CURRICULUM VITAE

CATHERINE A. PETERS

The George J. Magee Professor of Geoscience and Geological Engineering

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EDUCATION:

PhD Joint degree: Civil Engineering, Engineering & Public Policy, Carnegie Mellon University, Pittsburgh, Pennsylvania, 1992.
MS Civil Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania.
BSE Chemical Engineering, University of Michigan, Ann Arbor, Michigan, 1985.

PROFESSIONAL EXPERIENCE:

2023-24 *Guest Professor*, Technical University Delft, The Netherlands. Faculty of Civil Engineering & Geosciences, Dept. of Geoscience and Engineering, Host: Prof. Hadi Hajibeygi.
2017-23 *Department Chair*, Dept. of Civil and Environmental Engineering, Princeton University.
2011-pr *Full Professor*, Dept. of Civil and Environmental Engineering, Princeton University.
Director, Program in Geological Engineering
Associated Faculty: Department of Geosciences, Andlinger Center for Energy and the Environment, Princeton Materials Institute, High Meadows Environmental Institute
Executive Committee, Program in Sustainable Energy
2014-15 *Acting Chair*, Princeton University, Dept. of Civil and Environmental Engineering
2009 *Visiting Professor*: Earth & Environ. Systems Inst., Penn State Univ. Host: Susan Brantley
2004-08 *Associate Dean*, Academic Affairs, Princeton Univ. School of Engineering & Applied Science
2000-11 *Associate Professor*, Princeton University, Dept. of Civil and Environmental Engineering
1994-00 *Assistant Professor*, Princeton University, Dept. of Civil Engineering & Operations Research
1992-94 *Postdoctoral Research Associate,* University of Michigan, Environmental and Water Resources Eng., Ann Arbor, MI. Research group: Prof. Walter J. Weber, Jr.
1985-92 Carnegie Mellon University, Pittsburgh, PA.
Research Assistant for Prof. Richard G. Luthy, Dept. of Civil Engineering
Research Assistant for Prof. Mitchell J. Small, Dept. of Engineering and Public Policy.
1986 Brookhaven National Laboratory, Upton, NY. *Research Assistant.*
1982-85 Dow Chemical Co., Midland, MI. Internship: Cooperative Education Program.
1983-85 Univ. of Michigan, Ann Arbor, MI. *Laboratory Assistant*, UofM Research Hospital.
Undergraduate Research Assistant for Prof. H. Scott Fogler, Dept. of Chem. Eng.

PROFESSIONAL MEMBERSHIPS:

Association of Environmental Engineering and Science Professors (*President, 2002-2003*)
American Academy of Environmental Engineering and Science (AAEES)
American Chemical Society (ACS)
American Geophysical Union (AGU)
American Society of Civil Engineers (ASCE)
Alpha Chi Sigma, Professional Chemistry Fraternity

AWARDS, HONORS AND DISTINCTIONS:

The George J. Magee Professorship of Geosciences and Geological Engineering at Princeton University. Appointed September 2021.

2023 Paul F. Boulos Excellence in Computational Hydraulics/Hydrology Award with Tom Postma, conferred by the American Academy of Environmental Engineers and Scientists (AAEES), in association with AEESP and EESF.

Princeton Commendation List for Outstanding Teaching. 2016, 2018, 2023.

2021 *Applied Geochemistry Editor's Choice Award* for "Quantification of Mineral Reactivity Using Machine Learning …" doi.org/10.1016/j.apgeochem.2021.105162

2020 Distinguished Alumnus Award of Carnegie Mellon University CEE.

AAEES Honorary Board Certification by Eminence (BCEE), 2020.

Fellow of the Association of Environmental Engineering and Science Professors (AEESP), 2016.

2012 EPA P3 Award for Sustainable Design Project, Power-in-a-Box™. $90,000.

2011 Chemical Geology Most Cited Article 2005 to 2010 for "Forsterite dissolution and magnesite precipitation … ".

AEESP Award for Service as President of AEESP (2002-2003) and for service on the AEESP Board of Directors (2000-2004).

Educator of the Year 2000. Presented by the New Jersey Section ASCE to an outstanding educator who has contributed substantially to the field of civil engineering.

Princeton University Research Board Award, 1997-98. Conferred in recognition of significant promise in establishment of a research program.

Alfred Rheinstein '11 Junior Faculty Award, Princeton University, 1996. Conferred in recognition of exceptional promise in teaching and scholarship.

Alcoa Foundation Research Award, 1996. For novel research on synthetic NAPLs.

Princeton University Research Board Award, 1995-96. Conferred in recognition of significant promise in establishment of a research program.

Patricia Harris Scholarship, U.S. Department of Education, 1989-92.

Wharton Foundation Fellowship, 1986-87.

BSE degree granted *Cum Laude*, 1985.

Tau Beta Pi, National Engineering Honor Society, 1984.

Phi Lambda Upsilon, National Chemistry Honor Society, 1984.

PROFESSIONAL APPOINTMENTS and STANDING COMMITTEES:

Editor-in-Chief, *Environmental Engineering Science*, Mary Ann Liebert, Inc. Publishers. Since 2019.

Science Advisory Committee, DOE Earthshot EERC "Center for Understanding Subsurface Signals and Permeability" (CUSSP) at PNNL, since 2023.

NSLS-II Synchrotron, Beamline Advisory Team for Tender X-ray Nanoprobe (TXN). Since Jan 2024.

AEESP Fellows Steering Committee, 2017-20, 2023-26.

Advisory Board, *Greenhouse Gases: Science and Technology*, Wiley Journals. Since 2011.

Deputy Editor, *Environmental Engineering Science*, Mary Ann Liebert, Inc. Publishers. 2014-19.

Advisory Committee, DOE EFRC Center on "Nanoscale Controls on Geologic CO_2" (NCGC) at Lawrence Berkeley National Laboratory. 2014-2019.

Member of Stakeholders Group, U.S. DOE National Risk Assessment Partnership (NRAP), 2016-2018.

Rutgers University, External Advisory Board (EAB) of the Bioenvironmental Engineering Undergraduate Program. 2015-18.

Associate Editor, *Environmental Engineering Science*, Mary Ann Liebert, Inc. Publishers. 2011-2014.

Member, U.S. Environmental Protection Agency (EPA) Science Advisory Board. 2007-2013.

Past President, *Association of Environmental Engineering and Science Professors* (AEESP). 2003-04.

President, *Association of Environmental Engineering and Science Professors* (AEESP). 2002-03.

Vice President, *Association of Environmental Engineering and Science Professors* (AEESP). 2001-02.

Board of Directors, *Assoc. of Environmental Engineering and Science Professors* (AEESP). 2000-2005.

Nominating Committee, AEESP Board of Directors, 2003-08 (*Chair*, 2003-04)
Science Advisory Committee of the Great Plains/Rocky Mountain Hazardous Substance Research Center, of the U.S. EPA. 1996-2002.
National Research Council Committee on Drinking Water Contaminants, 1998-2001.
AGU Hydrology Section: Groundwater Technical Committee. 1998-2000.
Electronic Communication and Education Committee of the Association of Environmental Engineering and Science Professors (AEESP). 1996 - 2000.

PROFESSIONAL ACTIVITIES AND INVITED PANELS:

Convener and Presider, Minisymposium 'Flow, transport and mechanics in fractured porous media'InterPore2024 16th Annual Meeting, Qingdao, China. May 2024.
Convener and Presider, Workshop on "Climate Change in Environmental Engineering Education" AEESP Research and Education Conference, June 2022.
Panelist, "Meet the Editors" Workshop at AEESP Research & Education Conference, June 2022, 2023.
Delegate, Environmental Geochemistry Field Trip to GangCha Qinghai Lake (western China), Hosted by Xiaofan Yang, Beijing Normal University, August 2019.
ISEG Special Editor Session Panelist, ISEG 2019 11th International Symposium on Environmental Geochemistry, Peking University (PKU), Beijing, China, August, 2019.
Earth and Environmental Sciences Area Expert Assessment Committee at the Lawrence Berkeley National Laboratory, February 2017.
Panelist DOE Basic Energy Sciences (BES) Basic Research Needs (BRN) for the Energy-Water Nexus: New Approaches to Ensure Robust and Secure Energy and Water Systems, January 2017.
Theme Chair, sessions on "Energy Resources for Society" for Goldschmidt Conference 2017 Paris.
Onsite reviewer, Oak Ridge National Lab (ORNL) BES Geosciences Program, November 2015.
Editor (with Andres Clarens) of the special issue of *Environmental Engineering Science*, "The science and innovation of emerging subsurface energy technologies", 2015-2016.
Convener and Presider, Symposium "Subsurface Geochemistry for Energy & the Environment", 250th ACS National Meeting, GEOC Division, Boston, MA. August 2015
Convener and Presider, Workshop on "Engineering Strategies for a Sustainable Food Supply Chain", Princeton University, March 2015.
Roundtable participant and contributing author: 'Controlling Subsurface Fractures and Fluid Flow: A Basic Research Agenda' DOE Roundtable report, Foundational Research Relevant to SubTER, DOE Germantown May 2015.
Convener, Gordon Research Conference on Flow & Transport in Permeable Media, 6th to 11th July 2014, Bates College, Maryland.
Review Committee Member, Earth Sciences Division (ESD) at Lawrence Berkeley National Laboratory (LBNL). 2013.
Rice University Department of Civil and Environmental Engineering, Advancement Committee, 2013.
Organizing Committee and Session Leader, Gordon Research Conference Flow & Transport in Permeable Media, Les Diablerets, Switerzerland. June 2012.
Session convener and chair, "GC42A Carbon Sequestration: Upscaling Issues Related to Predicting Carbon Dioxide Leakage Potential from Geologic Repositories" AGU Fall Meeting, Dec 2011.
Organizer, NSF SEES Workshop Natural and Engineered Carbon Sequestration, Minneapolis, MN, October 2011.
Technical Committee, AEESP Education & Research Conference, Univ of S. FL, July 2011.
Panelist for the 2011 PNNL Science Focus Area (SFA) Review.
Workshop organizer and panel chair, U.S. DOE Workshop on *Common Research Themes for Carbon Storage and Enhanced Geothermal Energy*. June 2010. Rockville, MD.
Session organizer and presider, "Science and Engineering Challenges in Carbon Capture and Storage (CCS)", at the AEESP 2009 Conference on Grand Challenges in Environmental Engineering and Science. University of Iowa, July 2009.
Steering Committee, 2009 Symposium on Engineering & Liberal Education. June 2009 Union College.

Task Force, Creation of a Society for Environmental Engineering, AEESP and AAEE. 2002-2005.
NETL Merit Review Board (DOE's National Energy Technology Laboratory), Pittsburgh, PA. 2004-pr.
Advisory Committee, Rutgers University, Center for Self-Sustaining High-Rise Buildings, 2004-pr.
Session Chair for "Understanding Complex Environmental Systems" at the 2002 AEESP/AAEE Conference: Integrating Environmental Teaching, Research and Practice, Toronto, Canada.
Association of Environmental Engineering and Science Professors (AEESP) Conference on Research Frontiers, Penn. State University, August 1999; Member of organizing committee.
Convener and chair (with C. Zheng) of special session on "Environmental Hydrogeology", AGU Fall Meeting, San Francisco, CA, Dec. 1999.
Convener and chair of special session on "Multicomponent Contaminants in Surface and Subsurface Systems", AGU Fall Meeting, San Francisco, CA, Dec. 1997.
Proposal Review Panelist, National Science Foundation. 3/98, 12/01, 11/01, 11/02 etc.
Proposal Review Panelist, U. S. Environmental Protection Agency. 6/96, 7/96, 3/97. Etc.

PRINCETON UNIVERSITY SERVICE:

Chair of the CEE department, 2017-2023.
Elected Member, C/3 Faculty Advisory Committee on Appointments and Advancements, 2019-20.
Director of the Program in Geological Engineering, 2013 – present.
High Meadows Environmental Institute (formerly PEI) Advisory Committee, 2019-present.
PECS (Princeton Energy & Climate Scholars) Faculty Board
Task Force on the Administrative Workload on Research, Dean for Research, 2017-18.
Committee on Public Lectures, 2015 – 2017.
CEE Departmental Representative for Undergraduate Academic Affairs. 2011-2015.
Princeton Environmental Institute (PEI) Interdepartmental Committee for the Program in Environmental Studies. July 1998 to 2012.
Executive Committee Member, Keller Center for Innovation in Engineering Education. 2008 to 2020.
Faculty leader for award-winning student project "Power in a Box™", http://powerbox.princeton.edu, 2010-2014.
Executive Committee Member, Program in Sustainable Energy, 2008-2016.
Executive Committee Member, Program Environmental Engineering & Water Resources. 1995 to 2016.
CEE Departmental Committee for ABET Accreditation. 1999-2017.
Executive Committee Member, Program in Architecture and Engineering, 2012-2015.
Member, SEAS Curriculum Committee 2008 to 2015.
Member, Program in Urban Studies, 2007 to 2013.
Director, Program in Environmental Engineering and Water Resources, 2009 to 2011.
Acting Director, Energy Grand Challenges Research Initiatives, Princeton University, 2009-2010.
Chair, SEAS Curriculum Committee, 2005 to 2008.
Chair of Search Committee for SEAS Director of Engineering and the Life Sciences, 2005-06.
Co-Chair of Search Committee for SEAS Associate Dean for Graduate Affairs, Summer 2004.
Chair, Executive Committee for the SEAS Workshop on Energy and the Environment, Fall 2003.
Executive Committee Member for the SEAS Workshop on Engineering, Policy and Society. Fall 2003.
President's Task Force on the Status of Women in Natural Sciences and Engineering. 2001-03.
University Committee on the Course of Study. Term: 2002-05.
CEE Departmental Representative for Undergraduate Academic Affairs. 1999-2001
SEAS Strategic Alliance Committee on Environmental Engineering. 1997-1998.
University Committee on Undergraduate Life, Princeton University, 1995-1999.
Princeton Environmental Institute (PEI) Curriculum Committee. 1997 to 1998.
Faculty Representative, Graduate Women in Science and Engineering (GWISE) 1995-1997.

EDUCATIONAL GRANTS and EDUCATIONAL AWARDS:

Award from Princeton 250th Fund for Innovation in Undergraduate Education, "CEE curricular elements of systemic racism, racial injustice and anti-racism" with CEE faculty, July 2020

Award from the Princeton Humanities Council for a Gardner magic grant for Power-in-a-Box™ project and collaboration with Anthropology Professor Carolyn Rouse.

Award from the Siebel Energy Challenge fund at Princeton University for summer internships for "Wind-Solar Power for High School in Oshiyie, Ghana". Summer 2012.

Award from the U.S. EPA for "Power in a Box™: Shipping Sustainable Energy to Recovering and Off-the-Grid Communities" for winning the EPA P3 student design competition, 2012.

Award from the U.S. EPA for "Wind Energy for Haiti", for EPICS team to compete in the P3: People, Prosperity and Planet Student Design Competition 2012.

Award from the Siebel Energy Grand Challenge fund, Princeton Univ., "Carbon Capture and Geologic Sequestration: Linking Undergraduate Education with Cutting Edge Research". 2010-13.

Award from Princeton Institute for International and Regional Studies (PIIRS), with Elie Bou-Zeid and Jane Harrison, "EPICS: Wind Energy and Rainwater Harvesting Solutions for Sustainable Recovery of Haiti", 2010-2013.

Award from the 250th Anniversary Fund for Innovation in Undergraduate Education, Princeton University, "EPICS: Engineering Projects in Community Service 2007-2009.

Award from the U.S. EPA for "An Innovative Paradigm: Green Retrofitting Residential Buildings", an opportunity for my EPICS student team to compete in the P3: People, Prosperity and the Planet Student Design Competition for Sustainability. 2008.

Award from the High Meadows Fund, managed by the Princeton Sustainability Committee, for innovations in engineering education related to sustainability, EPICS Greentrofit Project.

Graduate Curriculum Development Award, Princeton University, May 2000. Conferred for "Molecular Modeling in Environmental Chemistry".

COURSES TAUGHT:

CEE 304	Environmental Engineering and Energy
CEE 303	Introduction to Environmental Engineering
EGR 250/350/450	EPICS: Engineering Projects in Community Service
CEE 367	Environmental Risk Assessment and Management
CIV 406	Statistics for Experimental Design and Data Analysis
CEE 477	Engineering Design for Sustainable Development
CEE 501	Environmental Engineering Fundamentals I
CEE 502	Environmental Engineering Fundamentals II
CEE 505	Statistical Methods for Data Analysis, Modeling and Experimental Design
CEE 571	Environmental Chemistry
CEE 599	Special Topics in EEWR: Carbon Capture and Geologic Sequestration
CEE 599	Special Topics in EEWR: Modeling of Geochemical Kinetics and Reactive Transport
ENV 201	Environmental Studies

INVITED LECTURES AND SEMINARS: @ Universities, National Labs, Workshops, Short Courses:

1. "Underground H_2 Storage and Natural Production: Pathways to Energy Decarbonization", Distinguished Lecture Series, School of Civil and Environmental Engineering and Earth Sciences, Clemson University. Host: Jesus M. de la Garza. March 2024.
2. "Underground H_2 Storage and Natural Production: Pathways to Energy Decarbonization", HMEI Faculty Seminar. Host: Gabe Vecchi. March 2024.
3. "Geochemistry of Carbon Capture and Sequestration" Subsurface Storage Course, TU Delft, Dept. of Geoscience and Engineering, Host: Hadi Hajibeygi. November 2023.
4. "Carbonate Geochemistry, Carbon Mineralization and Reaction Kinetics" DARSim Lecture, TU Delft, Dept. of Geoscience and Engineering, Host: Hadi Hajibeygi. October 2023.

5. "Carbonate Geochemistry and Coupled Hydrologic Processes", Invited speaker, DTU Summer School on Offshore CCS, Danish Technical University, August 2023.
6. "Carbon Mineralization and Reaction Kinetics", Invited speaker, DTU Summer School on CCS, DTU, Copenhagen, August 2023.
7. "Underground H_2 Storage: Geochemistry Considerations", Invited speaker, 2nd International Summer School on UHS, Technical University of Delft, The Netherlands. July 2023.
8. "Underground H_2 Storage: Geochemistry" Invited speaker, 1st International Summer School on UHS, TU Delft, The Netherlands. July 2022.
9. "Underground H_2 Storage: Geochemical Considerations" Invited speaker, Collaborative Opportunities in Hydrogen Research, Development, Demonstration, and Deployment (RDD&D), ACEE Princeton University, April 2022
10. "Offsetting greenhouse gas emissions with carbon mineralization, utilization and sequestration" Delft Univ. Technology, GeoScience and GeoEnergy Webinar, April 2022 (Host: Hadi Hajibeygi)
11. "Decarbonization: Carbon capture, mineralization, utilization and sequestration" EEE Research Seminar, Purdue University, Environmental and Ecological Engineering. February 2022.
12. "Offsetting greenhouse gas emissions with carbon capture, mineralization, utilization and sequestration" 2021 National Academy of Engineering Annual Meeting. Forum on Engineering Responses to Climate Change. October 2021.
13. "Looking underground for a climate solution" 2021 National Academy of Engineering Annual Meeting Section 4 Symposium titled 'Feeling the effects of too much carbon? Civil and environmental engineering actions.' October 2021.
14. "Multimodal X-ray spectroscopy and a synchrotron-based *In Operando* microfluidic experiment to study mineral reactions on fracture surfaces" Synchrotrons and Geochemistry: A Workshop for Novices and Experts. June 28-29, 2021. Hosted by GSECARS and COMPRES.
15. "Reactive transport experiments and modeling for secure fluid containment in the subsurface" Frontiers in Geosciences Seminar Series, Los Alamos National Laboratory April 2019. (Host: Qinjun Kang)
16. "Environmental Geochemistry Perspectives on Subsurface Energy Technologies" Energy Seminar, Stanford Precourt Institute for Energy, Stanford University, April 2018. (Host: Sally Benson)
17. "Permeability evolution in fractured carbonates exposed to reactive flow" the Claude R. Hocott Lecture in Petroleum Engineering, at the University of Texas at Austin's Hildebrand Department of Petroleum and Geosystems Engineering. February 2018. (Host: Masa Prodanovic)
18. "Synchrotron Techniques in Support of Sustainable Subsurface Energy Technologies" 2017 NSLS-II and CFN Users' Meeting: Synchrotron Techniques in Support of DOE's Subsurface R&D Effort, Brookhaven National Lab, Brookhaven, NY May 2017.
19. "Environmental Geochemistry Perspectives on Subsurface Energy Technologies" Engineering Sustainability 2017: Innovation and the Triple Bottom Line. Pittsburgh, PA, April 2017.
20. "Permeability evolution in fractured carbonates exposed to reactive flow", University of Calgary, Department of Geosciences, Alberta Canada. March 2017. (Host: Steve Bryant)
21. "Permeability evolution in fractures exposed to reactive flow", Imperial College London, Department of Earth Science & Engineering, Petroleum Geoscience & Engineering. March 2016. (Host: Branko Bijeljic)
22. "Geochemical reactions and permeability evolution in caprock fractures", University College London, Department of Earth Sciences, March 2016. (Host: Eric Oelkers)
23. "Geological Carbon Sequestration: Geochemical Processes and Storage Reliability", University of Delaware, Civil & Environmental Engineering, November 2015. (Host: Dominic Di Toro)
24. "Geochemical reactions and permeability evolution in caprock fractures", Temple University, Earth & Environmental Science, Sept 2015. (Host: Nicholas Davatzes)

25. "CO_2 Storage Permanence in Geologic Carbon Sequestration" Workshop on Clean Utilization of Coal; 5th International Symposium of the McConnell International Scholars Academy. St. Louis, MO, October 2014.
26. "Geochemistry of Caprock Fracture Dissolution and CO2 Leakage in Geologic Carbon Sequestration" Gordon Research Conference on Environmental Sciences Water. Holderness, NH, June 2014.
27. "Modifications to cost curves of geologic CO2 storage caused by reservoir leakage and the policy implications" Workshop for the Research Coordination Network on Carbon Capture Utilization and Storage, Columbia University. CCUS RCN April 2014.
28. "Geochemistry of Caprock Fracture Dissolution and CO2 Leakage in Geologic Carbon Sequestration", Washington University, Department of Energy Environmental and Chemical Engineering, 2014.
29. "Caprock Fracture Dissolution and CO_2 Leakage", MSA Short Course on Geochemistry of Geologic CO_2 Sequestration, Lawrence Berkeley National Lab, December 2013.
30. "Predicting Permeability Evolution in Reactive Flow Paths in Porous and Fractured Media", U.S. DOE BES Geosciences Workshop on Reaction and Transport within Internal Domains of Porous Media, Dec 2012, San Francisco, CA.
31. "Permeability Evolution of Fractured Rock Due to Acid-Driven Reactions: Experiments and Modeling", NSF workshop on Identification of Fundamental Interfacial and Transport Phenomena for the Sustainable Deployment of Hydraulic Shale Fracturing, May 14-15, 2012, Arlington, VA.
32. "CO_2-acidified brines and reactions with caprock minerals", Workshop on Supercritical Carbon Dioxide and Material Interactions, Brookhaven National Laboratory, March 21-23, 2011.
33. "Wind Energy and Rainwater Harvesting Solutions for Sustainable Recovery of Haiti." NSF EERI Haiti RAPIDS and Research Needs Workshop, September 30 and October 1, 2010, NSF Headquarters, Arlington, VA.
34. "DUSEL CO_2: A facility for experimental study of geologic carbon sequestration", Sanford Underground Laboratory at Homestake, Lead, SD. April 20, 2010.
35. "Geologic Carbon Sequestration: Challenges of Experimental Study", Chinese Academy of Sciences, Institute for Geosciences (Host: Zhenhao Duan) Beijing, China. Nov. 6, 2009.
36. "Geologic Carbon Sequestration: Challenges of Experimental Study", Center for Energy & Environmental Policy Research (CEEP), Chinese Academy of Sciences Institute of Policy and Management and the CNPC Research Institute of Economics and Technology (Hosts: Prof. Changlu Zhao, Vice President of BIT and Prof. Wei, the center director) Beijing, China. Nov. 6, 2009.
37. "Geologic Carbon Sequestration: Challenges of Experimental Study", Tsinghua BP Clean Energy Research and Education Centre (Li Zheng, Director), Tsinghua University, Beijing, China. Nov. 5, 2009.
38. "Geologic Carbon Sequestration: Challenges of Experimental Study", Forum on Energy, Environment & Economic Policy Research, November 3-4, 2009, Jiao Tong University, Shanghai, China.
39. "Reactions in geologic sequestration of CO_2: Fast, slow, and forget about it!", CEE Seminar Series, Penn State University, April 2009. (Host: Bruce Logan)
40. "Reactions in geologic sequestration of CO_2: Fast, slow, and forget about it!", CEKA 30-Slides Seminar Series, Earth and Environmental Systems Institute, *Penn State University*, March 2009. (Host: Susan Brantley)
41. "Reaction rate upscaling in geologic carbon sequestration", Dept. of Geosciences, SUNY Stony Brook, February 2009.
42. "Carbon Sequestration", *Deep Carbon Cycle Workshop*, Geophysical Laboratory of the Carnegie Institute, Sponsored by the Alfred P. Sloan Foundation, May 2008.
43. "Up-Scaling Mineral Accessibility and Pore Networks for CO_2 Reactive Transport in Sandstones", U.S. DOE National Energy Technology Laboratory, Morgantown, WV, March 31, 2008.

44. "Mineral Reactions in Geological CO_2 Sequestration: Fast, Slow, and Forget About It!", Department of Civil & Environmental Engineering, McGill University, March 22, 2007. (Host: Subhasis Ghoshal)
45. "Environmental Behavior of Complex PAH Mixtures", Brown University, Division of Engineering, April 19, 2006.
46. "Mineral Reactions in Geological CO_2 Sequestration: Fast, Slow, and Forget About It!", School of Engineering, University of Vermont, January 31, 2006. (Host: Domenico Grasso)
47. "Geologic Storage of CO_2 in Deep Saline Aquifers", Department of Chemical Engineering, Yale University. February 12, 2003. (Host: Meny Elimelech)
48. "Geologic Storage of CO_2 in Deep Saline Aquifers", Department of Environmental Sciences and Engineering, University of North Carolina. January 31, 2003. (Host: Mike Aitken)
49. "Geologic Storage of CO_2 in Deep Saline Aquifers", Department of Civil and Environmental Engineering, Lehigh University. September 27, 2002. (Host: Arup Sengupta)
50. "Neural Network Approach for Prioritizing Drinking Water Contaminants: PCCL to CCL", NDWAC CCL Classification Process Work Group Meeting, U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water, Washington, D.C. Sept. 18, 2002.
51. "Classifying Drinking Water Contaminants for Regulatory Consideration: A Neural Network Approach", ILSI Risk Sciences Institute meeting on *Exploring Approaches to Screening Chemicals for Reproductive/Developmental Toxicity*, Washington, D. C. June 21, 2002.
52. "A Neural Network Approach for Prioritizing Drinking Water Contaminants: An Explanation of the Recommendations of the NRC Committee on Drinking Water Contaminants", Contaminant Identification Meeting, American Water Works Association, Washington, D.C. April 25, 2002.
53. "CO_2 Storage in Deep Saline Aquifers", Department of Engineering and Public Policy and Department of Civil & Environmental Engineering, Carnegie Mellon University. April 22, 2002.
54. "A Neural Network Approach for Prioritizing Drinking Water Contaminants: An Explanation of the Recommendations of the NRC Committee on Drinking Water Contaminants", U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water, Washington, D.C. Jan. 24, 2002.
55. "Risk Assessment for Subsurface Contamination Involving PAHs", PSE&G, Newark, New Jersey. July 2000.
56. "Risk Assessment for Subsurface Contamination Involving PAHs", Interagency Risk Assessment Committee (IRAC), New Jersey Department of Environmental Protection, Trenton, NJ. May 2000.
57. "Toward a Risk-Based Model for Multi-Component NAPL Contaminants: When is Remediation Intervention Worthwhile?" EPA Innovative Clean-Up Approaches. Nov. 1999, Bloomingdale, IL.
58. "Environmental Behavior and Risk Assessment of Complex Mixture NAPLs" The Environmental Science, Engineering and Policy in the 21st Century Seminar Series, University of Michigan. October 22, 1999.
59. "Environmental Behavior and Risk Assessment of Complex Mixture NAPLs", Department of Geography and Environmental Engineering, Johns Hopkins University. April 2, 1999.
60. "Environmental Behavior and Risk Assessment of Complex Mixture NAPLs", School of Environmental Science, Engineering, and Policy, Drexel University. Mar. 19, 1999.
61. "Long-Term Chemodynamics of NAPL Environmental Contaminants", Dept. of Environmental Sciences, Rutgers University. Mar. 27, 1998.
62. "Phase Behavior of Multi-Component NAPLs in the Environment", Hydrological Sciences Seminar Series, University of Colorado, Oct. 31, 1997.
63. "Phase Behavior of Multi-Component Environmental Contaminants", ALCOA Tech Cent, 08/1997.
64. "Organic Pollutants in the Subsurface Environment: Chemistry, Technology and Risk Assessment", Univ. of Dalecarlia, Borlange, Sweden. Host: Mr. Roger Bydler. Nov. 1996.
65. "The Chemistry of Multicomponent NAPLs Containing PAHs: Dissolution, Bioavailability, and Risk Assessment", Environmental Scholars Colloquium, Spring 1996, University of Connecticut, Storrs, CT, Feb. 2, 1996.
66. "Constraints and Uncertainties in Cleanup Strategies", Gordon Research Conference, Environmental Sciences: Water, June 19-24, 1994, New Hampton, NH.

67. "The Challenges of Hazardous Waste Site Management: Coal Tar Clean-Up as an Example". Presented at the Third International Summer School for Science and World Affairs, June 24-July 4, 1991, Moscow, USSR.

INVITED PRESENTATIONS – OUTREACH and EDUCATION:

1. "Opportunities in Graduate School" Purdue Undergraduate Seminars in Environmental Engineering. Purdue University. February 2022.
2. "Managing the Triad of Teaching, Research and Service Post-Tenure" Panelist, AEESP Workshop, University of Michigan, Ann Arbor, MI, June 2017.
3. "Environmental Regulation in the U.S.: From Smog to Acid Rain to Greenhouse Gases", E-ffiliates Retreat, Princeton, NJ February 2017.
4. "The Science and Innovation of Fossil Fuels and the Environment", E-ffiliates Retreat, Princeton, NJ January 2016.
5. "Portable Power: Opportunities for Student Engagement", IEEE PCJS Education Society Chapter Meeting, Princeton University, April 10, 2013.
6. "Library Research Skills in Engineering Education", Invited panelist for *Library Research Skills: Can They Be Taught?* May 2009, Princeton University Libraries.
7. "Energy, the Environment, and a Sustainable Future", Keynote Address for the Society of Women Engineers, Princeton University, Nov 2008.
8. "Engineering and the Liberal Arts", Symposium on Engineering and Liberal Education, Union College, Schenectady, NJ May 2008.
9. "Topics, Technology and the Times We Live In", Colloquium for high school girls interested in engineering, Marymount High School, New York, NY. May 2007.
10. "Sustainable Energy in the CEE Curriculum", Frontiers in Environmental Engineering Education, NSF-sponsored workshop, ASU January 2007.
11. "Engineering in a Liberal Arts Environment: Observations and Directions", School of Engineering, University of Vermont, January 30, 2006.
12. "Putting CO_2 in its Place: Engineering Solutions to a Global Environmental Problem", Presentation to all BSE freshmen, Princeton University, September 2004.
13. "Student Web Authoring in Environmental Engineering and Chemistry Courses". AEESP Research Frontiers Preconference Workshop on Computer-Based Learning Tools. Penn. State University. August 1999.
14. "Women Engineers in Academia: An American Perspective", 1996, Tomasmässan Convention on Women and Technology, Sponsored by Falu Ingeniörsklubb. Falun, Sweden, Nov. 1996.
15. "Women Engineers in Academia: An American Perspective", Univ. of Dalecarlia, Borlange, Sweden. Hosted by the Studenternas Näringslivsenhet, Nov. 1996.
16. "Instructional Web Technology in Engineering: Access to Course Materials and Software in and beyond Princeton", Faculty World Wide Web Workshops, Information Services, CIT, Princeton University, January 10-11, 1995.

PEER REVIEWED JOURNAL PAPERS

1. M. Boon, I. Buntic, K. Ahmed, N. Dopffel, C. Peters, H. Hajibeygi (2024) "Microbial induced wettability alteration with implications for Underground Hydrogen Storage" *Scientific Reports*, Submitted Dec 2023.
2. Oerther, D.B.; Oerther, S.; Peters, C.A. (2023) "Environmental Engineers Solve Problems of Planetary Health" *Environmental Engineering Science*. 41:1, 3-6. https://doi.org/10.1089/ees.2023.0301
3. S.J. Masten, R.M. Hozalski, T.H. Nguyen, C.A. Peters, K.H. Wammer (2023) "Microbial and Chemical Processes in Natural and Engineered Systems" *Environmental Engineering Science*. 40(11): 469-471. https://doi.org/10.1089/ees.2023.0239.

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PUBLISHED DATA SETS

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EDITORIALS, BOOK REVIEWS and LETTERS TO THE EDITOR

1. M. Li, M.J. Krzmarzick, C.A. Peters (2022) “AEESP Spotlight: Mid 2022” *Environmental Engineering Science* 39(6): 584-585.
2. D.A. Ladner, M.J. Krzmarzick, C.A. Peters (2022) “AEESP Spotlight: Early 2022” *Environmental Engineering Science* 39(2): 193-194.

3. V. Gadhamshetty, M.J. Krzmarzick, C.A. Peters (2021) "AEESP Spotlight: Late 2021" *Environmental Engineering Science* 38(10): 1010-1011.
4. S.J. Masten, M.J. Krzmarzick, C.A. Peters (2021) "AEESP Spotlight: Mid 2021" *Environmental Engineering Science* 38(6):575–576.
5. D.A. Ladner, M.J. Krzmarzick, C.A. Peters (2021) "AEESP Spotlight: Early 2021" *Environmental Engineering Science* 38(2): 107-108.
6. D.B. Oerther, C.A. Peters (2020) "Think-Pair-Listen in the Online COVID-19 Classroom" *Environmental Engineering Science* 37(10): 647-648. DOI: 10.1089/ees.2020.0395
7. B. Deng, M.J. Krzmarzick, C.A. Peters (2020) "AEESP Spotlight: Late 2020" *Environmental Engineering Science* 37(10):715-716.
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10. D.G. Brown, M.J. Krzmarzick, S.J. Masten, C.A. Peters (2020) "AEESP Journal Spotlight: Early 2020" *Environmental Engineering Science* 37(2):169-170.
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12. Deng, B.; Masten, S.J.; Peters, C.A.; Grasso, D. (2019) "AEESP Journal Spotlight: Mid 2019" *Environmental Engineering Science* 36(6):760.
13. Krzmarzick, M.J.; Masten, S.J.; Peters, C.A.; Grasso, D. (2019) "AEESP Journal Spotlight: Early 2019" *Environmental Engineering Science* 36(2):262-263.
14. Brown, D.G., Masten, S.J., Peters, C.A., Grasso, D. (2018) "AEESP Journal Spotlight: Late 2018" *Environmental Engineering Science*, 35 (10), p. 1148.
15. Masten, S.J., Peters, C.A., Grasso, D. (2018) "AEESP Journal Spotlight: Mid 2018" *Environmental Engineering Science* 35 (6): 662.
16. Brown, D.G., Peters, C.A., Masten, S.J., Grasso, D. (2018) "AEESP Journal Spotlight: Early 2018" *Environmental Engineering Science*, 35 (2), 141.
17. Peters, C. A., Masten, S.J., Grasso, D. (2017) "AEESP Journal Spotlight: Late 2017" *Environmental Engineering Science* 34(10): 771.
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3. Setting Priorities for Drinking Water Contaminants, Committee on Drinking Water Contaminants, Water Science and Technology Board, National Research Council, National Academy Press, Washington, D.C. January 1999.

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CONFERENCE PRESENTATIONS AND ABSTRACTS:

1. C.A. Peters (2024) "Orthogonally different mineral reactions, same outcome of permeability reduction: How can this be?" ***INVITED Keynote Speaker***. InterPore2024 16th Annual Meeting. May 2024 Qingdao, China
2. C.A. Peters, L.E. Beckingham, L.N. Pincus, Z. Shi, H. Hajibeygi, N. Dopffel (2023) "Underground Hydrogen Storage and Geochemical Considerations Regarding H_2S: Prevalence and Accessibility of Sulfate Minerals" AGU Fall Meeting 2023. GC54E-01.
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4. C. Yi, R. Tang, J.J. Kim, V. Nikitin, P. Fenter, S.S. Lee, C.A. Peters (2023), "Mapping and Quantification of Mineral Compositions: Bayesian Model for Synchrotron X-ray Nano CT Data." AGU Fall Meeting 2023. MR34A-103D.
5. Peters, C.A. (2023) "Pathways to decarbonization through carbon sequestration and mineralization", ACS Fall Meeting, 'Improving Water Quality by Understanding Environmental Chemical Processes: A Symposium in Honor of Richard G. Luthy".
6. Peters, C.A. (2023). "Joining the global effort for decarbonization through a comprehensive understanding of hydro-geochemical processes in the subsurface" ***INVITED Keynote Speaker***. Goldschmidt 2023 Conference. Lyon, France.
7. L.E. Beckingham, Z. Shi, C.A. Peters, H. Hajibeygi, N. Dopffel. (2023). "Sulfur oxidation states in underground salt caverns and sedimentary formations: Geochemical considerations for underground H_2 storage" Goldschmidt 2023 Conference. Lyon, France. https://doi.org/10.7185/gold2023.20789
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15. C.A. Peters and J.J. Kim, "Simultaneous mitigation of greenhouse gases and heavy metal pollution with carbonate mineral precipitation" ***INVITED*** Oral Presentation at ACS Fall 2021. Atlanta GA. August 2021.
16. Ling, F.T., Plattenberger, D., Clarens, A., Peters, C.A. "Modeling $CaSiO_3$-CO_2 reactions and permeability evolution for sealing leakages from geologic carbon storage" Oral Presentation at ACS Spring 2021. Virtual, 14, April 2021.
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18. D.F. Levia et al. "Planetary Resilience Jeopardized by Homogenization of the Terrestrial Water Cycle" H081-04, AGU Fall Meeting 2020.
19. A. Mrad et al. "Peak Grain Forecasts in the U.S. High Plains and Withering Waters" GC066-06, AGU Fall Meeting 2020.
20. H. Deng et al. "Key controls and impacts of reaction-driven alteration of fracture-matrix interfaces" H067-01, AGU Fall Meeting 2020. ***INVITED***
21. JJ Kim, FT Ling, D Plattenberger, AF Clarens, CA Peters, "Multimineral Characterization of Shales for Reactive Transport Modeling Based on Micro-XRF Interpretations" H081-04, AGU Fall Meeting 2020.
22. S Hajirezaie and CA Peters, "Stochastic modeling of carbonate mineral precipitation and dissolution in fractures" H067-06, AGU Fall Meeting 2020.
23. C.A. Peters and J.J. Kim, "Synchrotron-Based Machine Learning Approach for Raster (SMART) Mineral Mapping and Applications for Reactive Transport Modeling" CMWR 2020: Computational Methods in Water Resources. Stanford University 2020.
24. C.A. Peters, J.J. Kim, F.T. Ling, D.A.Plattenberger, A.F. Clarens, "Machine learning for SMART mineral mapping using coupled XRF-XRD" Goldschmidt 2020. DOI: 10.46427/gold2020.2069 ***INVITED***
25. S. Hajirezaie, C.A. Peters, "Precipitation-driven permeability reduction of an underground fracture using magnetite nanoparticles" H14I-08. 2019 AGU Fall Meeting.
26. Levia, D. et al. "Ecohydrology in the 21st Century: A Convergence of Opportunities for Global Sustainability and Social Justice and Equity" H14C-04, 2019 AGU Fall Meeting.
27. A.F. Clarens, D. Plattenberger, F.T. Ling, C.A. Peters. "Crystalline calcium silicate hydrates could enable tailored permeability control in the deep subsurface." H14I-07, 2019 AGU Fall Meeting.
28. Peters, C.A. "Subsurface Applications for Greenhouse Gas Mitigation: Seismic Detection of Geochemical Processes" ***INVITED***. ISEG 2019 The 11th International Symposium on Environmental Geochemistry, Peking University (PKU), Beijing, China, August 7th-10th, 2019.
29. Hunter, H., Ling, F.T., Peters, C.A. "Strontium Removal from Hydraulic Fracturing Wastewater through Coprecipitation with Barite ". *ASCE World Environmental & Water Resources Congress*, Pittsburgh, PA, 2019.
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32. D. Plattenberger, F.T. Ling, C.A. Peters, A.F. Clarens "Calcium Silicate Crystal Structure Impacts its Reactivity with CO_2 and Chemistry of Reaction Products" MR53A-0089, 2018 Fall Meeting AGU, Washington D.C.
33. F.T. Ling, D. Plattenberger, A.F. Clarens, C.A. Peters "A Reactive Transport Model of $CaSiO_3$ Reactions for Targeted Mineral Precipitation in Porous Media" H21N-1888, 2018 Fall Meeting AGU, Washington D.C.
34. A.F. Clarens, D. Plattenberger, Z. Tao, L. Xiaotong, C.A. Peters, J.P. Fitts, F.T. Ling "Targeted Mineral Carbonation to Enhance Wellbore Integrity" Mastering the Subsurface Through Technology Innovation, Partnerships and Collaboration: Carbon Storage and Oil and Natural Gas Technologies Review Meeting, U.S. Department of Energy NETL, August 2018 Pittsburgh, PA.
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38. Spokas, K.; Fang, Y.; Fitts, J.P.; Peters, C.A.; Elsworth, D. "Collapse of chemically altered porous surface decreases fracture permeability, frictional strength and stability." InterPore 10th Annual Meeting and Jubilee May 14 – 17 2018, New Orleans, USA.
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41. Hajirezaie, S, Peters, CA, Swift, A., Sheets, JM, Cole, DR, Crandall, D, Cheshire, M, Stack, AG, Anovitz, LM. "Mineral Precipitation in Fractures: Multiscale Imaging and Geochemical Modeling" H43G-1726, 2017 Fall Meeting AGU, New Orleans, LA 11-15 Dec.
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52. C. Peters, K. Spokas, L. Pyrak-Nolte, J. Fitts. "Permeability evolution in fractures exposed to reactive flow and normal stress: Fracture sealing vs. run-away flow" INTERPORE 2016 May 9-12, Cincinnati, OH, USA.
53. Spokas, K.; C. A. Peters; L.J. Pyrak-Nolte; J. Morris; J. P. Fitts; H. Deng. "Coupling stress and reactive transport in fractures: Effects on contacting asperities, permeability and stiffness." Abstract H43K-05, 2015 AGU Fall Meeting, San Francisco, CA. Dec 2015.
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67. Peters, CA; J.P. Fitts; H. Deng. "Geochemistry Challenges in Reliable Geologic Carbon Sequestration" ***INVITED*** Keynote presentation at 100th anniversary of the Division of Environmental Chemistry, 248th American Chemical Society National Meeting, San Francisco, CA August 2014. *PAPER ID: 18241*
68. Peters, C.A. "Geochemistry of Caprock Fracture Dissolution and CO_2 Leakage in Geologic Carbon Sequestration" ***INVITED*** Gordon Research Conference on Environmental Sciences Water. Holderness, NH, June 2014.
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MENTORING OF GRADUATE STUDENTS AND POSTDOCS

	Degree or appointment	**Graduation year, or term**	**Current position**
Lauren Pincus	Postdoc	2023-24	Postdoc at Princeton
Jun Hu	PhD	[future]	PhD student
Conghao Yi	PhD	[future]	PhD student
Ruijie Tang	PhD	[future]	PhD student
Julie Kim	PhD	2023	LG Chemical, Korea
Sassan Hajirezaie	PhD	2022	Employed in industry
Zahra Bajalan	MSE	2021	PhD student, UT Austin
Heather Hunter	PhD	2020	National Energy Technology Lab, DOE, Pittsburgh PA
Kasparas Spokas	PhD	2019	The Brattle Group, Washington DC
Florence Ling	Postdoc	2016-18	Assistant Professor, Environmental Science, La Salle University
Jeffrey P. Fitts	Research scientist	2012-17	Columbia University
Bin Guo	PhD	2015	ExxonMobil Upstream Research Company, Houston TX
Hang Deng	PhD	2015	Scientist, Lawrence Berkeley National Laboratory
Zhongxuan Jia	MSE	2013	Wells Fargo
Lauren (Crandell) Beckingham	PhD	2012	Associate Professor, Auburn University
Brian Ellis	PhD	2012	Associate Professor, University of Michigan
Juan Nogues	PhD	2012	Professor, Universidad Paraguayo Alemana
Junfeng Qin	Postdoc	2010-11	Georg-August-Universitat Gottingen, Germany
Megan Fuller	Postdoc	2010	Professor of Chemistry, Community College of Philadelphia
Kimberley (Bowman) Groff	MSE	2008	ENVIRON, Titusville, NJ
Sujata Ray	PhD	2007	Professor, Indian Institute of Science Education and Research Kolkata
Dmitri Kavetski	Postdoc	2004-07	Professor, University of Adelaide,

			Australia
Li Li	PhD	2005	Professor, Pennsylvania State University
Robert Bruant	Postdoc	2001-04	Pioneer Water Management at Pioneer Natural Resources Company
Kristine Wammer	PhD	2003	Professor, University of St. Thomas Department of Chemistry
Christopher Knightes	PhD	2000	Research Engineer, U.S. EPA NERL Lab
Kenneth Lee	Postdoc	1999	Professor, Western New England University
Sandeep Ramachandran	MSE	1999	Axis Capital Holdings Limited
Saumyen Guha	Postdoc	1996-98	Professor, Indian Institute of Technology (IIT) Kanpur
Jingzhao Fan	MSE	1996	unknown