

Li Li, Barry and Shirley Isett Professor, PhD, she/her/hers

Dept of Civil & Environmental Engineering, Penn State University, University Park, PA

lli@engr.psu.edu; [@LiReactiveWater.bsky.social](#); [Homepage](#); [Google Scholar](#)**PROFESSIONAL PREPARATION**

| | | |
|------|--|---------------------------|
| 2005 | Ph.D. in Environmental Engr. + Water Resources | Princeton University, USA |
| 1999 | M.S. in Environmental Chemistry | Nanjing University, China |
| 1996 | B.S. in Environmental Chemistry | Nanjing University, China |

APPOINTMENTS

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|-----------------|---|--|
| 4/2022 – | Barry and Shirley Isett Professor, Dept. Civil & Environ. Engr., Penn State University (PSU) | |
| 7/1/2024 - | Director, Biogeochemistry Dual Title Degree Program, Penn State University | |
| 8/2018 – 6/2019 | Visiting professor (on sabbatical at ECHO lab (Andrea Rinaldo), École polytechnique fédérale de Lausanne (EPFL), Switzerland | |
| 9/2009 – | Full (7/2020 - present), Associate (7/2015 – 6/2020), Assistant (9/2009 – 6/2015) Professor, PSU | |
| 9/2005-9/2009 | Research Scientist (9/2007 – 9/2009), Geological Postdoctoral Fellow (9/2005 – 8/2007), Earth Sciences Division, Lawrence Berkeley National Laboratory | |

RESEARCH INTERESTS

Li works at the intersections of hydrology, biogeochemistry, ecology, and environmental engineering. She asks questions on how climate change and human perturbations (e.g., land use) regulate land and river biogeochemistry in Earth system. She is an Earth system modeler. Her group uses big data, machine learning tools, and reactive transport models to understand processes that drive temporal trends and spatial patterns of land and river hydro-biogeochemistry from watershed to global scales.

SELECTED HONORS AND AWARDS[Joanne Simpson Medal](#), American Geophysical Union, 2024[Paul A. Witherspoon Lecture](#), Hydrologic Sciences, American Geophysical Union, 2024

Fellow, American Geophysical Union, 2024 (0.1% of AGU members)

Institute of Energy and the Environment (IEE) Person of the Year, Penn State University, 2023

Penn State Engineering Alumni Society (PSEAS) outstanding research award, Penn State University, 2019

Commission for Woman Achieving Woman Award (faculty category), Penn State University, 2017

Invited participant, US Frontiers of Engineering, National Academy of Engineering, 2015

Wilson award for excellence in teaching, EMS, Penn State University, 2015

Wilson initiation award, EMS, Penn State University, 2010

SUPERVISION OF GRADUATE STUDENTS/POSTDOCTORAL FELLOWS (overall > 70% women and minority)

Li has supervised and mentored more than 19 Ph.D. students (11 completed, 9 current), 7 postdocs, 5 MS students, and 19 undergraduates. Former group members holding Faculty / postdoc / research scientist positions: N. Gawande (Pacific Northwestern National Laboratory, USA), J. Vilcaez (Oklahoma State University, USA), P. Heidari (Missouri University of Science and Technology, USA), B. Stewart (Caltech., USA), D. Kerins (University College Dublin., Ireland), V. K. Surasani (Birla Institute of Science and Technology, India), L. Wang (Xi'an Jiaotong University, China), H. Wen (Tianjin U., China), W. Zhi (Hohai University, China)

ONLINE EDUCATION TO THE BROAD COMMUNITY

Li Group has a track record of generating online instruction materials for the global community. Examples:

- Online instruction materials on Reactive Transport Modeling in Porous Media (<https://www.e-education.psu.edu/png550/node/829>). Based on website analysis, this teaching website has been accessed for > 70,000 times by > 45,000 users from > 20 countries across the globe since its launch in 2015.
- Instruction videos for a recently developed watershed-scale reactive transport model, BioRT-HBV (<https://www.youtube.com/@LiReactiveWaterLi/videos>, work in progress, scheduled to have full release with relevant reading materials in summer 2026.

BROADER SOCIETAL IMPACTS / ENVIRONMENTAL AWARENESS / MEDIA COVERAGE

Multiple papers have been covered by media extensively. **Rising river heat waves** ([Sadayappan and Li, PNAS, 2025](#)) has been covered by, for example, [The Conversation](#), [NPR](#) and [El País](#), the leading newspaper in Spanish. **Widespread deoxygenation in warming rivers** ([Zhi et al., 2023. Nature Climate Change 13,1105–1113](#)) has > 7 million media impressions (based on data analysis from Office of Strategic Communications at Penn State); it was featured in outlets nationally and internationally, including [The Conversation](#), [New Scientist](#), [Newsweek](#), [EoS](#), [Scripps News](#), [EurekAlert](#), [ScienceDaily](#), [phys.org](#), [The Freshwater Blog](#), [ABC27](#) (Harrisburg, PA), [Deutschlandfunk](#), as well as dozens of other outlets. The story piece in [The Conversation](#) received > 6,000 reads and was republished by > 20 news outlets. [Penn State release](#) was viewed > 24,000 times on [EurekAlert](#), a database for journalists.

SERVICE TO THE ACADEMIC AND SCIENCE COMMUNITIES (excerpts)

Editorial: Associate Editor: Global Biogeochemical Cycles (2022 –); Water Resources Research (2017 – 2022); Hydrological Processes (2021 –); Frontiers in Water - Water Quality (2019 – 2021); **Committees:** Advisory committee for Coastal Observations, Mechanisms, and Predictions Across Systems and Scales – Great Lake Modeling (COMPASS-GLM, member, 2021 –); Science Advisory Committee, WaDE: Watershed Dynamics And Evolution, Oak ridge National Laboratory (2023 –); AGU Horton Award (2023 –); Steering committee of Chesapeake Community Modeling Program (CCMP, member, 2019 – 2021); Penn State CEE Promotion and Tenure Committee (chair or member, 2019 – 2024); Penn State College of Engineering Promotion and Tenure Committee (2024 – present)

Leadership in diversity, equity, and inclusion: [Global monthly seminar series WARR: “Women Advancing River Research”](#) Seminar Series co-host with Ellen Wohl (2021 - 2022), Rebecca Barnes (2023 - 2024), Bryn Stewart, Devon Kerins, and Marguerite Xenopoulos (2025 -); [Workshop “Expanding the Critical Zone Research Network”](#), July 18 – 21, 2022; [Bringing the Science Home](#): a cybersymposium for earth surface scientists, June 23-24, 2020; [Growing the critical zone research network](#): Cyberseminars introduced basic concepts in CZ science to those not totally familiar with this field but interested in, 2020; [Workshop “Expanding the role of reactive transport modeling in biogeochemical sciences.”](#) (lead PI, with Kate Maher and Alexis Navarre-Sitchler), 2014; [Li Reactive Water Group has hosted](#) education activities for kindergarteners, girl scouts, primary and middle school students, and high school students from underrepresented groups. The high school student teams from my group won 1st and 3rd place, respectively, in 2012 and 2016, in the research competitions in the [PSU Upward Bound Math and Science Summer Academy](#).

Conference sessions: AGU Fall meeting sessions “Modeling the Critical Zone: Integrating Processes and Data across Disciplines and Scales”, 2013 – 2018; Computational Methods in Water Resources (CMWR), 2016

Proposal review panel: NSF, Water, Landscape, and Critical Zone Processes (WaLCZ), 2025; Hydrological Sciences (HS), 2021; Graduate Research Fellowship Program (GRFP), 2018; Environmental Engineering, 2017; Low temperature geochemistry and geobiology, 2015; DOE, SBR program, 2020; DOE, ESS program, 2022; SBR SLAC National Accelerator Laboratory Scientific Focus Area, 2017; SBR, Oak Ridge National Laboratory scientific focus area on Mercury Biogeochemistry, 2015; German Research Foundation, Deutsche Forschungsgemeinschaft (DFG), 2021

Proposal reviewer: US NSF, Division of Earth Sciences (Water, Landscape, and Critical Zone Processes (WaLCZ), Hydrological Sciences, Geobiology and low-temperature geochemistry, Marine geosciences); DOE (Basic Energy Sciences, Subsurface Biogeochemical Research (SBR), Office of Sciences); USDA Foundation for Food & Agriculture Research; US-Israel Binational Foundation, Stanford Synchrotron beamline; Consortium for Clean Coal Utilization (CCCU); **International:** Swiss National Science Foundation (SNSF), ETH Zurich Research Commission; German Research Foundation; Canadian Research Councils (the Social Sciences and Humanities Research Council (SSHRC), the Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR); Geological Survey Ireland

Journal Reviewer: Science; Nature; Nature Climate Change; PNAS; Science Advances; Water Resources Research; Global Biogeochemical Cycles; J Hydrology; Advances in Water Resources; Environmental Science & Technology; Geochimica Et Cosmochimica Acta; HESS, Hydrological Processes; Science of the Total Environment, Scientific Reports.

MEMBERSHIPS: American Geophysical Union (2003 - present); American Association for the Advancement of Science (AAAS) (2020 - present); Ecological Society of America (2022 – present); American Chemical Society (2009 – 2015); Geological Society of America (2012 – 2022)

AWARDS TO ADVISEES

1. Valerie Smykalov, Graduate Research Fellowship from NSF, 2025
2. Matt Berzonsky, first place in oral presentation, PIERS, Spring, 2025
3. Matt Berzonsky, Graduate Research Fellowship from NSF, 2024
4. Devon Kerins, Voss Postdoctoral Fellowship, Brown University 2024 - 2026
5. Bryn Stewart, Foster and Coco Stanback Postdoctoral Fellowship, Caltech, 2024-2026
6. Abby Knapp, Best poster award (graduate category), ECMSS, 2023
7. Matt Berzonsky, Best poster award (undergraduate category), ECMSS, 2023
8. Devon Kerins, Best Oral Presentation 2023 Penn State College of Engineering Student Symposium: Exploring Environmental Issues and Solutions through Science Session
9. Devon Kerins, Best Up-and-Coming Student Organization Award (Group award presented to the leadership of the Penn State Association of Water Students), 2023
10. Valerie Smykolav, University Graduate Fellowship, 2023
11. Matt Berzonsky, University Graduate Fellowship, 2023
12. Devon Kerins, Best presentation award, College of Engineering research symposium, 2023
13. Abigail Knapp, University Graduate Fellowship, 2022
14. Wei Zhi, Chinese Government Award for Outstanding Self-financed Students Abroad (国家优秀自费留学生奖学金), 2022
15. Kayalvizhi Sadayappan, C. Norwood Wherry Memorial Graduate Fellowship in Engineering, 2022
16. Devon Kerins, Cecil M. Pepperman Memorial Graduate Fellowship, 2022
17. Shreya Ramesh, 2nd place in student research presentation award, PA AWWA conference, April 2022
18. Matthew Berzonsky, undergraduate from Saint Francis University, Goldwater Scholarship, March 2022
19. Bryn Stewart, EnvironMentors Graduate Mentor Scholarship, Penn State University, August 2022-May 2023
20. Bryn Stewart, NSF-INTERN Program Supplemental Funding Award, April-August 2022
21. Kayalvizhi Sadayappan, C. Norwood Wherry Memorial Graduate Fellowship in Engineering, 2021
22. Shreya Ramesh, best poster award, Virtual EMS Celebration of Undergraduate Engagement (CUE), April 2021
23. Devon Kerins, NASA Pennsylvania Space Grant Consortium Graduate Fellowship, 2021
24. Devon Kerins, 1st place in student presentations in the first-ever virtual Environmental Chemistry and Microbiology Student Symposium, April 2021
25. Bryn Stewart, Graduate School Endowed Fellowship, Penn State, Fall 2021 (one student in the entire CoE)
26. Bryn Stewart, Cecil M. Pepperman Fellowship, Penn State University, 2020
27. Devon Kerins, George W. Johnstone Graduate Fellowship, 2020
28. Shreya Ramesh, research presentation award, Annual Biomedical Research Conference for Minority Students (ABRCMS), 2020
29. Kayalvizhi Sadayappan, University Graduate Fellowship, 2019
30. Wei Zhi, 3rd place for Best Graduate Oral Presentation in 21st Environmental Chemistry and Microbiology Student Symposium (ECMSS), April 14, 2018
31. Dacheng Xiao, AGU Fall meeting Outstanding Student Paper Award, 2017 (1% of students awarded)
32. Bryn Stewart, AGU David E. Lumley Young Scientist Scholarship, 2017
33. Wei Zhi, Best poster award in the "Minerals/Gas/Fracking" categories on Energy Days, May 2017
34. Michael Cavazza, 3rd place in the Society of Petroleum Engineers (SPE) student paper contest, September 28, 2016, at the SPE Annual Technical Conference and Exhibition in Dubai, United Arab Emirates (title "Reducing Freshwater Consumption in the Marcellus Shale Play by Recycling Flowback with Acid Mine Drainage")

35. High school students Miguel Santana and Cintia Vasquez won 1st place in research presentation competition in the Summer Experience in EMS (SEEMS) as part of the Upward Bound Math and Science (UBMS) Summer Residential Program, for their research in my lab, July 2016
36. Hang Wen, Best poster award to in the "Minerals/Gas/Fracking" categories on Energy Days, May 2016
37. Michael Cavazza, 1st place in the SPE Northeastern region student paper contest, April, 2016
38. Gregory Kojadinovich, 3rd place in the Penn State SPE student paper contest, March, 2016
39. Michael Cavazza, 1st place in the Penn State SPE student paper contest, March, 2016
40. Michael Cavazza, 1st place in the Grundy Haven Student Paper Contest, February, 2016
41. Michael Cavazza, 2nd place in the SPE Northeastern region student paper contest, April, 2015
42. Michael Cavazza, Undergraduate Merit Award (1 out of 200 students), Dept. Energy & Mineral Engineering, Penn State, April, 2015
43. Li Wang, student Travel Award from the DOE office of sciences Subsurface Biogeochemical Research (SBR) PI meeting in May 6-7, 2014
44. Chen Bao, Centennial Research Travel Award, College of the Earth and Mineral Sciences, Penn State, May 2014
45. Chen Bao, Graduate Merit award, Dept. Energy & Mineral Engineering, Penn State, May 2014
46. Peyman Heidari, Charles B. Darrow award, Dept. Energy & Mineral Engineering, Penn State, May 2013
47. Peilin Cao, 1st place in poster presentation competition in the Energy and Engineering category, Carbon Conference of CarbonEARTH, February, 2012
48. High school students Sierra Anderson, Chris Zurita, Fonseca, and Jermayne Jones won 1st place for their research presentation at the closing ceremony. They worked in my lab with graduate student Jesse Chao as part of the 2012 Summer Experience in the Earth and Mineral Sciences (SEEMS) program within the Penn State Upward Bound Math and Science (UBMS) Summer Academy
49. Evan Frye, Geological Society of America (GSA) Research Grant, 2010

ADVISEES (woman and minority: > 70%)

In progress:

Postdocs:

1. Kayalvizhi Sadayappan (Fall 2024 -)

PhD:

2. Yuanyuan Luo (Fall 2025 -)
3. Valerie Smykalov (Fall 2023 -)
4. Matt Berzonsky (Fall 2023 -)
5. Andrew Vierbicher (Fall 2022 -)
6. Abby Knapp (Fall 2022 -)
7. Fiona Liu (Fall 2022 -)

Alumni

Postdocs:

8. Elizabeth Andrews 2022 – 2023 (now research scientist at Penn State University, Geosciences)
9. Wei Zhi 2020 – 2023 (now professor, Hohai University, China)
10. Hang Wen 2018 - 2020 (associate professor, Tianjin University, China)
11. Vikranth K. Surasani 2013 (assistant professor, Birla Institute of Science and Technology, India)
12. Hongfei Wu 2012 (engineer at Halliburton, Houston)
13. Nitin Gawande 2011 (research scientist, Pacific Northwestern National Laboratory)
14. Javier Vilcaez 2011 (associate professor, Oklahoma State University)

PhD:

15. Devon Kerins 2024 (assistant professor, University College Dublin)
16. Kayalvizhi Sadayappan 2024 (postdoc at Penn State)
17. Bryn Stewart 2023 (postdoc fellow at Caltech; incoming assistant professor at U Arizona starting in January 2026)
18. Dacheng Xiao 2020 (environmental consulting company)
19. Wei Zhi 2019 (professor at Hohai University, China)

20. Zhang Cai 2018 (environmental consulting company)
21. Hang Wen 2017 (Associate professor, Tianjin University, China)
22. Chen Bao 2015 (engineer, Shell)
23. Fatemeh Salehikhoo 2015 (researcher, University of Wyoming)
24. Li Wang 2015 (assistant professor, Xi'an Jiaotong University, China)
25. Changhe Qiao 2015 (quantitative research associate, Susquehanna International Group)
26. Peyman Heidari 2014 (assistant professor, Missouri University of Science & Technology)
27. Peilin Cao 2014 (engineer, Chevron)

Msc:

28. Jancoba Dorley 2018 (PhD student, University of New Mexico, co-advised with Chris Duffy)
29. Rebecca Fogarty 2014 (engineer, Baker Hughes)
30. Mariya Skocik 2014 (engineer, Chevron)
31. Jessie Tse-Hua Chao 2014 (Graduate student, University of British Columbia)
32. Evan Frye 2011 (U.S. Energy Information Administration)

BSc: with honors thesis:

33. Daniel Kozar 2019 (PhD student, UC Davis)
34. Sruthi Kakuturu 2017 (PhD student, UT Austin)
35. Michael Cavazza 2016 (engineer, Shell)
36. Robert Follet 2012 (engineer, Chevron)

BSc: Undergraduate researchers without thesis:

1. Colin Conway, Fall 2024 - , Schryer honors student
2. Grace Deng, Fall 2024 - , Schryer honors student
3. Riley Westman, summer 2023, Climate Science REU
4. Immanuel Bissell, summer 2021, Climate Science REU
5. Shreya Remesh, spring 2019 – (Millennium scholar, Schryer honors college), Climate Science REU
6. Matthew Berzonsky, spring 2022 – summer 2023
7. Cissy Ming, spring 2020
8. Juan Pablo Speer, summer 2020, Climate Science REU
9. Xiaoqing Ye, summer 2020
10. Hayden Carpenter, summer 2020
11. Jared Kine, spring 2019
12. Sarah Ticker 2018 – (WISER | MURE | FURP)
13. Jaime Burdette 2018 – (WISER | MURE | FURP)
14. Bryn Stewart 2017 - 2018
15. Christian Alvarado 2017 (Undergraduate student, Penn State, WISER | MURE | FURP)
16. Megan Smajda 2017 (Undergraduate student, Penn State, WISER | MURE | FURP)
17. Kriston Ramdass 2017 (Undergraduate student, Penn State, WISER | MURE | FURP)

COURSES

Department Civil & Environmental Engineering, PSU (FA 2016 – present)

1. CE 370: Introduction to Environmental Engineering (SP17, SP20, FA20; typical class size: 160 – 180)
2. CE 403: Energy use, CO2 emission, and our infrastructure (SP23 – 25; typical class size: 40 - 60)
3. CE 475: Water Quality Chemistry (SP18, class size: 15)
4. CE 474: Water Quality Chemistry Lab (SP18, class size: 15)
5. CE 574: Reactive Transport Processes (SP17, SP18, Fall 2019 – 2024; typical class size: 7 – 20)
6. CE 591: Kappe Seminar series for Environmental Engineering and Water Resources (FA 17, FA + SP 2019 – 2025; typical attendance: 30 – 50)
7. CE 592: Special topics in Environmental Engineering (FA16, SP21, FA23, SP24; typical class size: 10 – 20)

Department of Energy & Mineral Engineering (FA 2009 – SP 2016)

8. PNG 410: Applied reservoir engineering (every spring, 2010 - 2015; typical class size: 160 – 180)
9. PNG 420: Reservoir analysis and secondary recovery (every fall, 2010 – 2015; typical class size: 160 - 180)
10. PNG 411: Introduction to oil and gas extraction (every fall 2012 – 2015; typical class size: 40 - 50)

11. PNG 550: Reactive transport in subsurface (FA 10, FA11, FA12, SP16; typical class size: 10 - 20)
Beyond Penn State U.
12. Watershed Reactive Transport Processes, CUAHSI virtual university (November 9 – Dec. 9, 2021)

CURRENT AND COMPLETED PROJECTS (my current share totals ~ \$3.3 M, out of ~ \$18 M)

| Project Titles (In progress) | Role | Period | current total: \$3.3 M |
|---|-------|----------------------|----------------------------------|
| Unraveling Continental-scale Patterns and Processes of Terrestrial and Aquatic Carbon Fluxes under Hydroclimate Extremes. US DoE | PI | 09/01/24 – 08/31/26 | \$400,000 |
| Collaborative proposal: How do changes in climate and land cover perturb grassland water and carbon cycles belowground? NSF Hydrological Sciences | PI | 09/01/24 – 08/31/27 | \$332,550 |
| SitS: Spatial and temporal mapping of dissolved organic matter transformations in the rhizosphere using subsurface gas and aqueous phase probe networks. US Department of Agriculture | PI | 6/1/2024 – 5/31/2027 | \$100,000 |
| Illuminating patterns and processes of water quality in US rivers using physics-guided deep learning, NSF, Hydrological Sciences | PI | 03/01/24 – 02/28/27 | \$447,958 |
| Collaborative Research: From Peaks to Slopes to Communities, Tropical Glacierized Volcanoes as Sentinels of Global Change: Integrated Impacts on Water, Plants, and Elemental Cycling, NSF, Frontier Research in Earth Sciences (FRES) | PI | 09/01/23 – 08/31/27 | \$375,797 out of ~\$5 M |
| Collaborative Research: How roots, regolith, rock and climate interact over decades to centuries — the R3-C Frontier, NSF FRES | PI | 08/01/21 - 07/31/26 | \$393,581 out of \$3 M |
| Collaborative Research: Network Cluster: The Critical Zone in the age of Big Data: using an integrative approach to assess ecohydrological resilience across scales. NSF CZCN program | PI | 9/1/20 – 8/30/26 | \$454,372 out of \$3.2 M |
| “CZCN: Dynamic water storage in montane watersheds”. NSF CZCN program | PI | 9/1/20 – 8/30/26 | \$421,847 out of \$5.6 M |
| Project Titles (Completed) | | | |
| 1. CZ Research Coordination Network (RCN): Building capacity to deepen the critical zone: expanding boundaries and exploring gradients through data-model synergy, collaborative with K. Singha (CSM), Sullivan (KU), NSF CZO program | Co-PI | 06/01/19 – 05/31/25 | \$39,396 out of \$500,000 |
| 2. SitS: Collaborative Research: Soils are signaling shifts in aggregate life-cycles: What does this mean for water, carbon and climate feedbacks in the Anthropocene? NSF Signal in soils | PI | 1/15/21 – 1/14/24 | \$233,042 out of ~ \$1.1 million |
| 3. Advancing a Watershed Hydro-biogeochemical Theory: Linking Water Travel Time and Reaction Rates Under Changing Climate, with Sullivan (KU), Williams (LBNL), Dept. of Energy (DoE), Subsurface Biogeochemistry Research (SBR) program | PI | 09/01/19 – 08/31/22 | \$540,000 out of \$600,000 |
| 4. Digging deeper: Do deeper roots enhance deeper water and carbon fluxes and alter the trajectory of chemical weathering in woody-encroached grasslands? Collaborative with Sullivan at U Kansas and Nippert at Kansas State U., NSF Hydrological Sciences | PI | 09/01/19 – 08/31/22 | \$198,060 out of \$665,000 |
| 5. RAISE-SitS: Designing models to forecast how biogeochemical fluctuations in soil systems govern soil development, terrestrial water storage and ecosystem nutrient fluxes, Collaborative with Sullivan (KU, PI), Hirmus (UC Riverside), Billings (KU), Flores (Boise State), NSF Geosciences | PI | 9/1/18- 8/31/21 | \$121,266 out of \$500,000 |

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| 6. | Using the Susquehanna - Shale Hills CZO to Project from the Geological Past to the Anthropocene Future. (PI S. Brantley, PSU), NSF- Critical Zone program | Co-PI | 10/01/13 – 9/30/21 | \$780,000 out of \$6,200,000 |
| 7. | Collaborative Research: Combining complex systems tools, process-based modelling and experiments to bridge scales in low temperature geochemistry. With Perdrial, Rizzo (UVM), Harpold (U Nevada, Reno), NSF – Geobiology and low-temperature geochemistry | PI | 01/01/18 – 12/31/ 20 | \$173,352 out of \$650,000 |
| 8. | Collaborative Research: Determining the eco hydrogeologic response of tropical glacierized watersheds to climate change: An integrated data-model approach. with Ng and Wickert (U Minnesota), NSF – Hydrological Sciences | PI | 07/01/18 – 06/30/21 | \$151,685 out of \$650,000 |
| 9. | Multi-scale and Multi-Model Global Sensitivity Analysis for Identifying Key Controlling Processes of Complex Systems, collaborative with Ye (Florida State U), DOE Subsurface Biogeochemistry Research (SBR) | PI | 9/15/2018 - 9/14/2020 | \$38,712 out of \$180,000 |
| 10. | Advancing capabilities for forecasting water quality. With Brantley, Institute of Cyber Science, Penn State Univ. | PI | 05/01/18 – 04/30/19 | \$34,160 |
| 11. | Understanding Ecohydrological Controls of Biogeochemical Reactions and Fluxes at the Watershed Scale, with Kaye and Shi (PSU), DOE Subsurface Biogeochemistry Research (SBR) | PI | 09/01/16 – 08/14/19 | \$180,000 |
| 12. | Redefining Reactive Surface Area: Understanding Reactive Interfaces in Heterogeneous Porous Media, NSF - Geobiology and low-temperature geochemistry | PI | 07/01/15 - 06/30/18 | \$193,050 |
| 13. | Understanding characteristics of hyper saline waters from deep aquifers for geological carbon sequestration. DOE EERE program | Co-PI | 09/01/15 – 02/28/17 | \$99,825 |
| 14. | 3D Data Acquisition and 3D Printing to Construct “Digital Twins”, Liu (PI), PSIEE seed grant | co-PI | 03/15/15 – 06/30/16 | \$25,000 |
| 15. | Understanding, predicting, and preventing reservoir souring. BP, subcontract through Energy Biosciences Institute (EBI) at UC Berkeley. | PI | 01/01/14 – 12/31/15 | \$95,000 |
| 16. | Geochemical transformations caused by CO ₂ injection or leakage. Department of Energy National Energy Technology Laboratory (NETL). | PI | 01/01/11 – 12/31/11 | \$38,038 |
| 17. | Development of a coupled compositional and reactive transport model for gas flooding reservoir applications. With Johns (PSU), Gas Flooding Joint Industry Project. | Co-PI | 08/01/11 – 05/31/15 | \$108,894 |
| 18. | Expanding the role of Reactive Transport Modeling (RTM) within the Biogeochemical Sciences. With Maher (Stanford), and Navarre-Sitchler, A. (CSM). NSF Geobiology and low temperature geochemistry program | PI | 02/01/14 – 02/28/15 | \$50,000 |
| 19. | Scaling effects of Cr(VI) reduction kinetics: the role of geochemical heterogeneities, DOE SBR | PI | 9/01/11 – 5/31/15 | \$150,000 |
| 20. | Develop a General Quantitative Framework to Understand, Quantify, and Predict the Evolution of Single Fracture Properties and to Accommodate the Opposing Observations on "Fracture Opening", DOE NETL | PI | 10/23/2013 - 6/30/2014 | \$70,000 |
| 21. | NRAP 3rd Generation ROM Release and Transport Through Wells. DOE NETL | PI | 11/15/2013 – 11/14/2014 | \$89,277 |

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| 21. | Integration of Multiple Natural Tracer Signals in Reactive Transport Modeling. DOE NETL | PI | 11/15/2013 – 11/14/2014 | \$63,000 |
| 22. | Optimizing parameters for predicting the geochemical behavior and performance of discrete fracture networks in geothermal systems, DOE Efficiency and Renewable Energy Golden Field Office (DOE EERE) | co-PI | 06/01/12 – 11/15/14 | \$149,628 Out of \$1,050,000 |
| 23. | Reactive Transport Processes in Microbe-Enhanced Hydrocarbon Recovery (MEHR): Process Understanding and Optimization. BP, subcontract through Energy Biosciences Institute (EBI) at UC Berkeley. | PI | 01/01/2012 – 12/31/2013 | \$175,000 |
| 24. | Geochemical modeling integration of isotope signatures. DOE NETL | PI | 11/15/12 – 09/30/13 | \$66,040 |
| 25. | Development of reactive transport models for CO ₂ leakage, DOE NETL | PI | 10/01/11 – 6/30/13 | \$180,000 |
| 26. | Clogging process during field scale biostimulation. DOE Office of Sciences Subsurface Biogeochemical Research (SBR). Subcontract through Lawrence Berkeley National Laboratory (LBNL). | PI | 12/11/09 – 09/30/13 | \$279,414 |
| 27. | Development of a Subsurface Reactive Transport Model for Predicting Potential Water Quality Problems at Marcellus Shale. With Brantley. The Pennsylvania Water Resources Research Center (PA-WRRC). | PI | 03/01/11 – 05/31/13 | \$18,000 |
| 28. | Multiphase Reactive Transport Processes Associated with Wellbore Cement Degradation during CO ₂ Leakage. DOE NETL | PI | 01/01/11 – 02/29/12 | \$62,100 |
| 29. | Risk-informed Site Assessment and Selection for the Long-term Geologic Disposal of CO ₂ . With Blumsack, DOE NETL | Co-PI | 01/01/11 – 02/29/12 | \$18,389 out of \$73,436 |
| 30. | Quantifying the environmental impacts of carbon leakage on water quality. College of Earth and Mineral Sciences, Wilson Initiation research grant, PSU | PI | 07/01/10 – 06/31/11 | \$10,000 |
| 31. | Reactive transport processes associated with microbe-enhanced oil recovery. BP, subcontract through Energy Biosciences Institute (EBI) at UC Berkeley. | PI | 12/11/09 – 08/14/11 | \$59,771 |
| 32. | Biodegradation of oil spill and their environmental impacts. BP, subcontract through Energy Biosciences Institute (EBI) through UC Berkeley. | PI | 12/11/09 – 12/31/11 | \$99,771 |

BIBLIOGRAPHY ([Google Scholar](#), citation >7,800, h-index: 51, as of November, 2025)

- Sadayappan, K., and L. Li. 2025. Riverine heat waves in the rise, outpacing air heat waves. PNAS. 122 (39) e2503160122. <https://doi.org/10.1073/pnas.2503160122>
- Li, L., 2025. Ancient carbon released through modern rivers. Nature. 642 (8066), 41-42
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INVITED SEMINARS AND PRESENTATIONS

2025

1. The invisible river water quality at the confluence of “big” data and “deep” models. Earth System Science Interdisciplinary Center. February 3, 2025

2024

2. Widespread deoxygenation in warming rivers, January 18, 2024, Chesapeake Bay program. Over zoom
3. Critical Zone Science at The Convergence of Disciplines, People, Place, and Scales. Goldschmidt conference, August 23, 2024. Chicago
4. The future of river water quality at the confluence of physics-based and machine learning models. Google / Alphabet, September 17, over Google Meet
5. Reactive transport models in the 21st century. Reactive transport workshop, Paris, France. October 24.
6. Unravelling Patterns and Processes Driving Terrestrial and Aquatic Carbon Fluxes. COMPASS monthly seminar, November 21, 2024
7. Deep Learning reveals distinct River Water Quality responses to climate change across diverse Land Uses. American Geophysical Union, December 9-13, 2024
8. River Water Quality Under Climate Extremes. American Geophysical Union, December 9-13, 2024
9. The invisible river water quality at the confluence of “big” data and “deep” models. Paul A. Witherspoon Lecture, American Geophysical Union., December 9-13, 2024

2023

10. Women Plus Water conversations, February 9, 2023 (over zoom), Global Water Forum, Canada
11. Catchment structure and function in diversely disturbed landscape, keynote speaker, Gordon research conference, June 18, 2023, Andover, NH, USA
12. Climate controls on river chemistry, Goldschmidt, 9eO2, July 7-11, 2023, Lyon, France,
13. Illuminating the “invisible”: carbon transformation and transport in the deeper subsurface. B22B-07. American Geophysical Union Annual meeting, Dec 11-15, 2023, San Francisco, CA, USA
14. Patterns, Trends and Drivers of Water Quality: Insights from a Deep Learning Approach. H41B-05, American Geophysical Union Annual meeting, Dec 11-15, 2023, San Francisco, CA, USA

2022

15. Climate controls on river chemistry, American Geophysical Union (AGU), Dec 12-16, 2022
16. Hydro-biogeochemical processes in Variably Inundated Environments, Variably Inundated Environments Workshop (VIEW) Workshop, May 4, 2022
17. River chemistry in the Anthropocene, University of Illinois at Urbana Champaign, Natural Resources & Environmental Sciences (NRES), April 22, 2022
18. Hydrological reactivity across scales, ACS spring, March 20-24, 2022
19. From soils to streams: the structure and function of the Critical Zone in the Anthropocene, WARR talk, Feb. 17, 2022
20. The land, the river, and the connection in between, Oak Ridge National Laboratory (ORNL) Science Focus Area workshop, Feb. 8, 2022

2021

21. How simple should simple models be? AGU invited talk, abstract H32B-05 presented at Fall Meeting, December 15 (virtual), New Orleans, LA
22. The shallow and deep hypothesis: linking flow paths, biogeochemical reactions, and stream chemistry in the Critical Zone? AGU invited talk, abstract H51D-04, presented at Fall Meeting (virtual), December 17, New Orleans, LA
23. The shallow and deep concentration contrast ratio, part of “tools for meta analysis”, CUAHSI seminar series on “Tools for integrating and synthesizing data from CZOs and watershed sites”, November 18, 2021

24. The shallow and deep hypothesis: linking flow paths, biogeochemical reactions, and stream chemistry in the Critical Zone, November 8, 2021, Soil Society SA
25. Using deep learning tools to forecast dissolved oxygen. Department of Energy AI4ESP workshop, November 2, 2021
26. The shallow and deep hypothesis: linking flow paths, biogeochemical reactions, and stream chemistry in the Critical Zone, K.D. Nelson Lecture Series, Syracuse University, Oct. 28, 2021
27. The shallow and deep hypothesis: linking flow paths, biogeochemical reactions, and stream chemistry in the Critical Zone. St. Anthony Falls Laboratory seminar series, University of Minnesota, Twin Cities, Sept. 14, 2021
28. Gordon Research Conference on Catchment Sciences. June 20-25, 2021 (scheduled and cancelled)
29. From pores to watersheds: reactions at interfaces. ACS spring meeting, April 8, 2021 (virtual)
30. The shallow and deep hypothesis: linking flow paths, biogeochemical reactions, and stream chemistry in the Critical Zone, Feb. 15, 2021, ORNL seminar series

2020

31. The shallow and deep hypothesis: linking flow paths, subsurface biogeochemical reactions, and stream chemistry in the Critical Zone, Tianjin University, China, Dec. 16, 2020 (via zoom)
32. Significant stream chemistry response to temperature variations in a high elevation mountain, LBNL Watershed Science Focus Area community call, November 10, 2020 (via zoom)
33. The shallow and deep hypothesis: distinct water flow paths shape contrasting stream water chemistry, Texas A & M University, October 28, 2020 (via zoom)
34. From pores to watersheds: how and how much can we extrapolate from small-scale understanding to large-scale patterns? ENIGMA Final Conference, University of Copenhagen, Denmark. April 14-16, 2020 (cancelled due to covid-19)
35. From pores to watersheds: biogeochemical reactions at interfaces. ACS annual meeting, Philadelphia. March 22-26, 2020 (cancelled due to covid-19)

2019

36. Biogeochemical reactions in natural systems: rates, fluxes, and residence times, IRSTEA, Lyon, France, June 6, 2019
37. Biogeochemical reactions in natural systems: rates, fluxes, and residence times, Swedish University of Agricultural Sciences (SLU), Sweden, May 29, 2019
38. Catchments as hydro-biogeochemical systems: What can we learn from virtual experiments?, Dept of Civil and Environmental Engineering, Ecole Polytechnique Zurich, May 3, 2019
39. Catchments as hydro-biogeochemical reactors under changing climate conditions. Environmental Engineering Seminar Series, Dept of Architectural, Civil and Environmental Engineering, Ecole Polytechnique Federal Lausanne, ENAC, Lausanne, Switzerland, March 12, 2019
40. Catchments as Hydro-biogeochemical Reactors: Integrating data and models across disciplines. University of Freiburg, Freiburg, Germany, February 7, 2019
41. Catchments as Hydro-biogeochemical Reactors: Integrating data and models across disciplines. University of Zurich, Zurich, Switzerland, February 5, 2019

2018

42. Watershed reactive transport, Ecole Polytechnique Zurich (ETH Zurich), Kirchner laboratory, September 26, 2018
43. Watershed reactive transport, Ecole Polytechnique Federal de Lausanne (EPFL), ECHO laboratory, September 12, 2018
44. Hydrological and biogeochemical coupling at the watershed scale, keynote speaker, Computational Methods in Water Resources (CMWR), Saint-Malo, France, June 3-6, 2018
45. Model complexity and simplicity from a reactive transport perspective: When, where, and why does mechanistic biogeochemistry matter?, keynote speaker, Integrated Hydrosystem Modelling 2018 Conference, University of Tübingen, Germany, April 3 – 7, 2018
46. Data assimilation in hydrobiogeochemistry, keynote speaker, AMS Special Symposium on Multiscale Predictability, Austin, Texas, Jan. 7 – 9, 2018

2017

47. Hydrobiogeochemical modeling for water quality forecasting, Penn State University, Water Insights series, November 14, 2017
48. Critical Reactive Interfaces across scales, Department of Earth Sciences seminar, University of Minnesota, November 9, 2017
49. Ecohydrological drivers of biogeochemical processes at the watershed scale, biannual reactive transport workshop, Amboise, France, October 2, 2017
50. Predictive understanding of metal export in a mining-impacted watershed, Coal Creek Watershed Coalition, Crested Butte, CO, September 5, 2017

2016

51. Synchronized hydrogeochemical processes drive chemostatic behavior, AGU fall session, December 13, 2016
52. Understanding hydrogeochemical processes at the watershed scale, University of Tübingen, Tübingen, October 13, 2016
53. Bridging computational bridges between biogeochemistry, hydrology, and climate sciences, Advances in Mathematical and Computational Climate Modeling Workshop, aka: AXICCS workshop, Rockville, MD, September 12-13, 2016
54. Biogeochemical interactions across scales, Jilin University, Jilin, July 25, 2016

2015

55. Predictive Understanding of Biogeochemical Reactions in Heterogeneous Porous Media. Annual meeting of Geological Society of America, Baltimore, Maryland, November 1-4, 2015.
56. Reactive transport modeling as a powerful tool for understanding and predicting transport and fate of contaminants in natural waters, Penn State Water Resources Webinar, October 28, 2015.
57. RT-Flux-PIHM: A Coupled Hydrological, Land Surface, and Reactive Transport Model for Hydrogeochemical Processes at the Watershed Scale., Peking University, July 20, 2015
58. Controls of biogeochemical processes across scales. Tsinghua University, July 17, 2015
59. Controls of biogeochemical processes across scales and across disciplines, China University of Geosciences, July 15, 2015
60. "Nature is an artist: why and how does it relate to water and energy?" Today at Millennium Café. Penn State University, February 17, 2015

2014

61. "When water meets rock: controls of spatial heterogeneities across scales", Dept. Energy and Mineral Engineering, Penn State University, University Park, September 18, 2014.
62. "When water meets rock: controls of spatial heterogeneities across scales", Dept. Energy, Environmental, and Chemical Engineering, departmental colloquium, Washington University at St. Louis, September 5, 2014.
63. "When water meets rock: chemical weathering across scales." 4th CUAHSI Biennial Colloquium on Hydrologic Science and Engineering, Shepherdstown, WV, July 28 -30, 2014.
64. "Unravelling Controls on Marcellus Shale Weathering", session 16e, Goldschmidt conference, Sacramento, June 6 - 11, 2014.
65. "Expanding the role of reactive transport modeling in biogeochemical sciences." DOE Office of Sciences TES-SBR joint PI meeting, Washington, DC, May 6-7, 2014.

2013

66. "Heterogeneity controls of water-rock interactions." Dept. Civil & Environmental Engineering, University of Illinois at Urbana-Champaign, July 17, 2013.
67. "Cement-CO₂ interactions: chemistry-induced porosity and permeability evolution." NETL Reduced Order Models (ROM) workshop, Carnegie Mellon University, June 7, 2013.
68. "Geologic Carbon Sequestration: Possibility and Impacts of CO₂ Leakage." Saint Francis University, February 1, 2013.

2012

69. "Water-rock interaction: what is the role of geochemical hot spots?" PSU water talks, University Park, PA, November 5, 2012.
70. "Reactive transport modeling: an integration tool for understanding subsurface geochemical processes." Geochemistry workshop, National Energy and Technology Laboratory, Pittsburgh, PA, June 18, 2012.

71. "Microbe-Enhanced hydrocarbon recovery and Marcellus related water issues", Department of Energy Office of Sciences Subsurface Biogeochemistry Research Program PI meeting breakout session on "Subsurface Biogeochemical Processes Associated with Energy Production, Usage, and Storage", Washington, D. C., April 30 – May 2, 2012.
72. "Cement degradation under conditions relevant to geological carbon sequestration." graduate seminar, Dept. Civil and Environmental Engineering, Geotechnical program, Penn State University, State College, PA, April 27, 2012.
73. "Understanding controls of physicochemical heterogeneity on field scale U(VI) bioreduction rates: challenges and future directions." Lawrence Berkley National Laboratory Scientific Focus Area (SFA) All Hands meeting, Berkeley, CA, January 12-13, 2012.

2011

74. "Geologic carbon sequestration: possibility and environmental impacts of CO₂ leakage." graduate seminar, Dept. Civil and Environmental Engineering, Penn State University, State College, PA, November 9, 2011.
75. "Environmental Impacts of Geological Carbon Sequestration." Penn State - Peking University Multi-workshops on PKU-Penn State University Academic Exchange Day, Peking, China, May 18, 2011.
76. "'The Issue of Scaling in Understanding Reactive Transport Processes in Subsurface.'" DOE Office of Science Subsurface Biogeochemistry Research (SBR) PI meeting, Washington DC, April 26-28, 2011.

2010

77. "When is Small Scale Information Important in Determining Large Scale Mineral Dissolution Rates?", Abstract H44A-07 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., December 13-17, 2010.
78. "Geological carbon sequestration research at Penn State." Penn State Energy Day, Washington, DC, November 19, 2010.
79. "Effects of physical and chemical heterogeneities on biogeochemical processes associated with uranium bioremediation at Rifle, Colorado." DOE Office of Science Environmental Remediation Science Program (ERSP) PI meeting, Washington DC, March 29-31, 2010.

2009

80. "Reactive transport processes in natural porous media: research opportunities and applications." EME 590 colloquium, October 15, 2009.
81. "Effects of physical and geochemical heterogeneities in biogeochemical processes and implications for uranium bioremediation." CEKA All Hands meeting, October 1, 2009.
82. "Mineral Reaction Kinetics in Heterogeneous Porous Media during Geologic CO₂ Sequestration." Dept. Energy and Mineral Engineering, Penn State University, April 27, 2009.

2008

83. "Effects of physical and chemical heterogeneities on biogeochemical processes associated with uranium bioremediation at Rifle, Colorado." American Geophysical Union 2008 Fall Meeting, San Francisco, December 16, 2008.
84. "Geochemical reaction kinetics under conditions relevant to geological carbon sequestration." Dept. Geosciences, Penn State University, May 1, 2008.
85. "Uranium bioremediation and biogeochemical reaction rates in heterogeneous porous media." University of Iowa, March 11, 2008.

2007

86. "Biogeochemical reaction rates in heterogeneous porous media at multiple spatial scales." Lehigh University, March 27, 2007.
87. "Biogeochemical reaction rates in heterogeneous porous media at multiple spatial scales." Harvard University, March 12, 2007.

2005

88. "Scaling of geochemical reaction kinetics using pore-scale network modeling." University of California, Davis, October 24, 2005.
89. "Scaling of geochemical reaction kinetics using pore-scale network modeling." Penn State University, Center of Environmental Kinetic Analysis (CEKA) All Hands meeting, September 14, 2005.
90. "Scaling of geochemical reaction kinetics using pore-scale network modeling." Lawrence Berkeley National Lab, Earth Sciences Division, May 9, 2005.

INVITED WORKSHOP AND PANEL PARTICIPATION

1. Headwater working group, USGS and EPA, Powell Center, Fort Collins, 2023 - 2025
2. ORNL SFA workshop, Feb. 1 – March 1, 2022
3. Workshop on Concentration Discharge relationship, March 11-14, 2018, Idaho State University, Pocatello, Idaho
4. A Joint CZO / LTER / NEON / ISMC Dialogue: Using Observation Networks to Advance Earth System Understanding: State of the Art, Data-Model Integration, and Frontiers, February 13-15 2018, Battelle-NEON HQ, Boulder, Colorado
5. Advances in Mathematical and Computational Climate Modeling Workshop, aka: AXICCS workshop, Washington, DC, September 12-13, 2016
6. Invited participant, U.S. Department of Energy's (DOE) Office of Biological and Environmental Research (BER) workshop on "Multiscale Computation: Needs and Opportunities for BER Science", Washington, D.C., August 26, 2014
7. Invited participant, presenter, and session summary writer for the breakout session on "Building better models for model practitioners", DOE Office of Sciences TES-SBR joint PI meeting, Washington, DC, May 6-7, 2014.
8. Invited panelist, plenary session titled "Fossil Fuel Microbiology/Souring, The Energy Bioscience Institute (EBI) Retreat Planning Committee (ERPC), University of Illinois at Urbana Champaign, July 15 – 17, 2013.
9. Invited participant, National Science Foundation (NSF): An Earth Cube Domain Workshop integrating the inland-waters geochemistry, biogeochemistry and fluvial sedimentology communities. Boulder, Colorado, April 24-26, 2013.
10. Invited participant, Community Surface Dynamics Modeling Systems (CSDMS) 2.0: moving forward. Boulder, Colorado, March 23 – 25, 2013.
11. Invited panelist, Department of Energy Office of Sciences Subsurface Biogeochemistry Research Program PI meeting breakout session on "Subsurface Biogeochemical Processes Associated with Energy Production, Usage, and Storage", Washington, D. C., April 30 – May 2, 2012.
12. National Science Foundation (NSF) Science, Engineering, and Education for Sustainability (SEES) Workshop: Natural and Engineered Carbon Sequestration. Minneapolis, Minnesota, Oct. 7-8, 2011.
13. Department of Energy Office of Sciences Subsurface Biogeochemical Research (SBR) workshop on data management, Washington, D. C., April 28-29, 2011.
14. Department of Energy joint workshop on carbon sequestration and geothermal energy science ("To identify key issues common to carbon sequestration and geothermal energy"), Maryland, June 15-17, 2010.

SERVICE TO THE DEPARTMENT, COLLEGE, AND UNIVERSITY

1. *Record of committee work at campus, college, department, and university levels*
- 1) Director, Biogeochemistry Dual Title Degree Program (Fall 2024 – present)
- 2) College of Engineering P & T committee (Fall 2024 – Spring 2025)
- 3) Department mentoring committee, chair (Fall 2024 – Spring 2025)
- 4) Department P & T committee (Fall 2022 – Spring 2024)
- 5) Department P & T committee (chair, Fall 2021 – Spring 2022)
- 6) Department seminar committee (member, Fall 2021 – Spring 2022)
- 7) Department seminar committee (chair, Fall 2020 – Spring 2021)
- 8) Department advisory committee (Fall 2020 – Spring 2021)
- 9) PIHM Scientific Advisory Group, Penn State (Spring 2019 -)
- 10) CEE TA and grader committee (chair, Spring 2018)
- 11) Institute of Cyber Science (ICS) steering committee (Fall 2017 – SP 2018)
- 12) Water Research and Education at Penn State (WREAPS) committee (Fall 2017 -)
- 13) Faculty search committee for Environmental systems engineering (EME) (Fall 2017 -)
- 14) CEE P & T committee (Fall 2017 – Spring 2018)
- 15) CEE watershed research faculty search (Spring 2017)
- 16) CEE Teaching Performance and Review Committee (Fall 2016 – Spring 2017)
- 17) CEE Geotechnical engineering faculty search committee (Fall 2016 – Spring 2017)
- 18) EME faculty activity evaluation committee (Spring 2015)

- 19) EME faculty search committee member in CEE (InGaR position) (Fall 2014 - 2015)
- 20) EME faculty search committee member in PNGE (InGaR position) (Fall 2014 - 2015)
- 21) Rotating member of the SSHCZO executive committee (Fall 2014 – 2015)
- 22) Data management contact for SSHCZO (Spring 2014 –)
- 23) Chair for SSHCZO seed grant proposals (Fall 2013 – Summer 2014)
- 24) Host for Darcy Lecturer, Dortha Wildenschild (Oct. 1-2, 2014)
- 25) 2013 Faculty Activity Analysis Committee for EME, April 2014
- 26) Reviewer for PSIEE seed grant (Spring 2014)
- 27) EME departmental representative of the EMS Diversity council (Fall 2013 – Spring 2016)
- 28) EME Leone Chair search committee (Spring 2013)
- 29) EME energy engineering faculty search committee (Spring 2013)
- 30) Member, 2013 Faculty Activity Analysis Committee for Department of Energy and Mineral Engineering, 2013
- 31) Member, 2012 Faculty Activity Analysis Committee for Department of Energy and Mineral Engineering, 2013
- 32) Member, PSIEE water series committee, August 2012 – May 2013
- 33) Member, 2011 Faculty Activity Analysis Committee for Department of Energy and Mineral Engineering, 2012
- 34) Member, PSIEE competitive postdoc committee, May – December 2012
- 35) Member on PhD Candidacy exam committees for 30 students
- 36) PNGE senior faculty search committee (Fall 2009 – Spring 2010)
- 37) Member, Earth and Environmental Systems Institute (EESI) committee on annual workshop series, 2010

2. *Record of contribution to the University's programs to enhance equal opportunity and cultural diversity*

- 1) The Li Reactive water research group boasts a high woman and underrepresented group ratio of 50%.
- 2) In summer 2020, Li group hosted 4 undergraduate students, 2 of those are from underrepresented groups.
- 3) In 2017, 2018, and 2019, my group hosted 7 undergraduate students via Penn State WISER|MURE|FURP programs that aim to enhance research opportunities for woman and underrepresented groups. These students are Christian Alvarado, Megan Smajda, and Kriston Ramdass in 2017, Sarah Ticker and Jaime Burdette 2018, and Jared Kines in 2019.
- 4) In summer 2016, my group, together with Roman Dibiase's group, hosted two students supported by Research Experience for Undergraduates (REU): Perri Hannah Silverhart and Martin Connor. Perry presented her work at the annual meeting of Geological Society of America (GSA), 2016.
- 5) In summer 2016, my group hosted a high school student team from underrepresented group in my laboratory (Miguel Santana and Cintia Vasquez), as part of the 2016 Summer Experience in the Earth and Mineral Sciences (SEEMS) program within the Penn State Upward Bound Math and Science (UBMS) Summer Academy for UBMS scholars. The goal of this activity is to enhance education opportunities for underrepresented high school students. One of my graduate students, Zhang Cai, led this activity. In the final research presentation competition, our team won first place among all SEEMS teams and won first place in all SEEMS and SEECoS (College of Science) teams.
- 6) In summer 2012, my group hosted a high school student team from underrepresented group in my laboratory (Sierra Anderson, Chris Zurita, Fonseca, and Jermaine Jones), as part of the 2012 Summer Experience in the Earth and Mineral Sciences (SEEMS) program within the Penn State Upward Bound Math and Science (UBMS) Summer Academy for UBMS scholars. The goal of this activity is to enhance education opportunities for underrepresented high school students. One of my graduate students, Jessie Chao, led this activity. In the final research presentation competition, our team won first place among all SEEMS teams and won third place in all SEEMS and SEECoS (College of Science) teams.
- 7) I mentored 3 undergrads from underrepresented groups, including 2 females. Among these, Stephanie Troutman is the first 3+2 student from Fort Valley State University, a Historically Black College in Georgia. Stephanie is the first African American female FVSU student graduated with an Engineering degree from PSU.

3. *Assistance to student organizations*

- 1) Judge for CEE Capstone Design, April 22, 2018.
- 2) Judge for student presentation in the 19th Annual Environmental Chemistry and Microbiology Student Symposium, April 2016.

- 3) Judge for student presentation in the 18th Annual Environmental Chemistry and Microbiology Student Symposium, March 2015.
- 4) Judge for student presentation in the 17th Annual Environmental Chemistry and Microbiology Student Symposium, March 29, 2014.
- 5) Judge for EMS Annual Graduate Student Poster Exhibition, September 29, 2011.
- 6) Judge for 27th Graduate Exhibition, March 23 -25, 2012
- 7) Judge for 2012 Undergraduate Exhibition, April 11, 2012
- 8) Shell Robert Camp, faculty coordinator, 2010 and 2012.
Shell camp is an Engineering training at Shell's Robert training center. Penn State students from geosciences, petroleum and natural gas, chemical, and mechanical engineering receive training in petroleum production operations, drilling techniques, and state-of-the-art subsea technologies in Robert, Louisiana. I was the faculty coordinator for Shell camp in May 9-14, 2010, and May 13-17, 2012. Forty-four participated in 2010 and twenty-five participated in 2012. My role in the Shell camp includes setting up information sessions, coordinating with the Shell staff to arrange the trip with the students to the camp.

SERVICE TO THE SOCIETY

- 1) Water chemistry demonstration, girls' scouts, May 20 & 27, 2018
- 2) Water chemistry demonstration, girls' scouts, May 22, 2017
- 3) Critical Zone concept exhibition, Shaver's Creek Nature's Center, May 27, 2016
- 4) "Climate change and why it is a global problem?", Radio Park Elementary School, 2nd grade classroom (Ms. Mary Robert), State College, March 2016
- 5) "Climate change and why it is a global problem?", Radio Park Elementary School, 4th grade classroom (Ms. Julie Jobe), State College, March 2016
- 6) Science demonstration on "Water" for kindergarteners at Bennett Center, PSU, May 2012, 2014
- 7) Science demonstration on "Water" for 3rd graders at Radio Park Elementary school, State College, December 2014