

## **KURT PENNELL, Ph.D., P.E., BCEE, F.ASCE, F.AEESP    250th Anniversary Professor**

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### **Education**

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

### **Professional Experience**

250 <sup>th</sup> Anniversary Professor	School of Eng., Brown University	2018-
Professor and Chair	Dept. of Civil & Environ. Eng., Tufts. Univ.	2009-2017
Bernard M. Gordon Senior Faculty Fellow in Environmental Eng.		2014-2017
Adjunct Professor	Dept. of Neurology, Emory Univ.	2004-2009
Asst./Assoc./Full Professor	School of Civil & Environ. Eng., Georgia Tech	1995-2009
Assistant Research Scientist	Dept. of Civil & Environ. Eng., Univ. of Michigan	1993-1995
Post-Doctoral Fellow	Dept. of Civil & Environ. Eng., Univ. of Michigan	1990-1993

### **Selected Professional Activities**

Chair, Environmental Engineering Program Leaders (EEPL) Committee, Association of Environmental Engineering and Science Professors (AEESP)	2024-
Program Evaluator (PEV), Accreditation Board for Engineering and Technology (ABET)	2021-
Member, John R. Freeman Lecture, Boston Society of Civil Engineers Section (BSCES)	2020-
Independent Reviewer, Orica Botany Groundwater Cleanup Project, Sydney, Australia	2020
Member, Advisory Board, Rhode Island Water Resources Center	2020-
Panelist, National Academy of Science Engineering and Medicine, PFAS Workshop	2019
Co-Chair, Remediation Technology (RemTec) and Emerging Contaminants Summit	2018-
Instructor, Interstate Technology Research Council (ITRC), Courses on Mass Flux and Integrated Site Characterization and Management	2014-2020
Member, Certification Admissions Committee, American Academy of Environmental Engineers and Scientists (AAEES)	2015-
Member, External Advisory Committee, Brown Univ. Superfund Research Program	2015-2017
Member, National Research Council, Committee on the Nation's Groundwater	2010-2013
Associate Editor, <i>Journal of Contaminant Hydrology</i>	2006-

### **Selected Honors and Awards**

Best Research Paper Award, <i>Metabolomics</i>	2025
Best Critical Review, <i>Environmental Science &amp; Technology</i>	2024
Best Viewpoint, <i>Environmental Science &amp; Technology</i>	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-
Professional Engineer (P.E.), Rhode Island, No. PE0201297	2026-
Board Certified Environmental Engineer (BCEE), AAEES	2009-
Certified Professional Soil Scientist (CPSS), ARCPACS, No. 24756	1998-

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

- Klevan, C., C. Gomez Casas, O. Van Allen, K. Mukai, T. LeBlanc, A. Shukla, 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). *J. Hazard. Mater.*, 502: 141023
- Klevan, C., U. Garza-Rubalcava, L.M. Abriola, K.D. Pennell. 2026. Effects of transient air-water interfacial area on PFOA transport in unsaturated soil. *J. Contam. Hydrol.*, 277: 104859.
- Yan, P.F., S. Dong, L.M. Abriola, K.D. Pennell, 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
- Rocchio, C.L., K.D. Pennell, 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
- Klevan, C., O. Van Allen, S. Xia, K. Mukai, A. Gomes, S. Caines, M.J. Woodcock, 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.
- Garza-Rubalcava, U., C. Klevan, K.D. Pennell, L.M. Abriola. 2025. Transport and competitive interfacial adsorption of PFOA and PFOS in unsaturated porous media: Experiments and modeling. *Water Research*, 268: 122728.
- Anderson, K.A., U. Garza-Rubalcava, M.A. Widdowson, E.J. Suchomel, N.L. Cápiro, 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.
- Liao, S., U. Garza-Rubalcava, L.M. Abriola, H.E. Preisendanz, L.S. Lee, 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,
- Klevan, C., S. Caines, A. Gomes, 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
- Arshadi, M., U. Garza-Rubalcava, A. Guedes, N.L. Cápiro, K.D. Pennell, J.Christ, 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.
- Smith, S.J., M. Lauria, C.P. Higgins, K.D. Pennell, J. Blotvogel, 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.
- Yan, P-F., S. Dong, K.D. Pennell, 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.
- Dong, S., P-F. Yan, M.P. Mezzari, L.M. Abriola, K.D. Pennell, N.L. Cápiro. 2024. Using network analysis and predictive functional analysis to explore the fluorotelomer biotransformation potential of soil microbial communities. *Environ. Sci. Technol.* 58: 7480–7492.
- Yan, P.-F., S. Dong, K.E. Manz, C. Liu, M.J. Woodcock, M.P. Mezzari, L.M. Abriola, K.D. Pennell, 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.
- Liao, S., S. Akbariyeh, X. Chen, C. Klevan, C. Greenley, K.P. Johnston, L.M. Abriola, K.D. Pennell\*. 2023. Evaluation of polyelectrolyte complex nanoparticles for prolonged scale inhibitor release in porous media. *Energy & Fuels*, 37(6): 4515–452.
- Lee, J., C. Kim, C. Liu, M.S. Wong, N.L. Cápiro, K.D. Pennell, 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.
- Liu, C., J. Chu, N.L. Cápiro, J.D. Fortner, K.D. Pennell. 2022. In-situ sequestration of perfluoroalkyl substances using polymer-stabilized ion exchange resin. *Journal of Hazardous Materials*, 422: 126960.
- Dusza, H.M., K.E. Manz, K.D. Pennell, R. Kanda, J. Legler. 2022. Identification of known and novel nonpolar endocrine disruptors in human amniotic fluid. *Environment International*, 158: 106904.
- Liao, S., Z. Saleeba, J.D. Bryant, L.M. Abriola, 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.
- Costanza, J., L.M. Abriola, K.D. Pennell. 2020. Aqueous film-forming foams exhibit greater interfacial activity than PFOA, PFOS, or FOSA. *Environmental Science & Technology*, 54: 13590-13597.
- Huff, D.K., L.A. Morris, L. Sutter, J. Costanza, 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.
- Liu, C., J. Hatton, W.A. Arnold, M.F. Simcik, 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.
- Hnatko, J.P., L. Yang, K.D. Pennell, L.M. Abriola, N.L. Cápiro. 2020. Bioenhanced back diffusion and population dynamics of *Dehalococcoides mccartyi* strains in heterogeneous porous media. *Chemosphere*, 254: 126842.
- Costanza, J.<sup>§</sup>, M. Arshadi, L.M. Abriola, K.D. Pennell. 2019. Accumulation of PFOA and PFOS at the air-water interface, *Environmental Science & Technology Letters*, 6: 487-491.
- Aly, Y.H., D.P. McInnis, S.M. Lombardo, W.A. Arnold, K.D. Pennell, J.M. Hatton, M.F. Simcik, 2019. Enhanced adsorption of perfluoro alkyl substances for in situ remediation, *Environmental Science: Water Research Technology*, 5: 1867-1875.
- Wilton N., B.A. Lyon-Marion, R. Kamath, K. McVey, K.D. Pennell, A. Robbat. 2018. Remediation of heavy hydrocarbon impacted soil using biopolymer and polystyrene foam beads. *Journal of Hazardous Materials*, 349: 153-159.
- Marcet, T.F., N.L. Cápiro, Y. Yang, F.E. Löffler, K.D. Pennell. 2018. Impacts of low-temperature thermal treatment on microbial detoxification of tetrachloroethene under continuous flow conditions. *Water Research*, 145: 21-29.
- Lyon-Marion, B.A., M.D. Becker, A.A. Kmetz, E. Foster, K.P. Johnston, L.M. Abriola, K.D. Pennell. 2017. Simulation of magnetite nanoparticle mobility in a heterogeneous flow cell. *Environmental Science: Nano*, 4: 1512-1524.
- Cápiro, N.L., F.E. Löffler, 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.
- 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, M. Unger. 2012. Chlorinated ethene source remediation: Lessons learned. *Environmental Science & Technology*, 46: 6438-6447.

## **Selected Research Projects (from 80 externally funded grants)**

- Individual Metabolome and Exposome Assessment for Pharmaceutical Optimization  
(IndiPHARM) 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) 8/1/23-7/31/28  
Funding Agency: National Institutes of Health (NIEHS)  
Role: co-PI with Helen Suh (PI, Tufts) and Joshua Sonnen (UWashington)
- Polymer Addition for Improved Removal of Short-Chain PFAS by Dissolved Air Flotation  
Funding Agency: Department of Defense, SERDP ER21-3540 5/24/23-5/23/27  
PI
- In Situ Sequestration of PFAS-Impacted Groundwater Using Stabilized Ion Exchange Resin  
Funding Agency: Department of Defense, ESTCP ER21-7754 10/1/23-9/30/27  
PI with James Hatton (co-PI, Jacobs Eng.)
- Environmental Conditions Influencing Natural Abiotic and Biotic Transformation of  
Perfluoroalkyl Acid (PFAA) Precursors at AFFF-impacted Sites  
Funding Agency: Department of Defense, SERDP ER23-3628 11/1/23-10/31/27  
co-PI with Natalie Capiro (PI, Cornell) and Katherine Manz (co-PI, UMichigan)
- Experimental Evaluation and Mathematical Modeling of Particulate Amendment Delivery,  
Retention and Adsorption Performance in the Subsurface  
Funding Agency: Department of Defense, SERDP ER21-1129 6/1/22-5/31/26  
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  
Funding Agency: Department of Defense, SERDP ER21-1234 6/1/22-5/31/27  
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  
Funding Agency: US Environmental Protection Agency 09/01/20-8/31/25  
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  
Funding Agency: National Science Foundation, CBET-1236653 10/1/12 – 9/30/15  
PI with Linda Abriola (Tufts, co-PI), Yonggang Wang (Tufts, co-PI), John Fortner (WashU,  
co-PI)
- Secondary Impacts of In Situ Remediation on Groundwater Quality and Post-Treatment  
Management Strategies (ER-2129)  
Funding Agency: Department of Defense, SERPD ER-2129 4/1/11 – 12/31/15  
PI with Natalie Capiro (Tufts, co-PI) and Frank Löffler (Tennessee, co-PI)
- Fate and Transport of Metal-Based Nanoparticles in the Subsurface  
Funding Agency: National Science Foundation 7/1/09-6/30/12  
PI with Linda Abriola (Tufts, co-PI) and Yusong Li (Nebraska, co-PI)
- Quantitative Metabolomic Analysis of Chronic Exposures to Environmental Toxicants  
Funding Agency: National Institutes of Health (NIEHS) 5/8/06 – 4/30/10  
PI (K25 Career Award)
- Investigation of Chemical Reactivity, Mass Recovery and Biological Activity During In Situ  
Thermal Treatment of DNAPL Source Zones  
Funding Agency: Department of Defense, SERDP  
PI with Frank Löffler (GT, co-PI) and Eva Davis (EPA-NRML, co-PI)