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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**

Program Evaluator (EnvE), Accreditation Board for Engineering and Technology	2021-
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, Environmental Health Matters Initiative, PFAS Workshop	2019
Co-Chair, Organizing Committee for Remediation Technology Summit (RemTec)	2018-
Member, Certification Admissions Committee, American Academy of Environmental Engineers and Scientists	2015-
Member, External Advisory Committee, Brown Univ. Superfund Research Program	2015-2017
Member, National Research Council, Committee on the Nation's Groundwater	2010-2013

**Selected Honors and Awards**

Fellow, Association of Environmental Engineering and Science Professors (AEESP)	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  
Board Certified Environmental Engineer (BCEE), AAEES  
Certified Professional Soil Scientist (CPSS), ARCPACS, No. 24756

**Selected Expert Witness/Consulting Activities**

Gowanus Canal Superfund Site, Brooklyn, NY	2015-2017
Groyne 42 Cheminova Site, Denmark	2013-2014
Independent Reviewer, United Nations Compensation Commission - Kuwait	2007-2013

**Refereed Publications (selected from 182; Google Scholars h-index = 53, SCI h-index = 47)**

- Manz, K.E., I. Kulaots, C.A. Greenley, P.J. Landry, K.V. Lakshmi, M.J. Woodcock, L. Hellerich, J.D. Bryant, M. Apfelbaum, K.D. Pennell. 2022. Low-temperature persulfate activation by powdered activated carbon for simultaneous destruction of perfluorinated carboxylic acids and 1,4-dioxane. *J. Hazardous Materials*, 442: 129966.
- 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. *J. Hazardous Materials*, 422: 126960.
- 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 Res.*, 195, 116975.
- Costanza, J., L.M. Abriola, K.D. Pennell. 2020. Aqueous film-forming foams exhibit greater interfacial activity than PFOA, PFOS, or FOSA. *Environ. Sci. Technol.*, 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 J. 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. *Environ. Sci. Technol.*, 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., M. Arshadi, L.M. Abriola, K.D. Pennell. 2019. Accumulation of PFOA and PFOS at the air-water interface, *Environ. Sci. 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, *Environ. Sci.: Water Res. Technol.*, 5: 1867-1875.
- Kingsley, S.L., D.I. Walker, A.M. Calafat, A. Chen, G.D. Papandonatos, Y. Xu, D.P. Jones, B.P. Lanphear, K.D. Pennell, J.M. Braun. 2019. Metabolomics of childhood exposure to perfluoroalkyl substances: A cross-sectional study. *Metabolomics*, 15: 95-103.
- 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. *J. Hazardous Mater.*, 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 Res.*, 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. *Environ. Sci.: Nano*, 4: 1512-1524.
- Pennell, K.D. 2016. Specific surface area. In Reference Manual in Earth Systems and Environmental Sciences, S.A. Elias (ed.), Elsevier, Oxford, UK. ISBN: 978-0-12-409548-9.
- 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. *J. Contam. Hydrol.* 182: 78-90.
- Pennell, K.D., N.L. Cápiro, D.I. Walker. 2013. Surfactant and cosolvent flushing. In Chlorinated Solvent Source Zone Remediation, B. Kueper, H.F. Stroo, H. Ward (eds): Section IV. Remediation Technologies, Chapter 13, Washington, DC.

- 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. *Environ. Sci. Technol.*, 46: 6438-6447.
- Cápiro, N.L., E.K. Granbery, C.A. Lebrón, D.W. Major, M.L. McMaster, M.J. Pound, F.E. Löffler, K.D. Pennell. 2011. Liquid-liquid mass transfer of partitioning electron donors in chlorinated solvent source zones. *Environ. Sci. Technol.*, 45: 1547-1554.
- Costanza, J., G. Otaño, J. Callaghan, K.D. Pennell. 2010. PCE oxidation by sodium persulfate in the presence of solids. *Environ. Sci. Technol.*, 44: 9445-9450.
- Christ, J.A., C.A. Ramsburg, K.D. Pennell, L.M. Abriola. 2010. Predicting DNAPL mass discharge from pool-dominated source zones. *J. Contam. Hydrol.*, 114:18-34.
- Amos, B.K., E.J. Suchomel, K.D. Pennell, F.E. Löffler. 2009. Spatial and temporal distributions of *Geobacter Lovleyi* and *Dehalococcoides* spp. during bioenhanced PCE-NAPL dissolution. *Environ. Sci. Technol.*, 43: 1977-1985.
- Suchomel, E.J., C.A. Ramsburg, K.D. Pennell. 2007. Evaluation of trichloroethene recovery processes in heterogeneous aquifer cells flushed with biodegradable surfactants. *J. Contam. Hydrol.*, 94: 195-214.

### **Research Projects (selected from 66 externally funded)**

- Experimental Evaluation and Mathematical Modeling of Particulate Amendment Delivery, Retention and Adsorption Performance in the Subsurface  
 Funding Agency: Department of Defense (SERDP) ER21-1129 6/1/22-5/31/25  
 PI with Linda Abriola (co-PI) 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 6/1/22-5/31/25  
 co-PI with Franklin Goldsmith (PI) and Eric Suuberg
- Evaluating PFAS Occurrence and Fate in Rural Water Supplies and Agricultural Operations to Inform Management Strategies  
 Funding Agency: US Environmental Protection Agency (EPA) 09/01/20-8/31/23  
 co-PI with Linda Lee (PI, Purdue) and Heather Preisendanz (Penn State)
- Ex-Situ Thermal Treatment of Perfluoroalkyl and Polyfluoroalkyl Substances  
 Funding Agency: Department of Defense (ESTCP) 10/01/20-9/30/23  
 co-PI with Jennifer Wehrmann (PI, Paragon), Gorm Heron (TRS), Emily Crownover (TRS)
- Acquisition of a High-Resolution Liquid Chromatograph-Mass Spectrometer for Environmental Exposure Biomonitoring Research and Training  
 Funding Agency: National Science Foundation (NSF) 9/01/18-8/31/22  
 PI with Joe Braun (Brown), Vicki Colvin (Brown), and Jess Plavicki (Brown)
- Development of Coupled Physiochemical and Biological Systems for In-Situ Remediation of Mixed Perfluorinated Chemical and Chlorinated Solvent Groundwater Plumes  
 Strategic Environmental Research Development Program (SERDP) 1/01/18-8/31/22  
 PI with Natalie Cápiro (Auburn) and John Fortner (Yale)
- Development and Laboratory Validation of Mathematical Modeling Tools for Prediction of PFAS Formation, Transport, and Retention in AFFF Source Areas  
 Strategic Environmental Research Development Program (SERDP) 6/01/18-12/31/22  
 co-PI with Linda Abriola (PI, Tufts) and Natalie Cápiro (Auburn)
- Effects of Nano-Bio Interactions on Nanoparticle Fate and Transport in Porous Media  
 National Science Foundation (NSF) 9/1/17-8/31/20  
 PI with John Fortner (Wash Univ.) and Natalie Capiro (Auburn)