Kurt Pennell, Ph.D., P.E., BCEE, F.ASCE, F.AEESP

250th Anniversary Professor

Contact Information

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Education

Degree	Institution	Year
Ph.D.	University of Florida	1990
M.S.	North Carolina State University	1986
B.S.	University of Maine (with high distinction)	1984

Professional Experience

Role	Institution / Department	Years
250th Anniversary Professor	School of Engineering, Brown University	2018–Present
Professor and Chair	Department of Civil & Environmental Engineering, Tufts University	2009–2017

Role	Institution / Department	Years
Bernard M. Gordon Senior Faculty Fellow	Environmental Engineering, Tufts University	2014–2017
Adjunct Professor	Department of Neurology, Emory University	2004–2009
Assistant / Associate / Full Professor	School of Civil & Environmental Engineering, Georgia Tech	1995–2009
Assistant Research Scientist	Department of Civil & Environmental Engineering, University of Michigan	1993–1995
Post-Doctoral Fellow	Department of Civil & Environmental Engineering, University of Michigan	1990–1993

Selected Professional Activities

- **Chair** (2024–Present): Environmental Engineering Program Leaders (EEPL) Committee, Association of Environmental Engineering and Science Professors (AEESP)
- **Program Evaluator (PEV)** (2021–Present): Accreditation Board for Engineering and Technology (ABET)
- **Member** (2020–Present): John R. Freeman Lecture, Boston Society of Civil Engineers Section (BSCES)
- **Independent Reviewer** (2020): Orica Botany Groundwater Cleanup Project, Sydney, Australia
- **Member** (2020–Present): Advisory Board, Rhode Island Water Resources Center
- **Panelist** (2019): National Academy of Science Engineering and Medicine, PFAS Workshop
- **Co-Chair** (2018–Present): Remediation Technology (RemTec) and Emerging Contaminants Summit
- **Instructor** (2014–2020): Interstate Technology Research Council (ITRC), Courses on Mass Flux and Integrated Site Characterization and Management
- **Member** (2015–Present): Certification Admissions Committee, American Academy of Environmental Engineers and Scientists (AAEES)
- **Member** (2015–2017): External Advisory Committee, Brown University Superfund Research Program

- **Member** (2010–2013): National Research Council, Committee on the Nation's Groundwater
- **Associate Editor** (2006–Present): *Journal of Contaminant Hydrology*

Selected Honors and Awards

- **Best Research Paper Award**, *Metabolomics* (2025)
- **Best Critical Review**, *Environmental Science & Technology* (2024)
- **Best Viewpoint**, *Environmental Science & Technology* (2024)
- **Fellow**, Association of Environmental Engineering and Science Professors (AEESP) (2019)
- **Outstanding Service Award**, Tufts University (2019)
- **Fellow**, American Society of Civil Engineers (ASCE) (2016)
- **SERDP Project of the Year**, Environmental Restoration (2006, 2012)
- **Career Award (K25)**, National Institutes of Health (NIEHS) (2006–2009)
- **Outstanding Service Award**, Soil Physics Division, Soil Science Society of America (2003)
- **Outstanding Faculty Advisor Award**, Chi Epsilon Civil Engineering Honor Society (2003)
- **Faculty Member of the Year Award**, College of Engineering, Order of Omega (2000)

Professional Certifications

- **Professional Engineer (P.E.)**, State of Georgia, No. PE030840 (2006–Present)
- **Professional Engineer (P.E.)**, Rhode Island, No. PE0201297 (2026–Present)
- **Board Certified Environmental Engineer (BCEE)**, AAEES (2009–Present)
- **Certified Professional Soil Scientist (CPSS)**, ARCPACS, No. 24756 (1998–Present)

Selected Publications

(Selected from 255 total publications; Google Scholar h-index = 65, SCI h-index = 57)

1. Klevan, C., C. Gomez Casas, O. Van Allen, K. Mukai, T. LeBlanc, A. Shukla, and K.D. Pennell. (2026). Shea-derived cationic surfactants are effective and low-toxicity alternative co-surfactants for foam fractionation of per-and polyfluoroalkyl substances (PFAS). *Journal of Hazardous Materials*, 502: 141023.
2. Klevan, C., U. Garza-Rubalcava, L.M. Abriola, and K.D. Pennell. (2026). Effects of transient air-water interfacial area on PFOA transport in unsaturated soil. *Journal of Contaminant Hydrology*, 277: 104859.
3. Yan, P.F., S. Dong, L.M. Abriola, K.D. Pennell, and N.L. Cápiro. (2025). Biotransformation of perfluorooctane sulfonamide (FOSA) and microbial community dynamics in aerobic soils. *ACS ES&T Water*. doi.org/10.1021/acsestwater.5c00033
4. Rocchio, C.L., K.D. Pennell, and C.F. Goldsmith. (2025). Computational investigation of the reaction mechanism for the thermal treatment of hexafluoropropylene oxide dimer

acid (GenX). *Journal of Physical Chemistry A*, 129: 5343–5358. doi.org/10.1021/acs.jpca.5c01170
5. Klevan, C., O. Van Allen, S. Xia, K. Mukai, A. Gomes, S. Caines, M.J. Woodcock, and K.D. Pennell. (2025). Evaluation of co-foaming agents for enhanced removal of per-and polyfluoroalkyl substances (PFAS) by foam fractionation. *Journal of Hazardous Materials*, 494: 138423.
6. Garza-Rubalcava, U., C. Klevan, K.D. Pennell, and L.M. Abriola. (2025). Transport and competitive interfacial adsorption of PFOA and PFOS in unsaturated porous media: Experiments and modeling. *Water Research*, 268: 122728.
7. Anderson, K.A., U. Garza-Rubalcava, M.A. Widdowson, E.J. Suchomel, N.L. Cápiro, and K.D. Pennell. (2025). Sorption-desorption processes contributing to the natural attenuation of cis-1, 2-dichloroethene in porous media. *Journal of Hazardous Materials*, 494: 138500. doi.org/10.1016/j.jhazmat.2025.138500
8. Liao, S., U. Garza-Rubalcava, L.M. Abriola, H.E. Preisendanz, L.S. Lee, and K.D. Pennell. (2025). Simulating PFAS transport in effluent-irrigated farmland using PRZM5, LEACHM, and HYDRUS-1D models. *Journal of Environmental Quality*, 54: 54-65.
9. Klevan, C., S. Caines, A. Gomes, and K.D. Pennell. (2024). Accurate determination of perfluorooctanoate aqueous solubility, critical micelle concentration, and acid dissociation constant. *Environmental Science & Technology Letters*. doi.org/10.1021/acs.estlett.4c00858
10. Arshadi, M., U. Garza-Rubalcava, A. Guedes, N.L. Cápiro, K.D. Pennell, J. Christ, and L.M. Abriola. (2024). Modeling 1-D aqueous film forming foam transport through the vadose zone under realistic site and release conditions. *Science of the Total Environment*, 919: 170566.
11. Smith, S.J., M. Lauria, C.P. Higgins, K.D. Pennell, J. Blotevogel, and H.P.H. Arp. (2024). The need to include a fluorine mass balance in the development of effective technologies for PFAS destruction. *Environmental Science & Technology*, 58: 2587-2590.
12. Yan, P-F., S. Dong, K.D. Pennell, and N.L. Cápiro. (2024). A review of the occurrence and microbial transformation of per- and polyfluoroalkyl substances (PFAS) in aqueous film-forming foam (AFFF)-impacted environments. *Science of The Total Environment*, 927: 171883.
13. Dong, S., P-F. Yan, M.P. Mezzari, L.M. Abriola, K.D. Pennell, and N.L. Cápiro. (2024). Using network analysis and predictive functional analysis to explore the fluorotelomer biotransformation potential of soil microbial communities. *Environmental Science & Technology*, 58: 7480–7492.
14. Yan, P.-F., S. Dong, K.E. Manz, C. Liu, M.J. Woodcock, M.P. Mezzari, L.M. Abriola, K.D. Pennell, and N.L. Cápiro. (2022). Biotransformation of 8:2 fluorotelomer alcohol in soil from aqueous film-forming foams (AFFFs)-impacted sites under nitrate-, sulfate-, and iron-reducing conditions. *Environmental Science & Technology*, 56: 13728−13739.
15. Liao, S., S. Akbariyeh, X. Chen, C. Klevan, C. Greenley, K.P. Johnston, L.M. Abriola, and K.D. Pennell. (2023). Evaluation of polyelectrolyte complex nanoparticles for prolonged scale inhibitor release in porous media. *Energy & Fuels*, 37(6): 4515–452.
16. Lee, J., C. Kim, C. Liu, M.S. Wong, N.L. Cápiro, K.D. Pennell, and J.D. Fortner. (2023). Ultra-high capacity, multifunctional nanoscale sorbents for PFOA and PFOS treatment. *npj Clean Water*, 6: 62. doi.org/10.1038/s41545-023-00263-9

17. Liu, C., J. Chu, N.L. Cápiro, J.D. Fortner, and K.D. Pennell. (2022). In-situ sequestration of perfluoroalkyl substances using polymer-stabilized ion exchange resin. *Journal of Hazardous Materials*, 422: 126960.
18. Dusza, H.M., K.E. Manz, K.D. Pennell, R. Kanda, and J. Legler. (2022). Identification of known and novel nonpolar endocrine disruptors in human amniotic fluid. *Environment International*, 158: 106904.
19. Liao, S., Z. Saleeba, J.D. Bryant, L.M. Abriola, and K.D. Pennell. (2021). Influence of aqueous film forming foams on the solubility and mobilization of non-aqueous phase liquid contaminants in quartz sands. *Water Research*, 195, 116975.
20. Costanza, J., L.M. Abriola, and K.D. Pennell. (2020). Aqueous film-forming foams exhibit greater interfacial activity than PFOA, PFOS, or FOSA. *Environmental Science & Technology*, 54: 13590-13597.
21. Huff, D.K., L.A. Morris, L. Sutter, J. Costanza, and K.D. Pennell. (2020). Accumulation of six PFAS compounds by woody and herbaceous plants: potential for phytoextraction. *International Journal of Phytoremediation*, 1-13. doi: 10.1080/15226514.2020.1786004
22. Liu, C., J. Hatton, W.A. Arnold, M.F. Simcik, and K.D. Pennell. (2020). In-situ sequestration of per- and polyfluoroalkyl substances (PFAS) using polymer-stabilized powdered activated carbon. *Environmental Science & Technology*, 54: 6929–6936.
23. Hnatko, J.P., L. Yang, K.D. Pennell, L.M. Abriola, and N.L. Cápiro. (2020). Bioenhanced back diffusion and population dynamics of Dehalococcoides mccartyi strains in heterogeneous porous media. *Chemosphere*, 254: 126842.
24. Costanza, J., M. Arshadi, L.M. Abriola, and K.D. Pennell. (2019). Accumulation of PFOA and PFOS at the air-water interface. *Environmental Science & Technology Letters*, 6: 487-491.
25. Aly, Y.H., D.P. McInnis, S.M. Lombardo, W.A. Arnold, K.D. Pennell, J.M. Hatton, and M.F. Simcik. (2019). Enhanced adsorption of perfluoro alkyl substances for in situ remediation. *Environmental Science: Water Research Technology*, 5: 1867-1875.
26. Wilton, N., B.A. Lyon-Marion, R. Kamath, K. McVey, K.D. Pennell, and A. Robbat. (2018). Remediation of heavy hydrocarbon impacted soil using biopolymer and polystyrene foam beads. *Journal of Hazardous Materials*, 349: 153-159.
27. Marcet, T.F., N.L. Cápiro, Y. Yang, F.E. Löffler, and K.D. Pennell. (2018). Impacts of low-temperature thermal treatment on microbial detoxification of tetrachloroethene under continuous flow conditions. *Water Research*, 145: 21-29.
28. Lyon-Marion, B.A., M.D. Becker, A.A. Kmetz, E. Foster, K.P. Johnston, L.M. Abriola, and K.D. Pennell. (2017). Simulation of magnetite nanoparticle mobility in a heterogeneous flow cell. *Environmental Science: Nano*, 4: 1512-1524.
29. Cápiro, N.L., F.E. Löffler, and K.D. Pennell. (2015). Spatial and temporal dynamics of organohalide-respiring bacteria in a heterogeneous PCE-DNAPL source zone. *Journal of Contaminant Hydrology*, 182: 78-90.
30. Stroo, H.F., A. Leeson, J.A. Marqusee, P.C. Johnson, C.H. Ward, M.C. Kavanaugh, T.C. Sale, C.J. Newell, K.D. Pennell, C.A. Lebrón, and M. Unger. (2012). Chlorinated ethene source remediation: Lessons learned. *Environmental Science & Technology*, 46: 6438-6447.

Selected Research Projects

(Selected from 80 externally funded grants)

Individual Metabolome and Exposome Assessment for Pharmaceutical Optimization (IndiPHARM)

- **Project Dates:** 9/11/25 – 9/10/29
- **Funding Agency:** Advanced Research Projects Agency for Health (ARPA-H)
- **Role:** co-PI with Gary Miller (PI, Columbia) and others

Airborne Metals, Neurodegeneration and Cognitive Decline: Examining the Olfactory System in The Adult Changes in Thought Study (R01 ES035501)

- **Project Dates:** 8/1/23 – 7/31/28
- **Funding Agency:** National Institutes of Health (NIEHS)
- **Role:** co-PI with Helen Suh (PI, Tufts) and Joshua Sonnen (University of Washington)

Polymer Addition for Improved Removal of Short-Chain PFAS by Dissolved Air Flotation

- **Project Dates:** 5/24/23 – 5/23/27
- **Funding Agency:** Department of Defense, SERDP ER21-3540
- **Role:** Principal Investigator (PI)

In Situ Sequestration of PFAS-Impacted Groundwater Using Stabilized Ion Exchange Resin

- **Project Dates:** 10/1/23 – 9/30/27
- **Funding Agency:** Department of Defense, ESTCP ER21-7754
- **Role:** Principal Investigator (PI) with James Hatton (co-PI, Jacobs Engineering)

Environmental Conditions Influencing Natural Abiotic and Biotic Transformation of Perfluoroalkyl Acid (PFAA) Precursors at AFFF-impacted Sites

- **Project Dates:** 11/1/23 – 10/31/27
- **Funding Agency:** Department of Defense, SERDP ER23-3628
- **Role:** co-PI with Natalie Capiro (PI, Cornell) and Katherine Manz (co-PI, University of Michigan)

Experimental Evaluation and Mathematical Modeling of Particulate Amendment Delivery, Retention and Adsorption Performance in the Subsurface

- **Project Dates:** 6/1/22 – 5/31/26
- **Funding Agency:** Department of Defense, SERDP ER21-1129
- **Role:** Principal Investigator (PI) with Linda Abriola (co-PI, Brown) and Rula Deeb (co-PI, Geosyntec)

Experimental and Theoretical Validation of the Chemical Kinetics for the Thermal Destruction of Perfluoroalkyl Alkyl Substances

- **Project Dates:** 6/1/22 – 5/31/27
- **Funding Agency:** Department of Defense, SERDP ER21-1234
- **Role:** co-PI with Franklin Goldsmith (PI, Brown) and Eric Suuberg (co-PI, Brown)

Evaluating PFAS Occurrence and Fate in Rural Water Supplies and Agricultural Operations to Inform Management Strategies

- **Project Dates:** 09/01/20 – 8/31/25
- **Funding Agency:** US Environmental Protection Agency
- **Role:** co-PI with Linda Lee (PI, Purdue) and Heather Preisendanz (co-PI, Penn State)

Impacts of Surface Coating Aging on Nanomaterial Fate and Transport in Porous Media

- **Project Dates:** 10/1/12 – 9/30/15
- **Funding Agency:** National Science Foundation, CBET-1236653
- **Role:** Principal Investigator (PI) with Linda Abriola (Tufts, co-PI), Yonggang Wang (Tufts, co-PI), and John Fortner (Washington University, co-PI)

Secondary Impacts of In Situ Remediation on Groundwater Quality and Post-Treatment Management Strategies (ER-2129)

- **Project Dates:** 4/1/11 – 12/31/15
- **Funding Agency:** Department of Defense, SERDP ER-2129
- **Role:** Principal Investigator (PI) with Natalie Capiro (Tufts, co-PI) and Frank Löffler (Tennessee, co-PI)

Fate and Transport of Metal-Based Nanoparticles in the Subsurface

- **Project Dates:** 7/1/09 – 6/30/12
- **Funding Agency:** National Science Foundation
- **Role:** Principal Investigator (PI) with Linda Abriola (Tufts, co-PI) and Yusong Li (Nebraska, co-PI)