

## Edward F. Peltier

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### EDUCATION

Northwestern University	Civil and Environmental Engineering	PhD, 2002
Northwestern University	Civil and Environmental Engineering	MS, 1997
Princeton University	Chemical Engineering	BSE, 1996

### WORK EXPERIENCE

Dean R. and Florence W. Frisbie Associate Chair for Undergraduate Studies  
2020-present  
Professor  
2019-present  
Chair's Council Associate Professor  
2018-2019  
Associate Professor  
2012-2019  
Assistant Professor  
2006-2012  
Department of Civil, Environmental and Architectural Engineering, University of Kansas,  
Lawrence KS

Post-Doctoral Research Fellow  
2002-2005  
Department of Plant and Soil Sciences, University of Delaware, Newark, DE

Graduate Research/Teaching Assistant and Ph.D. Candidate  
1996-2002  
Northwestern University, Evanston, IL.

Pollution Prevention Intern,  
1997  
Illinois Environmental Protection Agency, Freeport, IL

### PROFESSIONAL ORGANIZATIONS

American Chemical Society (Member of Environmental Division and Geochemistry Division)  
American Society of Civil Engineers : Environmental & Water Resources Institute (EWRI): Water Resources Education Task Committee (2009-2012), Stormwater Infrastructure Committee (2010-2012), Urban Water Resources Research Council, LID Subcommittee (2011-present); Water Quality and Drainage Committee (2015-present, Secretary 2017-2019, Vice-Chair 2019-2021, Chair 2021-present); Environmentally Responsible Energy Production (2017-present, Vice-Chair Education Task Committee 2017-2020, Vice-Chair for Conferences 2020-2021).

### HONORS AND AWARDS

Glenn L. Parker Faculty Fellow, Department of Civil Engineering, 2022- present

Chair's Council Associate Professor of Civil, Environmental and Architectural Engineering, 2018-19 Academic Year  
University of Kansas Miller Scholar, 2017  
U.S. EPA STAR Program Fellow, 1998-2001.

## PUBLICATIONS

- Chen, M., Tinner, S., Shafer-Peltier, K., Randtke, S., Dollar, O., Peltier, E. (2022) "Boron removal from synthetic brines and oilfield produced waters using aluminum electrocoagulation" *Science of the Total Environment* 848:157733  
<https://doi.org/10.1016/j.scitotenv.2022.157733>
- Stops, M. W., Sullivan, P., Peltier, E., Young, B., Brookfield, A. E. (2022) "Tracking the hydrologic response of agricultural tile outlet terraces to storm events" *Agricultural Water Management* 263:107382 <https://doi.org/10.1016/j.agwat.2021.107382>
- Tetteh, J. T., Pham, A., Peltier, E., Hutchison, J. M., and Barati, R. (2022) "Predicting the electrokinetic properties on an outcrop and reservoir composite carbonate surfaces in modified salinity brines using extended surface complexation models" *Fuel* 309, 122078 <https://doi.org/10.1016/j.fuel.2021.122078>
- Gessler, B., Jalal, A., Yun, J., Peltier, E. and Depcik, C. (2021) "Combustion and Emissions Studies of Macroalgae and Pine Blends using a Fixed Bed Combustor" *Bioresource Technology Reports* 100871 <https://doi.org/10.1016/j.biteb.2021.100871>
- Hutchison, J. M. and Peltier, E. (2021) "Environmental Engineering Core Curriculum Transformation: A Skill-Based Approach" *2021 ASEE Midwest Section Conference*, November 2021 doi:10.18260/1-2-1127.1153-38341
- Khajouei, G., Park, H. I., Finklea, H. O., Ziemkiewicz, P. F., Peltier, E. F. and Lin, L.-S. (2021) "Produced water softening using high-pH catholyte from brine electrolysis: reducing chemical transportation and environmental footprint" *Journal of Water Process Engineering* 40, 101911 <https://doi.org/10.1016/j.jwpe.2020.101911>
- Ibrahim, A., Hiripitiyage, Y., Peltier, E., and Sturm, B. S. M. (2020) "Use of halophilic bacteria to improve aerobic granular sludge integrity in hypersaline wastewaters" *Environmental Engineering Science* 37(5), 306-315.
- Chen, M., Dollar, O., Shafer-Peltier, K., Randtke, S., Waseem, S., and Peltier, E. (2020) "Boron removal by electrocoagulation: Removal mechanism, adsorption models and factors influencing removal" *Water Research* 170, 115362.
- Shafer-Peltier, K., Kenner, C., Albertson, E., Chen, M., Randtke, S. and Peltier, E. (2020) "Removing Scale-Forming Cations from Produced Waters" *Environmental Science: Water Research & Technology* 6, 132-143.
- Ibrahim, A., Hiripitiyage, Y., Warren, J., Peltier, E. F. and Sturm, B. S. M. (2019) "Enhancing removal of aromatic compounds using an integrated biofilm-GAC reactor" *Proceedings of the Water Environment Federation 2019*
- Chen, M., K. Shafer-Peltier, S. Randtke, E. Peltier, (2019) "Complex and Precipitation of Scale-forming cations in Oil Produced Water with Ionic Polyelectrolytes," *Separation and Purification Technology* 222(1), 1-10.

- Siddiqui, D. A., Peltier, E. F., Young, C. B. and Sullivan, P. L. (2019) “Modelling Influent Runoff and Retention Time in Storm Water Wetland Systems” *Proceedings of the 2019 World Environmental and Water Resources Congress*, 400-410
- Chen, M., Shafer-Peltier, K., Randtke, S. J., and Peltier, E. (2018) “Modeling arsenic (V) removal from water by micellar enhanced ultrafiltration in the presence of competing anions” *Chemosphere* 213, 285-294.
- Ibrahim, A., Hiripityage, Y., Peltier, E. F. and Sturm, B. S. M. (2018) “Investigation of the response mechanisms of halophilic and mixed culture aerobic granular sludge under hypersaline conditions” *Proceedings of the Water Environment Federation 2018* (10), 3836-3853.
- Chen, M., Shafer-Peltier, K., Randtke, S. J., and Peltier, E. (2018) “Competitive association of cations with poly(sodium 4-styrenesulfonate) (PSS) and heavy metal removal from water by PSS-assisted ultrafiltration. *Chemical Engineering Journal*, 344, 155-164
- Hosseini, H., Tsau, J., Peltier, E., and Barati, R. (2018) “Lowering Fresh Water Usage in Hydraulic Fracturing by Stabilizing scCO<sub>2</sub> Foam with Polyelectrolyte Complex Nanoparticles Prepared in High Salinity Produced Water” SPE International Conference and Exhibition on Formation Damage Proceedings, February 2018.
- Ibrahim, A., Peltier, E. F., and Sturm, B. S. M. (2017) “Halophilic and nonhalophilic aerobic granular sludge formation in hypersaline synthetic oilfield produced water” *Proceedings of the Water Environment Federation 2017* (16), 141-152.
- Mangus, M., Kiani, F., Mattson, J., Tabakh, D., Petka, J., Depcik, C., Peltier, E., Stagg-Williams, S. (2015) Investigating the Compression Ignition Combustion of Multiple Biodiesel/ULSD Blends via Common-Rail Injection. *Energy*, 89 (932-945).
- Depcik, C., Jachuck, J., Jantz, D.; Kiani, F., Mangus, M., Mattson, J., Peltier, E., Stagg-Williams, S. (2015) Influence of Fuel Injection System and Engine Timing Adjustments on Regulated Emissions from Four Biodiesel Fuels. *Transportation Research Record: Journal of the Transportation Research Board*, 2503, 20–28.
- Mangus M., Depcik, C., Ragone, C. and Peltier, E. (2015) “Ozone-Assisted Combustion: Experimental Assessment of the Influence of Ozone in a Single-Cylinder Diesel Engine” *SAE Technical Paper 2015-01-0787*
- Mangus, M.D., Kiani, F., Mattson, J., Depcik, C. D., Peltier, E. and Stagg-Williams, S. M. (2014) “Comparison of Neal Biodiesels and ULSD in an Optimized Single-Cylinder Diesel Engine with Electronically-Controlled Fuel Injection” *Energy & Fuels* 28: 3849-3862
- Peltier, E., Chong, W. O., Nielsen, E., Johnson, J. (2014) “Auditing Kansas Department of Transportation Vehicle Fleet Fuel Use and Carbon Footprint” 93<sup>rd</sup> Annual Meeting of the Transportation Research Board Compendium, Washington, DC January 2014
- Chong, W. O., Peltier, E., Wade, B., Kwok, K.-Y. G., (2014) “Energy Use and Carbon Emissions Analysis Methodologies for Large Organizations” 93<sup>rd</sup> Annual Meeting of the Transportation Research Board Compendium, Washington, DC January 2014

- Chen, X., Peltier, E., Sturm, B.S.M. and Young, C. B. (2013) “Nitrogen Removal and Nitrifying and Denitrifying Bacteria Quantification in a Stormwater Bioretention System” *Water Research* 47 1691-1700.
- Guerra, S. A., Lane, D. D., Carter, R. E., Peltier, E., Marotz, G., Slade, N. (2013) “Novel Data Analysis Technique Used to Evaluate NO<sub>x</sub> and CO<sub>2</sub> Continuous Emissions Data” 106<sup>th</sup> Air & Waste Management Association Annual Conference and Exhibition 2013, Chicago, IL
- Mattson, J. M. S., O’Malley, R., Depcik, C. and Peltier, E. (2013) “Recommendation for the Next Generation of Hydrocarbon Modeling with respect to Diesel Exhaust Aftertreatment and Biodiesel Fuels” *SAE Technical Paper 2013-01-1348*
- Cecrle, E., Depcik, C., Duncan, A., Guo, J., Mangus, M., Peltier, E., Stagg-Williams, S. and Y. Zhong (2012) “Investigation of the Effects of Biodiesel Feedstock on the Performance and Emissions of a Single-Cylinder Diesel Engine” *Energy & Fuels* 26(4), 2331-2341.
- Guo, J., Peltier, E., Carter, R. E., Krejci, A. J., Stagg-Williams, S. M. and Depcik, C. (2012) “Waste Cooking Oil Biodiesel Use in Two Off-Road Diesel Engines” *ISRN Renewable Energy*, doi:10.5402/2012/130782
- Cecrle, E., Depcik, C., Guo, J. and Peltier, E. (2012) “Analysis of the effects of reformat (hydrogen/carbon monoxide) as an assistive fuel on the performance and emissions of used canola-oil biodiesel.” *Int. J. Hydrogen Energy* 37(4): 3510-3527.
- Shi, Z., Peltier, E. and Sparks, D. L. (2012) “Kinetics of Ni Sorption in Soils: Roles of Soil Organic Matter and Ni Precipitations” *Environmental Science and Technology* 46(4), 2212-2219.
- Sturm, B. S. M., Peltier, E., Smith, V H., and deNoyelles, F. (2012) “Controls of Microalgal Biomass and Lipid Production in Municipal Wastewater-Fed Bioreactors” *Environmental Progress & Sustainable Energy*. 31(1): 10-16
- Peltier, E., Ilipilla, P. and Fowle, D. (2011) “Structure and reactivity of zinc sulfide precipitates formed in the presence of sulfate-reducing bacteria” *Applied Geochemistry* 26(9-10): 1673-1680.
- Mohammadi, Z., Xie, S.-X., Peltier, E. Veisi, M. and Berkland, C. (2011) “Enhancing the Selectivity of an Iron Binding Hydrogel” *European Polymer Journal* 47: 1485-1488.
- Peltier, E. and Carbone, G. (2011) “Bioretention Design and Performance in Johnson County, KS” *Proceedings of the 2011 World Environmental and Water Resources Congress*, 356-363
- Peltier, E., Guo, J., Slade, D., Danzer, M. and Laughridge, R. (2011) “Impact of Biodiesel Blends on Emissions from a Switching Locomotive” 90<sup>th</sup> Annual Meeting of the Transportation Research Board Compendium (DVD), Washington, D. C. January 2011.
- Peltier, E., Vincent, J., Finn, C., and Graham, D. W. (2010) “Zinc-induced antibiotic resistance in activated sludge bioreactors” *Water Research* 44 3829-3836

- Guo, J., E. Peltier and G. Macpherson, (2010) "Measuring Trace Metal Concentrations in Diesel and Biodiesel Particulate Exhaust" *Symposium on Air Quality Measurement Methods and Technology 2010*, pp. 913-917, Air & Waste Management Association, Pittsburgh, PA.
- Peltier E., J. Saadi, X. Chen and C. B. Young (2010) "Metal Sequestration and Remobilization in Bioretention Media" *Proceedings of the 2010 World Environmental and Water Resources Congress*, 3028-3037
- Young, C. B., E. Peltier and K. Kindscher (2010) "Relating Vegetation Composition in a Bioretention Cell to Small-Scale Hydrologic and Topographic Variability" *Proceedings of the 2010 World Environmental and Water Resources Congress*, 1451-1457
- Peltier, E., van der Lelie, D. and Sparks, D. L. (2010) "Formation and Stability of Ni-Al Hydroxide Phases in Whole Soils" *Environmental Science and Technology* 44(1):302-308
- Guo, J., E. F. Peltier, R. E. Carter and A. J. Krejci (2009) "Effects of Biodiesel Blending on Gas-phase Emissions from a Heavy-duty Engine" *Preprints of Papers-American Chemical Society, Division of Fuel Chem.*
- Peltier, E., X. Chen, K. Kindscher and C. B. Young (2009) "Long-term Effectiveness of a Bioretention System Treating Road Runoff in Northeastern Kansas" *Proceedings of the 2009 World Environmental and Water Resources Congress*, 1335-1343
- Porter, E., J. Kenny, E. Peltier and C. B. Young (2009) "A Student-Led Effort to Assess the Effect of Urban Runoff on Potter Lake." *Proceedings of the 2009 World Environmental and Water Resources Congress*, 791-798
- Tappero, R., Peltier, E., Grafe, M., Heidel, K., Ginder-Vogel, M., Livi, K. J. T., Rivers, M. L., Marcus, M. A., Chaney, R. L., Sparks, D. L. (2007) "Hyperaccumulator *Alyssum murale* relies on a different metal storage method for cobalt than for nickel" *New Phytologist* 175(4):641-654
- Allada, R. K., Peltier E., Navrotsky, A., Casey, W. H., Johnson, A., Thompson-Berbeco, H. and Sparks, D. L. (2006) "Calorimetric determination of the enthalpies of formation of hydrotalcite-like solids and their use in the geochemical modeling of metals in natural waters" *Clays and Clay Minerals* 54(4):409-417
- Everhart, J., McNear Jr., D. H., Peltier, E., van der Lelie, D., Chaney, R. L. and Sparks, D. L. (2006) "Assessing nickel bioavailability in smelter-contaminated soils" *Science of the Total Environment* 367(2-3):732-744
- Peltier, E., Allada, R. K., Navrotsky, A. and Sparks, D. L. (2006) "Nickel Solubility and Precipitation in Soils: A Thermodynamic Study" *Clays and Clay Minerals* 54(2):153-163
- McNear Jr., D. H., Peltier, E., Everhart, J. Chaney, R. Newville, M., Rivers, M., Sutton, S., and Sparks, D. L. (2005) "Application of Quantitative Fluorescence and Absorption-Edge Computed Microtomography to Image Metal Compartmentalization in *Alyssum murale*" *Environmental Science and Technology* 39: 2210-2218

Peltier, E., Dahl, A.L., and Gaillard, J.F. (2005) “Metal Speciation in Anoxic Sediments: When Sulfides Can Be Construed as Oxides” *Environmental Science and Technology* 39:311-316

Peltier, E., Webb, S. M. and Gaillard, J.F. (2003). “Zinc and Lead Sequestration in an Impacted Wetland System” *Advances in Environmental Research* 8:103-112

### **BOOK CHAPTERS**

Ghahfarokhi, R. B., Randtke, S., and Peltier, E. “Environmental Aspects of Shale Hydrocarbon Reservoir Developments” in *Unconventional Hydrocarbon Resources: Techniques for Reservoir Engineering Analysis*, R. Barati and M. M. Alhubail, eds., American Geophysical Union, 2020.

### **REPORTS**

Peltier, E., Sullivan, P., Young, C. B., Siddiqui, D. and Stops Jr. M. “Assessing the Water Quality Impacts of Constructed Wetlands on Tile Outlet Terrace Runoff (CD-97758901)” Kansas Water Office, Topeka, KS.

Randtke, S. J., Peltier, E. F., Adams, C. D., Lane, R. F., Breault, Z. A. and Carter Jr. R. E. (2017). “Evaluation of Lead Service Line Lining and Coating Technologies” WRF #4351, Water Research Foundation, Denver, CO.

Peltier, E., Young, C. B., Luellen, L. and Lee, H. (2016). “Monitoring Effectiveness of Tile Outlet Terrace Fields with Constructed Wetlands for Sediment, Nutrient and Volume Reduction in Northeastern Kansas.” Kansas Water Office, Topeka, KS.

Nielsen, E., Magnuson, G., Kwok, G., Peltier E. and Chong, O. (2014) “Kansas Department of Transportation Enterprise Energy and Carbon Accounting and Utility Usage Research, Phase 2B: Improving Energy and Fuel Efficiencies in KDOT Operations” Kansas Department of Transportation, Topeka, KS.

Peltier, E. (2013) “Impacts of Emissions Control Solutions RH7 Technology on Locomotive Engine Exhaust: Report of Experimental Findings” Kansas City Southern Railroad, Kansas City, MO

Kwok, G., Wade, B., Magnuson, G., Johnson, J., Chong, O. and Peltier, E. (2011) “Kansas Department of Transportation Enterprise Energy and Carbon Accounting and Utility Usage Research, Phase 1B: Embodies and Operation Energy and Carbon in Buildings and Vehicles” Kansas Department of Transportation, Topeka, KS.

Peltier, E., Young, C. B. and Lacy, S. (2008) “Minimizing Contaminant Impact from Road and Parking Lot Runoff” University of Kansas Transportation Research Institute, Lawrence KS, Report KAN 42816.

### **PRESENTATIONS**

“Geochemical and Economic Evaluation of Brine Exchange as a Means of Produced Water Management” 2022 AEESP Research and Education Conference, June 28-30, St. Louis, MO

“Assessing Reuse Options for High-Salinity Oil and Gas Wastewater” World Environmental & Resources Congress 2022, Atlanta, GA, June 5- 8, 2022

- “Fate of Microplastics Added to Soil through Land Application of Biosolids” 2021 ASA, CSSA, SSSA International Annual Meeting, Nov 7-10, 2021 Salt Lake City, UT
- “Panel Discussion on Produced Water and Induced Seismicity” Regional Induced Seismicity Collaborative Webinar, June 24, 2021 (Invited Panelist)
- “Sustainability of Produced Water Pretreatment used to Address Desalination Challenges” World Environmental & Water Resources Congress 2021, Virtual online. June 7-11, 2021
- “Relating Produced Water Composition and Reuse Options” American Chemical Society National Meeting, Virtual online, April 5-16, 2021
- “Farm to regional ammonia production, water treatment: options using wind energy. How does it work?” Webinar hosted by Kansas Water Office, January 14, 2021
- “Treating Produced Water for Beneficial Reuse: A Pilot Project in Kansas” Governor’s Conference on the Future of Water in Kansas. Online. November 10, 2020
- “Challenges in Recovery and Reuse of Oil and Gas Produced Water” University of Mosul, Mosul, Iraq, May 12, 2020
- “Modeling Nutrient Removal in Constructed Wetlands Collecting Terraced Field Runoff” Governor’s Conference on the Future of Water in Kansas. Wichita, KS, November 7-8, 2019
- “Assessing the Water Quality Impacts of Constructed Wetlands on Tile Outlet Terrace Runoff” World Environmental & Resources Congress 2019, Pittsburgh, PA, May 19-23, 2019
- “Better Management and Recovery of Oil and Gas Produced Water” Professional Development Seminar Series, College of Engineering, University of Alaska Anchorage, February 15, 2019
- “Constructed Wetland Impacts on Runoff Quality from Terraced Fields in NE Kansas” Governor’s Conference on the Future of Water in Kansas. Manhattan, KS, November 13-14, 2018
- “Integrated Treatment Strategies for Produced Water” World Environmental & Water Resources Congress 2017, Minneapolis, MN, June 3-7 2018
- “RII-Track-2 FEC: Improving Water Management, Treatment and Recovery in Oil and Gas Production” Innovations at the Nexus of Food, Energy and Water Systems (INFEWS) Principal Investigator Workshop, May 16-18, 2018, Alexandria, VA
- “Produced Water Management: Integrating Treatment and Reuse” University of Kansas Chemical and Petroleum Engineering Department Seminar Series, Lawrence, KS April 3, 2018. Invited Speaker.
- “Stormwater Management for Water Quality” 2018 KU CEAE Professional Development Series, Overland Park, KS, April 2, 2018.
- “Elemental contaminants in produced water and their impact on treatment and reuse” 255<sup>th</sup> American Chemical Society National Meeting, New Orleans, LA, March 18-22, 2018.

- “Produced Water Management in Kansas: Treatment and Reuse Options” Governor’s Conference on the Future of Water in Kansas. Manhattan, KS, November 8-9, 2017
- “Produced Water Reuse Options in Kansas: A Case Study at the Food-Energy-Water Nexus” 254<sup>th</sup> American Chemical Society National Meeting, Washington, DC, August 20-24, 2017.
- “Nitrogen Removal in Constructed Wetlands Treating Storm Runoff from Tile Drain Systems” World Environmental and Water Resources Congress 2017, Sacramento, CA, May 21-25, 2017.
- “RII Track-2 FEC: Improving Water Management, Treatment and Recovery in Oil and Gas Production” Innovations at the Nexus of Food, Energy and Water Systems (INFEWS) Principal Investigator Workshop, Arlington, VA, March 22-24, 2017.
- “Tile Outlet Terrace Systems: What we Know and What We’re Doing” Missouri Regional Advisory Committee, Atchison, KS. February 14, 2017.
- “Constructed Wetlands for Sediment, Nutrient and Runoff Volume Reduction in Northeastern Kansas” Governor’s Conference on the Future of Water in Kansas. Manhattan, KS, November 14-15, 2016.
- “Impact of Treatment Wetlands on Tile Outlet Terrace Drainage: A Monitoring Study” World Environmental and Water Resources Congress 2016. West Palm Beach, FL. May 22-26, 2016.
- “Use of Polyelectrolyte Complexes in Sr and Ba Removal from Produced Waters” 251<sup>st</sup> American Chemical Society National Meeting, San Diego, CA. March 13-17, 2006.
- “Treating Agricultural Runoff with Constructed Wetlands.” Governor's Conference on the Future of Water in Kansas, Manhattan, KS, November 18-19, 2015.
- “Assessing Constructed Wetlands for Treating Runoff from Tile Outlet Terraces in Agricultural Systems.” World Environmental and Water Resources Congress 2015, Austin, TX, May 17-21, 2015.
- “Stormwater Treatment: Best Management Practices and New Techniques.” CEAE Professional Development Series, Overland Park, KS, April 13, 2015.
- Reactivity of an Epoxy Coating with Free and Combined Chlorine in Drinking Water Service Lines. 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 22-26, 2015.
- “Influence of Fuel Injection System and Engine Timing Adjustments on Regulated Emissions from Four Biodiesel Fuels” Transportation Research Board 94<sup>rd</sup> Annual Meeting, Washington, DC January 11-15, 2015.
- “The Effects of Biodiesel Blending on Hydrocarbon Emissions from a Single Cylinder Compression Engine” Air & Waste Management Association 107<sup>th</sup> Annual Conference and Exhibition, Long Beach, CA, June 24-27, 2014.
- “Zebra Mussels: Impact on Drinking Water Treatment” KS AWWA Water Treatment Operations School, Kansas City, KS, May 7, 2014. Invited Speaker.



- “Auditing Kansas Department of Transportation Vehicle Fleet Fuel Use and Carbon Footprint” Transportation Research Board 93<sup>rd</sup> Annual Meeting, Washington, DC January 12-16, 2014.
- “N-Heptane as a Fuel Surrogate for n-Alkane Components of Diesel and Biodiesel Fuels” 245<sup>th</sup> American Chemical Society National Meeting, New Orleans, LA, April 7-11, 2013.
- “NO<sub>x</sub> and Particulate Matter Emissions from a Diesel Engine Burning Jatropha Biodiesel-ULSD Fuel Blends” 245<sup>th</sup> American Chemical Society National Meeting, New Orleans, LA, April 7-11, 2013.
- “Contaminant Sorption and Desorption Processes in Bioretention Media” World Environmental and Water Resources Congress 2013, Cincinnati, OH, May 19-23, 2013.
- “Measuring Emissions from a General Aviation Engine Burning Alternative Jet Fuels” Transportation Research Board 92<sup>nd</sup> Annual Meeting, Washington, DC January 13-17, 2013.
- “Sorption and pH effects on the removal of trace metals from a contaminated alkaline groundwater” 244<sup>th</sup> American Chemical Society National Meeting, Philadelphia, PA August 19-23, 2012.
- “Air Quality Impacts of Biofuel Combustion” Universidad de Costa Rica, San José, Costa Rica, June 19, 2012.
- “Effects of Biodiesel Composition on Nitrogen Oxide Emissions from a Single Cylinder Diesel Engine” 243<sup>rd</sup> American Chemical Society National Meeting, San Diego, CA March 2012.
- “Road salt Impacts on Bioretention Systems” Philadelphia Low Impact Development Symposium, Philadelphia, PA Sept. 25-28, 2011.
- “Comparing Bioretention System Design and Performance in Johnson County, KS” World Environmental & Water Resources Congress 2011, Palm Springs, CA, May 22-26, 2011.
- “Road Salt Effects on Contaminant Remobilization from Bioretention Media” World Environmental & Water Resources Congress 2011, Palm Springs, CA, May 22-26, 2011.
- “Trace Metal Impacts on Antibiotic Resistance in Wastewater Reactors” 241<sup>st</sup> American Chemical Society National Meeting, Anaheim, CA, March 27-31, 2011.
- “Impact of Biodiesel Blends on Emissions from a Switching Locomotive” Transportation Research Board 90<sup>th</sup> Annual Meeting, Washington, DC January 24-27, 2011.
- “Characterizing Metal Loadings in Exhaust Particulate Fractions Using a Laser Ablation-ICP-MS Technique” Society of Environmental Toxicology and Chemistry (SETAC) North America 31<sup>st</sup> Annual Meeting, Portland, OR, November 7-11, 2010

- “Zn and Cu Effects on Microbial Resistance to Antibiotics in Activated Sludge Populations” Society of Environmental Toxicology and Chemistry (SETAC) North America 31<sup>st</sup> Annual Meeting, Portland, OR, November 7-11, 2010
- “Effects of Biodiesel Blending on Exhaust Emissions from a Switching Locomotive” 2010 Railroad Environmental Conference, Champaign, IL, October 26-27, 2010
- “Biogenically Formed Metal Sulfide Phases” 2010 Goldschmidt Conference, Knoxville TN, June 13-18, 2010
- “Metal Sequestration and Remobilization in Bioretention Media” World Environmental & Water Resources Congress 2010, Providence, RI, May 16-20, 2010.
- “Biogenic Metal Sulfide Formation and Reactivity” 239<sup>th</sup> American Chemical Society National Meeting, San Francisco, CA, March 21-25, 2010.
- “Stormwater Treatment: Performance = Maintenance” Green Infrastructure Workshop, Lenexa, KS February 18, 2010 Invited Speaker.
- “Stormwater Treatment: Vegetated Systems for Water Quality Improvement”, Haskell Indian Nations University, October 14, 2009
- “New Treatment Technologies Using Ion Exchange”, KWEA & KsAWWA Joint Conference, Topeka, KS, September 1-3, 2009.
- “Formation and Characterization of Biogenic Metal Sulfide Phases” 238<sup>th</sup> American Chemical Society National Meeting, Washington, DC, August 16-20, 2009.
- “Metal Induced Antibiotic Resistance in Activated-Sludge Reactors” AEESP 2009, Iowa City, IA, July 27-28, 2009.
- “Long-term Effectiveness of a Bioretention System Treating Road Runoff in Northeastern Kansas” World Environmental & Resource Conference 2009 Kansas City, MO, May 17-21, 2009.
- “Sustainable Stormwater Treatment and Management in Northeastern Kansas” Johnson County Stormwater Management Program Series, October 21, 2008. Invited Speaker.
- “Sustainable Stormwater Treatment and Management” 2008 KU CEAE Professional Development Series, Overland Park, KS, April 7, 2008.
- “Zebra Mussels: Impact on Drinking Water Treatment” KS AWWA Water Workshop, Kansas City, KS, February 14, 2008. Invited Speaker.
- “Sustainable Approaches for Stormwater Treatment: A Bioretention Study” 58<sup>th</sup> Annual Environmental Engineering Conference, Lawrence, KS, February 6, 2008. Invited Speaker.
- “Emerging Environmental Issues in Water Use and Management” Asian Groundwater Management Program, University of Kansas, November 26-December 15, 2006. Invited Speaker.
- “Metal Transformations in Natural Systems: Integrating Molecular and Macroscopic Studies” KBS Seminar Series, September 8, 2006. Invited Speaker.

- “The Influence of Surface Precipitation on Nickel Solubility, Bioavailability and Fate in Contaminated Soils.” 18<sup>th</sup> World Conference of Soil Science, Philadelphia, PA. July 9-15, 2006.
- “Environmental Remediation of Urban Industrial Sites” 2006 KU CEAE Professional Development Series, Overland Park, KS, April 24, 2006.
- “Formation and Stability of Ni Surface Precipitates in Delaware Soils” National Science Foundation Sponsored Workshop Frontiers in Exploration of the Critical Zone, Newark, DE, October 24-26, 2005.
- “Predicting Nickel Precipitate Formation in Contaminated Soils” Soil Science Society of America National Meeting, Seattle, WA, October 31-November 4, 2004.
- “Formation and Stability of Mixed Metal Hydroxide Phases in Contaminated Soils” 20th Annual International Conference on Soils, Sediments and Water, Amherst MA, October 18-21, 2004.
- “Formation and Stability of Nickel Soil Precipitates” 228<sup>th</sup> American Chemical Society National Meeting, Philadelphia, PA, August 22-26, 2004.
- “Kinetics of Nickel Precipitate Formation in Soils” 227<sup>th</sup> American Chemical Society National Meeting, Anaheim, CA, March 27-April 1, 2004.
- “Factors Affecting Ni and Zn Hydroxide Precipitate Formation in Soils” Soil Science Society of America National Meeting, Denver, CO, November 2-6, 2003.
- “Trace Metal Re-Speciation during Partial Oxidation of Anoxic Wetland Sediments” 225<sup>th</sup> American Chemical Society National Meeting, New Orleans, LA, March 23-27, 2003.
- “Assessing Metal Mobility and Release in Wetland Sediments using X-Ray Techniques” 222<sup>nd</sup> American Chemical Society National Meeting, Chicago, IL, August 26-30, 2001.

#### **FUNDED GRANTS (PI UNLESS OTHERWISE NOTED)**

- “Novel 3D Printed Zeolite Passive Samplers Enabling Fast & Reliable Measurements of PFAS in Complex Environmental Matrices” \$250,054 from U.S. Army Corps of Engineers from September 2021 – September 2023 (Co-PI with PI M. Shiflett and Co-PIs D. Corbin, J. Hutchison, B. Laird)
- “Coblentz Marsh Sampling Project” \$59,444 from City of Lawrence, KS from May 2021- May 2023.
- “Experimental and Modeling Investigations of Fluid-Fluid and Rock-Fluid Compatibility between Arbuckle and Lansing Kansas City Formations with the Purpose of Produced Water-Exchange Between the Two Formations to Reduce both Fresh Water Usage and Water Disposal Problems” \$40,000 from Kansas Water Resources Institute from March 2020- August 2022 (Co-PI with PI R. Barati and Co-PI J. Hutchison)
- “INFEWS/T2 FEWtures: Innovation Analysis Framework for Resilient Futures, with Application to the Central Arkansas River Basin” \$2,500,000 from September 2019-August 2024 from the National Science Foundation (Senior Personnel with M. Hill, Pi and four Co-PIs)

“Steel Pickling for Hot-Dip Galvanizing: Effects of Zinc and Iron on Hydrochloric and Sulfuric Acid Pickling Rates” \$9,998 from American Galvanizers Association, Inc. (Co-PI with C. Bennett, PI and Co-PIs J. Li and W. Collins)

“Pilot Test Project for Produced Water near Hardtner, Kansas” \$210,972 from August 2019 – December, 2021 from Bureau of Reclamation and KS Water Office (with Co-PI S. Randtke)

“RET Site: Exploring Career Opportunities through Water-Themed Engineering Research (ECO-WaTER)” \$594,001 from Sept 2018- Sept 2022 from National Science Foundation (with Co-PI C. Bode)

“WERF: Determining the fate and major removal mechanisms of microplastics in water and resource recovery facilities” \$304,892 from August 2017 – July 2021 from National Science Foundation (Co-PI with B. Sturm, PI)

“Assessing the Water Quality Impacts of Constructed Wetlands on Tile Outlet Terrace Runoff” \$248,767 from October 2016- July 2020 from Kansas Water Office (with Co-PIs: Pam Sullivan and C. Bryan Young)

“RII Track-2 FEC: Improving Water Management, Treatment and Recovery in Oil and Gas Production” \$3,898,637 from August 2016-July 2021 from NSF EPSCoR Program (with Co-PIs: Lian-Shin Lin, Karen Peltier, Steve Randtke and Paul Ziemkiewicz)

“Assessing the impact of constructed wetlands on nitrogen transformation and release from tile outlet terraces (TOTs) in Kansas” \$30,000 from March 2016-February, 2019 from KS Water Resources Institute (Co-PI with P. Sullivan, PI)

“Sustainable Hydrocarbon Recovery in Unconventional Reservoirs Initiation” \$299,000 from January 2014- December 2015 from KU Strategic Research Initiative (One of four Co-PIs with Jenn-Tai Liang, PI)

“Supplemental Monitoring of Constructed Wetlands in the Upper Wakarusa Watershed” \$20,000 May, 2014- June, 2016. (with B. Young and R. Carter)

“Monitoring the Effectiveness of Constructed Wetlands for Removing Sediment and Nutrients from Agricultural Runoff” \$148,000 from Kansas Water Office from November 2013 – August 2015. (Co-PI with B. Young, PI)

“Impact of Emissions Control Solutions RH7 Technology on Locomotive Exhaust Emissions” \$5,000 from Kansas City Southern Railroad, December 2012- December 2013 (with C. Depcik)

“KU Investigation into Emissions Control Solutions Hardware” \$252,000 from Emissions Control Solutions, August 2011- August 2013. (Co-PI with C. Depcik, PI)

“Carbon Emissions and Energy Efficiency (Phase 2): Improving Energy and Fuel Efficiencies in KDOT Operations” \$60,000 from Kansas Department of Transportation, July 2011 -June 2012. (with O. Chong and C. Depcik)

“Feasibility of Renewable Feedstocks for Production of Bio-jet Fuel” \$488,193 from Kansas NASA EPSCoR Program, January 2011- May, 2012. (One of three Co-PIs with B. Sturm, PI)

“Evaluation of Lead Service Line Lining and Coating Technologies” \$600,000 from USEPA, May 2011- December 2014 (one of 2 Co-PIs with S. Randtke, PI)

“Engine Test Cell Upgrade Project” \$350,000 from U. S. Department of Transportation, September 2010- September 2013 (Co-PI with C. Depcik, PI)

“Evaluation of ECS Ozone Addition Process” \$32,974 from Emissions Control Strategies, Inc., August 2010 – May 2011. (with C. Depcik, PI)

“Carbon Emissions (Phase 1): Establish Carbon Emissions Baseline for Kansas Department of Transportation (KDOT)” \$60,000 from Kansas Department of Transportation, July 2010 -June 2011. (one of four Co-PIs O. Chong, PI)

“Emissions Studies of Biodiesel and Biodiesel Blends in a Light Duty Truck” \$49,480 from Kansas Soybean Commission, April 2010 – June 2011 (one of 3 Co-PIs with S. Williams, PI)

“Feedstock to tailpipe initiative: Kansas biofuels, production, testing and certification laboratory” \$1,236,950 from U. S. Department of Energy, January 2010- December 2011. (one of 7 Co-PIs with S. Williams, PI)

“RET: Shaping Inquiry for Feedstock to Tailpipe (SHIFT)” \$499,477 from 2009-2011 from National Science Foundation, August 2009- August 2012. (one of multiple Senior Personnel with S. Williams, PI)

“KU Biofuels Feedstock to Tailpipe Initiative” \$516,814 from KU Transportation Research Institute, October 2008 – May, 2011. (one of 8 CO-PIs with S. Williams, PI)

“Assessment of the Short and Long Term Effectiveness of Bioretention Cells Treating Paved Surface Runoff in Lenexa, KS”. \$179,040 from KU Transportation Research Institute from Johnson County Stormwater Management Advisory Council, January 2008 – December, 2010. (with B. Young and K. Kindscher)

“Biodiesel Emissions Testing” \$187,000 from KU Transportation Research Institute, August 2007-December 2008. (one of two Co-PIs with D. Lane, PI)

“Minimizing Contaminant Impact from Road and Parking Lot Runoff.” \$51,487 from KU Transportation Research Institute, July 2007- June 2007. (with B. Young and D. Graham)

“Plug-in Hybrid Emissions Characterization & Demonstration Study” \$169,336 from KU- Transportation Research Institute, August 2006-July 2008 (one of two Co-PIs with D. Lane, PI)

“On-Board Vehicle Emissions Monitoring System” \$85,000 from KU Transportation Research Institute, August 2006-July 2008 (one of two Co-PIs with D. Lane, PI)

“Chemical Speciation and Availability of Metals in Wetlands” Co-PI. (with J.-F. Gaillard, Northwestern University, PI) Awarded \$110,000 from 2002-2004 by Illinois-Indiana Sea Grant College Program.

## **COURSES TAUGHT**

CE 477	Introduction to Environmental Engineering, Spring 2022
CE 576	Municipal Water Supply and Wastewater Treatment, Spring 2006-2021
CE 756	Introduction to Wetland Hydrology and Management, Fall 2007, Spring 2010, 2012,2016, 2019
CE 770/570	Concepts in Environmental Chemistry, Fall 2006-2017, 2019-2022
CE 771/571	Environmental Chemical Analysis, Fall 2006-2017
CE 775	Stormwater Treatment Systems Design, Spring 2011, Fall 2012, 2014, 2016, 2019, 2021
CE 776	Water Reuse, Spring 2021
CE 875	Solid and Hazardous Wastes, Fall 2013
CE 895/495	Special Topics in Stormwater Quality and Treatment, Spring 2009
CE 895/CPE 715	Special Topics: Produced Water Management, Spring 2018

## **CHAIRPERSON ON EXAMINATIONS**

Ph.D.: Chair for five candidates in Environmental Engineering, four graduated.  
D.E.: Co-chair for one candidate in Environmental Engineering, graduated.  
M.S.: Chair or co-chair for 30 candidates in Environmental Engineering or Environmental Science. 27 graduated, three currently enrolled.

## **UNIVERSITY SERVICE**

### **Department of Civil, Environmental and Architectural Engineering**

Curriculum Committee, Chair	(2020-present)
Sabbatical Leave Committee, Chair	(2019-2020)
Undergraduate Recruiting, Chair	(2014-2020)
Undergraduate Retention Committee	(2018-present)
ABET Accreditation Committee	(2008-present)
Chair	(2020-present)
Graduate Studies Committee	(2007-present)
Renovation Committee	(2008-2012)
Computer Committee, Chair	(2012-2014)
Faculty Search Committee, Environmental Engineering, 2017	
Department Chair Search Committee, 2012	

### **School of Engineering**

Curriculum Committee(2020-present)	
Promotion & Tenure Committee	(2019-2020)
Design Committee for LEEP2 Environmental and Analytical Laboratories	(2012-2014)
Computer Committee	(2009-2017)
Academic Standards Committee	(2007-2009)

### **University**

Ad-Hoc Committee on the KU Core	(2019-2020)
Faculty Senator, University & Faculty Senate	(2016-2019)

University Core Curriculum Committee	
Engineering Representative	(2013- 2016, Fall 2019)
Chair	(2014-2015)
University Calendar Committee	(2013-2015)
Faculty Advisor, Potter Lake Project student group	(2008-2010)
CEAE Departmental Contact, KU Research	
Experience Program	(2008-2016)