

May 2020

William A. Tarpeh

Assistant Professor
Stanford University
Chemical Engineering

tarpehgroup.stanford.edu
wtarpeh@stanford.edu
(240) 713-7512

EDUCATION

- 2017 Ph.D. University of California at Berkeley, Berkeley, CA**
Environmental Engineering; Designated Emphasis in Development Engineering
- 2013 M.S. University of California at Berkeley, Berkeley, CA**
Environmental Engineering
- 2012 B.S. Stanford University, Stanford, CA**
Chemical Engineering with Distinction, African Studies Minor

ACADEMIC APPOINTMENTS

- 9/2018-** **Assistant Professor**, Department of Chemical Engineering, Stanford University
Assistant Professor, by courtesy, Department of Civil & Environmental Engineering
Center Fellow, by courtesy, Woods Institute for the Environment
Faculty Affiliate, King Center for Development
Member, Bio-X Interdisciplinary Biosciences Institute
Faculty Affiliate, Re-inventing the Nation's Urban Water Infrastructure Engineering (ReNUWIt) Research Center
Faculty Affiliate, Stanford Program on Water, Health, and Development
- 2017-2018** **Postdoctoral Research Fellow**, University of Michigan, Ann Arbor, MI
Department of Civil & Environmental Engineering

HONORS AND AWARDS

Stanford University

- 2020 Matthew J. Quinn Prize, Jack Kent Cooke Foundation
2020 Stanford Faculty Entrepreneurship Leadership Program
2019 *Chemical & Engineering News* Talented 12
2019 National Academies Gulf Research Program Early Career Fellowship
2019 Forbes 30 Under 30: Science Category
2019 *The Root's* List of 100 Influential African-Americans
2019 Hellman Faculty Fellow
2019 Early Career Scientist, *Environmental Science & Technology/ES&T Letters*
2019 Excellence in Review, *Environmental Science & Technology*
2019 Excellence in Review, *Resources Conservation and Recycling*
2018 National Academies Arab-American Frontiers Symposium Participant
2018 Terman Faculty Fellow, Stanford University

University of Michigan (2017-2018)

- 2018 Bouchet Honor Society, University of Michigan
2017 Professorial Advancement Initiative, Big Ten Alliance

University of California, Berkeley (2012-2017)

- 2016 Featured in [NBCBLK “28 under 28”](#) for African-American innovators
- 2016 Gordon Research Conference Carl Storm Underrepresented Minority Fellowship
- 2014 Harvey Fellow, Mustard Seed Foundation
- 2012 National Science Foundation Graduate Research Fellowship
- 2012 Ford Foundation Pre-Doctoral Fellowship
- 2012 UC Berkeley Chancellor’s Fellowship (Top 4% of admitted PhD students)
- 2012 Jack Kent Cooke Foundation Graduate Scholar

Stanford University (2008-2012)

- 2012 Phi Beta Kappa
- 2011 Stanford School of Engineering Diversity Leadership Award
- 2011 Tau Beta Pi Engineering Honor Society
- 2009 Dean’s Award for Exceptional Academic Excellence (2009-2012)
- 2008 Ron Brown Scholar
- 2008 Jack Kent Cooke Foundation College Scholar
- 2003 Jack Kent Cooke Foundation Young Scholar

PUBLICATIONS

Peer-Reviewed Publications (underline= Tarpeh Group member; *=corresponding author; U=undergraduate author)

1. Clark BD, Tarpeh, William* (2020). Selective recovery of ammonia nitrogen from wastewaters with transition metal-loaded polymeric cation exchange adsorbents. *Chemistry: A European Journal*. In Press. DOI:10.1002/chem.202002170. **Invited Special Issue: Young Chemists.**
2. Hasseler T, Ramachandran A, Tarpeh, William, Stadermann M, Santiago J. (2020). User-friendly tool for techno-economic analysis and design of capacitive deionization systems. *Water Research*. In Press.
3. Dong H, Wei L, Tarpeh, William* (2020). Electro-assisted regeneration of pH-sensitive ion exchangers for sustainable phosphate removal and recovery. *Water Research*. Under Revision.
4. Mu L, Wang Y^U, Tarpeh, William* (2020). Validation and mechanism of a low-cost graphite carbon electrode for electrochemical brine valorization. *ACS Sustainable Chemistry & Engineering*. In Press. DOI: 10.1021/acssuschemeng.0c01485
5. Jafary T, Rahman S, Saif HK, Baawain MM, Tarpeh, William, Kim BH (2020). Novel two-chamber tubular microbial desalination cell for bioelectricity production, wastewater treatment and desalination with a focus on self-generated pH control. *Desalination*, 481. DOI: <https://doi.org/10.1016/j.desal.2020.114358>
6. Liu MJ, Neo BS, Tarpeh, William*. Building an operational framework for nitrogen recovery via electrochemical stripping (2020). *Water Research*, 169. DOI: 10.1016/j.watres.2019.115226
7. Carl S, Waldrop K, Pintauro P, Thompson L, Tarpeh, William*, Selective Hydrogenation of Furfural in Proton Exchange Membrane Reactor Using Hybrid Pd black/Pd on Alumina (2019). *ChemElectroChem*, 6(22), 5563-5570. DOI: 10.1002/celec.201901314. **Featured on Issue Cover.**
8. Hyun Christopher, Burt Z, Crider Y, Nelson K, Prasad CSP, Rayasam S, Tarpeh, William, Ray I. Sanitation for Low-Income Regions: A Cross-Disciplinary Review (2019). *Annual Review of Environment and Resources*, 44(1), 287-318. DOI: 10.1146/annurev-environ-101718-033327
9. Li Yalin, Tarpeh, William, Nelson K, Strathmann T. Quantitative evaluation of an integrated system for valorization of wastewater algae as bio-oil, fuel gas, and fertilizer products (2018). *Environmental Science & Technology*, 52(21), 12717-12727. DOI: 10.1021/acs.est.8b04035
10. Tarpeh, William, Wald I, Omollo M, Egan T, Nelson K. Evaluating ion exchange for nitrogen recovery from urine in Nairobi, Kenya (2018). *Development Engineering*, 3, 188-195. DOI: 10.1016/j.deveng.2018.07.002

11. Tarpeh, William, Wald I, Wiphrächtiger M, Nelson K. Effects of operating parameters on ion exchange columns for nutrient recovery from urine (2018). *Environmental Science: Water Research and Technology*, 4(6), 828-838. DOI: 10.1039/C7EW00478H
12. Tarpeh, William, Barazesh J, Cath T, Nelson K. Electrochemical stripping to recover nitrogen from source-separated urine (2018). *Environmental Science & Technology*, 52(3), 1453-1460. DOI: 10.1021/acs.est.7b05488
13. Kavvada O, Tarpeh, William, Horvath A, Nelson K. Life-cycle cost and environmental assessment of decentralized nitrogen recovery using ion exchange from source-separated urine through spatial modeling (2017). *Environmental Science & Technology*, 51(21), 12061-12071. DOI: 10.1021/acs.est.7b02244
14. Chrispim M, Tarpeh, William, Salinas D, Nolasco, M. The sanitation and urban agriculture nexus: urine collection and application as fertilizer in São Paulo, Brazil (2017). *Journal of Water, Sanitation and Hygiene for Development*, 7(3), 455-465. DOI: 10.2166/washdev.2017.163
15. Tarpeh, William, Udert K, Nelson K. Comparing ion exchange adsorbents for nitrogen recovery from source-separated urine (2017). *Environmental Science & Technology*, 51(4), 2373-2381. DOI: 10.1021/acs.est.6b05816

Patents

1. Durable and immersible water ammonia sensor using high electron mobility transistor. Tarpeh, William, Senesky D, Lalwani A, Holliday M, Mu L, Clark BD, Liu MJ. Provisional Patent, September 20, 2019.

Non Peer-Reviewed Publications

1. Tarpeh, William. Advocacy in the Academy. October, 30, 2018. Bouchet Society Blog, University of Michigan Rackham Graduate School. <https://rackham.umich.edu/discover-rackham/advocacy-in-the-academy/>

SELECTED PRESENTATIONS

Invited Research Presentations

1. University of Sao Paulo, Graduate Program for Sustainability. Sao Paulo, Brazil. March 2020.
2. Georgia Institute of Technology, Department of Civil & Environmental Engineering. Oct. 2019.
3. *Chemical & Engineering News* Talented 12 Symposium. American Chemical Society Meeting, San Diego CA. August 2019.
4. Non-targeted Analysis to Understand Fate & Effects of Pharmaceuticals & Emerging Contaminants in Agriculture & Natural Environments. Environmental and Agricultural Chemistry Divisions. American Chemical Society Meeting, San Diego CA. August 2019.
5. Sultan Qaboos University, Muscat Oman, Departments of Civil, Architectural, and Environmental Engineering.; Department of Chemical and Petroleum Engineering. July 2019
6. Zhejiang University, College of Chemical & Biomolecular Engineering. May 2019.
7. Stanford University, Department of Civil & Environmental Engineering. March 2019.
8. Stanford University, Department of Materials Science Engineering. February 2019.
9. University of Maryland, Baltimore County. Department of Chemical, Biomolecular, and Environmental Engineering and Meyerhoff Program. November 2018.
10. Zhejiang-Stanford Chemical Engineering Symposium. Stanford, CA. November 2018.
11. Stanford University, Department of Chemical Engineering Convocation. September 2018.
12. American Chemical Society 256th National Meeting. Boston, MA. August 2018.
13. Berkeley Haas Africa Business Forum. Berkeley, CA. April 2018.
14. Engineering Research Center for Reinventing our Nation's Urban Water Infrastructure. Apr 2018.

15. Nanyang Environment & Water Research Institute (NEWRI), Nanyang Technical University. Singapore. Dec 2017.
16. University of Michigan, Dept. of Civil & Environmental Engineering, Ann Arbor, MI. Sept 2017.
17. University of Southern California, Department of Civil & Environmental Engineering. Los Angeles, CA. April 2017.
18. North Carolina State University, Department of Construction, Civil, and Environmental Engineering. Raleigh, NC. March 2016.
19. Stanford University, Department of Chemical Engineering. February 2016.
20. University of Virginia, Department of Civil & Environmental Engineering. Charlottesville, VA. December 2016.
21. MIT Waste Alliance. Cambridge, MA. November 2016.
22. Gordon Research Seminar: Environmental Sciences, Water. Holderness, NH. June 2016.
23. Stanford Chemical Engineering Alumni Symposium. Stanford, CA. May 2016.
24. Eawag Engineering Department Seminar Series. Zurich, Switzerland. March 2015.
25. Education Solution Network Technical Convening 2014. Sponsored by United States Agency for International Development. Berkeley, CA. November 2014.

Selected Oral Research Presentations

1. *Accelerating Phosphate Recovery from Wastewaters: Electro-assisted regeneration of ferric oxide nanoparticles confined in polymeric adsorbents*. 2nd Pan-nano Conference on Nanotechnology. Aguas de Lindoia, Brazil. March 2020.
2. *Putting Brine to Use: Photoelectrocatalytic Production of Hydrogen and Commodity Chemicals from Desalination Brine*. International Water Association Resource Recovery Conference. Venice, Italy. September 2019.
3. *Sulphur-Enabled Electrochemical Nitrogen Recovery From Anaerobically Treated Wastewater*. International Water Association Leading Edge Technology Conference. Edinburgh, UK. June 2019.
4. *Electrochemical Stripping to Recover Nitrogen from Wastewater*. Americas International Meeting on Electrochemistry and Solid State Science/Electrochemical Society Meeting. October 2018.
5. *Suspect Analysis: Fate of pharmaceuticals during urine treatment*. Urine Diversion Summit. Brattleboro, VT. August 2018.
6. *Assessing Risks from Pharmaceuticals and Transformation Products in Urine-Derived Fertilizers*. American Chemical Society Annual Meeting. New Orleans, LA. March 2018.
7. *Household Ion Exchange Cartridges for Nitrogen Recovery From Urine*. Water Environment Federation Technical Conference. Chicago, IL. October 2017.
8. *Evaluating Decentralized Ion Exchange for Nitrogen Recovery From Urine*. Water Environment Federation Technical Conference. Chicago, IL. October 2017.
9. *Designing Nitrogen Recovery from Urine*. Urine Diversion Summit, Rich Earth Institute. Brattleboro, VT. August 2017.
10. *Electrochemical Stripping to Recover Nitrogen from Urine*. XII ECHEMS (International Society of Electrochemistry sponsored) Conference, Milano Marittima, Italy. June 2017.
11. *Electrochemical Stripping to Recover Nitrogen from Urine*. American Chemical Society 253rd Annual Meeting. San Francisco, CA. April 2017.
12. *Community Readiness Levels: Scaling Sanitation Success*. Development Impact Lab, Higher Education Solutions Network. First Annual Science of Scaling Meeting. September 2016.
13. *Electrochemical Stripping to Recover Nitrogen from Urine*. International Water Association Conference on Resource-Oriented Sanitation and Small and Decentralized Water Systems. Athens, Greece. September 2016.
14. *Creating Nitrogen Fertilizers from Source-Separated Urine*. Bay Area International Water, Sanitation, and Hygiene Symposium. Stanford, California. April 2016.

15. *Nitrogen Recovery from Urine via Ion Exchange and Electrochemical Stripping*. California Alliance for Graduate Education Annual Retreat. Berkeley, California. April 2016.
16. *Evaluating Ion Exchange and Electrochemical Nitrogen Recovery from Source-Separated Urine*. American Chemical Society 250th Annual Meeting. Boston, Massachusetts. August 2015. Awarded ACS Division of Environmental Chemistry Certificate of Merit.
17. *Comparing Ion Exchange and Electrochemical Nitrogen Recovery from Source-Separated Urine*. Third International Fecal Sludge Management Conference. Hanoi, Vietnam. January 2015.
18. *Waste as a Resource: Designing Disinfection and Nitrogen Recovery*. Conference of Ford Fellows, Washington, D.C. September 2013.

RESEARCH EXPERIENCE

2015	Guest PhD student, Swiss Aquatic Institute of Technology, Zurich, Switzerland
2013	Visiting Researcher, Sanergy, Nairobi, Kenya
2012-2017	Graduate Research Assistant, Nelson Lab, University of California, Berkeley
2011	Systems Engineering Intern, Siemens Healthcare Diagnostics, Glasgow, DE
2010	Undergraduate Research in Chemical Engineering, Bent Group, Stanford, CA
2010	Research Intern at SARAR Transformación SC, Tepoztlán, Mexico
2009	Undergraduate Research at Institute of Human Virology, Univ. Maryland, Baltimore, MD

TEACHING

Instruction at Stanford:

- Introduction to Chemical Engineering. Undergraduate Course. Spring 2019 (23 students), Winter 2020 (19 students)
 - Chemical Engineering Plant Design. Undergraduate Course. Spring 2020 (18 students)
 - Bing Overseas Studies Seminar: Sustainable Water and Sanitation in South-East Asia
- 2018 **Recipient, Teaching Advancement Grant**, Stanford University Vice Provost for Teaching and Learning. Competitive \$2500 grant to design and implement hands-on activities in intro course.
- 2018 **Course Mentor**. Postdoctoral Short Course on Teaching. University of Michigan. Winter 2018.
- 2016 **Graduate Student Instructor**. University of California, Berkeley. Fall 2016.
Course Title: Introduction to Environmental Engineering
- 2014 **Instructor**. Summer Math and Science Honors Academy, Berkeley, CA. Summer 2014, 2015.
Course Titles: Applied Calculus, SAT preparation
- 2011 **Instructor**. Centre of Science and Technology, Khayelitsha, South Africa. Spring 2011.
Course title: Advanced Calculus

MENTORING

Stanford University (2018-)

PhD Students

- Xiaohan (Anita) Shao. PhD student, Civil & Environmental Engineering.
- Matthew Liu. PhD student, Chemical Engineering.
2020 NASA Graduate Training Fellowship.
- Brandon Clark. PhD student, Chemical Engineering.

2018 National Science Graduate Research Fellowship
2020 Best Poster Award, Pan-Nano Conference
Anna Kogler. PhD student, Civil & Environmental Engineering.
2020 Stanford Interdisciplinary Graduate Fellowship
Lorelay Mendoza. PhD student, Civil & Environmental Engineering.
2019 National Science Graduate Research Fellowship
Valerie Niemann. PhD student, Chemical Engineering
2017 National Science Graduate Research Fellowship
Jinyu Guo. PhD student, Chemical Engineering.

Postdoctoral Fellows

Linchao Mu. Postdoctoral Fellow, Chemical Engineering.
Hang (Lucas) Dong. Postdoctoral Fellow, Chemical Engineering.

Master's Students

Valmik Lakhani. MS student, Chemical Engineering.
Ziyan Wu. Civil & Environmental Engineering

Undergraduates

Naomi Ray, Chemical Engineering.
Sydney Johnson, Chemical Engineering.
William Chow, Chemistry.
Yichong Wang, Chemistry.
Julia Simon, Chemical Engineering.
Bryan Romero, Chemistry.

University of Michigan (2017-2018)

Enrique Rodriguez, MS, Environmental Engineering. Current: PhD student, Michigan.
Nicholas Lowe, BS Environmental Engineering (2017-2018). Current: MS student, Michigan.
Alexi Sinanaj, BS Chemical Engineering (2017-2018).
Sarah Carl, PhD Chemical Engineering (2017-present). Current: Consultant, DSG Solutions.
Yan Du, BS Honors Environmental Engineering (2017-present).

University of California, Berkeley (2012-2017)

John Law, BS/MS Environmental Engineering (2017)
Ileana Wald, MS/PhD Environmental Engineering (2016-2017). Current:
Maja Wiprächtiger, MSc Environmental Engineering, ETH Zürich. Current: PhD student, ETH.
Michael Otieno Omollo, Lab technician at Sanergy, Ltd, Nairobi Kenya (2016).
Maritza Flores-Marquez, BS Environmental Engineering, UC Merced (2014).

Tutor, Project Touchdown, Berkeley, CA. 2012-2014.

Tutored low-income, minority high school students in math and science weekly.

The Phoenix Project. Stanford, CA. 2010-2012.

Director of Mentee Development - scaled program from 94 seniors to 220 across California.

Peer Tutor, Stanford Center for Teaching and Learning, Stanford, CA. 2009-2012.

Tutored Stanford students in math, chemistry, physics, economics, Spanish, and engineering.

PROFESSIONAL SERVICE

Peer Reviewer for Journals: *Environmental Science: Water Research and Technology*, *Water Research*, *Environmental Science & Technology*, *Joule*, *Science of the Total Environment*, *Environmental Engineering Science*, *Desalination and Water Treatment*, *Journal of Environmental Chemical Engineering*, *Resources Conservation and Recycling*

Peer Reviewer for Funding Agencies: *National Science Foundation*, *South Africa National Research Foundation*, *Schmidt Foundation*

1. Long-Range Sustainability Structure University Committee, Stanford University, 2020
2. Route to Getting Grants Committee for Junior Faculty, Stanford School of Engineering, 2019-present.
3. Graduate Admissions Committee, Stanford Department of Chemical Engineering, 2019-present.
4. Undergraduate Committee, Stanford Department of Chemical Engineering, 2018-present.
5. Coordinator for Research Experience for Stanford Undergraduates, 2018-2019.
6. Faculty Panelist, Stanford SERGE. Hosted by Stanford Black Engineering Graduate Students' Association. October 2018.
7. Advisory Board Member, Urban Life Mentors, Inc. 2018-present
8. Poster Judge, Michigan Undergraduate Research Opportunity Program. February 2018.
9. Symposium Organizer, American Chemical Society Fall 2018 Meeting. Symposium titled Waste to Product: Biological and Physicochemical Resource Recovery and Efficiency.
10. Diversity Advisory Board, ReNUWIt Engineering Research Center. 2015-2017.
11. Bay Area Graduate Pathways Symposium Organizing Committee. 2015-2017
12. Securing Water for Food Evaluator Intern, U.S. Agency for International Development. 2015-16.
13. Development Impact Lab Idea Team. 2013-2014.
14. National Society of Black Engineers, Stanford, Academic Excellence and Pre-College Initiative Chair. 2008-2012.

BROADER IMPACTS: PRESS AND OUTREACH PRESENTATIONS

Outreach Presentations

- 2019 Keynote Address, Bay Area Graduate Pathways to STEM. February 2020.
- 2019 **Preparing for Your Academic Interview**. NextProf Nexus Workshop. October 2019. Atlanta, GA.
- 2019 College readiness workshop. Urban Life Mentoring, Inc. August 2019. Oakland, CA.
- 2019 Summer Mathematics and Science Honors Academy at Stanford. July 2019. Stanford, CA.
- 2018 **Panelist**. Stanford Exposure to Research and Graduate Education (SERGE) Program. October 2018. Stanford, CA
- 2018 **Preparing for Your Academic Interview**. NextProf Nexus Workshop. September 2018. Berkeley, CA.
- 2018 **Speaker**, Graduate Fellowships in STEM. Jack Kent Cooke Foundation Scholars Weekend. August 2018. Landsdowne, VA.

- 2018 **Speaker**, Thriving as a College Scholar. Jack Kent Cooke Foundation Scholars Weekend. August 2018. Landsdowne, VA.
- 2018 **Keynote Speaker**, Welcome Session for Jack Kent Cooke Foundation Scholars Weekend. August 2018. Landsdowne, VA.
- 2018 **Using Engineering to Address Societal Problems: Producing Fertilizer from Urine**. May 2018. Fortis Academy, Ypsilanti, MI.
- 2018 **Panelist, Securing Postdoctoral Appointments, California Alliance Retreat**. March 2018.
- 2017 **Pee-Cycling: Creating Sustainable Fertilizers from Urine**. Fast Food For Thought, Sustainable Food Systems Initiative. University of Michigan. Ann Arbor, MI. October 2017. ([link](#))
- 2017 **Keynote Speaker, Stanford Black Scientists and Engineers Annual Banquet**. Stanford, CA.
- 2016 **Thinking Big, Working Hard, and Achieving: My Young Scholar Experience**.
Keynote Address. Jack Kent Cooke Foundation Young Scholars' Welcome Weekend. Baltimore, Maryland. June 2016
- 2015 **How to Apply to Graduate School as an Undergraduate Transfer Student**. Berkeley, CA.
- 2013 **Environmental Engineers: What We Do and Where to Start**.
Oakland Boys and Girls' Club Science/Math Outreach, Oakland, CA. November 2013.
- 2013 **Everybody Poops, the Sequel: What to Do About It**.
Education Program for Gifted Youth, Stanford, CA. June 2013.

Press Coverage

- 2019 **Can we recover valuable chemicals from sewage?** ([link](#)) Stanford Engineering News.
- 2019 **Imagining the future helps us engineer towards that future.** ([link](#)) Blum Center for Developing Economies, UC Berkeley.
- 2016 **How Your Pee Could Help Billions of People.** ([link video](#), [link article](#))
Video on urine nitrogen recovery. Produced by DNews, Discovery Communications.
- 2016 **NBC BLK 28 Under 28.** ([link](#))
Featured on inaugural list of 28 African-American innovators and game-changers.
- 2016 **Solving Real People's Real Problems.** ([link](#))
Video on development engineering and engineering for impact. Produced by Jack Kent Cooke Foundation.
- 2015 **UC Berkeley News Video.** 2015. ([link video](#), [link article](#))
World Toilet Day video featuring electrochemical nitrogen recovery from urine to produce fertilizer in Nairobi, Kenya. Produced by UC Berkeley News.

PROFESSIONAL AFFILIATIONS

American Institute of Chemical Engineers
American Chemical Society
Electrochemical Society
Association of Environmental Engineering and Science Professors
International Water Association
Sustainable Sanitation Alliance
International Society for Electrochemistry
International Society for Microbial Electrochemical Technologies
National Society of Black Engineers

PROFESSIONAL DEVELOPMENT

American Chemical Society New Faculty Workshop (August 2019)
Professoriate Bound (January-December 2018)
Dissertation Bootcamp, National Center for Faculty Development and Diversity (March 2015)
Penn Equity Institute for Doctoral Students in Higher Education (August 2015)
California Alliance (2015-2017)
Building Future Faculty Program, North Carolina State University (March 2017)
NextProf Workshop, University of Michigan (September 2017)
Next Generation Electrochemistry Workshop, University of Illinois Chicago (June 2018).

LANGUAGES

Spanish (fluent)
French (intermediate)
Xhosa (South African Bantu language; intermediate)