
- John P. Hennessey Scholarship, Michigan Water Environment Association (2010)
- Jack A. Borchardt Fellowship, University of Michigan (2009-2010)
- Ignatius Scholarship, Marquette University (2005-2009)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- International Water Association (IWA)
 - Member of Scientific Committee for AD16 Conference
- American Chemical Society (ACS)
- California Water Environment Association (CWEA)
- Michigan Water Environment Association (MWEA; 2010-2015)
- Water Environment Federation (WEF)
- Association of Environmental Scientists and Professors (AEESP)
 - Member of Outstanding Dissertation Review Committee

PROFESSIONAL SERVICE

- Environmental Science & Technology: Engineering Early Career Board, 2023
- Co-chair of 17th World Congress on Anaerobic Digestion, 2022
- Manuscript reviewer for reviewer for FEMS Microbiology Ecology, Water Research, Environmental Science & Technology, Environmental Science & Technology Letters, Environmental Science & Technology: Water, Environmental Science & Technology: Engineering, Bioresource Technology, Environmental Science: Water Research & Technology, Engineering Ecology, Chemosphere, Materials, Environment International, Water Environment Research, Environmental Technology, Water Science and Technology, Separation and Purification, Microbial Biotechnology, Separation Science and Technology, The Energy Journal, Journal of Membrane Science, Applied Microbiology and Biotechnology, Nanomaterials, Materials Letters, and Biochemical Engineering Journal.
- Scientific Committee member for XIV Latin American Workshop and Symposium on Anaerobic Digestion, 2020
- Scientific Committee member for 16th World Congress on Anaerobic Digestion, 2018
- AEESP Dissertation Award Review Committee, 2018-2020
- AEESP SSC Navigating the Academic Job Workshop, Reviewer, 2015 and 2019
- Panelist for NSF, USDA/NIFA, DOE
- Guest editor for Bioresource Technology Special Issue on Antibiotics in Wastewater, 2018
- Session Chair/Moderator
 - AEESP 2017 Conference, Advancing Community Health through Technology Innovation: Biological

OUTREACH

- Summer High-School Intensive in Next Generation Engineering, mentor for of 14 students, 2015-2022.
- Carson High School Environmental Science, Engineering, and Technology (ESET) advisory board, 2015.
- WonderKids program invited speaker as part of USC Dornsife's Joint Educational Project, discussed the natural water cycle and how the built environmental interfaces with it to K-2 students including a hands-on activity to build water filters at Norwood Elementary School, November 2014.
- MconneX Xplore Engineering Summer Camp, discussed role of bacteria in engineered systems and constructed lab-scale slow sand filters with 4th-10th grade students and College of Engineering alumni (August 2013)

- Detroit Area Pre-College Engineering Program (DAPCEP), presented and demonstrated environmental engineering principles to historically under-represented minority 7th-9th grade students from the Detroit Area (March 2011)
- World Water Monitoring Day (WWMD), helped 50 third and fourth grade students from Angell Elementary School collect and analyze water samples from the Huron River, Ann Arbor, Michigan (June 2009)