

# Curriculum Vita

## Paul T. Imhoff

### Personal Information

Paul T. Imhoff  
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Department of Civil and Environmental Engineering  
University of Delaware  
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### Education

Princeton University, Ph.D. Civil Engineering and Operations Research, 1992  
Princeton University, M.A. Civil Engineering and Operations Research, 1988  
University of Wisconsin at Madison, M.S. Civil and Environmental Engineering, 1986  
University of Cincinnati, B.S. Civil and Environmental Engineering, 1983

### Professional Experience

March, 2022–Present  
*Joint Appointment, Professor*  
Department of Plant and Soil Sciences  
University of Delaware  
Newark, Delaware

August, 2020–Present  
*Associate Director, Water Science and Policy Graduate Program*  
University of Delaware  
Newark, Delaware

September, 2012–Present  
*Professor*  
Department of Civil and Environmental Engineering  
University of Delaware  
Newark, Delaware

September, 2003–Present  
*Associate Professor*  
Department of Civil and Environmental Engineering

University of Delaware  
Newark, Delaware

January, 1997–August, 2003  
*Assistant Professor*  
Department of Civil and Environmental Engineering  
University of Delaware  
Newark, Delaware

October, 1993–December, 1996  
*Research Assistant Professor*  
Department of Environmental Sciences and Engineering  
University of North Carolina  
Chapel Hill, North Carolina

October, 1992–September, 1993  
*Post-Doctoral Research Associate*  
Department of Environmental Sciences and Engineering  
University of North Carolina  
Chapel Hill, North Carolina

May, 1992–September, 1992  
*Post-Doctoral Research Associate*  
Department of Civil Engineering and Operations Research  
Princeton University  
Princeton, New Jersey

September, 1986–April, 1992  
*Teaching and Research Assistant*  
Department of Civil Engineering and Operations Research  
Princeton University  
Princeton, New Jersey

January, 1986–August, 1986  
*Hydraulic Engineer*  
Mead and Hunt, Inc.  
Madison, Wisconsin

September, 1984–October, 1985  
*Research Assistant*  
Department of Civil and Environmental Engineering  
University of Wisconsin at Madison  
Madison, Wisconsin

June, 1979–August, 1982  
*Co-op Student*  
Ashland Petroleum Company  
Ashland, Kentucky

## **Licensure and Awards**

### **Professional Licensure**

Registered Professional Engineer, Delaware (No. 11231)

## Awards and Honors

2011 ASCE Outstanding Reviewer, *Journal of Environmental Engineering* (2011)  
2010 Top Reviewer, *Waste Management* (2010)  
Distinguished Service Award, Association of Environmental Engineering and Science Professors (2005)  
Outstanding Referee Award, *Waste Management* (2004)  
Editor's Award, *Journal of Environmental Engineering* (2002)  
Faculty Early Career Development (CAREER) Award, National Science Foundation (2000)  
Nominated for Excellence in Reviewing Award, Water Resources Research (1996)  
Princeton University Graduate Fellowship (1986)  
University of Wisconsin Graduate Fellowship (1983)  
Finalist from Department of Civil and Environmental Engineering for the Herman Schneider Medal Award for exemplary work as a co-op student (1983)  
Chi Epsilon Honorary Fraternity (1982–Present)  
Tau Beta Pi Honorary Fraternity (1981–Present)  
Ohio Academic Scholarship (1978–1983)  
Mary Rowe Scholarship (1978)

## Research

### Journal Publications

\* Indicates the author was an undergraduate or graduate student advised by Dr. Imhoff.

1. Saxena, S., Den, W., and **P.T. Imhoff** (2025) A coupled CFD-evaporation model to estimate drying rates across laminate-lined sanitation systems, *Journal of Water, Sanitation and Hygiene for Development*, DOI: 10.2166/washdev.2025.112.
2. Joshi, B., Dwivedi, D., Rahman, M.M., Sena, M.G., Moore, E.R., Galella, J.G., Peipoch, M., Kan, J., **P.T. Imhoff**, and Inamdar, S. (2025) Modeling the competition and controls for denitrification and dissimilatory nitrate reduction to ammonium (DNRA) in riparian sediments, *Journal of Geophysical Research: Biogeosciences*, DOI: 10.1029/2025JG009072.
3. Saul, C.J., **P.T. Imhoff**, Wang, Y., and Barlaz, M.A. (2026) Critical analysis of literature on landfill gas collection efficiency and its application to emissions estimates, *Waste Management*, DOI: 10.1016/j.wasman.2026.115353.
4. Chowdhury\*, S., Akpinar\*, D., Nakhli, S.A.A., Bowser\*, M, Imhoff, E., Yi, S.C., and **P.T. Imhoff** (2024) Improving stormwater infiltration and retention in compacted urban soils at impervious/pervious surface disconnections with biochar, *Journal of Environmental Management*, DOI: 10.1016/j.jenvman.2024.121032.
5. Akpinar\*, D, Chowdhury\*, S., Tian, J., Guo, Mingxin, Barton, S., and **P.T. Imhoff** (2023) Understanding a wood-derived biochar's impact on stormwater quality, plant growth, and survivability in bioretention soil mixtures, *Journal of Environmental Management*, DOI: 10.1016/j.jenvman.2023.119359.
6. Akpinar\*, D, Tian, J., Shepherd\*, E., and **P.T. Imhoff** (2023) Impact of wood-derived biochar on the hydrologic performance of bioretention media: Effects on aggregation, root growth, and water retention, *Journal of Environmental Management*, DOI: 10.1016/j.jenvman.2023.117864.
7. Platt\*, K.L., Di Toro, D.M., Carbonaro, R.F., Bugher\*, N.A., Parkerton, T.F., Eastcott, L.J., and **P.T. Imhoff** (2022) Ferrocyanide enhanced evaporative flux to remediate soils contaminated with produced water brine, *Journal of Hazardous Materials*, DOI: 10.1016/j.jhazmat.2022.130028.
8. Sherman, M., Hripto, J., Peck, E.K., Gold, A.J., Peipoch, M., **Imhoff, P.**, and S. Inamdar (2022) Backed-up, Saturated, and Stagnant: Effect of Milldams on Upstream Riparian Groundwater Hydrologic and Mixing Regimes, *Water Resources Research*, DOI: 10.1029/2022WR033038.
9. Delkash\*, M.N.A., Chow, F.K., and **P.T. Imhoff** (2022) Diurnal landfill methane flux patterns across different seasons at a landfill in Southeastern US, *Waste Management*, DOI: 10.1016/j.wasman.2022.03.004

10. Yan\*, Y., Nakhli\*, S.A.A., Jin\*, J., Mills, G., Wilson, C.S., Legates, D.R., Manahiloh, K.N., and **P.T. Imhoff** (2021) Predicting the impact of biochar on the saturated hydraulic conductivity of natural and engineered media, *Journal of Environmental Management*, DOI: 10.1016/j.jenvman.2021.113143.
11. Saxena, S., Srivastava, P.K., Dentel, S.K., **Imhoff, P.T.**, and D. K. Cha (2021) Field demonstration of breathable laminate-lined container-based toilets in Kanpur, India, *Journal of Water, Sanitation and Hygiene for Development*, DOI:10.2166/washdev.2021.011.
12. Nakhli\*, S.A.A., Tian, J., Jin\*, and **P.T. Imhoff** (2021) Preparing and characterizing repacked columns for experiments in biochar-amended soils, *MethodsX*, DOI: 10.1016/j.mex.2020.101205.
13. Nakhli\*, S.A.A., Goy\*, S., Manahiloh\*, K.N., and **P.T. Imhoff** (2021) Spatial heterogeneity of biochar (segregation) in biochar-amended media: an overlooked phenomenon, and its impact on saturated hydraulic conductivity, *Journal of Environmental Management*, DOI: 10.1016/j.jenvman.2020.111588.
14. Nakhli\*, S.A.A., and **P.T. Imhoff** (2020) Models for predicting water retention in pyrogenic carbon (biochar) and biochar-amended soil at low water contents, *Water Resources Research*, DOI: 10.1029/2020WR027726.
15. Yi\*, S., Chang\*, N. Y., and **P.T. Imhoff** (2020) Predicting water retention of biochar-amended soil from independent measurements of biochar and soil properties, *Advances in Water Resources*, DOI: 10.1016/j.advwatres.2020.103638.
16. Bakhshayesh\*, B.E., Saxena, S., and **P.T. Imhoff** (2019) Understanding fecal sludge drying in membrane-lined container-based toilets for developing countries with CFD modeling, *Environmental Science-Water Research & Technology*, DOI: 10.1039/c9ew00583h.
17. Saxena, S., Ebrahimbakhshayesh\*, B., Dentel, S.K., Cha, D.K., and **P.T. Imhoff** (2019) Drying of fecal sludge in 3D laminate enclosures for urban waste management, *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2019.03.487.
18. Saxena, S., Ebrahimbakhshayesh\*, B., Dentel, S.K., **Imhoff, P.T.**, and D.K. Cha (2019) In-situ drying of fecal sludge in breathable membrane-lined collection containers, *Journal of Water, Sanitation and Hygiene for Development*, DOI: 10.2166/washdev.2019.095.
19. Nakhli\*, S.A.A., Panta\*, S., Brown\*, J.D., Tian, J. and **P.T. Imhoff** (2019) Quantifying biochar content in a field soil with varying organic matter content using a two-temperature loss on ignition method, *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2018.12.174
20. Tian, J., Jin\*, J., Chiu, P.C., Cha, D.K., Guo, M., and **P.T. Imhoff** (2019) A pilot-scale, bi-layer bioretention system with biochar and zero-valent iron for enhanced nitrate removal from stormwater, *Water Research*, DOI: 10.1016/j.watres.2018.10.030.

21. Bakhshayesh\*, B.E., **Imhoff, P. T.**, and S.K. Dentel (2018) Assessing clogging of laminated hydrophobic membrane during fecal sludge drying, *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2018.01.209.
22. Taylor, D.M., Chow, F.K., Delkash\*, M., and **P.T. Imhoff** (2018) Atmospheric modeling to assess wind dependence in tracer dilution method measurements of landfill methane emissions, *Waste Management*, DOI: 10.1016/j.wasman.2017.10.036.
23. Marzooghi\*, S., Shi, C., Dentel, S.K., and **P.T. Imhoff** (2017) Modeling Biosolids Drying Through a Laminated Hydrophobic Membrane, *Water Research*, DOI: 10.1016/j.watres.2016.12.049.
24. Taylor, D.M., Chow, F.K., Delkash\*, M., and **P.T. Imhoff** (2016) Numerical Simulations to Assess the Tracer Dilution Method for Measurement of Landfill Methane Emissions, *Waste Management*, DOI: 10.1016/j.wasman.2016.06.040.
25. Tian\*, J., Miller, V., Chiu, P.C., Maresca, J.A., Guo, M., and **P.T. Imhoff** (2016) Nutrient Release and Ammonium Sorption of Poultry Litter and Wood Biochars in Stormwater Treatment, *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2016.02.129.
26. Delkash\*, M., Zhou, B., Han, B., Chow, F.K., Rella, C.W., and **Imhoff, P.T.** (2016) Short-Term Landfill Methane Emissions Dependency on Wind, *Waste Management*, DOI:10.1016/j.wasman.2016.02.009.
27. Yazdani, R., **Imhoff, P.**, Han, B., Mei\*, C., and D. Augenstein (2015) Quantifying Capture Efficiency of Gas Collection Wells with Gas Tracers, *Waste Management*, vol. 43, pp. 319-327, DOI:10.1016/j.wasman.2015.06.032.
28. Mei\*, C., Yazdani, R., Han, B., Mostafid\*, M.E., Chanton, J., VanderGheynst, J., and **P.T. Imhoff** (2015) Performance of Green Waste Biocovers for Enhancing Methane Oxidation, *Waste Management*, vol. 39, pp. 205-215, DOI:10.1016/j.wasman.2015.01.042.
29. Yi\*, S., Witt, B., Chiu, P.C., Guo, M. and **P.T. Imhoff**, (2015) The Origin and Reversible Nature of Poultry Litter Biochar Hydrophobicity, *Journal of Environmental Quality*, 44:963–971, DOI:10.2134/jeq2014.09.0385.
30. Wang, Y., Lin, Y., Chiu, P.C., **Imhoff, P.T.**, and M. Guo, (2015) Phosphorus Release Behaviors of Poultry Litter Biochar as a Soil Amendment, *Science of the Total Environment*, vol. 512-513, 454-463, DOI:10.1016/j.scitotenv.2015.01.093.
31. Saquing, J.M., Chanton, J.P., Yazdani, R., Barlaz, M.A., Scheutz, C., Blake, D.R., and **P.T. Imhoff**, (2014) Assessing Methods to Estimate Emissions of Non-methane Organic Compounds From Landfills, *Waste Management*, vol. 34, no. 11, pp. 2260-2270, DOI:10.1016/j.wasman.2014.07.007.
32. Akhavan\*, M, **Imhoff, P.T.**, Andres, A.S., and S. Finsterle (2013) Model Evaluation of Denitrification Under Rapid Infiltration Basin Systems, *Journal of Contaminant Hydrology*, vol. 152, p. 18-34, DOI: 10.1016/j.jconhyd.2013.05.007.

33. Farthing, M.W., Seyedabbasi\*, M.A., **Imhoff, P.T.**, and C.T. Miller, (2012) Influence of Porous Media Heterogeneity on NAPL Dissolution Fingering and Upscaled Mass Transfer, *Water Resources Research*, W08507, DOI:10.1029/2011WR011389.
34. Mostafid, M.E.\*, Shank, C.\*, **Imhoff, P.T.**, and R. Yazdani, (2012) Gas Transport Properties of Compost–Woodchip and Green Waste for Landfill Biocovers and Biofilters, *Chemical Engineering Journal*, vol. 191, pp. 314-325.
35. Akhavan\*, M., **P.T. Imhoff**, S. Finsterle, and A.S. Andres, (2012) Application of a Coupled Overland Flow–Vadose Zone Model to Rapid Infiltration Basin Systems, *Vadose Zone Journal*, vol. 11, p. vzj2011.0140.
36. Jung\*, Y. Han, B., Mostafid, M.E., Yazdani, R., and **P.T. Imhoff**, (2012) Photoacoustic Infrared Spectroscopy for Conducting Gas Tracer Tests and Measuring Water Saturations in Landfills, *Waste Management*, vol. 32, no. 2, pp. 297-304.
37. Jung\*, Y. **Imhoff, P.T.**, and S. Finsterle, (2011) Estimation of Landfill Gas Generation Rate and Gas Permeability Field of Refuse Using Inverse Modeling, *Transport in Porous Media*, vol. 90, pp. 41-58.
38. Jung\*, Y. **Imhoff, P.T.**, Augenstein, R., and R. Yazdani, (2011) Mitigating Methane Emissions and Air Intrusion in Heterogeneous Landfills with a High Permeability Layer, *Waste Management*, vol. 31, no. 5, pp. 1049-1058.
39. Han\*, B., Scicchitano\*, V., and **P.T. Imhoff**, (2011), Measuring Fluid Flow Properties of Waste and Assessing Alternative Conceptual Models of Pore Structure, *Waste Management*, vol. 31, no. 3, pp. 445-456.
40. Yazdani, R., Mostafid\*, M.E., Han\*, B., **Imhoff, P.T.**, Chiu, P., Augenstein, D., Kayhanian, M., and G. Tchobanoglous, (2010), Quantifying Factors Limiting Aerobic Degradation During Bioreactor Landfilling, *Environmental Science & Technology*, vol. 44, no. 16, pp. 6215-6220.
41. Sondhi\*, A., **Imhoff, P.T.**, Dentel, S.K., and H.E. Allen (2010), Assessment of Methods for Collecting Fallout Brake Pad Wear Debris for Environmental Analysis, *Journal of Environmental Science and Health Part A-Toxic Hazardous Substances & Environmental Engineering*, vol. 45, No. 2, pp. 239-249.
42. Jung\*, Y., **Imhoff, P.T.**, Augenstein, D.C., and R. Yazdani (2009), Influence of High Permeability Layers for Enhancing Landfill Gas Capture and Reducing Fugitive Methane Emissions from Landfills, *Journal of Environmental Engineering*, vol. 135, No. 3., pp. 138-146.
43. Seyedabbasi\*, M.A., Farthing, M.W., **Imhoff, P.T.**, and C.T. Miller (2008), The Influence of Wettability on NAPL Dissolution Fingering, *Advances in Water Resources*, vol. 31, pp. 1687-1696.

44. **Imhoff, P.T.**, Reinhart, D.R., Englund, M., Gurin, R., Gawande, N., Han\*, B., Jonnalagadda, S., Townsend, T., and R. Yazdani (2007), Methods for Measuring Liquid in Bioreactor Landfills - A Critical Review, *Waste Management*, vol. 27, pp. 729-745.
45. Han\*, B., **Imhoff, P.T.**, and R. Yazdani (2007), Field Application of Partitioning Gas Tracer Test for Measuring Water in a Bioreactor Landfill, *Environmental Science & Technology*, vol. 41, no. 1, pp. 277-283.
46. Han\*, B., Jafarpour\*, B., Gallagher\*, V.N., **Imhoff, P.T.**, Chiu, P.C., and D. Fluman (2006), Measuring Seasonal Variations of Moisture in a Landfill with the Partitioning Gas Tracer Tests, *Waste Management*, vol. 26, pp. 344-355.
47. Li\*, L., and **P.T. Imhoff** (2005), Water Saturation Measurement by Gas Tracers in Unsaturated Porous Media - Effect of Mass Transfer Limitations, *Vadose Zone Journal*, vol. 4, pp. 1107-1118.
48. Jafarpour\*, B., **P.T. Imhoff** and P.C. Chiu (2005), Mathematical Modeling of 2,4-Dinitrotoluene Reduction with High-Purity and Cast Iron, *Journal of Contaminant Hydrology*, vol. 76, pp. 87-107.
49. **Imhoff, P.T.**, and K. Pirestani\* (2004), Influence of Mass Transfer Resistance on Detection of Nonaqueous Phase Liquids with Partitioning Tracer Tests, *Advances in Water Resources*, vol. 27, no. 4, pp. 429-444.
50. **Imhoff, P.T.** and A.F.B. Tompson (2004), A Tribute to George F. Pinder - Preface, *Advances in Water Resources*, vol. 27, no. 4, pp. 307-309.
51. **Imhoff, P.T.**, A. Jakubowitch\*, M.L. Briening\*, and P. Chiu (2003), Partitioning Gas Tracer Tests for Measuring Water in Municipal Solid Waste, *Journal of the Air & Waste Management Association*, vol. 53, pp. 1391-1400.
52. **Imhoff, P.T.**, M.W. Farthing, and C.T. Miller (2003), Modeling NAPL Dissolution Fingering with Upscaled Mass Transfer Rate Coefficients, *Advances in Water Resources*, vol. 26, no. 10, pp. 1097-1111.
53. **Imhoff, P.T.**, K. Pirestani\*, Y. Jafarpour\*, and K.M. Spivey\* (2003), Tracer Interaction Effects During Partitioning Tracer Tests for NAPL Detection, *Environmental Science & Technology*, vol. 37, no. 7, pp. 1441-1447.
54. **Imhoff, P.T.**, A.L. Sawicki\*, M. Mercer, and M. Fitzpatrick (2003), Scaling DNAPL Migration from the Laboratory to the Field, *Journal of Contaminant Hydrology*, vol. 64, p. 73-92.
55. Bonk, R.J., **Imhoff, P.T.**, and A.H.-D. Cheng (2002) Integrating Written Communication Within Engineering Curricula (forum paper), *ASCE Journal of Professional Issues in Engineering Education & Practice*, vol. 128, no. 4, pp. 152-159.

56. **Imhoff, P.T.**, Farthing, M.W., Gleyzer, S.N., and C.T. Miller (2002) The Evolving Interface Between Clean and NAPL-Contaminated Regions in Two-Dimensional Porous Media, *Water Resources Research*, vol. 38, no. 6, pp. 29-1–29-14.
57. Fu\*, X., and **P.T. Imhoff** (2002) Mobilization of Small DNAPL Pools formed by Capillary Entrapment, *Journal of Contaminant Hydrology*, vol. 56, pp. 137–158.
58. Willson, C.S., J.L. Hall, C.T. Miller, and **P.T. Imhoff** (1999) Factors Affecting Bank Formation during Surfactant-Enhanced Mobilization of Residual NAPL, *Environmental Science & Technology*, vol. 33, no. 14, pp. 2440–2446.
59. **Imhoff, P.T.**, M.H. Arthur, and C.T. Miller (1998) Complete Dissolution of Trichloroethylene in Saturated Porous Media, *Environmental Science & Technology*, vol. 32, no. 16, pp. 2417–2424.
60. Miller, C.T., G. Christakos, **P.T. Imhoff**, J.F. McBride, J.A. Pedit, and J.A. Trangenstein (1998) Multiphase Flow and Transport Modeling in Heterogeneous Porous Media: Challenges and Approaches, *Advances in Water Resources*, vol. 21, no. 2, pp. 77–120.
61. **Imhoff, P.T.**, A. Frizzell, and C.T. Miller (1997) An Evaluation of Thermal Effects on the Dissolution of a Nonaqueous Phase Liquid in Porous Media, *Environmental Science & Technology*, vol. 31, no. 6, pp. 1615–1622.
62. **Imhoff, P.T.**, and C.T. Miller (1996) Dissolution Fingering During the Solubilization of Nonaqueous Phase Liquids in Saturated Porous Media: 1. Model Predictions, *Water Resources Research*, vol. 32, no. 7, pp. 1919–1928.
63. **Imhoff, P.T.**, G.P. Thyrum, and C.T. Miller (1996) Dissolution Fingering During the Solubilization of Nonaqueous Phase Liquids in Saturated Porous Media: 2. Experimental Observations, *Water Resources Research*, vol. 32, no. 7, pp. 1929–1942.
64. **Imhoff, P.T.**, S.N. Gleyzer, J.F. McBride, L.A. Vancho, I. Okuda, and C.T. Miller (1995) Cosolvent-Enhanced Remediation of Residual Dense Nonaqueous Phase Liquids: Experimental Investigation, *Environmental Science & Technology*, vol. 29, no. 8, pp. 1966–1976.
65. Szatkowski, A., **P.T. Imhoff**, and C.T. Miller (1995) Development of a Correlation for Aqueous-Vapor Phase Mass Transfer in Porous Media, *Journal of Contaminant Hydrology*, vol. 18, pp. 85–106.
66. **Imhoff, P.T.**, and P.R. Jaffé (1994) Effect of Liquid Distribution on Gas-Water Phase Mass Transfer in an Unsaturated Sand During Infiltration, *Journal of Contaminant Hydrology*, vol. 16, pp. 359–380.
67. **Imhoff, P.T.**, P.R. Jaffé, and G.F. Pinder (1994) An Experimental Study of Complete Dissolution of a Nonaqueous Phase Liquid in Saturated Porous Media, *Water Resources Research*, vol. 30, no. 2, pp. 307–320.

68. Mayer, A.S., **P.T. Imhoff**, R.J. Mitchell, A.J. Rabideau, J.F. McBride, and C.T. Miller (1994) Groundwater Quality (annual literature review), *Water Environment Research*, vol. 66, no. 4, pp. 532–585.
69. Mayer, A.S., A.J. Rabideau, **P.T. Imhoff**, R.L. Jacobs, M.I. Lowry, and C.T. Miller (1993) Groundwater (annual literature review), *Water Environment Research*, vol. 65, no. 4, pp. 486–534.
70. **Imhoff, P.T.**, and T. Green (1988) Experimental Investigation of Double-Diffusive Groundwater Fingers, *Journal of Fluid Mechanics*, vol. 188, pp. 363–382.

### Magazine and News Articles

1. WHYY news article on the University of Delaware EPA STAR grant (2024) **PI P.T. Imhoff**. <https://whyy.org/articles/university-of-delaware-methane-gas-landfills-research-epa/>
2. Manahiloh K.N., and **Imhoff P.T.** (2018). Properties of Biochar-Amended Highway Soils, *GeoStrata*, Sept/Oct. 2018 Issue.
3. Landers, J. (2018), Adding Biochar to Soils beside Highways Could Reduce Runoff, Report Says, *ASCE Civil Engineering Magazine*, January 2018, pp. 31–32. This news article described P.T. Imhoff’s research on biochar-amendment to roadway soils.

### Book Chapters

1. **Imhoff, P.T.** and C.T. Miller, Nonaqueous Phase Liquids in the Subsurface: Effects of Mass Transfer Limitations, In: Advances in Water Resources: Groundwater Contamination Control, K.L. Katsifarakis (Editor), Computational Mechanics Publications, 1999.
2. Miller, C.T., **P.T. Imhoff**, and S.N. Gleyzer, NAPL Dissolution Fingering in Porous Media, In: Physical Nonequilibrium in Soils: Modeling and Application, H.M. Selim (Editor), Ann Arbor Press, 1998.

### Peer-Reviewed Conference Proceedings

1. Jin\*, J. Abera, K.A., Manahiloh, K.N., and **P. Imhoff** (2017) Experimental Investigation of the Effects of Biochar on the Hydraulic Conductivity of Soils, Geotechnical Frontiers 2017: Waste Containment, Barriers, Remediation, and Sustainable Engineering, Orlando, FL, March 12-15.
2. Han\*, B., **Imhoff, P.**, Yazdani, R., and D. Augenstein (2012) Assessing Landfill Gas Collection Efficiency with Gas Tracers and Numerical Modeling, Global Waste Management Research Symposium Proceedings, Phoenix, AZ, September 30-October 3.

3. Yazdani, R., Han\*, B., Jung\*, Y., Mostafid\*, E., and **P.T. Imhoff** (2012) Use of Green Material as a Landfill Cover Material to Enhance Methane Oxidation, Global Waste Management Research Symposium Proceedings, Phoenix, AZ, September 30-October 3.
4. Akhavan\*, M., **Imhoff, P.T.**, Andres, S. and S. Finsterle (2012) Importance of Overland Flow in Denitrification of Wastewater Applied to Rapid Infiltration Basins, TOUGH Symposium 2012, Lawrence Berkeley National Laboratory, Berkeley, CA, September 17-19.
5. Augenstein, D., Yazdani, R., Benemann, J., Jung\*, Y., and **P. Imhoff** (2010) New Technologies for Increasing Landfill Gas Energy Recovery, Global Waste Management Research Symposium Proceedings, San Antonio, TX, October 3-6.
6. Han\*, B., **Imhoff, P.T.**, Scicchitano\*, V. (2010) Developing Conceptual Models for Fluid Flow in Solid Waste, Global Waste Management Research Symposium Proceedings, San Antonio, TX, October 3-6.
7. Yazdani, R., **Imhoff, P.T.**, Chiu, P., and D. Augenstein (2010) Performance of an Enhanced Aerobic Landfill Bioreactor, Global Waste Management Research Symposium Proceedings, San Antonio, TX, October 3-6.
8. Han\*, B., **Imhoff, P.T.**, Scicchitano\*, V., O'Neal, M.A., Puleo, J., Meehan, C., Dentel, S.K., and D.A. Fluman (2010) Airborne Measurements for Quantifying Methane Emissions from Landfills. Global Waste Management Research Symposium Proceedings, San Antonio, TX, October 3-6.
9. Jung\*, **Imhoff, P.T.**, and S. Finsterle (2009) Estimation of Landfill Gas Generation Rates and Gas Permeability Field of Refuse Using Inverse Modeling, TOUGH Symposium 2009, Lawrence Berkeley National Laboratory, Berkeley, CA, September 14-16.
10. Jung\*, Y., Han\*, B., Mostafid\*, E., **Imhoff, P.T.**, Chiu, P., and R. Yazdani (2008) Use of a Photacoustic Infrared Monitor for Conducting Gas Tracer Tests in Landfills, Global Waste Management Symposium Proceedings, Copper Mountain, CO, September 7-12.
11. Yazdani, R., Barlaz, M., **Imhoff, P.T.**, and D. Augenstein (2008) Performance of an Anaerobic Digester for Biodegradation of Green Waste. Global Waste Management Symposium Proceedings, Copper Mountain, CO, September 7-12.
12. Jung\*, Y., **Imhoff, P.T.**, Augenstein, D.C., and R. Yazdani (2008) Innovative Use of a High Permeability Layer for Mitigating Methane Emissions and Enhancing Landfill Gas Capture, Global Waste Management Symposium Proceedings, Copper Mountain, CO, September 7-12.
13. Augenstein, D.C., Yazdani, R., **Imhoff, P.T.**, Bentley, H., Barlaz, M., and J. Benemann (2008) Variable Landfill Gas Recover for Peaking Power, Global Waste Management Symposium Proceedings, Copper Mountain, CO, September 7-12.

14. Mostafid\*, M.E., **Imhoff, P.T.**, Yazdani, R., Chiu, P., Augenstein, D., Bentley, H.W., Smith, S., and B.J. Travis (2008) The Influence of Leachate Recirculation and Air Flow on Aerobic Bioreactor Performance, GeoCongress 2008, March 9-12.

### Other Conference Proceedings

1. Tian\*, J., Yi, S., **Imhoff, P.T.**, Chiu, P., Guo, M., Maresca, J.A., Beneski, V., and S.H. Cooksey (2014) Biochar-Amended Media for Enhanced Nutrient Removal in Stormwater Facilities, ASCE EWRI World Environmental Water Resources Congress, June 1-4, 2014.
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3. Bierck, B.R., D.M. Tuck, H. Sayed, **P.T. Imhoff**, and P.R. Jaffé (1994) Downward, Gravity Driven Mobilization of Tetrachloroethylene in a Porous Medium Treated with Surfactant Solution, Water Environment Federation Specialty Conference on Innovative Solutions for Contaminated Site Management, March 6-9, 1994, pp. 267–278.
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### Research Reports

1. Raaz, T.S., Delkash, M., Yazdani, R., Rees-White, T., Beaven, R., and **P.T. Imhoff** (2025) Assessing Diurnal Variations in CH<sub>4</sub> Emissions from Landfills and Impact on Whole Landfill Emission Estimates, Final Report to Environmental Research and Education Foundation, April, 2025.
2. Rees-White, T., Beaven, R., Spencer, E., **Imhoff, P.T.**, Delkash, M., and T.S. Raaz (2025) Variations in Methane Emissions From a Landfill Over a Day, Final Report to Environmental Research and Education Foundation, August, 2025.
3. Akpinar, D., Azad, S., Mosel, J., Webb, L., and **P.T. Imhoff** (2025) Monitoring Results for Biochar Installations in "Scaling Up Biochar Applications for Accelerated Stormwater Runoff Reduction and Resiliency in the Chesapeake Bay", (2025), Final Report to National Fish and Wildlife Foundation, May, 2025.
4. Hegberg, C., J. Egan, C. Brosch, J. Hubbart, **P. Imhoff**, D. Lueckenhoff, T. Miles, W. Teel, and D. Wood (2024) Using Carbon to Achieve Chesapeake Bay (and Watershed) Water Quality Goals and Climate Resiliency: The Science, Gaps, Implementation Activities and Opportunities. STAC Publication Number 24-005, Edgewater, MD. 110 pp.

5. Webb, L., Mosel, J., and **P.T. Imhoff** (2024) Field and Laboratory Testing of Biochar Amendments for Howard EcoWorks, Final Project Report to Howard EcoWorks, June 2024.
6. **Imhoff, P.T.**, Bruck, J., and M. Guo (2024) Evaluating the Benefits of Biochar Amendment for Increased Resiliency and Nutrient Removal in Living Shorelines, March, 2024.
7. Nakhli, S.A.A. Akpınar, D., Chowdhury, S., Bowser, M., and **P.T. Imhoff** (2023) Biochar as a Roadway Soil Amendment for Reducing Stormwater Runoff, Report to Maryland Transportation Authority, July 2023.
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9. Webb, L. and **P.T. Imhoff** (2023) Field and Laboratory Testing of Biochar Amendments for Howard EcoWorks, February 2023.
10. **Imhoff, P.T.** (2022) DelDOT Quarterly Progress Report, Application of Biochar Amendment to DelDOT Roadway Soils for Reduction in Stormwater Runoff Volume, June 2022.
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14. Nakhli, S.A.A., Williams, R., Benson, B., Noe, E., Brown, J., Chowdhury, S., Blackman, A., Bowser, M., Hegberg, C.H., and **P.T. Imhoff** (2021) IDEA Program Final Report NCHRP-211, October 2021.
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22. **Imhoff, P.T.** (2020) DelDOT Quarterly Progress Report, Application of Biochar Amendment to DelDOT Roadway Soils for Reduction in Stormwater Runoff Volume, December 2020.
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38. **Imhoff, P.T.** and S.A.A. Nakhali (2017) Reducing Stormwater Runoff and Pollutant Loading with Biochar Addition to Highway Greenways, Final Report to IDEA Program Transportation Research Board The National Academies, October, 2017.
39. **Imhoff, P.T.** and D. Cha (2017) DelDOT Quarterly Progress Report, Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff: Phase II Field Demonstration, Delaware Department of Transportation, October, 2017.
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### Conference Presentations

1. Mosel\*, J., Webb\*, L., Lilly, L., and **P.T. Imhoff** (2025) Utilizing Invasive Species to Improve Urban Soils, DENIN Graduate Research Symposium, Newark, DE.
2. Price\*, K., Geiger\*, J., DiToro, D., Carbonaro, R., and **P.T. Imhoff** (2025) Remediation of Contaminated Soil from Accidental Fracturing Spills, DENIN Graduate Research Symposium, Newark, DE.
3. Raaz\*, T.S., **Imhoff, P.T.**, Delkash, M., and R. Yazdani (2025) Understanding Fugitive Greenhouse Gas Emissions from Landfills: Evaluating Diurnal Variability, DENIN Graduate Research Symposium, Newark, DE.
4. Mosel\*, J., Webb\*, L., Chowdhury\*, S., Akpınar\*, D., Lilly, L., and **P.T. Imhoff** (2025) Two Case Studies on Biochar Application in Urban Soils, 2025 North American Biochar Conference, Minneapolis, MN.
5. Duarte Campos, L., Scott, S.P., Stringfellow, A., Rees-White, T., **Imhoff, P.** Gebert, J., and R. Beaven (2025) Gas Tracer Tests to Identify Spatial Distribution of Air Flow Throughout a Landfill under In Situ Aeration, Sardinia 2025, 20th International Symposium on Waste Management, Resource Recovery, and Sustainable Landfilling, Sardinia, Italy.
6. Joshi, B., Dwivedi, D., Sena, M.G., Rahman, M.M., Moore, E., Peipoch, M., Kan, J., **Imhoff, P.T.**, and S. P. Inamdar (2025) Modeling Nitrogen Transformation Pathways and Their Hydro-biogeochemical Drivers in Reducing Riparian Zone Using PFLO-TRAN, 2025 Fall Meeting of the American Geophysical Union, New Orleans, LA.
7. Farnum, A.K., Erukubami, O., Voter, C.B., Michael, H.A., **Imhoff, P.T.**, Barber, T., Trout, L., and C. Overcash (2025) Representing Fast (Surface) and Slow (Subsurface) Threats to Below-Ground Water Infrastructure in Integrated Urban Coastal Hydrologic Modeling, 2025 Fall Meeting of the American Geophysical Union, New Orleans, LA.
8. Raaz\*, T.S., **Imhoff, P.T.**, Delkash, M., and R. Yazdani (2025) Assessing Methane Oxidation and Significance of Aerobic Waste Degradation across Different Landfill Covers with Eddy Covariance Data, 2025 Fall Meeting of the American Geophysical Union, New Orleans, LA.

9. **P.T. Imhoff**, Elius, M., Yang, K., Gamarro, H., Yazdani, R., Delkash, M., Raaz, T.S., and F. K. Chow (2025) Digital Twins to Understand Methane Emissions From Landfills, 2025 Fall Meeting of the American Geophysical Union, New Orleans, LA.
10. Golbazi, M., Delkash, M., and **P.T. Imhoff** (2025) New Insights for Estimating Diurnal Methane Emissions from Landfills, European Geophysical Union General Assembly, Vienna, Austria.
11. Gieger\*, J., Carbonaro, R.F., DiToro, D.M., Eastcott, L.J., Stevenson, K., Parkerton, T.F., and **P.T. Imhoff** (2024) Remediation of Produced Water Impacted Soils Using Enhanced Evaporative Flux, 2024 Fall Meeting of the American Geophysical Union, Washington, DC.
12. Joshi, B., Dwivedi, D., Rahman, M.M., Sena, M., Peipoch, M., Kan, J., **Imhoff, P.T.**, and S. Inamdar (2024) Key factors controlling partitioning of denitrification and dissimilatory nitrate reduction to ammonium (DNRA) in riparian sediments, 2024 Fall Meeting of the American Geophysical Union, Washington, DC.
13. Azad\*, S., Bruck, J., and **P.T. Imhoff** (2024) Effectiveness of Wood-Derived Biochar on Erosion Resistance and Plant Health in Living Shorelines, 2024 Fall Meeting of the American Geophysical Union, Washington, DC.
14. Akpınar\*, D., and **P.T. Imhoff** (2024) Evolution of Biochar Performance as a Soil Additive to Increase Stormwater Infiltration from Three Highways, 2024 EWRI ASCE Conference, Austin, TX.
15. Osei Tutu\*, N.A., Akpınar, D., Ahlstrom, R., Hegberg, C., Kramer, D., and **P.T. Imhoff** (2024) Maintaining Stormwater Seepage in Infiltration Basins with Pneumatic Air Fracturing, 2024 EWRI ASCE Conference, Austin, TX.
16. Delkash, M., Golbazi, M., **Imhoff, P.T.**, and R. Yazdani (2024) Assessing Diurnal Variations in Methane Emissions from Landfills, Global Waste Management Symposium, Indian Wells, CA.
17. Karimi, S., Yazdani, R., **Imhoff, P.T.**, Zhao, Y., Delkash, M., Knipping, E., and S. Shaw (2024) Which has Fewer Air Pollutants? Aerated Static Pile Composting or Anaerobic Digestion with Short Aerobic Composting, Global Waste Management Symposium, Indian Wells, CA.
18. **Imhoff, P.T.** (2024) Effective Measurement Technologies for Methane Emissions, (2024) MRN/SWANA Mid-Atlantic Conference, Baltimore, MD (**INVITED**).
19. Mosel\*, J., and **Imhoff, P.T.** (2024) (2024) Biochar in Bioretention Systems, Maryland Water Monitoring Council Annual Conference, North Linthicum, MD.
20. Delkash, M., Aivazian, G., Yazdani, R., **Imhoff, P.T.**, and M. Thorpe (2023) Application of a Novel Airborne LiDAR Measurement to Quantify Landfill Methane Emissions and Leak Locations, AWMA Air Quality Measurement Specialty Conference, Durham, NC.

21. Yazdani, R., Karimi, S., **P.T. Imhoff**, Delkash, M., Kunkel, M., Thorpe, M., Knipping, E., and S. Shaw (2023) Advanced Quantification of Methane Emissions Using UAV Curtain Flux Method and Comparison with Flux Chamber Method, AWMA Air Quality Measurement Specialty Conference, Durham, NC.
22. Geiger, J.K., Cobb, H., Carbonaro, R., DiToro, D.M., and **P.T. Imhoff** (2023) Simulating Enhanced Evaporative Flux Remediation of High Salinity Soils Using a Modified HYDRUS-PHREEQC-1D Model, DENIN Graduate Research Symposium, Newark, DE.
23. Osei Tutu, N.A.K., Ahlstrom, R., Akpinar, D., and **P.T. Imhoff** (2023) Soil De-compaction Method by Pneumatic Air Fracturing to Enhance Stormwater Infiltration, DENIN Graduate Research Symposium, Newark, DE.
24. Cobb, H., Geiger, J., DiToro, D.M., Carbonaro, R., and **P.T. Imhoff** (2023) Development of an Engineered System for the Remediation of Brine-Contaminated Soils, DENIN Graduate Research Symposium, Newark, DE.
25. **Imhoff, P.T.**, Delkash, M., Chow, J.K., Taylor, D.M., Golbazi, M., and R. Yazdani (2023) The Effect of Atmospheric Conditions on Fugitive Landfill Gas Emissions – Implications for Measurement and Modeling, EREF Summit on Quantification of Landfill Emissions, Chicago, IL (**INVITED**).
26. Karimi, S., Yazdani, R., **Imhoff, P.T.**, Delkash, M., Kunkel, M., Thorpe, M., Knipping, E., and S. Shaw (2023) Advanced Quantification of Methane Emissions Using UAV Curtain Flux Method and Comparison with Flux Chamber Method, EREF Summit on Quantification of Landfill Emissions, Chicago, IL.
27. Webb\*, L., Akpinar\*, D., and **P.T. Imhoff** (2022) Enhancement of Infiltration in Compacted Urban Soil with Biochar Amendment, 2022 EWRI ASCE Conference, Atlanta, GA.
28. Akpinar\*, D., Tian, J. Chowdhury\*, S., and **P.T. Imhoff** (2022) Impact of Biochar Amendment on Plant Growth and Plant Traits that Enhance Nutrient Removal in Bioretention Systems, 2022 EWRI ASCE Conference, Atlanta, GA.
29. Chowdhury\*, S., Akpinar\*, D., and **P.T. Imhoff** (2022) Biochar Amendment for Enhanced Infiltration and Aggregation of Compact Urban Soil, 2022 EWRI ASCE Conference, Atlanta, GA.
30. Nakhli\*, S.A. and **P.T. Imhoff** (2022) Biochar for roadways stormwater runoff reduction: how and when it works, 2022 EWRI ASCE Conference, Atlanta, GA.
31. Shaw, S., Knipping, E., Alege, F.P., Aivazian, G., Mashad, H.E., **Imhoff, P.T.**, Mitloehner, F., Thorpe, M., Yazdani, R., and Y. Zhao (2022) Characterizing Emissions from California Biomethane Facilities, AWMA Air Quality Measurement Methods and Technology Conference, San Diego, CA.

32. Aivazian, G., **Imhoff, P.T.**, Yazdani, R., and M. Thorpe, (2022) Intercomparison Between Gas Mapping Lidar and Tracer Correlation Methods for Landfill Methane Emissions Quantification, Global Waste Management Symposium, Indian Wells, CA.
33. Gebert, J., Beaven, R., Comans, R., Heimovaara, T., Kanen, T., Lammen, H., and **P.T. Imhoff** (2022) In situ Stabilization of Landfills – Field-Based Research in the Netherlands, Global Waste Management Symposium, Indian Wells, CA.
34. **Imhoff, P.T.**, Kunkel, M., Thorpe, M., Delkash, M., and R. Yazdani (2022) Comparison of Gas Mapping Lidar with EPA Method 21 Surface Scans for Locating and Quantifying Fugitive Methane Releases, Intercontinental Landfill Research Symposium, Asheville, NC.
35. Geiger\*, J., Kegelman\*, M., Carbonaro, R.F., Di Toro, D.M., Eastcott, L.J., and **P.T. Imhoff** (2022) Remediation of High Salinity Soil Using Enhanced Evaporative Flux, Society of Environmental Toxicology and Chemistry Annual Meeting, Pittsburgh, PA.
36. Carbonaro, R.F., Geiger\*, J., Di Toro, D.M., Eastcott, L.J., and **P.T. Imhoff** (2022) Simulating Enhanced Evaporative Flux Remediation of High Salinity Soils Using a Modified HYDRUS-PHREEQC-1D Model, Society of Environmental Toxicology and Chemistry Annual Meeting, Pittsburgh, PA.
37. Bowser\*, M, Rypkema\*, M., Blackburn\*, A., **Imhoff, P.T.**, and E. Ervin (2022) The Impact of a Wood Biochar on Typical Roadside Soil, Turfgrass, and Stormwater Hydrology, United States Biochar Initiative Annual Meeting, Morgantown, WV.
38. Akpınar\*, D. and **P.T. Imhoff** (2022) Enhancement of Infiltration and Vegetation Growth in Compacted Urban Soil with Biochar Amendment, United States Biochar Initiative Annual Meeting, Morgantown, WVA.
39. Bowser\*, M, Chauhan\*, S., **Imhoff, P.T.**, and E. Ervin (2022) Three-Dimensional Analysis of Macropore Structure in Soils from Biochar Amendment, University of Delaware AMCL Conference, Newark, DE.
40. Bowser\*, M, Chauhan\*, S., **Imhoff, P.T.**, and E. Ervin (2022) DENIN Graduate Research Symposium, Impact of Biochar Amendment on Delaware Roadside Soil, Turfgrass, and Stormwater Hydrology, Newark, DE.
41. Kegelman\*, M., Gieger\*, J., **Imhoff, P.T.**, Di Toro, D. and R. Carbonaro (2022) DENIN Graduate Research Symposium, The Remediation Potential of Crystallization Inhibitors on Brine Contaminated Fluids, Newark, DE.
42. Delkash\*, M.N.A., Chow, F.K., and **P.T. Imhoff** (2021) Diurnal landfill methane flux patterns across different seasons at a landfill in Southeastern US - Measurement and Modeling, 2021 Fall Meeting of the American Geophysical Union, New Orleans, LA.
43. Akpınar\*, D., Shepherd\*, E., Tian, J. and **P.T. Imhoff** (2021) Impact of a Wood-Derived Biochar on The Performance of Bioretention Media: Effects on Plant Growth,

- Soil Structure, and Soil Hydrology, 2021 Fall Meeting of the American Geophysical Union, New Orleans, LA.
44. Shaw, S.L., Aivazian, G., El-Mashad, H., **Imhoff, P.T.**, Knipping, E., Mitloehner, F., Thorpe, M., Yazdani, R., and Y. Zhao, Characterizing Emissions from California Biomethane Facilities, 2021 Fall Meeting of the American Geophysical Union, New Orleans, LA (**INVITED**).
  45. **Imhoff, P.T.** (2021) Ethics - Case Studies, 2021 Roadway Management Conference, Rehoboth Beach, DE (**INVITED**).
  46. Akpinar\*, D. and **P.T. Imhoff** (2021) DENIN Graduate Research Symposium, Impact of biochar on plant growth and plant traits that enhance nutrient removal from stormwater in bioretention systems, Virtual.
  47. Chowdhury\*, S., Akpinar\*, D. and **P.T. Imhoff** (2021) DENIN Graduate Research Symposium, Impact of biochar amendment to filter strips on stormwater runoff reduction for parking lots and roadways, Virtual.
  48. Akpinar\*, D., Chowdhury\*, S., Bowser\*, M., Kramer, D., and **P.T. Imhoff** (2021) Enhancement of Infiltration in Compacted Urban Soil with Biochar Amendment, 2021 AWRA Mid-Atlantic Conference, Virtual.
  49. Platt\*, K.L., **Imhoff, P.T.**, DiToro, D., Carbonaro, R.F., Allen, H.E., Parkerton, T.F., and L.J. Eastcott (2020) Enhanced Evaporative Flux to Remediate Soils Contaminated with Produced Water Brine, SETAC North America 41st Annual Meeting, Virtual.
  50. Thorpe, M.J., Kreitinger, A.T., **Imhoff, P.T.**, and R. Yazdani (2020) Drone-Based Gas Mapping LiDAR for Methane Concentration Mapping and Whole Landfill Emissions Monitoring, Global Waste Management Symposium 2020, Indian Wells, CA.
  51. **Imhoff, P.T.**, Akpinar\*, D., Tian, W., Cargill\*, S. and S. Chowdhury\* (2020) Enhancement of Bioretention Media Through Biochar Amendment, 2020 Transportation Research Board Annual Meeting, January, Washington, DC (**INVITED**).
  52. Williams\*, R., Noe\*, E., Nakhli\*, S.A.A., Brown\*, J.D., and **P.T. Imhoff** (2019) Evaluating Causes of Enhanced Soil Aggregation in Biochar-Amended Roadway Soils, 2019 Fall Meeting of the American Geophysical Union, San Francisco, CA.
  53. Brown\*, J.D., **Imhoff, P.T.**, Trout, L., Hegberg, C., and S.A.A. Nakhli\* (2019) A Field Study of Biochar Amended Soils: Water Retention, Infiltration and Nutrient Removal from Storm Water Runoff, Delaware Estuary Science and Environmental Summit, DE.
  54. Platt\*, K., **Imhoff, P.T.**, DiToro, D., Allen, H., and R. Carbonaro (2019) DENIN Graduate Research Symposium, Enhanced Evaporative Flux to Remediate Soils Contaminated with Fracking Brine, Newark, DE.

55. Derya\*, A., Tian, J., Cargill\*, S., Chiu, P., Guo, M., and **P.T. Imhoff** (2019) DENIN Grand Challenges in Water Sustainability: Future of Water in the Mid-Atlantic: Agriculture, Restoration and Technology, Biochar Amendment for Nitrate Treatment in Stormwater, Avondale, PA.
56. **Imhoff, P.T.**, Brown\*, J.D., Panta\*, S., Nakhli\*, S., Yudi\*, Y., Chapman\*, C., Saquing, J., Chiu, P., Maresca, J., Hegberg, C., and L. Trout (2019) Reducing Stormwater Runoff with Biochar, 19th Southern School on Chemistry and Engineering Conference, Newark, DE. (**INVITED**)
57. **Imhoff, P.T.**, Brown\*, J.D., Panta\*, S., Nakhli\*, S., Yudi\*, Y., Chapman\*, C., Saquing, J., Chiu, P., Maresca, J., Hegberg, C., Trout, L., and S. Finsterle (2019) Reducing Stormwater Runoff with Biochar, Biochar Symposium 2019, National Chiao Tung University, Hsinchu City, Taiwan. (**INVITED**)
58. Nakhli\*, S.A.A. and **P.T. Imhoff** (2019) Advancing Models to Predict Influence of Biochar Macro, Meso, and Micro Pores on Water Characteristic Curves of Biochar-Amended Soils of Different Texture, The Soil Science Society of America International Soils Meeting, San Diego, CA.
59. Nakhli\*, S.A.A., Brown\*, Yudi\*, Y., Finsterle, S., Hegberg, C., and **P.T. Imhoff** (2019) Biochar-amended Media for Enhanced Runoff Reduction in Stormwater Facilities, ASCE World Environmental & Water Resources Congress 2019, Pittsburgh, PA.
60. **Imhoff, P.T.**, Brown\*, J.D., Mehta\*, K., Akpınar\*, D., Tian, J., Chowdhury\*, S., Anderson\*, K., Chiu, P., Hegberg, C., Trout, L., and L. Lilly (2019) Recent Advances in Biochar Application for Stormwater, 9th Annual Bay-Wide Stormwater Retreat, March, Shepherdstown, WV. (**INVITED**)
61. Tian, J., Cargill\*, S., Chiu, P.C., Guo, M., and **P.T. Imhoff** (2018) Biochar amendment in bioretention filter media for enhanced stormwater treatment, United States Biochar Initiative Biochar 2018, Wilmington, DE.
62. Brown\*, J., Panta\*, S., Hegberg, C., Trout, L., Tian, J., Nakhli\*, S.A.A., and **P.T. Imhoff** (2018) A Field Study of Biochar Amended Soils: Water Retention, Infiltration and Nutrient Removal from Stormwater Runoff, United States Biochar Initiative Biochar 2018, Wilmington, DE.
63. Yi\*, S., Wong\*, E., and **P.T. Imhoff** (2018) The Effects of Biochar Interpores and Intrapores on Soil-gas Transport, United States Biochar Initiative Biochar 2018, Wilmington, DE.
64. Nakhli\*, S.A.A., and **P.T. Imhoff** (2018) Predicting Impact of Biochar on Soil Water Retention, United States Biochar Initiative Biochar 2018, Wilmington, DE.
65. Yan\*, Y., Nakhli\*, S.A.A., Jin\*, J. **Imhoff, P.T.**, and D. R. Legates (2018) Predicting Impact of Biochar on Saturated Hydraulic conductivity of Natural and Engineered Media, Fall Meeting of the American Geophysical Union.

66. Ebrazi\*, B. and **P.T. Imhoff** (2018) CFD Simulation of Decentralized Breathable-Membrane Toilets to Improve Disposal of Fecal Sludge in Developing Countries, Delaware Environmental Institute Spring Research Symposium.
67. Chapman, C., Nakhli\*, S., Brown\*, J., Maresca, J.A., and **P.T. Imhoff** (2018) Biochar Amendment to Roadway Soils for Stormwater Treatment – Role of Soil Aggregation, Delaware Environmental Institute Spring Research Symposium.
68. Tian, J., Akpinar\*, D. Cargill\*, S., and **P.T. Imhoff** (2018) Evaluation of Biochar on Plant Growth and Nutrient Removal in DNREC Approved Bioretention Medium, Delaware Department of Transportation Research Symposium, Dover, DE.
69. Delkash\*, M., Legates, D., Xu, L., Taylor, D., Chow, F., Browne\*, J., and **P.T. Imhoff** (2018) Diurnal Landfill Methane Emission Variations, Global Waste Management Symposium 2018, Indian Wells, CA.
70. **Imhoff, P.T.**, Taylor, D., Delkash\*, M., and F. Chow (2018) Modeling to Assess Atmospheric Effects on Tracer Dilution Method Measurements of Landfill Methane Emissions, Global Waste Management Symposium 2018, Indian Wells, CA.
71. **Imhoff, P.T.**, Brown\*, J.D., Panta\*, S., Nakhli\*, S., Yan\*, Chapman\*, C., Yan\*, Y., Saquing, J., Chiu, P., Maresca, J., Hegberg, C., and L. Trout (2018) Reducing Roadway Runoff Volume & Nutrient Load with Biochar, 2018 Transportation Research Board Annual Meeting, January, Washington, DC (**INVITED**)
72. **Imhoff, P.T.**, Chiu, P., Maresca, J., Brown\*, J.D., Panta\*, S., Nakhli\*, S., Yan\*, Y., Hegberg, C., and L. Trout (2017) Reducing Roadway Runoff Volume & Nutrient Load with Biochar, 8th Annual Bay-Wide Stormwater Retreat, March, Shepardstown, WV. (**INVITED**)
73. Fang\*, T, **Imhoff, P.** and H. Michael (2017) The Impact of Soil Organic Matter on Mineral Weathering Under Different Saturation Conditions: Column Experiment, Delaware Environmental Institute Spring Research Symposium.
74. Brown\*, J., Panta\*, S., **Imhoff, P.T.**, Hegberg, C., Trout, L., Chiu, P., and J.A. Maresca (2017) Using Biochar to Reduce Nitrogen Load to Chesapeake Bay, Delaware Department of Transportation Research Symposium, Dover, DE.
75. Jing\*, T., **Imhoff, P.T.**, Chiu, P., Cha, D., and M. Guo (2017) Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff, Delaware Department of Transportation Research Symposium, Dover, DE.
76. Brown\*, J.D., Trout, L., Hegberg, C., and P.T. Imhoff (2017) Field Study Of Biochar Amended Soils: Water Retention And Nutrient Removal From Stormwater Runoff, Delaware Estuary Science and Environmental Summit, Cape May, NJ
77. Nakhli\*, S.A.A., Yan \*, Y., and **P.T. Imhoff** (2017) Predicting Impact of Biochar Addition on Soil Hydraulic Properties, Fall Meeting of the American Geophysical Union.

78. Fang\*, T, Yo, K., **Imhoff, P.** and H. Michael (2017) Impact of Organo-Mineral Complexation on Mineral Weathering in the Soil Zone under Unsaturated Conditions, Fall Meeting of the American Geophysical Union.
79. Taylor, D., Delkash\*, M., F. Chow, and **P.T. Imhoff** (2016) Assessing the Accuracy of the Tracer Dilution Method with Atmospheric Dispersion Modeling, Intercontinental Landfill Research Symposium, Noboribetsu Onsen, Japan.
80. Mei, C., **Imhoff, P.T.**, Han, B., and R. Yazdani (2016) 1D Modeling Approaches to Describe Methane Oxidation in Biocovers with Spatially Varying Properties, Intercontinental Landfill Research Symposium, Noboribetsu Onsen, Japan.
81. **Imhoff, P.T.**, Delkash\*, M., Taylor, D., and F.K. Chow (2016) Assessing the Impact of Atmospheric Conditions on Diurnal Methane Emission from Landfills, Intercontinental Landfill Research Symposium, Noboribetsu Onsen, Japan.
82. Jin\*, J., Tian, J., **Imhoff, P.T.**, Chiu, P. and M. Guo (2016) Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff, Delaware Department of Transportation Research Symposium, Dover, DE.
83. Brown\*, J., Panta\*, S., **Imhoff, P.T.**, Hegberg, C., Trout, L., Chiu, P., and J.A. Maresca (2016) Using Biochar to Reduce Nitrogen Load to Chesapeake Bay, Delaware Department of Transportation Research Symposium, Dover, DE.
84. Yu, Y.H., Saquing, J.M., **Imhoff, P.T.**, and P.C. Chiu (2016) Mechanism and Applications of Black Carbon-Mediated Microbial Contaminant Transformation, 252nd American Chemical Society National Meeting & Exposition, Philadelphia, PA.
85. Brown\*, J., Panta\*, S., Hegberg, C., Trout, L., Tian, J., Nakhli, A., and **P.T. Imhoff** (2016) Field Study of Biochar Amended Soils: Water Retention and Nutrient Removal from Stormwater Runoff, US Biochar Initiative Biochar 2016, The Synergy of Science and Industry: Biochar's Connection to Ecology, Soil, Food and Energy, Portland, OR.
86. Tian, J., Jin\*, J., Saquing, J.M., Yu\*, Y., Chiu, P.C., Guo, M., and **P.T. Imhoff** (2016) Biochar Addition to Stormwater Treatment Media for Enhanced Nitrogen Removal and Hydraulic Performance, US Biochar Initiative Biochar 2016, The Synergy of Science and Industry: Biochar's Connection to Ecology, Soil, Food and Energy, Portland. OR.
87. Tian, J., Jin\*, J., Chiu, P., Guo, M., and **P.T. Imhoff** (2016) The Impact of Biochar on Bioretention Nitrogen Removal and Hydrologic Performance, Fall Meeting of the American Geophysical Union.
88. Imhoff, P.T., Brown\* J., Panta\*, S., Yi\*, S., Hegberg, C., and L. Trout (2016) Reducing Stormwater Runoff Through Biochar Addition to Roadway Soils, Fall Meeting of the American Geophysical Union.

89. **Imhoff, P.T.**, Taylor, D., Delkash\*, M., Zhou, B., and F. Chow (2016) Accuracy of Whole-Landfill Methane Emissions Estimates with Tracer Dilution Method, Global Waste Management Symposium 2016, Indian Wells, CA.
90. Ebrazi\*, B., Dentel, S.K., Saxena, S., and **P.T. Imhoff** (2015) Fecal Sludge Dewatering and Drying by Novel Use of a Breathable Membrane Process, WEF/IWA Residuals and Biosolids 2015, Washington, DC.
91. Saquing, J.M., Yu, Y., **Imhoff, P.T.**, and P. Chiu (2015) How Does Biochar Enhance Microbial Nitrate Removal from Stormwater?, 2015 MATS UTC Annual Meeting, Wilmington, DE.
92. Taylor, D., Delkash\*, M., Chow, F.K., and **P.T. Imhoff** (2015) Assessing the Accuracy of the Tracer Dilution Method with Atmospheric Dispersion Modeling, Fall Meeting of the American Geophysical Union.
93. Tan\*, F., Dever\*, S., Yoo, K., **Imhoff, P.T.**, and H. Michael (2015) The Impact of Organo-Mineral Complexation on Mineral Weathering in the Soil Zone: Column Experiment, Fall Meeting of the American Geophysical Union.
94. Jin\*, J., Tian\*, J., **Imhoff, P.T.**, Chiu, P., and M. Guo (2015) Biochar Addition to Stormwater Treatment Media for Enhanced Removal of Nitrogen, Fall Meeting of the American Geophysical Union.
95. Saxena\*, S., Dentel, S.K., Ebrazi\*, B., **Imhoff, P.T.**, Shrivastava, E. P., Pandey, R., and S. Bharti (2015) Eco-Vapor Toilets: The Field Application Of Breathable Membrane Toilets, India Wash Summit, New Delhi, India.
96. Dentel, S.K., Saxena, S., Ebrazi, B., Marzooghi, S., and **P. Imhoff** (2015) Improvement of Fecal Sludge Dewatering and Drying by Incorporation of a Breathable Membrane Latrine Liner, 3rd International Faecal Sludge Management Conference 2015, Hanoi, Vietnam.
97. Dentel, S., Saxena, S., Marzooghi, S., Ebrazi\*, B., and **P. Imhoff** (2014) Dewatering and Drying of Sanitary Wastes by Novel Use of a Breathable Membrane Process, 2014 Water and Health Conference, University of North Carolina.
98. Taylor, D., Delkash\*, M., Chow, F.K., and **P.T. Imhoff** (2014) Atmospheric Dispersion Modeling to Assess the Tracer Dilution Method for Measuring Landfill Methane Emissions, Fall Meeting of the American Geophysical Union.
99. Tan\*, F., Lunn, E., Wenell, B., Yoo, K., **Imhoff, P.**, and H. Michael (2014) The Evolution of Soil Hydrological and Physical Properties under the Impact of Mineral Weathering and Organic Matter Sequestration, Fall Meeting of the American Geophysical Union.
100. Yi\*, S., Chang, N., Guo, M., and **P. Imhoff** (2014) Toward a Mechanistic Understanding of Biochar Addition on the Soil Water Retention Curve, Fall Meeting of the American Geophysical Union.

101. Mei\*, C., **Imhoff, P.T.**, Yazdani, R., and B. Han (2014) Understanding Spatial Variability of Gas Emissions from Biocovers, Intercontinental, 8th Intercontinental Landfill Research Symposium.
102. Delkash\*, M., Taylor, D., **Imhoff, P.T.**, Chow, F.K., and B. Zhou (2014) Addressing Some Practical Points in Employing the Tracer Dilution Method to Measure Methane Emissions from Landfills, 8th Intercontinental Landfill Research Symposium.
103. Taylor, D., Chow, F.K., **Imhoff, P.T.**, Delkash\*, M., and B. Zhou (2014) Coupled Land-Atmosphere Modeling of Methane Emissions with WRF, 8th Intercontinental Landfill Research Symposium.
104. Chanto, J., Abichou, T., and **P. Imhoff** (2014) Using stable isotopes to determine methane oxidization. Is there consistency in the error? 8th Intercontinental Landfill Research Symposium.
105. Imhoff, P.T., Zhou, B., Delkash\*, M., Han, B., and F. K. Chow (2014) Assessing the Accuracy of the Tracer Gas Correlation Technique for Measuring Whole-Landfill Methane Emissions through Numerical Simulation of a Field Test, Global Waste Management Symposium, Orlando, FL, June 22-25.
106. Saquing, J.M., **Imhoff, P.T.**, Chanton, J.P., Yazdani, R., Blake, D.R., Scheutz, C., and Barlaz, M.A. (2014) Assessing Methods to Estimate Emissions of Non-Methane Organic Compounds from Landfills, Global Waste Management Symposium, Orlando, FL, June 22-25.
107. Tian\*, J., Yi\*, S., **Imhoff, P.T.**, Chiu, P., Guo, M., Maresca, J.A., Beneski, V., and S.H. Cooksey (2014) Biochar-Amended Media for Enhanced Nutrient Removal in Stormwater Facilities, ASCE EWRI World Environmental Water Resources Congress, June 1-4.
108. **Imhoff, P.T.**, Mei, C., Yazdani, R., Han, B., and M.E. Mostafid\* (2013) Spatial Variability of Soil Properties and Their Effect on Methane Generation, Oxidation, and Emission from Soils Covering Landfills, Fall Meeting of the American Geophysical Union.
109. Taylor, D., Zhou, B., Chow, F.K., Delkash\*, M., and **P.T. Imhoff** (2013) Coupled Land-Atmosphere Modeling of Landfill Methane Emissions, Fall Meeting of the American Geophysical Union.
110. Marzooghi, Z., Dentel, S.K., and **P.T. Imhoff** (2013) Moisture Transport From Sludge Through Hydrophobic Membranes: Mathematical Modeling and Application, 2013 American Membrane Technology Association/American Water Works Association Conference, San Antonio, TX, February 25-28.
111. Han, B., **Imhoff, P.**, Yazdani, R., and D. Augenstein (2012) Assessing Landfill Gas Collection Efficiency with Gas Tracers and Numerical Modeling, Global Waste Management Research Symposium, Phoenix, AZ, September 30-October 3.

112. Yazdani, R., Han, B., Jung, Y., Mostafid\*, E., and **P.T. Imhoff** (2012) Use of Green Material as a Landfill Cover Material to Enhance Methane Oxidation, Global Waste Management Research Symposium, Phoenix, AZ, September 30-October 3.
113. Akhavan\*, M., **Imhoff, P.T.**, Andres, S. and S. Finsterle (2012) Importance of Overland Flow in Denitrification of Wastewater Applied to Rapid Infiltration Basins, TOUGH Symposium 2012, Lawrence Berkeley National Laboratory, Berkeley, CA, September 17-19.
114. **Imhoff, P.T.**, Akhavan\*, M., Finsterle, S., and S. Andres (2012) Modeling Engineered Approaches to Enhance Denitrification Under Rapid Infiltration Basins, Fall Meeting of the American Geophysical Union.
115. Zhou, B., Chow, F.K., Han, B., and **P.T. Imhoff** (2012) Gas Plume Modeling of Landfill Emissions – A Real-Life Engineering Application of Large-Eddy Simulation, Fall Meeting of the American Geophysical Union.
116. Yi\*, S., Witt\*, B., Guo, M., Chiu, P., and **P.T. Imhoff** (2012) Wettability of Poultry Litter Biochars at Variable Pyrolysis Temperatures and Their Impact on Soil Wettability and Water Retention Relationships, Fall Meeting of the American Geophysical Union.
117. Cha, D., **Imhoff, P.T.**, Chiu, P., Maresca, J.A., and M. Guo (2012) Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff, Delaware Department of Transportation Research Symposium.
118. **Imhoff, P.T.**, Han, B., Yazdani, R., Mostafid\*, E., Jung, Y., and M. Barlaz (2012) Biocover Properties Affecting Spatial Variability of Methane Oxidation in Landfill Covers, 6th Intercontinental Landfill Research Symposium.
119. Zhou, B., Chow, F.K., Han, B., and **P.T. Imhoff** (2012) Three-dimensional Modeling of Tracer Gas Emissions over a Landfill, 6th Intercontinental Landfill Research Symposium.
120. Akhavan\*, M., **Imhoff, P.T.**, Andres, S. and S. Finsterle (2011) Modeling Nitrogen Losses Under Rapid Infiltration Basins, Fall Meeting of the American Geophysical Union.
121. Akhavan\*, M., **Imhoff, P.T.**, Andres, S. and S. Finsterle (2011) Minimizing Contaminant Transport to Groundwater from Rapid Infiltration Basins: Model Evaluation of Soil Type and Permeability Heterogeneity, National Groundwater Association (NGWA) Ground Water Summit, Baltimore, MD, May 1-5.
122. Yi\*, S., Witt, B., **Imhoff, P.T.**, and P.C. Chiu (2011) Poultry Litter Biochar for Enhancing Soil Fertility: Effects on Soil Water Retention, Global Issues in Nutrient Management Science, Technology and Policy, 4th International Nutrient Management Symposium, Newark, DE, August 21-24.

123. Wang\*, Y., **Imhoff, P.T.**, Guo, M. and P.C. Chiu (2011) Distinct Phosphorus Leaching Behaviors of Poultry Litter (PL) and PL Char, Global Issues in Nutrient Management Science, Technology and Policy, 4th International Nutrient Management Symposium, Newark, DE, August 21-24.
124. Wang\*, Y., **Imhoff, P.T.**, Guo, M. and P.C. Chiu (2011) Distinct Phosphorus Leaching Behaviors of Poultry Litter (PL) and PL Char, American Chemical Society National Meeting, Denver, CO, August 28-September 1.
125. Akhavan\*, M., **Imhoff, P.T.**, Andres, S. and S. Finsterle (2010) Disposing Treated Wastewater in Rapid Infiltration Basins: Simulations to Optimize Soil-Aquifer-Treatment, Sixth International Conference on Sustainable Water Environment, Newark, DE, July 29-31.
126. Akhavan\*, M., **Imhoff, P.T.**, Andres, S., Finsterle, S., Gu, C. and F. Maggi (2010) Modeling Hydrologic and Geochemical Aspects of Rapid Infiltration Basins, Fall Meeting of the American Geophysical Union.
127. Tsang, M.A., Gasda, S.E., Farthing, M.W., Kees, C.E., **Imhoff, P.T.**, and C.T. Miller (2010) The Influence of Heterogeneity and Spill Conditions on NAPL Dissolution Fingering, Fall Meeting of the American Geophysical Union.
128. **Imhoff, P.T.**, Yazdani, R., Han\*, B., Jung\*, Y., Mostafid\*, M.E. and E. Wong\* (2010) Biocover Soils for Carbon Sequestration and Oxidation of Fugitive Greenhouse Gas Emissions, Ninth Annual Carbon Capture and Sequestration Conference, Pittsburgh, PA, May 10-13.
129. Tsang, M.A., Gasda, S.E., Farthing, M.W., Kees, C.E., **Imhoff, P.T.**, and C.T. Miller (2009) The Influence of Heterogeneity and Spill Conditions on NAPL Dissolution Fingering, Fall Meeting of the American Geophysical Union.
130. Jung\*, **Imhoff, P.T.**, and S. Finsterle (2009) Estimation of Landfill Gas Generation Rates and Gas Permeability Field of Refuse Using Inverse Modeling, TOUGH Symposium 2009, Lawrence Berkeley National Laboratory, Berkeley, CA, September 14-16.
131. Gasda, S.E., Farthing, M.W., Seyedabbasi\*, M.A., Kees, C.E., **Imhoff, P.T.**, and C.T. Miller (2008) The Influence of Heterogeneity and Spill Conditions on NAPL Dissolution Fingering, Fall Meeting of the American Geophysical Union.
132. Seyedabbasi\*, M.A., Farthing, M.W., **Imhoff, P.T.**, and C.T. Miller (2008) Influence of Porous Media Heterogeneity on NAPL Dissolution Fingering and Upscaled Mass Transfer, Fall Meeting of the American Geophysical Union.
133. Jung\*, Y., Han\*, B., Mostafid\*, E., **Imhoff, P.T.**, Chiu, P., and R. Yazdani (2008) Use of a Photacoustic Infrared Monitor for Conducting Gas Tracer Tests in Landfills, Global Waste Management Symposium, Copper Mountain, CO.

134. Yazdani, R., Barlaz, M., **Imhoff, P.T.**, and D. Augenstein (2008) Performance of an Anaerobic Digester for Biodegradation of Green Waste. Global Waste Management Symposium, Copper Mountain, CO.
135. Jung\*, Y., **Imhoff, P.T.**, Augenstein, D.C., and R. Yazdani (2008) Innovative Use of a High Permeability Layer for Mitigating Methane Emissions and Enhancing Landfill Gas Capture, Global Waste Management Symposium, Copper Mountain, CO.
136. Augenstein, D.C., Yazdani, R., **Imhoff, P.T.**, Bentley, H., Barlaz, M., and J. Benemann (2008) Variable Landfill Gas Recover for Peaking Power, Global Waste Management Symposium, Copper Mountain, CO.
137. Jung\*, Y., **Imhoff, P.**, Finsterle, S., Yazdani, R., and D. Augenstein (2008) Estimation of Gas Permeability Field in Landfills Using Inversion Modeling, The XVII International Conference on Computational Methods in Water Resources, San Francisco, CA.
138. Mostafid\*, M.E., **Imhoff, P.T.**, Yazdani, R., Chiu, P., Augenstein, D., Bentley, H., Smith, S., and B. Travis (2008) The Influence of Leachate Recirculation and Air Flow on Aerobic Bioreactor Performance, GeoCongress 2008, New Orleans, LA.
139. Yazdani, R., Augenstein, D., **Imhoff, P.T.**, Kieffer, J., Barlaz, M. and P. Chiu (2007) Aerobic Landfill Cell, Yolo County, California: Some Results from the First Five Years' Operation, Solid Waste Association of North America (SWANA) Landfill Conference, San Diego CA.
140. Seyedabbasi\*, M.A., **Imhoff, P.T.**, Farthing, M.W., and C.T. Miller (2007) Developing Upscaled Models for NAPL Dissolution Fingering: Effect of Porous Media Heterogeneity, 2nd International Conference on DNAPL Characterization and Remediation.
141. Sondhi\*, A., **Imhoff, P.T.**, Allen, H.E., and S.K. Dentel (2007) Copper Emissions from Brake Pad Wear Debris in Urban Environments, 2007 Association of Environmental Engineering and Science Professors Research and Education Conference.
142. Mostafid\*, M.E., **Imhoff, P.T.**, Yazdani, R. Augenstein, D. and P. Chiu (2007) Reducing Greenhouse Gas Emissions through Aerobic Bioreactor Landfilling: Observations from Yolo County Central Landfill, 2007 Association of Environmental Engineering and Science Professors Research and Education Conference.
143. **Imhoff, P.T.**, Yazdani, R., Mostafid\*, M.E., Chiu, P., Augenstein, D., Bentley, H., Smith, S., and B. Travis (2007) (INVITED) The Influence of Leachate Recirculation and Air Flow on Aerobic Bioreactor Performance, 2nd Workshop on Hydro-Physico-Mechanical Properties of Wastes (HPM2), Southampton, UK.
144. Farthing, M.W., Seyedabbasi\*, M.A., **Imhoff, P.T.**, and C.T. Miller (2006) Assessing the Impact of Wettability and Heterogeneity on NAPL Dissolution Fingering, Fall Meeting of the American Geophysical Union.

145. Li\*, L., and **P.T. Imhoff** (2006) Effect of Spatial Variations in Temperature, Permeability, and Water Saturation on Partitioning Gas Tracer Tests to Quantify Water in the Vadose Zone and in Landfills, Fall Meeting of the American Geophysical Union.
146. Seyedabbasi\*, M.A., **P.T. Imhoff**, M.W. Farthing, and C.T. Miller (2006) Developing Upscaled Models for NAPL Dissolution Fingering, 1st International Conference on DNAPL Characterization and Remediation.
147. Augenstein, D., J. Benemann, R. Yazdani, H. Bentley, and **P.T. Imhoff** (2006) Landfill Methane Capture Via Permeable Layers, 4th Intercontinental Landfill Research Symposium. Lapland, Sweden.
148. Han\*, B., E. Mostafid\*, and **P.T. Imhoff** (2006) Developing Dual Domain Models for Fluid Flow in Refuse: Laboratory Measurement of Capillary Pressure Saturation Relationships, 4th Intercontinental Landfill Research Symposium, Lapland, Sweden.
149. Jung\*, Y., **P. Imhoff**, H. Bentley, S. Smith, and D. Augenstein (2006) Influence of High Permeability Layers on Collection and Emission of Methane, 4th Intercontinental Landfill Research Symposium, Lapland, Sweden.
150. **Imhoff, P.T.**, P. Chiu, R. Yazdani, D. Augenstein, and H. Bentley (2006) Development of an Intelligent Bioreactor Management Information System for Mitigation of Greenhouse Gas Emissions from Landfills, 5th Annual Conference on Carbon Capture & Sequestration.
151. Farthing, M.W., M. Seyedabbasi\*, **P.T. Imhoff**, and C.T. Miller (2005) Efficient Numerical Methods for Modeling NAPL Dissolution Fingering, Fall Meeting of the American Geophysical Union.
152. Seyedabbasi\*, M., K. Pirestani\*, S.B. Holland\*, and **P.T. Imhoff** (2005) Investigation of Processes Controlling Elution of Solutes from Nonaqueous Phase Liquid (NAPL) Pools into Groundwater, Fall Meeting of the American Geophysical Union.
153. **Imhoff, P.T.**, L. Li\*, K. Pirestani\*, B. Han\*, and P. Chiu (2005) Measuring Heterogeneous Distributions of Immobile Liquids in Porous Media, 2005 Association of Environmental Engineering and Science Professors Research and Education Conference.
154. Han\*, B., V.N. Gallagher\*, **P.T. Imhoff**, R. Yazdani, and P. Chiu (2004) Measuring Water in Bioreactor Landfills, Fall Meeting of the American Geophysical Union.
155. **Imhoff, P.T.** and K. Pirestani\* (2004) d. Detecting NAPLs Heterogeneously Distributed in the Subsurface, Fall Meeting of the American Geophysical Union.
156. **Imhoff, P.T.**, B. Han, B. Jafarpour\*, V.N. Gallagher\*, P.C. Chiu, D.A. Fluman, and N.C. Vasuki (2004) Field Test of Partitioning Gas Tracers for Measuring Water in Landfills, Third Intercontinental Landfill Research Symposium.

157. Sondhi\*, A., **P.T. Imhoff**, H.E. Allen, and S.K. Dentel (2004) Dissolution of Metals from Brake Pad Wear Debris Under Conditions Simulating Leaching in Urban Areas, Society of Environmental Toxicology and Chemistry Meeting.
158. Sondhi\*, A., **P.T. Imhoff**, H.E. Allen, and S.K. Dentel (2004) Evaluation of Metal Emissions from Brake Pad Wear Debris in Urban Runoff, 228th American Chemical Society Meeting and Exposition.
159. **Imhoff, P.T.**, B. Han\*, Y. Jafarpour\*, V.N. Gallagher\*, P.C. Chiu, D.A. Fluman, N.C. Vasuki, R. Yazdani, D. Augenstein, and K.K. Cohen (2003) Evaluation of Partitioning Gas Tracer Tests for Measuring Water in Landfills, Fall Meeting of the American Geophysical Union.
160. Kremer, T.J., J.S. Gierke, J. Drelich, and **P.T. Imhoff** (2003) Surfactant-Enhanced Air Sparging: Laboratory Evaluation of Performance, Water Environment Federation Conference (WEFTEC 2003).
161. Li\*, L., **P.T. Imhoff**, and C.S. Willson (2003) Evaluation of Air/Water Interfacial Area in Porous Media by Diffusive Gas Tracer Tests and Synchrotron X-ray Tomographic Imaging, Annual Meeting of the Soil Science Society of America.
162. Li\*, L. and **P.T. Imhoff** (2003) Water Saturation Measurements by Gas Tracers in Unsaturated Porous Media - Mass Transfer Limitations, Annual Meeting of the Soil Science Society of America.
163. **Imhoff, P.T.**, A.S. Mann\*, M. Mercer, and M. Fitzpatrick (2002) Scaling DNAPL Migration from the Laboratory to the Field, Fall Meeting of the American Geophysical Union.
164. Briening\*, M., A. Jakubowitch\*, **P.T. Imhoff**, P.C. Chiu, and M. Tittlebaum (2002) Partitioning Gas Tracer Technology for Measuring Water in Landfills, Fall Meeting of the American Geophysical Union.
165. Briening\*, M., A. Jakubowitch\*, **P.T. Imhoff**, P.C. Chiu, and M. Tittlebaum (2002) Measuring Water Within Landfills, Second Intercontinental Landfill Research Symposium.
166. Kremer, T.J., J.S. Gierke, **P.T. Imhoff**, and J.W. Drelich (2002) Performance of Aerosol-Surfactant Enhanced Air Sparging: Laboratory Results, The Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds.
167. **Imhoff, P.T.**, J.M. Bross, E.P. Kuipers, M.J. Paul, and J.M. Sentman III (2002) Teaching Environmental Engineering Design with Non-University Engineers: Good Idea or Poor Compromise?, AEESP/AAEE Conference on Education and Research in Environmental Engineering and Science.
168. **Imhoff, P.T.**, K. Pirestani\*, Y. Jafarpour\*, and K.M. Spivey\* (2002) Tracer Interaction Effects During Partitioning Tracer Tests, Spring Meeting of the American Geophysical Union.

169. Li\*, L. and **P.T. Imhoff** (2002) Measuring Soil-Water Content with Gas-Phase Partitioning Tracers: Mass Transfer Limitations, Spring Meeting of the American Geophysical Union.
170. Jakubowitch\*, A., **P.T. Imhoff**, P.C. Chiu, and M. Tittlebaum (2001) Characterizing Moisture Content within Landfills, The Seventeenth International Conference on Solid Waste Technology and Management.
171. **Imhoff, P.T.**, M.W. Farthing, and C.T. Miller (2001) Use of Fractals to Model NAPL Dissolution Fingering in Porous Media, SIAM Conference on Mathematical and Computational Issues in the Geosciences.
172. **Imhoff, P.T.**, and M.W. Farthing (2001) NAPL Dissolution Fingering in Homogeneous and Heterogeneous Media, (invited) Spring Meeting of the American Geophysical Union.
173. Pirestani\*, K., and **P.T. Imhoff** (2000) Effect of Mass Transfer Rate Limitations on the Use of Partitioning Tracers for the Characterization of DNAPL Micropools in the Subsurface, Fall Meeting of the American Geophysical Union.
174. **Imhoff, P.T.**, A.L. Sawicki\*, M. Mercer, and M. Fitzpatrick (2000) Experiments Characterizing NAPL and APL Transport at Hazardous Waste Dump Sites, U.S. Environmental Protection Agency National RCRA Program Meeting.
175. Fu\*, X., and **P.T. Imhoff** (1999) Cosolvent and Surfactant Enhanced Mobilization of a Nonaqueous Phase Liquid in Heterogeneous, Saturated Porous Media, Spring Meeting of the American Geophysical Union.
176. Miller, C.T., **P.T. Imhoff**, C.S. Willson, S.N. Gleyzer, J.F. McBride, E.H. Hill III, M.W. Farthing, M.H. Arthur, J.L. Hall, and O. Pau (1998) NAPL Entrapment and Removal in Heterogeneous Porous Media Systems, International Conference and Special Workshops on Groundwater Quality: Remediation and Protection, GQ98, International Association of Hydrological Sciences, Tübingen, Germany.
177. Gleyzer, S.N., C.T. Miller, and **P.T. Imhoff** (1997) Numerical Modeling of NAPL Dissolution Fingering, Spring Meeting of the American Geophysical Union.
178. **Imhoff, P.T.**, S.N. Gleyzer, and C.T. Miller (1997) Self-Affine Fractal Interfaces From NAPL Dissolution Fingering, Fall Meeting of the American Geophysical Union.
179. Miller, C.T., S.N. Gleyzer, **P.T. Imhoff**, J.F. McBride, J.A. Pedit, and V.R. Raghu (1996) Multiphase Model Formulation: Issues and Approaches, Advanced Simulation of Subsurface Flow and Contaminant Transport, Organized by Cray Research and the North Carolina Supercomputing Center.
180. Arthur, M., **P.T. Imhoff**, and C.T. Miller (1995) Dissolution of Nonaqueous Phase Liquids at Low Saturation, Spring Meeting of the American Geophysical Union.

181. Gleyzer, S.N., C.T. Miller, **P.T. Imhoff**, and J.F. McBride (1995) Experimental and Theoretical Investigation of the Use of Polyethylene Glycols for Alcohol-Enhanced Aquifer Remediation, Fall Meeting of the American Geophysical Union.
182. **Imhoff, P.T.**, E.H. Hill III, S.N. Gleyzer, J.F. McBride, and C.T. Miller (1995) Co-solvent Enhanced Remediation of Residual DNAPLs in One- and Two-Dimensional Systems, 1995 Theis Conference: In-Situ Flush Technologies for DNAPL Source Zone Restoration: Process, Performance, and Prognosis.
183. **Imhoff, P.T.**, E.H. Hill III, S.N. Gleyzer, J.F. McBride, and C.T. Miller (1995) Enhanced Remediation of a DNAPL Spill in a Two-Dimensional Heterogeneous Porous Medium, Fall Meeting of the American Geophysical Union.
184. Gleyzer, S.N., **P.T. Imhoff**, J.F. McBride, and C.T. Miller (1994) Investigation of Alcohol-Enhanced Remediation of Nonaqueous Phase Liquids in Porous Media, Spring Meeting of the American Geophysical Union.
185. Thyrum, G.P., P.B. Calvin, **P.T. Imhoff**, and C.T. Miller (1994) Effect of Dissolution Fingering on Remediation of NAPL-Contaminated Porous Media, Fall Meeting of the American Geophysical Union.
186. Thyrum, G.P., **P.T. Imhoff**, and C.T. Miller (1994) An Examination of the Changing Morphology of NAPL Ganglia During Dissolution, Spring Meeting of the American Geophysical Union.
187. **Imhoff, P.T.**, C.T. Miller, and G.P. Thyrum (1993) An Analysis and Experimental Study of Dissolution Fingers, Spring Meeting of the American Geophysical Union.
188. Miller, C.T., A. Frizzell, L.A. Vancho, **P.T. Imhoff**, J.F. McBride, and I. Okuda (1993) An Evaluation of Mass Transfer Phenomena for Enhanced Remediation Processes, Fall Meeting of the American Geophysical Union.
189. **Imhoff, P.T.**, P.R. Jaffé, and G.F. Pinder (1991) Dissolution of Trichloroethylene at Residual Saturation in Groundwater, Spring Meeting of the American Geophysical Union.
190. **Imhoff, P.T.**, P.R. Jaffé, and G.F. Pinder (1990) Dissolution of Trichloroethylene at Residual Saturation in Groundwater, Spring Meeting of the American Geophysical Union.
191. **Imhoff, P.T.**, P.R. Jaffé, and G.F. Pinder (1989) Experimental Investigation of the Dissolution Dynamics of Chlorinated Hydrocarbons in Porous Media, International Symposium on Processes Governing the Movement and Fate of Contaminants in the Subsurface Environment, Stanford University.
192. **Imhoff, P.T.**, J.F. Guarnaccia, P.R. Jaffé, and G.F. Pinder (1987) Selection of Optimal Sample Well Locations to Define the Boundary of a Contaminant Plume, Spring Meeting of the American Geophysical Union.

193. **Imhoff, P.T.**, and T. Green (1985) Experimental Investigation of Double-Diffusive Groundwater Fingers, Spring Meeting of the American Geophysical Union.

### **Invited Presentations**

1. Variations in Methane Emissions From a Landfill Over a Day, Solid Waste Industry for Climate Solutions Meeting, sponsored by EREF, October, 2025.
2. Diurnal Variations of Landfill Methane Emissions and Their Impact on Whole Landfill Emission Estimates, EREF Summit on Landfill Gas Emissions, Raleigh, NC, April, 2025.
3. Ongoing Research on Methane Emission Measurements, EREF Methane Emissions Workshop, Raleigh, NC, September 2024.
4. Effective Measurement Technologies for Methane Emissions, MRN/SWANA Mid-Atlantic Conference, Baltimore, MD, June 2024.
5. The Effect of Atmospheric Conditions on Fugitive Landfill Gas Emissions – Implications for Measurement and Modeling, EREF Summit on Quantification of Landfill Emissions, Chicago, IL, October 2023.
6. Aerial measurements of Methane Emissions from Landfills, MRN/SWANA Mid-Atlantic Annual Conference, Baltimore, MD, June 2022.
7. DelDOT Biochar Project, Innovative Ditch Day hosted by Center for Watershed Protection, Easton, MD, July 2022.
8. Ethics - Case Studies, 2021 Roadway Management Conference, Rehoboth Beach, DE, October 2021.
9. Enhancement of Bioretention Media Through Biochar Amendment, AKD50 Subcommittee on Stormwater at 2020 TRB Annual Meeting, Washington, DC, January 2020.
10. Application of Biochar for Stormwater Treatment - Reducing Nutrients and Stormwater Runoff, Chesapeake Stormwater Network Webinar, October 2019.
11. Reducing Stormwater Runoff With Biochar in Ellicott City, MD, Howard EcoWorks, Columbia, MD, January 2019.
12. Reducing Runoff Volume & Nutrient Load with Biochar, presentation to Corvias Inc., Fort Meade, MD, July 2018.
13. Reducing Roadway Runoff Volume & Nutrient Load with Biochar, AFP40 Committee on Geo-Environmental Processes at 2018 TRB Annual Meeting, Washington, DC, January 2018.
14. Application of Biochar to Soils and Bioretention Media to Reduce Stormwater Volume and Nutrient Concentrations, Scientific and Technical Advisory Committee Delaware Inland Bays, Lewis, DE, September, 2017.

15. Reducing Roadway Runoff Volume & Nutrient Load with Biochar, Transportation Research Board IDEA Program Review Meeting, Woods Hole, MA, June, 2017.
16. Biochar: Environmental Benefits and Opportunities Production, R&D and Implementation, with C. Hegberg and D. Koslow, Maryland Department of Natural Resources, Annapolis, MD, February, 2017.
17. Biochar: Environmental Benefits and Opportunities in Stormwater and Manure Management, with C. Hegberg, US EPA Region 3, Philadelphia, PA, 2016.
18. Reducing Stormwater Volume and Nutrients with Biochar, National Fish and Wildlife Foundation Chesapeake Bay Stewardship Fund Webinar, Annapolis MD, 2016.
19. Accuracy of Whole-Landfill Methane Emissions Estimates with Tracer Dilution Method, Spring 2016 Environmental Research and Education Foundation Research Council, Phoenix, AZ, 2016.
20. Using Biochar to Reduce Nitrogen Load to Chesapeake Bay, Choose Clean Water Coalition's "Chesapeake Hill Day", Washington, DC, 2016.
21. Area of Influence of Gas Collection Wells, 24th Annual Solid Waste Technical Conference, The Engineering Society of Detroit Michigan Waste Industries Association, East Lansing MI, 2014.
22. Fugitive Emissions: Why We Should Care, Paul Imhoff, University of Delaware, and Roger Green, Waste Management, Inc., Environmental Education and Research Foundation Regional Summit - Leachate and Gas Management – Regulatory & Operational Perspectives, Austin, TX, 2014.
23. Toward a better understanding of gas flow and collection in landfills, Environmental Education and Research Foundation Regional Summit on Sustainable Solid Waste Practice & Research, Austin, TX, 2012.
24. Modeling methane transport and oxidation in landfills and landfill cover soils, University of Minnesota, 2011.
25. Assessing landfill gas collection efficiency and landfill processes with gas tracers and numerical modeling, Environmental Education and Research Foundation Regional Summit on Solid Waste Practice & Research, Raleigh, NC, 2011.
26. Assessing landfill gas collection efficiency and landfill processes with gas tracers and numerical modeling, Environmental Education and Research Foundation Regional Summit on Sustainable Solid Waste Management Practices, Indianapolis, IN, 2011.
27. Groundwater modeling to evaluate long-term water table levels at Yolo County Central Landfill, California Environmental Protection Agency, 2011.
28. Compost cover at landfills methane emissions reduction demonstration, Yolo County Central Landfill & California Recycle (with Dr. Ramin Yazdani), 2010.

29. Intelligent bioreactor management information system (IBM-IS) for mitigation of greenhouse gas emissions and carbon sequestration monitoring with blimps, Department of Energy, National Energy Technology Laboratory, 2009.
30. Intelligent bioreactor management information system (IBM-IS) for mitigation of greenhouse gas emissions and carbon sequestration, Department of Energy, National Energy Technology Laboratory, 2006.
31. Measuring heterogeneous distributions of immobile liquids in soils and bioreactor landfills, University of Virginia, 2006.
32. Measuring heterogeneous distributions of immobile liquids in soils and bioreactor landfills, Johns Hopkins University, 2005.
33. NAPL dissolution: Column-scale investigations, DNAPL Source Zone Workshop, University of Arizona, February 24-25, 2005.
34. Intelligent bioreactor management information system (IBM-IS) for mitigation of greenhouse gas emissions and carbon sequestration, Department of Energy, National Energy Technology Laboratory, 2005.
35. Modeling NAPL dissolution fingering with upscaled mass transfer rate coefficients, Louisiana State University, 2002.
36. Evaluation of partitioning tracer tests for measuring water in landfills, University of New Orleans, 2002.
37. Using gas tracers to quantify moisture in landfills, Penn State Harrisburg, 2002.
38. Experiments characterizing NAPL and APL transport at hazardous waste dump sites, E.I. DuPont Company, 2001.
39. Solubilization of nonaqueous phase liquids in the subsurface, City College of New York, 2000.
40. Characterization of landfill water, Delaware Solid Waste Authority, 1999.
41. Solubilization of nonaqueous phase liquids in the subsurface, E.I. DuPont Company, 1999.
42. Solubilization of nonaqueous phase liquids in the subsurface, Johns Hopkins University, 1999.
43. Solubilization of nonaqueous phase liquids in the subsurface, Drexel University, 1999.
44. Dissolution of nonaqueous phase liquids in porous media, University of Virginia, 1998.
45. Dissolution of nonaqueous phase liquids in porous media, Rowan University, 1998.
46. Enhanced remediation of NAPL-contaminated porous media with surfactants and alcohols, Princeton University, 1995.

47. Remediation of aquifers contaminated with nonaqueous phase liquids, North Carolina Groundwater Association, 1995.
48. Dissolution of nonaqueous phase liquids in porous media: instabilities and mass transfer rate coefficients, Vanderbilt University, 1993.

## Sponsored Research

Dr. Imhoff has participated in 21.7 million dollars of research activity while at the University of Delaware: he has been PI on projects totaling 7.3 million dollars, and participated as Co-PI or Investigator on projects totaling 14.4 million dollars.

1. “Accreditation of DelDOT Biochar Treatments for Maintenance and Regulatory Compliance,” Delaware Department of Transportation, PI **P.T. Imhoff**, Co-PI E. Ervin, July 2025 - June 2027, \$122,870.
2. “Assessing the Effects of Soil Amendment and Subsoiling on Compacted Urban Land in the District of Columbia,” Biohabitats, Inc. and the District of Columbia, PI Z. Mijjic, Co-PI **P.T. Imhoff**, October 2025 - September 2026, \$39,475.
3. “Improving methane leak detection and methane flux estimates with drones, eddy covariance towers, and atmospheric modeling,” Environmental Research and Education Foundation, PI **P.T. Imhoff**, Co-PIs F.K. Cho and R. Yazdani, September 2025 - August 2027, \$300,000.
4. “Field Pilot Application of Enhanced Evaporative Flux to Remediate Brine-Contaminated Soils,” Imperial Oil, PI **P.T. Imhoff**, Co-PIs D. DiToro and R. Carbonaro, May 2025 - May 2028, \$120,000.
5. “Developing Engineering practices using Ecosystem Design Solutions for Future Army (Military DEEDS Project),” U.S. Army Engineer Research and Development Center (ERDC), Inv. **P.T. Imhoff** Co-Inv. J. Bruck, January 2025 - January 2027, \$145,723.
6. “Evaluation of Landfill Cover and Automated Gas Collection as Methane Emissions,” California Air Resources Board/University of California Davis, PI **P.T. Imhoff**, June 2024 - May 2026, \$50,000.
7. “Assessment of Biochar on DelDOT Stormwater Basins and Roadway Soil Performance,” Delaware Department of Transportation, PI **P.T. Imhoff**, August 2024 - June 2025, \$50,001.
8. “SAI: Examining Long-Term ”Success” of Green Stormwater Infrastructure,” NSF-SAI, PI C. B. Voter, Co-PIs **P.T. Imhoff**, Y. Hu, and R. Nixon, September 2024 - August 2027, \$749,964.
9. “Phase IV Biochar Amendment of Highway Greenspace Study MOU,” Maryland Transportation Authority, PI **P.T. Imhoff** January 2024 - June 2025, \$150,695.
10. “Perfecting Percolation in District Parklands: Testing Soil Amendment Techniques and Subsoiling on Compacted Urban Land in DC,” National Fish and Wildlife Foundation through District of Columbia, PI S.M. Roberts, Co-PIs J. Berg, B. Arvai, M. Richardson, and **P.T. Imhoff**, June 2023 - June 2025, \$269,996 (Imhoff portion \$90,000).

11. "Testing and Consulting Services for Howard EcoWorks to Assess Biochar Amended Soils in Howard County, MD," PI **P.T. Imhoff**, August 2023 - June 2024, \$8,000.
12. "Assessment of Biochar and Soil Decompaction for Stormwater Treatment at DelDOT Sites," PI **P.T. Imhoff**, July 2023 - June 2024, \$85,983.
13. "Integrated Assessment of Climate Change Impacts to Groundwater, Stormwater, and Wastewater Infrastructure at Coastal Military Facilities," DoD ESTCP, PI C.B. Voter, Co-PIs **P.T. Imhoff** and H.A. Michael, September 2023 - March 2026, \$1,537,038.
14. "Evaluation and Control of Emissions from MSW landfills: Direct Measurement and Modeling," US EPA STAR Program, PI **P.T. Imhoff**, Co-PIs F.K. Cho and R. Yazdani, October 2023 - September 2025, \$999,831.
15. "SAI-P: Optimizing Deployment of Green Stormwater Infrastructure for Maximum Benefit," National Science Foundation, PI C. Voter, Co-PIs **P.T. Imhoff**, Y. Hu, and R. Nixon, September 2022 - August 2024, \$123,556 (Imhoff portion \$24,711).
16. "Assessment of Biochar Amended to Soils in Howard County, MD," Howard EcoWorks, PI **P.T. Imhoff**, April 2022 - February 2023, \$20,000.
17. "Phase III Biochar Amendment of Highway Greenspace Study MOU," Maryland Transportation Authority, PI **P.T. Imhoff**, July 2022 - July 2023, \$65,000.
18. "Testing and Consulting Services for Hanover School Campus Stormwater Management Master Plan (SWMMP) & Demonstration Hanover, York County, PA," Borough of Hanover, PA, PI **P.T. Imhoff**, April 2022 - February 2023, \$25,000.
19. "Assessment of Biochar and Soil Decompaction on DelDOT Stormwater Basin and Roadway Soil Performance," Delaware Department of Transportation, PI **P.T. Imhoff**, November 2022 - July 2023, \$138,122.
20. "Scaling Up Biochar Applications for Accelerated Stormwater Runoff Reduction and Resiliency in the Chesapeake Bay," National Fish and Wildlife Foundation, Subcontract through Center for Watershed Protection, Investigator **P.T. Imhoff**, September 2022 - May 2025, \$669,508 (Imhoff portion \$105,352).
21. "Evaluating the Benefits of Biochar Amendment for Increased Resiliency and Nutrient Removal in Living Shorelines," Delaware Sea Grant, PI **P.T. Imhoff**, Co-PIs J. Bruck and M. Guo, September 2022 - July 2023, \$23,353.
22. "Assessing Diurnal Variations in Methane Emissions from Landfills and Impact on Whole Landfill Emission Estimates," Environmental Research and Education Foundation, PI **P.T. Imhoff**, Co-PIs R. Yazdani, T. Rees-White, and R. Beaven January 2022 - December 2024, \$149,000.
23. "Monitoring Biochar Amendment to MDTA Highway Greenways," Maryland Transportation Authority, PI **P.T. Imhoff**, April. 2021 - March 15, 2022, \$41,477.

24. "Evaluation Of Biochar Amendment To DE Route 301 Roadway Soils For Reduction In Stormwater Runoff Volume and Nutrient Removal," Delaware Department of Transportation, PI **P.T. Imhoff**, August 2021 - June 30, 2022, \$122,203.
25. "Enhanced Evaporative Flux to Remediate Brine-Contaminated Soil – Phase 2," Imperial Oil, PI **P.T. Imhoff**, Co-PIs R. Carbanoro and D. M. DiToro April 2021 - December 2026, \$529,037.
26. "Biochar Stormwater Research for Hanover Demonstration Project," Borough of Hanover, PA, PI **P.T. Imhoff**, January 2021 - December 2022, \$40,000.
27. "Scrap Tire Pyrolysis Research Project," Delaware Department of Natural Resources and Environmental Control, PI P. Chiu, Co-PIs D. Ditoro and **P.T. Imhoff**, September 2020 - May 2022, \$123,245.
28. "Characterizing Emissions from California Biomethane Facilities," California Energy Commission, Subcontract through EPRI, Investigator **P.T. Imhoff**, September 2020 - May 2023, \$998,335 (Imhoff portion \$98,512).
29. "Coupled Multi-process research for reducing landfill emissions (CURE)", Netherlands Organisation for Scientific Research, NWO - GROOT, Subcontract through University of Southampton, PI J. Gebert, Co-PIs R.N.J. Comans, T.J. Heimovaara, and A.A.M. Diedonne, Investigator **P.T. Imhoff**, June 2020 - July 2025, \$3,000,000, (Imhoff portion - \$58,076).
30. "Application of Biochar Amendment to DE Route 301 Roadway Soils for Reduction in Stormwater Runoff Volume," Delaware Department of Transportation, PI **P.T. Imhoff**, September 2020 - July 2021, \$27,786.
31. "Reinventing Pit Latrines using Breathable Laminate Liners to Mitigate Groundwater Contamination," Humanitarian Grand Challenge, PI W. Denn, Co-PIs S. Saxena, P. Abongwa, **P.T. Imhoff**, and P. Srivastava, June 2020 - February 2023, \$250,000.
32. "Biochar Amendment of Highway Greenspace," Maryland Transportation Authority, PI **P.T. Imhoff**, September 2019 - July 2021, \$116,476.
33. "Application of Biochar Amendment to DelDOT Roadway Soils for Reduction in Stormwater Runoff Volume," Delaware Department of Transportation, PI **P.T. Imhoff**, Co-PI M. Guo (Delaware State University), September 2019 - July 2021, \$123,086.
34. "Reducing Stormwater Runoff with Biochar Addition to Soils in Howard County, Maryland," Howard EcoWorks, PI **P.T. Imhoff**, November 2018 - August 2020, \$50,943.
35. "Reducing Stormwater Runoff and Pollutant Loading with Biochar Addition to Highway Greenways," NCHRP Transportation Research Board, PI **P.T. Imhoff**, November 2018 - May 2021, \$100,000.

36. "Intercomparison Between Gas Mapping Lidar and Tracer Correlation Methods for Landfill Methane Emissions Quantification," Environmental Research and Education Foundation, PI M. Thorpe (Bridger Photonics, Inc.), Co-PI **P.T. Imhoff** April, 2018 - September, 2021, \$280,000.
37. "Enhanced Evaporative Flux to Remediate Brine-Contaminated Soil," ExxonMobil, PI **P.T. Imhoff**, Co-PIs H.E. Allen, R. Carbonaro (Manhattan College), and D.M. DiToro, September 2018 - December 2020, \$283,585.
38. "Applying Biochar as Roadway Soil Amendment in New Castle County, DE," National Fish and Wildlife Foundation - Chesapeake Bay Technical Capacity Program, PI **P.T. Imhoff**, January 2018 - March 2019, \$49,723.
39. "Enhanced Evaporative Flux to Remediate Brine-Contaminated Soil," ExxonMobil, PI **P.T. Imhoff**, Co-PIs H.E. Allen and D. M. DiToro, June 2017 - December 2017, \$30,000.
40. "Evaluating Biochar Amendment of DNREC Biosoil-14 Bioretention Medium," Delaware Department of Transportation, PI **P.T. Imhoff**, May 2017 - May 2019, \$12,325.
41. "Removing Nitrate from Stormwater with Biochar Amendment to Roadway Soils," Mid-Atlantic Transportation Sustainability University Transportation Center, PI **P.T. Imhoff**, Co-PI P. Chiu and Collaborator T. B. Culver (University of Virginia), May 2017 - May 2019, \$152,392.
42. "UD Core Water Laboratory: An urgently needed shared resource," University of Delaware UNIDEL, PI S. Inamdar, Co-PIs A. Shober, A. Seyyferth, R. Vargas, C. Balascio, T. Trammell, P. Imhoff, P. Chiu, N. Sturchio, H. Michael, W. Ullman, D. Levia, G. Kauffman, S. Andres (Delaware Geological Survey), and G. Ozbay (Delaware State University), May, 2017 - June, 2019, \$501,400.
43. "Assessing Accuracy of Tracer Dilution Measurements of Methane Emissions from Landfills with Wind Modeling," Environmental Research and Education Foundation, PI **P.T. Imhoff**, Co-PI F.K. Chow (University of California-Berkeley), September, 2016 - December, 2017, \$93,069.
44. "Reducing Stormwater Runoff Volumes with Biochar Addition to Highway Soils," Center for Advanced Infrastructure and Transportation, PI J. Maresca, Co-PI **P.T. Imhoff**, September, 2016 - May, 2018, \$69,980.
45. "Seeing Inside Soil-Biochar Mixtures: Pore-Level Imaging with X-ray Microtomography," PI Kalehiwot N. Manahiloh, Co-PI **P.T. Imhoff**, University of Delaware Research Foundation Strategic Initiatives Program, December 2015 - December 2017, \$45,000.
46. "Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff - Field Demonstration," Delaware Department of Transportation, PI **P.T. Imhoff**, Co-PIs D.K. Cha, P. Chiu,

- J.A. Maresca, and M. Guo (Delaware State University), December 2015 - November 2015, \$99,105.
47. "Reducing Stormwater Runoff and Pollutant Loading with Biochar Addition to Highway Greenways," NCHRP Transportation Research Board, PI **P.T. Imhoff**, July 2015 - June 2017, \$129,665.
  48. "Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff: Phase II Field Demonstration," Delaware Department of Transportation, PI **P.T. Imhoff**, Co-PIs D.K. Cha, P. Chiu, J.A. Maresca, and M. Guo (Delaware State University), December 2014 - May, 2017 \$61,308.
  49. "Reducing Stormwater Volume and Nutrients with Biochar," National Fish and Wildlife Federation, Chesapeake Bay Innovative Nutrient and Sediment Program, PI **P.T. Imhoff**, Co-PIs P. Chiu, and J.A. Maresca, September 2014 - December 2017, \$316,349.
  50. "Enhancing Nitrogen Removal in Stormwater Treatment Facilities For Transportation," Rutgers Center for Advanced Infrastructure and Transportation, PI **P.T. Imhoff** and P. Chiu, January 2014 - December 2014, \$42,762.
  51. "Understanding Nitrate Reduction by Exoelectrogenic Microbes Supported by Black Carbon and ZVI," DENIN Environmental Frontiers Program, PI P. Chiu, Co-PIs **P.T. Imhoff** and M. Guo (Delaware State University), February 2014 - January 2015, \$49,981.
  52. "Collaborative Proposal: Enhancing Nitrogen Removal in Stormwater Treatment Facilities for Transportation," Rutgers Center for Advanced Infrastructure and Transportation, PI **P.T. Imhoff**, Co-PIs P. Chiu and Q. Guo (Rutgers, The State University of New Jersey), January 2014 - December 2014, \$52,963.
  53. "NSF EPSCoR - Meeting Delaware's 21st Century Water and Energy Challenges through Research, Education and Innovation," National Science Foundation, PI D. Sparks; multiple Co-PIs from Une University of Delaware, Delaware State University, Wesley College, and Delaware Technical Community College; multiple investigators including **P.T. Imhoff**; June 2013 - May 2018, \$20,000,000.
  54. "Spatial and Temporal Integration of Carbon and Mineral Fluxes: A Whole Watershed Approach to Quantifying Anthropogenic Modification of Critical Zone Carbon Sequestration," NSF Critical Zone Observatory Program, PI J.E. Pizzuto, Co-PIs A. K. Aufdenkampe, L. Kaplan, K. Yoo, H. Michael, **P.T. Imhoff**, S. Inamdar, L. A. Kaplan, L. Slater, R. Aalto, D. Karwan, R. Vargas, C. Chan, October 2013 - September 2015, \$699,589.
  55. "Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff: Phase II Field Demonstration," Delaware Department of Transportation, PI **P.T. Imhoff**, Co-PIs D.K. Cha,

- P. Chiu, J.A. Maresca, and M. Guo (Delaware State University), September 2013 - August 2014, \$59,903.
56. "Breathable Membrane Enclosures for Fecal Sludge Stabilization Phase II," Bill and Melinda Gates Foundation, PI S.K. Dentel, Co-PI **P.T. Imhoff**, November 2013 - October 2015, \$249,788.
  57. "Assessing Accuracy of Tracer Dilution Measurements of Methane Emissions from Landfills with Wind Modeling," Environmental Research and Education Foundation, PI **P.T. Imhoff**, Co-PI F.K. Chow (University of California-Berkeley), June 2013 - May 2015, \$200,890.
  58. "Integrating Zero-valent Iron and Biochar Amendments in Green Stormwater Management Systems for Enhanced Treatment of Roadway Runoff," Delaware Department of Transportation, Co-PIs, D. Cha, **P.T. Imhoff**, P. Chiu, J. Maresca, M. Guo (Delaware State University), December 2011 - August 2012, \$55,677.
  59. "Groundwater Modeling at Yolo County Central Landfill," County of Yolo, California, PI **P.T. Imhoff**, July 2011 - August 2013, \$74,930.
  60. "Quantifying Capture Efficiency of Gas Collection Systems with Gas Tracers," Environmental Research and Education Foundation, PI **P.T. Imhoff**, Co-PIs R. Yazdani, D. Augenstein, and P. Chiu, January 2010 - September 2011, \$140,993.
  61. "Understanding the Mechanisms for the Reduction in Greenhouse Gas Emissions from Soil by Biochar Addition," NSF Delaware EPSCoR, PI P. Chiu, Co-PIs **P.T. Imhoff** and M. Guo, November 2009 - July 2011, \$51,019.
  62. "Spatial and Temporal Integration of Carbon and Mineral Fluxes: A Whole Watershed Approach to Quantifying Anthropogenic Modification of Critical Zone Carbon Sequestration," NSF Critical Zone Observatory Program, PI D.L. Sparks, Co-PIs A. K. Aufdenkampe, L. Kaplan, J. E. Pizzuto, K. Yoo, T. L. Bott, D. M. DiToro, Fredrickson, Hatcher, Hornberger, **P.T. Imhoff**, S. Inamdar, Y. Jin, L. A. Kaplan, D. A. Miller, D. F. Levia, Myneni, H. Michael, J. D. Newbold, October 2009 - September 2014, \$4,315,608.
  63. "Quantifying Reductions in Greenhouse Gas Emissions with Airship-Based Measurements," University of Delaware Research Foundation, PI **P.T. Imhoff**, Co-PIs C. Meehan, M. O'Neal, J. Puleo and S. Dentel, January 2009 - March 2010, \$45,000.
  64. "Intelligent Bioreactor Management Information System (IBM-IS) for Mitigation of Greenhouse Gas Emissions and Carbon Sequestration," U.S. Department of Energy, PI **P.T. Imhoff**, Co-PIs P.C. Chiu, R. Yazdani (Yolo County, California, Planning and Public Works Department), D. Augenstein (Institute for Environmental Management, Inc.), H. W. Bentley (Hydro Geo Chem, Inc.), June 2008 - May 2010, \$320,000.
  65. "Long-term Performance of Monitoring of a Recycled Tire Embankment in Wilmington, DE," Delaware Department of Transportation, PI V. Kaliakin, Co-PIs C. Meehan, N. Attoh Okino, and **P.T. Imhoff**, July 2008 - June 2010, \$69,499.

66. "Assessment of Ageing on Performance of Alternative Biocover Materials," California Energy Commission, PI R. Yazdani (Yolo County, California, Planning and Public Works Department), CoPIs **P.T. Imhoff**, and M. Barlaz (North Carolina State University), June 2008 - July 2010, \$100,000.
67. "Nature InSpired Engineering Research Experiences for Teachers," National Science Foundation, PI K.E. Barner, Co-PIs S.G. Advani, S.K. Agrawal, R. Donham, **P.T. Imhoff**, X. Jia, I. Shah, A.D. Shine, P. Sine, K. Steiner, and M.O. Sullivan, January 2008 - December 2010, \$499,938.
68. "Modeling Hydrologic and Geochemical Effects of Land-Based Wastewater Disposal," Delaware Water Resources Center, Co-PIs **P.T. Imhoff** and S. Andres (Delaware Geological Survey), September 2007 - August 2010, \$62,160.
69. "Removing Copper from Roof Runoff," Copper Development Association, PI **P.T. Imhoff**, October 2007 - March 2008, \$10,200.
70. "Evaluation of Leachate from In-Place Scrap Tire Backfill," Delaware Center for Transportation Studies, PI **P.T. Imhoff**, September 2007 - December 2007, \$5,000.
71. "Toward Sustainable Landfills: Workshop on Models for Sustainable Landfilling," National Science Foundation, PI **P.T. Imhoff**, Co-PI S.L. Bartelt-Hunt (University of Nebraska-Lincoln), July 2007 - December 2008, \$55,117.
72. "Intelligent Bioreactor Management Information System (IBM-IS) for Mitigation of Greenhouse Gas Emissions and Carbon Sequestration - Year 2 Amendment for Equipment Purchase," U.S. Department of Energy, PI **P.T. Imhoff**, Co-PIs P.C. Chiu, R. Yazdani (Yolo County, California, Planning and Public Works Department), D. Augenstein (Institute for Environmental Management, Inc.), H. W. Bentley (Hydro Geo Chem, Inc.), June 2006 - May 2007, \$54,950.
73. "Modeling and Laboratory Testing in Support of Bioreactor Landfill Projects at Yolo County Central Landfill," Yolo County, California, Planning and Public Works Department, PI **P.T. Imhoff**, July 2006 - July 2007, \$74,998.
74. "Development of In-Line Filter System for Removing Copper from Roof Runoff," Copper Development Association, PI **P.T. Imhoff**, Co-PI H.E. Allen, September 2005 - December - 2006, \$24,402.
75. "Modeling in Support of Field-Scale Research on Peak Energy Production from Bioreactor Landfills," California Energy Board (subcontract to Yolo County, California), PI **P.T. Imhoff**, August 2005 - March 2006, \$48,106.
76. "Scrap Tire Research," Delaware Department of Transportation, PI N. Attoh-Okine, Co-PIs **P.T. Imhoff** and V. Kaliakin, July 2005 - May 2006, \$60,000.
77. "Intelligent Bioreactor Management Information System (IBM-IS) for Mitigation of Greenhouse Gas Emissions and Carbon Sequestration," U.S. Department of Energy,

- PI **P.T. Imhoff**, Co-PIs P.C. Chiu, R. Yazdani (Yolo County, California, Planning and Public Works Department), D. Augenstein (Institute for Environmental Management, Inc.), H. W. Bentley (Hydro Geo Chem, Inc.), June 2005 - May 2008, \$599,373.
78. “Upscaled Mass Transfer Coefficients for Modeling Dissolution of Nonaqueous Phase Liquids in Homogeneous and Heterogeneous Porous Media in the Field,” National Science Foundation, PI **P.T. Imhoff**, Co-PI C.T. Miller (University of North Carolina), January 2005 - December 2008, \$390,407 (UD portion \$193,913).
  79. “Development of an In-Line Filter System for Removing Copper from Roof Runoff,” Copper Development Association, Inc., PI **P.T. Imhoff**, Co-PI H.E. Allen, June 2004 - May 2005, \$24,959.
  80. “Evaluation of Partitioning Gas Tracers for Evaluating Water in Bioreactor Landfills,” U.S. Department of Energy (subcontract to Yolo County California), PI **P.T. Imhoff**, co-PI P.C. Chiu, October 2003–July 2004, \$24,940.
  81. “Evaluation of Metal Sources in Urban Areas,” U.S. Environmental Protection Agency, PI **P.T. Imhoff**, co-PIs S.K. Dentel and H.E. Allen, January 2003–December 2005, \$70,990.
  82. “Strategies and Analytical Procedures for Assessing Copper Emissions from Brake Pads,” Copper Development Association, Inc., PI **P.T. Imhoff**, Co-PI’s S.K. Dentel and H.E. Allen, July 2002–December 2002, \$25,000.
  83. “Case-based Interim Courses to Promote Public Communication Skills for Technical Students,” University of Delaware General Education Project, PI S.Bernhardt, Co-PI’s M. Pearlman, D. O’Neill, **P.T. Imhoff**, and M. Chajes, January 2002–June 2003, \$15,000.
  84. “Characterizing Moisture Content in Landfills,” Delaware Solid Waste Authority, PI **P.T. Imhoff**, June 2001–June 2003, \$5,000.
  85. “Career Award: Equipment Match,” National Science Foundation, PI **P.T. Imhoff**, September 2000–August 2001, \$10,000.
  86. “CAREER: Characterizing Preferential Water Flow in Laboratory and Field Soils with Gas Tracers,” National Science Foundation, PI **P.T. Imhoff**, September 2000–August 2004, \$199,335.
  87. “Characterizing Moisture Content Within Landfills,” U.S. Environmental Protection Agency (subcontract to University of New Orleans), July 2000–June 2003, PI **P.T. Imhoff**, Co-PI P.C. Chiu, \$157,636.
  88. “Physical Experiments to Validate a Numerical Model of an LNAPL Capture System,” Roy F. Weston, Inc., PI **P.T. Imhoff**, December 1999–June 2000, \$30,000.
  89. “Natural Media for Stormwater Infiltration,” U.S. Environmental Protection Agency, PI **P.T. Imhoff**, January 2000–June 2000, \$2,500.

90. “Long-Term Movement of Nonaqueous and Aqueous Phase Contaminant Plumes Under Hazardous Waste Sites,” U.S. Environmental Protection Agency, June 1999–May 2000, \$25,000.
91. “Mobilization of Nonaqueous Phase Liquids in Heterogeneous Soils,” University of Delaware Research Foundation, PI **P.T. Imhoff**, September 1997–August 1998, \$29,840.

## Teaching Experience (\* courses developed)

### Graduate Level Courses, the University of Delaware

CIEG 698*	Groundwater Flow and Contaminant Transport
CIEG 865	Civil Engineering Seminars: Environmental
CIEG 866*	Special Problems (Lectures and Instruction on Advanced Topics in Multiphase Fluid Flow and Colloid Transport in Porous Media)
CIEG 667*	Research Methods & Topics in Soil/Water Systems: Science and Policy (Co-instructor with Gerald Kauffman)
PLSC 667*	Field Methods and Analysis (Co-instructor with Angelia Seyfferth and Rodrigo Vargas)

### Undergraduate Level Courses, the University of Delaware

EGGG 101	Introduction to Engineering
MECH 306	Fluid Mechanics Laboratory
CIEG 133*	Introduction to Environmental Engineering
CIEG 133*	Introduction to Environmental Engineering - Honors Section
CIEG 337*	Environmental Engineering Laboratory
CIEG 461*	Senior Design (Environmental Engineering Majors Only)
CIEG 461	Senior Design (Civil and Environmental Engineering Majors)
CIEG 436	Processing, Recycling, Management of Solid Wastes
CIEG 498*	Groundwater Flow and Contaminant Transport

### Graduate Level Courses, the University of North Carolina

ENVR 176	Introduction to Groundwater Engineering
ENVR 176L*	Groundwater Engineering Laboratory

### Doctoral Committees Chaired

- Geiger, Jason, *Enhanced Evaporative Flux Remediation of Brine-Contaminated Soils*, expected 2026.
- Azad, Simanta, *Application of Biochar to Living Shorelines for Erosion Control, Shore Stabilization, and Nutrient Removal*, expected 2027.
- Brown, Joseph, *A Field Study of Biochar Amended Soils: Water Retention, Infiltration, and Nutrient Removal from Stormwater Runoff*, through qualifying and comprehensive exams.
- Akpinar, Derya, *Impact of Biochar on Plant Growth, Nutrient Removal, and Hydraulic Performance of Bioretention Media and Evaluation of the Effectiveness of Biochar*

*Implementation in Reducing the Stormwater Runoff at Urban Watershed*, July 2023. Derya is an engineer with the State of Illinois Environmental Protection Agency.

- Delkash, Madjid, *Short Term Methane Emission Variations from Landfills*, July 2021. Madjid is an Environmental Engineer with the US EPA in the Office of Air Quality Planning and Standards.
- Nakhli, Seyyed Ali Akbar, *Biochar for Mitigating Stormwater Runoff and Nitrate Load: Models, Tools, and the Role of Soil Aggregation*, completed December 2020. Ali is a Hydraulic and Hydrologic Modeler, Water Resource Engineer with WithersRavenal.
- Bakhshayesh, Babak, *Performance of Breathable Laminated Membranes for Drying of Fecal Sludge in Container-Based Toilet Systems*, completed October, 2020. Babak is a Lead Project Engineer with RJN Group, Inc., Baltimore, MD.
- Buisma-Yi, Susan, *The Impact of Biochar Surface Properties on Sand and on Sandy Loam Regarding Water Repellency, Water Retention, and Gas Transmissivity*, completed December, 2017. Susan is post doctoral research associate in the Department of Civil Engineering and Geosciences, TUDelft, Netherlands.
- Tian, Jing, *The Effect of Biochar on Bioretention Hydrologic Effect and Nitrogen Removal*, completed April, 2016 from School of Geosciences and Environmental Engineering, Southwest Jiaotong University. Jing completed her dissertation research under my supervision at the University of Delaware. Jing is currently an Instructor in the College of Chemistry and Materials Science, Sichuan Normal University, Sichuan, China.
- Akhavan, Maryam, *Modeling Hydrologic and Geochemical Effects of Rapid Infiltration Basin Systems*, completed May, 2013. Maryam is currently a senior engineer with Atkins SNC-Lavalin in Alexandria, Virginia.
- Mostafid, Erfan, *Assessing Aerobic Activity During Aerobic Bioreactor Landfilling and Quantifying Gas and Water Transport Properties of Landfill Biocovers*, completed May, 2011. Erfan is currently working as an Engineer with Terra Pacific Group, Walnut Creek, CA.
- Sondhi, Akash, *Release and Uptake of Copper from Composite Materials in the Environment*, completed May, 2010. Akash is currently an Assistant Professor in the Department of Energy and Environment at TERI School of Advanced Studies, New Delhi, India.
- Jung, Yoojin *Development of Methods to Improve Capture of Greenhouse Gases from Bioreactor Landfills*, completed May, 2010. Yoojin is currently a Principal Scientific Engineering Associate in the Earth and Environmental Sciences Division of Lawrence Berkeley National Laboratory, Berkeley, CA.
- Seyedabbasi, Ahmad *Upscaling Mass Transfer for NAPL Dissolution Fingering*, completed December, 2009. Ahmad is currently an Environmental Engineer with GSI Environmental, Houston, TX.

- Han, Byunghyun *Development of Techniques for Measuring Water and Fluid Flow Properties in Solid Waste in Landfills*, completed May, 2009.
- Li, Liqing *Water Saturation and Air Water Interfacial Area Measurements by Partitioning Gas Tracers in the Vadose Zone and Landfills*, completed January, 2008. Liqing is currently a Data Automation Architect with The NPD Group, Chicago, IL.
- Pirestani, Katayoun *Effect of Mass Transfer Rate Limitation on Detection of Nonaqueous Phase Liquids with Partitioning Tracer Tests*, completed May, 2004. Katayoun is currently a Senior Environmental Engineer with the Delaware Department of Natural Resources and Environmental Control, New Castle, DE.

### External Examiner

- Kissas, K., PhD, *Landfill methane emission dynamics and the influence of barometric pressure*, Delft Technical University, Department of Environmental Engineering, September 2022.
- Hlaing, May Y., PhD, *Sensitive Detection of Methane and Nitrous Oxide using Higher Harmonic Wavelength Modulation Spectroscopy*, Delaware State University, Department of Physics, Engineering, Mathematics, and Computer Science, Optical Science Center for Applied Research, Delaware State University, April 2020.
- Monster, Jacob, PhD, *Quantifying greenhouse gas emissions from waste treatment facilities*, Delft Technical University, Department of Environmental Engineering, July 2014.

### Masters Thesis Advisor

- Tawsif Sultan Raaz “Assessing Methane Emissions from Landfills with Eddy Covariance Towers ”  
Expected Graduation 2026
- John Mosel “The Unusual Effects of Biochar Amended to Clay Roadside Soils ”  
Graduated 2025
- Marcus Bowser “The Impact of a Wood Biochar on Stormwater Retention and Infiltration in Roadside Soils Seeded with Turfgrass”  
Graduated 2023
- Sraboni Chowdhury “Biochar Amendment for Enhanced Infiltration and Aggregation of Compact Urban Soils”  
Graduated 2021
- Kathryn Platt “Enhanced Evaporative Flux to Remediate Soils Contaminated with Fracking Brine”  
Graduated 2020 (co-advised; primary advisor Dominic M. DiToro)
- Yudi Yan “Predicting Impact of Biochar on Saturated Hydraulic Conductivity of Natural and Engineered Media”  
Graduated 2017
- Sriya Panta “Quantifying Biochar Content in Biochar Amended Roadway Soil Using a Two-Temperature Loss on Ignition Method”  
Graduated 2017
- Jing Jin “Predicting Changes in Saturated Hydraulic Conductivity of Bioretention Media Amended with Biochar”  
Graduated 2016
- Yue Wang “Comparison of Different Phosphorus Leaching Behaviors of Poultry Litter and Poultry Litter Char”  
Graduated 2011 (co-advised with Pei C. Chiu)
- Vince Scicchitano “Estimating Hydraulic Properties of Landfill Waste Using Multi Step Drainage Experiments”  
Graduated 2010
- Michele Briening “Mass Transfer Effects Influencing Gas-Phase Tracers in Landfills: Laboratory and Field Investigation”  
Converted to non-thesis option. Graduated 2003  
(co-advised with Pei C. Chiu)
- Benham Jafarpour “Mathematical Modeling of 2,4-Dinitrotoluene Reduction with High-Purity Iron and Cast Iron”  
Graduated 2003 (co-advised with Pei C. Chiu)

- Indhu Muthukrishnan "Evaluation of the Utility of Gas Tracers to Quantify Preferential Water Flow in the Vadose Zone"  
Graduated 2000
- Xin Fu "Cosolvent AND Surfactant Flush of Nonaqueous Phase Liquid in Saturated, Heterogeneous Porous Media"  
Graduated 1999

### Supervision of Undergraduate Research

1. Deely, Brigid (February 2025–August 2025) *Field Tests for Enhanced Evaporative Remediation of Produced Water Spills in West Texas*
2. Beckford, Kioni-Lee (June 2025–August 2025) *Assessment of Biochar Amendment on Stormwater Runoff Reduction from Pilot Scale Tests*
3. Dennis, Kyle (September 2025–May 2026) Senior Thesis *Assessing the Influence of Tidal Cycling and Biochar on the Growth of Cordgrass in Living Shorelines*
4. Flaherty, Chelsea (September 2025–May 2026) Senior Thesis *Assessing the Impact of Biochar Amended Sediment on Erosion Due to Tidal Influence on a Living Shoreline*
5. Price, Kalya (September 2025–May 2026) Senior Thesis *Optimizing Water Addition for Evaporative Salt Remediation in Contaminated Soils*
6. McGullum, Holly (September 2024–May, 2025) Senior Thesis *Assessing the Impact of Pneumatic Air Fracturing and Air Spading with Biochar on Urban Soils for Enhanced Stormwater Treatment*
7. Fleetwood, Harrison (September 2023–May, 2024) Senior Thesis (student did not complete) *The Evaluation of Potassium Ferrocyanide and Capillary Wicks to Remediate Brine-Contaminated Soils at the Pilot Scale*
8. Chauhan, Shivam (September 2023–May, 2024) Chemical Engineering Senior Project *Assessment of Biochar Amendment of Urban Soils on Greenhouse Gas Emissions*
9. Webb, Leslie (June 2022–May, 2023) Senior Thesis *Evaluation of Kiln-Produced and Commercial Biochar: Comparing Effects on Hydrologic Properties of Amended Soils*
10. Cobb, Holly (June 2022–May, 2023) Senior Thesis *Development of an Engineered Treatment System for the Remediation of Brine-Contaminated Soils*
11. McCune, Ryan (June 2021–May, 2022) Senior Thesis *Potential Impacts of Soil Aging on TDR Calibrations of Biochar Amended Urban and Coastal Soils*
12. Kegelman, Mary (June 2021–May, 2022) Senior Thesis *The Remediation Potential of Potassium Ferrocyanide for Brine Contaminated Soils*
13. Benson, Brendan (June 2020–May, 2021) Senior Thesis *The Effect of Biochar Addition on Infiltration Rate and Soil Aggregation in the Lab*

14. Williams, Reid (June, 2019–May, 2020) Senior Thesis *The Effect of Biochar Addition on Soil Aggregation and Stormwater Infiltration*
15. Witt, Brandon (June, 2011–August, 2011) National Science Foundation REU Student, University of Delaware *Effects of Poultry Litter Biochar on Soil-Water Properties in an Agricultural Soil*
16. Mehta, Navni S. (June, 2010–August, 2010) National Science Foundation REU Student, Rutgers University *Reducing Methane Emissions from Landfill Covers Soils*
17. Wong, Edwin (May, 2009–May, 2010) Senior Thesis *Aeration Properties of Biochar-Amended Soil: Implications for Greenhouse Gas Suppression*
18. Davis, Craig (January, 2009–February, 2009) *Gas Transport Properties of Compost, Greenwaste, and Mixtures of Woodchips*
19. D’Ortone, Steven (June, 2007–August, 2007) *Measuring Fluid Flow Properties of Waste Materials under Varying Compression*
20. Malinak, Andrew (September, 2006–May, 2007) *Advancement of Experimental Techniques for Measuring Fluid Flow Properties of Waste Materials*
21. May, Andy (June, 2005–May, 2006; September, 2006–May, 2007) University of Delaware Science and Engineering Scholar *Influence of Mass Transfer Limitations on Measuring Water in Refuse*
22. Kiracofe, Nathan (June, 2005–May, 2007) *Fluid flow Properties of Soils with Different Wettabilities and Nonaqueous Phase Liquid Saturations*
23. Gallagher, Nicole (June, 2003–September, 2003; June, 2004–September, 2004) University of Delaware Science and Engineering Scholar *Development of Gas Tracer Technology for Measuring Water in Refuse*
24. Holland, Sarah (June, 2003–September, 2003; June, 2004–July, 2004) University of Delaware Science and Engineering Scholar *Measuring Diffusion Coefficients in Non-aqueous Phase Liquids*
25. Powell, Danielle R. (June, 2002–May, 2003) University of Delaware Science and Engineering Scholar *Gas tracers for Measuring Water in the Vadose Zone*
26. Spivey, Kelly M. (January, 2002–June, 2002) University of Delaware Science and Engineering Scholar *Mass Transfer Effects on Partitioning Tracers for NAPL Detection*
27. Spivey, Kelly M. (January, 2002–June, 2002) *Estimating Diffusion Coefficients in Multifluid Systems in Porous Media.*
28. Spivey, Kelly M. (June, 2001–December, 2001) *Mass Transfer Effects on Partitioning Tracers for NAPL Detection*

29. Goh, Lih Shiun (June, 2000–August, 2000) visiting student from Imperial College, London *Diffusion Coefficients of Chemical Tracers in NAPLs*.
30. Sawicki, Amy Lynn (June, 1999–May, 2000) US Environmental Protection Agency Fellowship *Long-Term Movement of Nonaqueous and Aqueous Phase Contaminant Plumes Under Hazardous Waste Sites*.
31. DiDonato, Nicole (February, 2000–May, 2000) *Nondestructive Measurement of Sand Filter Clogging During Stormwater Infiltration*.
32. Thomas, Rebecca L. (June, 1998–December, 1998) *Mobilization of Nonaqueous Phase Liquids in Heterogeneous Soils*.

## Professional Activities

### Professional Affiliations

Member, Air & Waste Management Association  
Member, American Chemical Society  
Member, American Geophysical Union  
Member, American Society of Civil Engineers  
Member, American Society for Engineering Education  
Member, Association of Ground Water Scientists and Engineers,  
National Ground Water Association

### Leadership at Meetings and Workshops

(a) Professional Workshops: Lead Organizer

USBI-Sponsored Workshop on “Biochar Opportunities in Stormwater Management,” August 20, 2018, Wilmington, Delaware

NSF-Sponsored Workshop on “Models for Sustainable Landfills,”

This workshop was designed to bring together a small group ( $\approx 30$ ) of researchers from the US and abroad to discuss the state-of-the-art for landfill modeling.

March 16-19, 2008, Lewes, Delaware.

(b) Professional Meetings: Chair, Co-Chair or Technical Committee Member

Co-Chair, United States Biochar Initiative Biochar2018

Conference. Conference included six pre-conference workshops, eight invited lectures, 90 presentations, and 285 attendees. Wilmington, DE (2018)

Session Chair and Organizing Committee, Intercontinental Landfill Research Symposium, Orlando, FL (2014)

Technical Committee Member, Global Waste Management Research Symposium 2014, Orlando, FL (2014)

Technical Committee Member, Global Waste Management Research Symposium 2012, Phoenix, AZ (2012)

Session Chair and Technical Committee Member, Global Waste Management Research Symposium 2010, San Antonio, TX (2010)

Session on “Developing and Applying Constitutive Models for Fluid Flow in Refuse and Organic Wastes” Intercontinental Landfill Research Symposium, Hokkaido, Japan (2010)

Session on “Measuring, Modeling and Controlling Gas Flow in Landfills,” Intercontinental Landfill Research Symposium, Copper Mountain, CO (2008)

Session on “Physical, Chemical, and Biological Aspects of Bioreactor Landfills” GeoCongress 2008 - Annual Conference of the Geo-Institute of ASCE (2008)

Session on “Movement of Liquids in Refuse and Cover Materials” Intercontinental Landfill Research Symposium, Lapland, Sweden (2006)

Session on “Bioreactors II: Developments in Measuring Techniques for Bioreactor Landfills” Intercontinental Landfill Research Symposium, Hokkaido, Japan (2004)

Session on Recent Advances in Groundwater Hydrology  
Fall Meeting of the American Geophysical Union (2002)

- (c) Invited Workshop Participant  
“Responsible Disposal of Flame Retarded Foam Plastic: Developing the Basic Science,” Green Science Policy Institute, February, 2017

#### Editorial and Committee Work

- (a) Advances in Water Resources  
Associate Editor (2000-2015)

- (b) Professional Committees

- Transportation Research Board Standing Committee

- Committee on Geo-Environmental and Climatic Impacts on Geomaterials (2020–Present)

- Transportation Research Board Standing Committee  
on Geo-Environmental Processes Committee (2018–2020)

- University of Delaware representative for CUAHSI, the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (2002–Present)

- Member, International Waste Working Group (IWWG), Task Group on Landfill Modeling (2008–2016)

- Member Education Committee, Association of Environmental Engineering and Science Professors (2002–2016)

- Thesis Award Committee, Association of Environmental Engineering and Science Professors (2003–2006)

Peer Reviewer: Journal Manuscripts

The candidate typical reviews between 15-20 manuscripts a year.

Air and Waste Management Association, Journal of the Air & Waste Management Association  
(2002–Present)

American Society of Civil Engineers, Journal of Environmental Engineering  
(2002–Present)

American Society of Civil Engineers, Journal of Geotechnical and Geoenvironmental Engineering  
(2011–Present)

American Society of Civil Engineers, Journal of Hazardous, Toxic, and Radioactive Waste  
(2011–Present)

American Society of Civil Engineers, Journal of Irrigation and Drainage  
(2006–Present)

American Society of Testing and Materials, Geotechnical Testing Journal  
(2009–Present)

American Chemical Society, Environmental Science & Technology (1993–Present)

American Chemical Society, Chemical Engineering News (2003–Present)

American Geophysical Union, Water Resources Research (1993–Present)

Association of Ground Water Scientists and Engineers, Ground Water  
(1994–Present)

Association of Environmental & Engineering Geologists, Environmental & Engineering  
Geoscience (2005–Present)

Elsevier, Advances in Water Resources (1997–Present)

Elsevier, Environmental Modeling and Software (2003–Present)

Elsevier, Geoderma (2020–Present)

Elsevier, Journal of Contaminant Hydrology (1993–Present)

Elsevier, Journal of Environmental Management (2008–Present)

Elsevier, Journal of Hydrology (2004–Present)

Elsevier, Science of the Total Environment (2014–Present)

Elsevier, Water Research (2004–Present)

Inderscience, International Journal of Environment and Pollution  
(2005–Present)

International Journal of Environmental Research and Public Health (2011–Present)

IOP Science, Measurement Science and Technology (2007–Present)

Mary Ann Liebert, Inc., Environmental Engineering Science (2000–Present)

Soil Science Society of America, Vadose Zone Journal (2008–Present)

Springer, Computational Geosciences (2009–Present)

Waste Management (2003–Present)

Waste Management & Research (2004–Present)

Peer Reviewer: Research Proposals

Proposal Review Panelist, National Science Foundation, Geomechanics and Geomaterials Program (2011)

Proposal Review Panelist, National Science Foundation, Division of Hydrologic Sciences (2005, 2006, 2008, 2009, 2010, 2012)

Proposal Review Panelist, National Science Foundation, Division of Civil, Mechanical and Manufacturing Innovation (2009)

Proposal Review Panelist, Department of Energy's Environmental Management Science Program (EMSP) (2002, 2016)

Proposal Review Panelist, National Science Foundation, Division of Bioengineering and Environmental Systems (2002)

Environmental Research and Education Foundation (2010, 2011, 2017, 2018)

Institute of Soil and Environmental Quality (2008–Present)

State of Maryland, Maryland Industrial Partnership Program (2009–Present)

University of Nebraska Water for Food Institute Competitive Grants Program (2011)

U.S. Department of Agriculture (2005)

U.S. Department of Energy (2001–2005)

U.S. Department of Energy Environmental Molecular Science Laboratory (2009, 2010, 2013, 2014, 2016)

Wisconsin Research Foundation (2008, 2012)

National Science Foundation, Division of Bioengineering and Environmental Systems (2000)

National Science Foundation, Division of Earth Sciences - Hydrological Sciences (1997–Present)

Other Activities

- (a) National Fish and Wildlife Foundation Webinar for Stormwater Professionals: *Reducing Stormwater Volume and Nutrients with Biochar*, December, 2016
- (b) Environmental Research and Education Foundation Webinar for Landfill Professionals: *Landfill Gas Emissions and Measurements*, October, 2016
- (c) CUAHSI Center for Critical Zone Research Faculty Affiliate (2008-2014)
- (d) Environmental Research and Education Foundation Webinar for Landfill Professionals: *Gas Transport Through Landfills*, Spring 2013

- (e) Short Course Lecturer:  
Removal of DNAPLs Through Mobilization and Dissolution, in *Remediation of NAPL Contaminated Sites: A Two Day Critical Review of the State-of-the-Art*, sponsored by The EPA Northeast Hazardous Substance Research Center, New Jersey Institute of Technology, and Stevens Institute of Technology, June 10-11, 1997.

## University of Delaware Activities

### Environmental & Water Resources Group

- Coordinator, Graduate Program in Water Resources Engineering  
(9/2014–12/2019, 9/2020–Present)  
Coordinator, Environmental & Water Resources Group  
(9/2003–7/2004, 1/2005–9/2011, 9/2014–6/2015)  
ABET Coordinator, Undergraduate Program in Environmental Engineering  
(9/2013–6/2018)

### Department

- Chairman, Graduate Student Committee  
(9/2022–Present)  
Chairman, Search Committee for Department of Civil and Environmental Engineering Faculty Position (9/2009–5/2010)  
Chairman, Department Safety Committee (9/2000–8/2001)  
Department Representative, Blue and Gold Days (7/1998–7/2007)  
Chairman, Undergraduate Recruitment and Scholarship Committee, Environmental Engineering Program Subcommittee (9/1998–6/2001)  
Chairman, Department Web Site Committee (1/1999–6/1999)
- Member, Showcase and Recruitment Committee  
(9/2020–8/2022)  
Member, Search Committee for Department Administrator  
(10/2019–12/2019)  
Member, Search Committee for Environmental Laboratory Manager  
(9/2018–12/2018)  
Member, Leadership Committee for Department of Civil and Environmental Engineering (9/2017–12/2020)  
Member, Search Committee for Department of Civil and Environmental Engineering, Chair (9/2016–5/2017)  
Member, Search Committee for Department of Civil and Environmental Engineering, Environmental Faculty Position (9/2016–5/2017)  
Member, Search Committee for Department of Civil and Environmental Engineering, Environmental Faculty Position (9/2015–5/2016)  
Member, Search Committee for Department of Civil and Environmental

Engineering, Geotechnical Faculty Position (9/2011–5/2012)  
Member, Department of Civil and Environmental Engineering Graduate  
Committee (9/2010–8/2011, 9/2015–8/2016)  
Member, Department of Civil and Environmental Engineering Website  
Committee (9/2007–6/2008)  
Member, Search Committee for Department of Civil and Environmental  
Engineering Faculty Position (9/2005–5/2006)  
Member, Search Committee for Department of Civil and Environmental  
Engineering Faculty Position (9/2001–6/2002)  
Member, Department of Civil and Environmental Engineering Undergraduate  
Committee (9/2001–8/2002)  
Member, Department of Civil and Environmental Engineering Safety  
Committee (9/2001–Present)  
Member, ABET Committee (9/1998–8/2001)  
Member, Undergraduate Curriculum Committee, Environmental  
Program Subcommittee (9/1998–6/2001)  
Member, Undergraduate Curriculum Committee,  
Fluid Mechanics Subcommittee (9/1998–6/1998)

Chemical Hygiene Officer, Department of Civil and Environmental Engineering  
(1/2005–6/2010)  
Department Representative, Delaware Decision Days (3/1997–3/2004)  
Department Representative, CEE Freshman Orientation  
(9/1998, 9/1999, 9/2000, and 9/2001)  
Faculty Meeting Secretary (9/1997–8/1998)

### College

Member, College of Engineering Awards Committee (1/2020–Present)  
Chairman, College of Engineering eCALC Committee (1/2010–8/2011)  
Chairman, College of Engineering eCALC II Committee responsible for design  
and construction of new eCALC II room (4/2003–1/2004)  
Member, College of Engineering eCALC I and II Committee (2/2004–5/2009)

### University

Associate Chair Interdisciplinary Graduate Program in Water  
Science & Policy (9/2021–12/2023)  
Committee Member, Search Committee for Hydrologic Systems Modeler  
Faculty Cluster Search (2020)  
P&T Committee Member, Department of Geological Sciences for review  
of candidates for promotion to full professor (2018)  
Advisor, Environmental Science Majors with concentration in  
Water Quality and Water Resources (9/2010–9/2016)  
Member, Search Committee for Department of Geological Sciences,  
Chair (10/2006–5/2007)

- Member, Program Committee for Interdisciplinary Graduate Program in Water Science & Policy (9/2012–Present)
- Member, Admissions Committee for Interdisciplinary Graduate Program in Water Science & Policy (9/2015–Present)
- Member, Environmental Science and Policy Undergraduate Curriculum Committee (9/2012–9/2016)
- Member, Environmental Academic Council (9/2009–9/2011)
- Member, Search Committee for Department of Geological Sciences Engineering Faculty Position (10/2006–5/2007)