

Mira S. Olson

Department of Civil, Architectural and Environmental Engineering
Drexel University
Philadelphia, PA 19104
215-895-2987, mso28@drexel.edu
<http://www.pages.drexel.edu/~mso28/olson.html>

EDUCATION

Rice University	Mechanical Engineering	B.S.	1998
	Environmental Sciences and Engineering	B.A.	1998
University of Virginia	Civil (Environmental) Engineering	M.E.	2000
	Civil (Environmental) Engineering	Ph.D.	2004

RESEARCH AND TEACHING INTERESTS

My primary research interest is in protecting source water quality, including remediation of contaminated ground water, assessing the impact of water resources technology on underlying ground-water supply and quality, and the fate and transport of both chemical and biological agents in the environment. My work spans multiple scales, from pore-scale experimental analyses, to Darcy-scale column and field studies, to aquifer-scale transport models. My primary teaching interest is to provide students with the fundamental knowledge and skills necessary to solve complex environmental challenges, and an appreciation for how engineering fits within the broader context of their lives. I focus on interactive classroom activities to motivate and engage students.

PROFESSIONAL APPOINTMENTS

2013 – present Associate Professor
2016 – present Director of Technical Extension, Peace Engineering Program
2015 – 2017 Faculty Fellow for Civic Engagement
2012 – 2016 Associate Department Head for Graduate Studies
2006 – 2013 Assistant Professor
Department of Civil, Architectural and Environmental Engineering
Drexel University, Philadelphia, PA

2004 – 2005 Post-Doctoral Research Associate
Department of Environmental Sciences
University of Virginia, Charlottesville, VA

HONORS AND AWARDS

2018 Frontiers of Engineering Organizing Committee
2012 McGraw Hill/AEESP Outstanding Teaching in Environmental Science and Engineering Award
2009 Drexel Career Development Award
2007 ASCE ExCEed Teaching Fellow
2006 Louis and Bessie Stein Fellow
2004 Battelle Conference on Remediation of Chlorinated and Recalcitrant Compounds Student Paper Competition Winner
2004 ACS Division of Environmental Chemistry Graduate Student Paper Award Winner
2003 AAUW Selected Professions Engineering Dissertation Fellowship
2003 EPA STAR Graduate Fellowship
2003 Alcoa International Research Fellow
2003 AGU Hydrology Section Outstanding Student Paper Award
2002 EREF Fiessinger Environmental Science Scholarship Grant
2001 AGU Hydrology Section Horton Research Grant

2001 William R. Walker Graduate Research Fellow Award
 1999 NSF Graduate Research Fellowship

EXTERNAL RESEARCH SUPPORT

2017 – 2020	U.S. EPA (Co-PI): Water Quality in Premise Plumbing: New Materials and New Strategies	\$2,000,000
2016 – 2017	Philadelphia Water Department (Co-PI): Green Infrastructure Living Laboratory	\$150,000
2016 – 2018	William Penn Foundation (PI): Addressing the Multiple Functions of Critical Rivers in a Changing Environment	\$50,000
2016 – 2017	EPA SBIR (PI): Biofuel Production from Grease Trap Waste	\$55,243
2015 – 2018	Dept of Education (PI): Drexel GAANN Fellowships in (Appropriate) Resource Management in the Urban Environment	\$590,556
2014 – 2015	Water Environment Research Foundation (co-PI): <i>Extraction of Lipids from Wastewater to Produce Biofuels</i>	\$150,000
2012 – 2015	U.S. Department of State Obama-Singh 21 st Century Knowledge Initiative (co-PI): <i>Resource Building for Ecosystem and Human Health Risk Assessment with Special reference to Microbial Contamination</i>	\$97,840
2009 – 2013	NSF Hydrologic Sciences (PI, EAR-0911429): <i>Investigation of Chemotaxis in Porous Media: Visualization Experiments and Modeling</i>	\$255,000
2009 – 2013	Philadelphia Water Department (PI): <i>System Yield and Flow Management Optimization of the Delaware and Schuylkill Rivers</i>	\$182,701
2009 – 2013	NSF Research Experience for Undergraduates (PI, EEC-0851827): <i>Engineering Cities</i>	\$300,000
2011 – 2015	Rocking the Boat (co-PI): <i>Monitoring the Performance of Stormwater Wetland at ABC Carpet Home Site</i>	\$85,258
2011 – 2015	Flushing Meadows-Corona Park Conservancy (co-PI): <i>Wetlands and Rain Gardens for Treatment of Stormwater Entering Meadow Lake, Flushing Meadows Park, Queens</i>	\$59,750
2011 – 2014	National Fish and Wildlife Foundation (co-PI): <i>Design of a Street-end Stormwater Capture Park in Shoelace Park: Performance Monitoring</i>	\$318,371
2011 – 2012	EPA P3 (PI): <i>Waste to Fuel – Design of a Landfill Algae Bioreactor</i>	\$15,000
2010 – 2013	Department of Education GAANN (co-PI): <i>GAANN in Renewable Energy Technologies and Infrastructure Networks (RETAIN)</i>	\$1,312,650
2009 – 2012	NSF Environmental Sustainability (co-PI, CBET-1010131): <i>RAPID: Sustainable Stormwater Technologies</i>	\$161,527
2010 – 2012	NSF Nanotechnology in Undergraduate Education (PI, EEC-0939063): <i>Integrated Approach to Environmentally Responsible Nanotechnology Education</i>	\$200,000
2008 – 2011	Water Environment Research Foundation (co-PI): <i>Tools for Site-Specific Biosolids Risk Assessment</i>	\$600,000
2007 – 2012	Department of Education GAANN (co-PI): <i>GAANN Fellowships in Urban Hazard Mitigation: Creating Sustainability & Resilience</i>	\$516,220
2008 – 2009	USGS, through PA Water Resources Research Center (PI): <i>Impact of Infiltrating Runoff on Ground-Water Recharge Quality</i>	\$20,000
2008 – 2009	USDA (PI): <i>Acquisition of Real-Time PCR Equipment for Detection of</i>	\$24,597

Environmental Pathogens

2007 – 2008	American Association of University Women (PI): <i>Drexel-Blankenburg Science Fair Club for Girls</i>	\$6,000
2007 – 2008	Louis and Bessie Stein Fellowship (PI): <i>Quantifying Bacterial Transport in Fractured and Heterogeneous Porous Media</i>	\$20,000

PUBLICATIONS AND PRESENTATIONS

Refereed journal articles

1. Sniffen, K.D., Sales, C.M. and M.S. Olson, 2018. "The fate of nitrogen through algal treatment of landfill leachate", *Algal Research*, doi:10.1016/j.algal.2017.12.010.
2. Abuelfaraj, N., Gurian, P.L. and M.S. Olson, 2018. "Assessing Residential Exposure Risk from Spills of Flowback Water from Marcellus Shale Hydraulic Fracturing Activity", *International Journal of Environmental Research and Public Health*, doi:10.3390/ijerph15040727.
3. Sniffen, K.D., Price, J.R., Sales, C.M. and M.S. Olson, 2017. "Influence of Scale on Biomass Growth and Nutrient Removal in an Algal-Bacterial Leachate Treatment System", *Environmental Science and Technology*, DOI: 10.1021/acs/est.7b03975.
4. Hums, M., Amin, H., Tsao, Y.-C., Olson, M., Spatari, S., and R. Cairncross, 2018. "Longitudinal Study of Wastewater Greases and Their Potential for Production of Biofuels", *Energy & Fuels*, in press.
5. Sniffen, K.D., Sales, C.M. and M.S. Olson, 2017. "Comparison of scale in a photosynthetic reactor system for remediation of wastewater", *Journal of Visualized Experiments*, doi:10.3791/55256.
6. Sniffen, K., Sales, C. and M.S. Olson, 2016. "Nitrogen removal from raw landfill leachate by an algae bacteria consortium", *Water Science and Technology*, 73:3, 479-485.
7. Abuelfaraj, N., M.S. Olson, P.L. Gurian, A. DeRoos, C. Gross-Davis. 2016. "Statistical Analysis of Compliance Violations for Natural Gas Wells in Pennsylvania", *Energy Policy*, 97 (Oct): 421-428.
8. Abuelfaraj, N., B. Durant, M.S. Olson, P.L. Gurian, 2016. "Assessing Dermal Exposure Risk to Workers During Shale Gas Hydraulic Fracturing Activity" *Journal of Natural Gas Science & Engineering*, 34: 969-978
9. Abuelfaraj, N., Gurian, P.L., and M.S. Olson, 2014. "Characterization of Marcellus Shale Flowback Water", *Environmental Engineering Science*, Vol 31, No. 9, pp. 514-524.
10. Bloomdahl, R., Abuelfaraj, N., Olson, M.S. and P.L. Gurian, 2014. "Assessing worker exposure to inhaled volatile organic compounds from Marcellus Shale flowback pits", *Journal of Natural Gas Science and Engineering*, Vol 21, pp. 348-356.
11. Zhang, H., Amer Nordin, N., and M.S. Olson, "Evaluating the effects of variable water chemistry on bacterial transport during infiltration", *Journal of Contaminant Hydrology*, Vol 150, pp 54-64 (2013).
12. Galada, H., Gurian, P., Olson, M., Teng, J., Kumar, A., Wardell, M., Eggers, S., and E. Casman, 2013. "Development of Failure Scenarios for Biosolids Land Application Risk Assessment", *Water Environment Research*, Vol 85, No. 2, pp. 141-150.
13. Smalls-Mantey, L., DiGiovanni, K., Olson, M., and F.A. Montalto, 2012. "Validation of two soil heat flux estimation techniques against observations made in an engineered urban green space", *Urban Climate*, DOI: 10.1016/j.uclim.2012.11.001
14. Zhang, H. and M.S. Olson, 2012. "Effect of heavy metals on bacterial attachment in soils", *Journal of Environmental Engineering*, Vol. 138, No. 11.
15. Aminto, A. and M.S. Olson, 2012, "Four-Compartment Partition Model of Hazardous Components in Hydraulic Fracturing Fluid Additives", *Journal of Natural Gas Science and Engineering*, Vol 7, pp. 16-21.
16. Singh, R. and M.S. Olson, 2012. "Transverse Chemotactic Migration of Bacteria from High to Low Permeability Regions in a Dual Permeability Microfluidic Device", *Environmental Science and Technology*, DOI: 10.1021/es03614y.
17. Olson, M. and P.L. Gurian, 2012. "Risk Assessment Strategies as Nanomaterials Transition into Commercial Applications", *Journal of Nanoparticle Research*, DOI: 10.1007/s11051-012-0786-8.
18. Teng, J., Kumar, A., Zhang, H., Olson, M.S., and P.L. Gurian, 2012. "Determination of Critical Rainfall Events for Quantitative Microbial Risk Assessment of Land-Applied Soil Amendments", *Journal of Hydrologic Engineering*, Vol. 17, No. 3, pp. 437-444.

19. Singh, R. and M.S. Olson, 2011. "Transverse Mixing Enhancement due to Bacterial Random Motility in Porous Microfluidic Devices", *Environmental Science and Technology*, Vol 34, pp. 8780-8787.
20. Dudley-Ward, N., Falle, S., and M.S. Olson, 2011. "Modeling chemotactic waves in heterogeneous porous media using adaptive mesh refinement", *Transport in Porous Media*, DOI: 10.1007/s11242-011-9782-1.
21. Singh, R., and Olson, M.S. 2010. "Kinetics of Trichloroethylene and Toluene Toxicity to *Pseudomonas putida* F1", *Environmental Toxicology and Chemistry*, Vol 29, No. 1, pp. 56-63.
22. Olson, M.S., Ford, R.M., Smith, J.A., and Fernandez, E.J., 2006. "Mathematical Modeling of Chemotactic Bacterial Transport through a Two-Dimensional Heterogeneous Porous Medium", *Bioremediation Journal*, Vol. 10, No. 1-2, pp. 13-23.
23. Olson, M.S., Ford, R.M., Smith, J.A., and Fernandez, E.J., 2005. "Analysis of Column Tortuosity for MnCl₂ and Bacterial Diffusion using Magnetic Resonance Imaging (MRI)", *Environmental Science and Technology*, Vol 39, No. 1, pp. 149-154.
24. Olson, M.S., Ford, R.M., Ford, R.M., and Fernandez, E.J., 2004. "Quantification of Bacterial Chemotaxis in Porous Media using Magnetic Resonance Imaging (MRI)" *Environmental Science and Technology*, Vol. 38, No. 14, pp. 3864-3870.
25. Olson, M.S., Tillman, F.D., Choi, J-W, and Smith, J.A., 2001. "Comparison of Three Techniques to Measure Unsaturated-Zone Air Permeability at Picatinny Arsenal, New Jersey" *Journal of Contaminant Hydrology*, Vol. 53, No. 1, pp. 1-19.
26. Bhadra, R., Wayment, D.G., Williams, R.K., Barman, S.N., Stone, M.B., Hughes, J.B., and Shanks, J.V., 2001. "Studies on Plant-Mediated Fate of the Explosives RDX and HMX" *Chemosphere*, Vol. 44, No. 5, pp. 1259-1264.

Refereed conference papers

1. Hsuan, Y.G., Olson, M.S., Cairncross, R., Spatari, S. and S. Kilham (2011). "The roles of geomembranes in algae production at landfills", in GRI-24 Conference Proceedings, Optimizing Sustainability Using Geosynthetics, March 16, 2011, Dallas, TX
2. Singh, R., and Olson, M.S., (2010). " A microfluidic device for studying bacterial chemotaxis in porous media". *Proceedings of the World Environmental & Water Resources Congress 2010*, May 16-20 2010, Providence, RI.
3. Teng, J., Kumar, A., Gurian, P.L., Olson, M.S., and H. Zhang (2010), "Determination of Critical Rainfall Events for Quantitative Microbial Risk Assessment of Biosolids-Associated Pathogens", *Proceedings of the WEF Residuals and Biosolids Conference*, May 23-26, 2010, Savannah, GA.
4. Teng, J., Gurian, P.L., and Olson, M.S. (2009). "Prediction of Nitrate Concentration in Stream Water Based On Watershed Land Use and Stream Flow Rate" *Proceedings of the World Environmental and Water Resources Congress 2009*, May 17-21, 2009, Kansas City, MO.
5. Herman, J.S., Mills, A.L., Hornberger, G.M., Sofranko, A.C., and Olson, M.S. (2008). "Quantifying Nitrate Flux During Storm Events," *Proceedings of the World Environmental and Water Resources Congress 2008*, May 12-16, 2008, Honolulu, HI.

Book chapters

1. Olson, Mira. "Environmental Engineering." In Oxford Bibliographies in Environmental Science. Ed. Ellen Wohl. New York: Oxford University Press, forthcoming.
2. Bartelt-Hunt, S.L., Olson, M.S., and Tillman F.D., 2010. Mass Transfer Within Surface Soils, Part 2. Advective-Diffusive Transport Processes for Chemicals in Surface Soils. In Handbook of Estimation Methods for Chemical Mass Transport in the Environment, L. Thibodeaux and D. MacKay, editors, Taylor and Francis Press.
3. Singh, R. and Olson, M.S., 2008. "Application of Bacterial Swimming and Chemotaxis for Enhanced Bioremediation", in Emerging Environmental Technologies, V. Shah, editor, Springer Science and Business Media.

Other publications

1. Hsuan, Y.G., Olson, M.S., Spatari, S., Cairncross, R., and S. Kilham, 2012. "The roles of geomembranes in algae production at landfills", *Geosynthetics*, June/July 2012, pp. 34-41.
2. Chan Hilton, A.B., and R.M. Neupauer, editors, H2Oh! Classroom Demonstrations for Water Concepts, Report by the Excellence in Water Resources Education Task Committee, under the Groundwater Hydrology Council of the Environmental and Water Resources Institute of the American Society of Civil Engineers, in press (2012).
3. Galada, H., P. L. Gurian, et al., 2011. Site Specific Risk Assessment Tools for Land Applied Biosolids, Water Environment Research Foundation. **SRSK3R08**.

Refereed conference abstracts

1. Amur, A., Tezcan, B., Ekin Sahin, S., Olson, M.S. and P.L. Gurian, "Assessing the effects of land use change and climate change on water resources in the Delaware River Basin", AEESP Research and Education Conference, Ann Arbor, MI, June, 2017.
2. Krechmer, T., Olson, M. and White, S. Modeling the Design and Performance of Stormwater Tree Trenches, EWRI May 2016
3. White, S., Krechmer, T., Herrernan, T., Manna, N., Mannarino, E., Bergerson, C., Olson, M. and Cruz, J. Green Infrastructure Performance in the Real World: Modeling Natural and Simulated Runoff Events. EWRI International Low Impact Development Conference, Aug 29-31, 2016 Portland, ME.
4. AbuAlFaraj, N., Gurian, P.L., Olson, M.S. "Statistical analysis of compliance violations for natural gas wells in Pennsylvania" Society for Risk Analysis Annual Meeting, Arlington, VA December 7-9, 2015.
5. Bloomdahl, R.P., Olson, M.S., Abu Al Faraj, N., Chernak, E., and P.L. Gurian, "Assessing Worker Exposure to Inhaled Volatile Organic Compounds from Marcellus Shale Flowback Pits - Predicting Health Impacts", The College of Physicians Section on Public Health and Preventative Medicine, May 6, 2014, Philadelphia, PA.
6. Hums, M., Stacy, C., Cairncross, R., Olson, M.S., and S. Spatari. "Extraction of Lipids from Wastewater to Produce Biofuels", WEFTEC 2014. Oct 1, 2014, New Orleans, LA.
7. AbuAlFaraj, N., Gurian, P.L. and M.S. Olson, "Analysis of Marcellus Shale Flowback Water", Delaware River Water Alliance Conference, Philadelphia, PA, October 23, 2013.
8. Olson, M.S. "Lessons learned incorporating service and active learning techniques", Invited Talk, AEESP Research and Education Conference, Golden, CO, July 14-16, 2013.
9. Olson, M.S. and H. Zhang, "Variable Performance of an Urban Bioretention Facility", AEESP Research and Education Conference, Golden, CO, July 14-16, 2013.
10. Olson, M.S., Gurian, P.L., Aminto, A., Raj, V., Durant, B., and E. Reeves, "Identification and evaluation of failure scenarios during natural gas drilling operations", AEESP Research and Education Conference, Golden, CO, July 14-16, 2013.
11. Neupauer, R.M., Chan Hilton, A.B., Burian, S., Lauer, J.W., Mathisen, P., Mays, D.C., Nicklow, J.W., Olson, M.S., Pomeroy, C., Ruddell, B., A. Sciortino, "H2Oh!: Collection of classroom demonstrations and activities for improving student learning of water concepts, Geological Society of America Annual Meeting, Denver, CO, October 27-30, 2013.
12. Fagnani, D.E., Austero, M.S., Schauer, C.L., Olson, M.S. (2013), "Detection of Aqueous Toluene: a Fluorescent Sensor for use in Environmental Studies". Poster to be presented at 245th National ACS Meeting, New Orleans, LA, April 9, 2013.
13. Aminto, A. and M.S. Olson (2012), "Partition model of hazardous components in hydraulic fracturing fluid additives", Proceedings of the World Environmental & Water Resources Congress 2012, May 20-24, 2012, Albuquerque, NM.
14. Olson, M.S., Gurian, P.L., Morss-Clyne, A., Shih, W., and Wei-Heng Shih (2012), "NUE: Integrated approach to environmentally responsible nanotechnology education", NSF Engineering Education Awardees Conference, March 4-6, 2012, Arlington, VA.
15. Olson, M.S., Gurian, P.L., Urias, D., and S. Colins (2012), "REU Site: Engineering Cities", NSF Engineering Education Awardees Conference, March 4-6, 2012, Arlington, VA.
16. Olson, M.S., Teng, J., Kumar, A. and P.L. Gurian (2011). "Predicting pathogen transport and risk of infection from land-applied biosolids", American Geophysical Union Fall Meeting, Dec 5-9, 2011

17. Zhang, H., and M.S. Olson (2011). "Modeling bacterial transport in the subsurface using HP1". American Geophysical Union Fall Meeting, Dec 5-9, 2011, San Francisco, CA.
18. Singh, R., and M.S. Olson (2011). "Transverse chemotactic migration of bacteria from high to low permeability regions in a dual permeability porous microfluidic device". American Geophysical Union Fall Meeting, Dec 5-9, 2011, San Francisco, CA.
19. Olson, M.S., Gurian, P.L., Clyne, A.M., Shih, W.-H., Shih, W., and P. Lelkes (2011), "Nanotechnology in Undergraduate Education: Environmental and Health Implications of Nanotechnology", ASEE Middle Atlantic Section Fall Conference, Oct 29, 2011, Temple University, Philadelphia, PA.
20. Eggers, S., Galada, H., Gurian, P.L., Olson, M.S., Richter, E., Rostad, N., and J. Teng (2011), "Biosolids risk management: what we think we learned from you", Mid Atlantic Biosolids Association, August 10, 2011, Dover, DE.
21. Olson, M.S. and R. Singh (2011). "Bacterial transport in microfluidic devices: study of enhanced contaminant mixing and chemotaxis", Association of Environmental Engineering and Science Professors Education and Research Conference, July 10-12, Tampa, FL.
22. Galada, H., Gerba, C., Joe, A., Kumar, A., Marquez, E., Olson, M.S., Pepper, I., Richter, E., Teng, J., and P.L. Gurian (2011). "The SMART parameter database for quantitative microbial risk assessments", Annual Conference and Exhibition, American Water Works Association, June 15, 2011, Washington, DC.
23. Olson, M.S. and H. Zhang (2011), "Effect of stormwater composition on bacterial transport in the subsurface", *Proceedings of the World Environmental & Water Resources Congress 2011*, May 22-26, 2011, Palm Springs, CA.
24. Gurian, P.L., Casman, E., Eggers, S., Galada, H., Gerba, C., Joe, A. Kumar, Olson, M.S., Pepper, I., Richter, E., Rostad, N., Teng, J., and M. Wardell (2011), "Microbial risk assessment modeling", New Jersey Water Environment Association, May 11, 2011, Atlantic City, NJ.
25. Olson, M.S., Gurian, P.L., Morss-Clyne, A., Lelkes, P., Shih, W., and Wei-Heng Shih (2011), "NUE: Integrated approach to environmentally responsible nanotechnology education", NSF Engineering Education Awardees Conference, March 13-15, 2011, Reston, VA.
26. Olson, M.S., Gurian, P.L., Urias, D., and K. Morrison (2011), "REU Site: Engineering Cities", NSF Engineering Education Awardees Conference, March 13-15, 2011, Reston, VA.
27. Zhang, H., and M.S. Olson (2010). "Effect of heavy metals on bacterial transport through soil". American Geophysical Union Fall Meeting, Dec 13-17, 2010, San Francisco, CA.
28. Singh, R., and M.S. Olson (2010). "Effect of Bacterial Motility on Contaminant Mixing in Porous Media". American Geophysical Union Fall Meeting, Dec 13-17, 2010, San Francisco, CA.
29. Teng, J., Gurian, P.L., and M.S. Olson (2010). "Risk assessment modeling for exposure to contaminated groundwater by land-applied biosolids". Annual Northeast Residuals and Biosolids Conference, Nov 9-10, 2010, Lowell, MA.
30. Zhang, H., and M.S. Olson (2010). "Bacterial transport through soil in the presence of heavy metals", 2010 AWRA Annual Conference, November 1-4, 2010, Philadelphia, PA.
31. Zhang, H., and M.S. Olson. (2010). "Effect of heavy metals on mineral surfaces and bacterial attachment", 240th ACS National Meeting, August 22-26, 2010, Boston, MA.
32. Kumar, A., M. S. Olson, and P. L. Gurian. "Integrating Overland Fate and Transport of Biosolids-Associated Pathogens with Infection Risks during Surface Water Recreational Activities". Proceedings of the Sixth International Conference on Sustainable Water Environment, Newark, DE, U.S.A. (2010).
33. Galada, H., M. Wardell, P. Gurian, M. Olson, A. Kumar, J. Teng. (2010). "Creating The Tools For Site Specific Biosolids Risk Assessment" Pennsylvania Water Environment Association Annual Meeting, State College, PA. June, 2010 (**Student Award Winner**).
34. Singh, R., and Olson, M.S., (2009). "Modeling of TCE and Toluene Toxicity to *Pseudomonas putida* F1". American Geophysical Union Fall Meeting, Dec 14-18 2009, San Francisco, CA.
35. Zhang, H. and M.S. Olson (2009). "The effects of heavy metals on soil mineral surfaces and bacterial transport". American Geophysical Union Fall Meeting, Dec 14-18, 2009, San Francisco, CA.

36. Teng, J., P. L. Gurian, M. S. Olson, A. Kumar, H. Zhang, C. Harte, B. Olson, and K. Downs. (2009) "Microbial risk assessment of exposure to biosolids-associated pathogens", Society for Risk Analysis Annual Meeting, December 7, 2009, Baltimore, MD **(Student Award Winner)**.
37. Gurian, P. L., A. Kumar, M. S. Olson, J. Teng. (2009) "Scenarios of Concern for Biosolids Land Application - Interactive Survey w/Attendees", Mid-Atlantic Biosolids Association Annual Meeting, November 10, 2009, Philadelphia, PA.
38. Olson, M.S. and H. Zhang (2009) "Rainwater capture and reuse at a community garden: a research-driven civic engagement project for Hydrology students", Association of Environmental Engineering and Science Professors Conference, Iowa City, Iowa, July 2009.
39. Teng, J., P. L. Gurian, and M. S. Olson. (2009) "Models for Microbial Risk Assessment of Exposure to Biosolids-associated Pathogens in Groundwater" Association of Environmental Engineering and Science Professors Conference, Iowa City, Iowa, July 2009.
40. Teng, J., M.S. Olson, H. Zhang, and P.L. Gurian. (2009) "Risk assessment framework for pathogens in biosolids: ground water pathway", First International Conference on Microbial Transport and Survival in Porous Media, Niagara, Canada.
41. Gurian, P.L., Harte, C., Olson, B., Olson, M. Teng, J. (2009). "Extending the Risk Assessment Framework for Pathogens in Biosolids" WEF Residuals and Biosolids Conference, May 4 2009, Portland, OR.
42. Teng, J., M. S. Olson, and P. L. Gurian, (2009) "Extending the risk assessment framework for pathogens in biosolids: Groundwater Pathway", Pennsylvania Water Environment Association Meeting, Lancaster, PA, June 2009 **(Student Award Winner)**.
43. Olson, M.S., Gurian, P.L., Teng, J., and Zhang, H. (2008) "Exposure Models for Land Application of Biosolids," WERF Research Forum, December 2, 2008, Clearwater, FL.
44. Gurian, P.L., Casman, E., Gerba, C., McFarland, M. Olson, M., Pepper, I., Xagararaki, I., Harte, C., Kumar, A., and Olson, B. (2008). "WERF Challenge Biosolids Risk Assessment Team," WERF Research Forum, December 2, 2008, Clearwater, FL.
45. Singh, R., and Olson, M.S., (2008). "Application of Bacterial Chemotaxis for Enhanced Bioremediation". American Chemical Society 236th National Meeting & Exposition, August, 2008, Philadelphia, PA.
46. Singh, R., and Olson, M.S., (2008). "NAPL Toxicity Evaluation Using Fluorescence Microscopy in Batch Experiments". American Chemical Society 236th National Meeting & Exposition, August, 2008, Philadelphia, PA.
47. Singh, R. and Olson, M.S. (2007). "Molecular Probes: A Tool for Studying Toxicity of VOCs to *P. putida* F1". American Geophysical Union, 2007 Fall Meeting, San Francisco, CA.
48. Olson, M.S. and DiGiovanni, K.A. (2007). "Impact of ZnO and Ag Nanoparticles on Bacterial Growth and Viability". American Geophysical Union, 2007 Fall Meeting, San Francisco, CA.
49. Olson, M.S., Singh, R. and Xu, M (2007). "Viable Bacterial Distribution in a Chemical Gradient: Chemotaxis and Toxicity Effects". American Association of Environmental Engineering and Science Professors, July 2007, Blacksburg, VA.
50. Singh, R., Xu, M., and Olson, M. (2006). "Microscale Imaging: Microbial Behavior Near NAPL Surfaces". American Geophysical Union, 2006 Fall Meeting, San Francisco, CA.
51. Olson, M.S., (2006). "Molecular Probes for Observing Bacterial Behavior at NAPL/Water Interfaces". Society of Environmental Toxicology and Chemistry North America Program Committee, November 2006, Montreal, Quebec, Canada.
52. Olson, M.S., Herman, J.S., Sofranko, A.C., and Mills, A.L., (2006). "Nitrate Loading as a Function of Stream Discharge Along the Eastern Shore of Virginia". Geological Society of America, October 2006, Philadelphia, PA.
53. Olson, M.S., Smith, J.A., Ford, R.M., and Fernandez, E.J., (2005). "Simulation of Chemotactic Bacterial Transport Through a 2-D Heterogeneous System". Association of Environmental Engineering and Science Professors, July 2005, Potsdam, NY.
54. Olson, M.S., Smith, J.A., Ford, R.M., and Fernandez, E.J. (2004). "Quantification of Bacterial Chemotaxis in Porous Media Using MRI". American Chemical Society, August 2004, Philadelphia, PA.

55. Olson, M.S., Smith, J.A., Ford, R.M., Fernandez, E.J. (2004). "Quantifying Bacterial Chemotaxis to TCE in Porous Media Using MRI". Battelle Fourth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, May 2004, Monterey, CA.
56. Olson, M.S., Smith, J.A., Ford, R.M., and Fernandez, E.J. (2003). "Effect of Porous Media Particle Size on Bacterial Motility and Chemotaxis". American Geophysical Union, 2003 Fall Meeting, San Francisco, CA.
57. Scholz, M., Olson, M.S., and Trepel, M. (2003). "Hydraulic, Vegetation and Water Quality Characteristics of Heavily Vegetated Groundwater-Fed Ditches in a Riparian Peatland in Northern Germany". American Geophysical Union, 2003 Fall Meeting, San Francisco, CA.
58. Olson, M.S., Smith, J.A., Ford, R.M., and Fernandez, E.J. (2002). "Comparison of Tortuosity Values for MnCl₂ and Bacterial Diffusion in a Packed Column using Magnetic Resonance Imaging (MRI)". American Geophysical Union, 2002 Fall Meeting, San Francisco, CA.
59. Olson, M.S., Smith, J.A., Ford, R.M., and Fernandez, E.J. (2002). "Analysis of Bacterial Random Motility and Chemotaxis in Porous Media using Magnetic Resonance Imaging (MRI)". Association of Environmental Engineering and Science Professors (AEESP) and the American Academy of Environmental Engineers (AAEE) Conference 2002, Toronto, ON, Canada.
60. Olson, M.S., Smith, J.A., Ford, R.M., and Fernandez, E.J. (2002). "Measurement of Bacterial Motility and Chemotaxis in Porous Media using Magnetic Resonance Imaging (MRI)". American Geophysical Union, 2002 Spring Meeting, Washington, DC.
61. Olson, M.S., Choi, J-W, Tillman, F.D, and Smith, J.A. (2000). "Air Permeability Measurement in Heterogeneous Soil". American Chemical Society, 220th National Meeting, Washington, DC.

Invited presentations

1. *Performance of Urban Bioretention Facilities*, Washington University in St. Louis, January 30, 2015
2. *Lessons learned incorporating service and active learning techniques*, AEESP Research and Education Conference, Golden, CO, July 14-16, 2013.
3. *Bacterial Response to Chemical Gradients in Porous Media*, Flow & Transport in Permeable Media Gordon Research Conference, June 27, 2012
4. *Chemotaxis and Viability of Pseudomonas putida F1 in Chemical Gradients*, Worcester Polytechnic Institute, Spring Seminar Series, Department of Chemical Engineering, April 24, 2009
5. *Impact of Infiltrating Runoff on Groundwater Recharge Quality*, Drexel Engineering Cities Initiative Seminar Series, February 27, 2009
6. *Exposure Models for Land Application of Biosolids*, WERF Research Forum, Dec 2 2008
7. *Impact of Infiltrating Runoff on Ground-Water Quality*, Schuylkill Action Network Stormwater Management Group: April 24, 2008
8. *Bacterial Transport in Porous Media: Response to Environmental Conditions*, IAHR Faculty Seminar Series, April 17, 2008
9. *Bacterial Chemotaxis and Response to Environmental Stress*, The Nanotechnology Institute of Ben Franklin Technology Partners, March 21, 2008
10. *Drexel-Blankenburg Science Fair Club for Girls*, American Association of University Women, January, 2008
11. *Effect of Chemical Gradients on Bacterial Distributions in Porous Media*, Johns Hopkins University, Fall Seminar Series, Department of Geography and Environmental Engineering, October 23, 2007
12. *Bacterial Transport in Porous Media: Imaging and Analysis*, Weizmann Institute, June 24, 2007
13. *Bacterial Transport in Porous Media: Imaging and Analysis*, University of Delaware, Fall Seminar Series, Dec 1, 2006

TEACHING ACTIVITIES

Courses developed and taught at Drexel University

- CIVE 430/561: Hydrology
 Spring 2006, Fall 2006, Fall 2007, Fall 2008, Fall 2009
 CIVE 431/661: Groundwater Hydrology

Winter 2007, Winter 2008, Winter 2009, Winter 2010, Winter 2012, Winter 2013, Winter 2014,
 Winter 2017
 ENVE 300: Introduction to Environmental Engineering
 Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2015
 ENVE 486: Environmental Engineering Process Lab I
 Winter 2008, Winter 2009, Winter 2010, Winter 2012, Winter 2013, Winter 2014, Winter 2016,
 Winter 2017
 ENVE 435/665: Hazardous Waste and Ground Water Remediation
 Spring 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016
 CIVE 380/HNRS 200: Nanotechnology – Health and Environmental Implications
 Fall 2010, Spring 2012
 ENVE 681: Analytical and Numerical Approaches to Hydrology
 Spring 2007, Fall 2009, Fall 2011, Fall 2013, Fall 2015, Fall 2017
 ENGR 380 – Peck Scholars Capstone Project
 Winter 2016
 ENGR 101 – Freshman Engineering Design Lab I
 Fall 2010

Guest lectures

Water resources in the Middle East, Arava Institute for Environmental Studies, Israel	2018
Environmental Policy (St. Joe's University)	2017
UNIV 241: Making Space for Water –Water in Urban Environments	2017
UNIV 241: Geopolitics of Water	2017
CAEE 210: Measurements in CAE Engineering	2008 – 2017
CAEE 201: Introduction to Infrastructure Engineering	2008 – 2017
COM 690: Media and Advocacy in Urban Spaces	2010

K-12 education activities

Founder and director, Drexel – Blankenburg Science Fair Club for Girls	2007 – 2013
Mentor for Central High School Gifted Science Fair Program	2007 – 2009

UNIVERSITY SERVICE

Faculty Committee for Civic Engagement, Chair	2015 – present
Associate Department Head for Graduate Studies	2012 – 2016
Graduate Student Committee, CAEE Department	2007 – 2012
Structures Faculty Search Committee, CAEE Department	2011 – 2012
Faculty Search Committee, BEES Department	2015 – 2016
CAEE Operating Committee	2008 – present
Junior Faculty Advisory Committee, College of Engineering	2008 – 2011
Centralized Research Facilities Faculty Advisory Committee, College of Engineering	2008 – 2010
Udall Scholarship Nominating Committee	2010 – 2016
SEED (Summer Engineering Experience @ Drexel)	2007
Research Day Judge	2006 – 2012
Drexel Open Houses and Admitted Students Days	2006 – 2012

PROFESSIONAL ACTIVITIES

Memberships and affiliations

- American Geophysical Union
- National Ground Water Association

- Geological Society of America
- American Association of University Women
- American Chemical Society
- Association of Environmental Engineering and Science Professors
- American Society of Civil Engineers: Environmental & Water Resources Institute

Service and leadership positions

ELATE (Executive Leadership in Academic Technology & Engineering) Leadership Fellow 2014-2015
 Ground Water Quality Committee, American Society of Civil Engineers (ASCE) Environmental and Water Resources Institute (EWRI)

Chair	2010 – 2013
Secretary	2009 – 2010

Horton Student Award Committee, American Geophysical Union (AGU)

Member	2007 – 2009
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Internet Resources Committee, Association of Environmental Engineering and Science Professors (AEESP)

Chair	2012 – present
Member	2009 – 2012

Excellence in Water Resources Education Task Committee, ASCE

Member	2009 – present
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Journal referee for: Environmental Science and Technology, Water Resources Research, Chemosphere, Transport in Porous Media, Process Biochemistry, Biotechnology and Bioengineering, Environmental Progress and Sustainable Energy, Journal of Hydrologic Engineering

Panelist for: National Science Foundation (4 panels), Department of Energy ERSP (1 panel)

Ad hoc reviewer for: United States – Israel Binational Science Foundation, National Science Foundation (2), Minnesota Sea Grant, New Jersey Water Resources Research Institute, Environmental Research and Education Foundation (2), Stormwater Manual of Practice

Conference organization

Session Moderator: Panel Session on Hydraulic Fracturing
World Environmental & Water Resources Congress, May 19-23, 2013, Cincinnati, OH

Session Moderator: New Adventures in Reactive Flow Through Porous Media
AEESP Research and Education Conference, July 14-16, 2013, Golden, CO

Session Moderator: Groundwater Quality, Emerging Contaminants, and Human Health
World Environmental & Water Resources Congress, May 20-24, 2012, Albuquerque, NM

Session Moderator: Microbial Transport in the Subsurface
World Environmental & Water Resources Congress, May 22-26, 2011, Palm Springs, CA

Session Moderator: Microbial Quality and Emerging Contaminants
World Environmental & Water Resources Congress, May 16-20 2010, Providence, RI

Session Moderator: Microbial Transport in the Subsurface
World Environmental & Water Resources Congress, May 16-20 2010, Providence, RI

Session Moderator: Water Reuse as related to ground water quality
World Environmental & Water Resources Congress, May 16-20 2010, Providence, RI

Session Moderator: Contemporary Water Issues and Potential Solutions
Pennsylvania Water Symposium, May 5, 2010, State College, PA

Co-Chair: Environmental, Ecological and Biogeochemical Impacts of Natural and Synthetic Nanomaterials
American Geophysical Union, Biogeoscience Section, December 10-14, 2007, San Francisco, CA

Professional Development

Community Based Learning Workshop – Drexel University	2016
Nanotechnology Workshop – The Science Center, Philadelphia, PA	2010
Communication Skills for Effective Management, Drexel University	2009
PRF Proposal-Writing Workshop – American Chemical Society	2008
Negotiation Skills Workshop for Drexel Faculty	2008
WinSLAMM Workshop – EPA National Risk Management Research Lab, Edison, NJ	2008
ASCE ExCEEd Teaching Workshop – University of Northern Arizona	2007
Public Speaking Workshop: Refreshers and Reminders on Tips for Improving Presentations	2006
Write Winning Grants: Grant Writers' Seminars and Workshops	2006

STUDENT ADVISING AND MENTORING

Ph.D. students

Rajveer Singh, Ph.D. <i>Analysis of bacterial motility effects for enhancement of bioavailability and bioactivity: bacterial random motility and chemotaxis</i>	2011
Jingjie Teng, Ph.D. (co-advised with Dr. Patrick Gurian) <i>Assessing the risk of infection from microbial pathogens originating from land application of biosolids</i>	2012
Haibo Zhang, Ph.D. <i>Development and validation of a microbial reactive transport model for stormwater infiltration</i>	2013
Molly Hesson, Ph.D. (co-advised with Dr. Patrick Gurian) <i>Flow optimization and reservoir management in the Schuylkill River</i>	2013
Noura AbuAlFaraj, Ph.D. (co-advised with Dr. Patrick Gurian) <i>Health and environmental risk of hydraulic fracturing</i>	2016
Kaitlin Sniffen, Ph.D. (co-advised with Dr. Christopher Sales) <i>Production of algae using landfill waste streams</i>	2017
Dienye Tolofari, Ph.D. student <i>Detection of opportunistic pathogens in premise plumbing</i>	exp. 2021
Md Rasheduzzaman, Ph.D. student <i>Decision tool for premise plumbing</i>	exp. 2021

M.S. students

Minhua Xu, M.S. <i>Dissolution of NAPL ganglia in porous media</i>	2008
Jingjie Teng, M.S. <i>Prediction of nitrate concentration in stream water based on watershed land use and stream flow rate</i>	2008
Laura Klinger, M.S. <i>Impacts of infiltrating stormwater on ground water quality</i>	2010
Tyler Krechmer, M.S. <i>Impacts of infiltrating stormwater on ground water quality</i>	2015
Nicholas Manna, M.S. <i>Modeling infiltration of stormwater through rain gardens</i>	2017
Burcu Teczan, M.S. <i>Reservoir modeling of NY reservoirs using STELLA</i>	2017

Achira Amur, M.S. student <i>Climate change impacts on precipitation in the Delaware River Basin</i>	2018
Suna Ekin Sahin, M.S. student <i>Impact of changing land use and climate on water management in the DRB</i>	2018

Ph.D. thesis committees

Kutay Celebioglu, Ph.D.	2006
Sujata Ray, Ph.D. (Princeton University)	2007
Shun Li, Ph.D.	2009
Joanna Pope, Ph.D.	2009
Murat Hamderi, Ph.D.	2009
Wai-Kuen (Connie) Wong, Ph.D	2010
Carolyn Conlee, Ph.D.	2010
Yin Huang, Ph.D.	2010
Sushil Tamrakar, Ph.D.	2011
Bo Lu, candidacy, Ph.D.	2011
Ran Liu, Ph.D.	2012
Michael Ryan, Ph.D.	2012
Neha Sunger, Ph.D.	2013
Kim DiGiovanni, Ph.D.	2013
Lauren Weinrich, Ph.D.	2015
Kimberly Marcellus, Ph.D.	2015
Kerry Hamilton, Ph.D.	2016
Megan Hums, Ph.D.	2017
Seongcheol Yeom, Ph.D.	2017
Bitu Alizadehtazi, Ph.D. candidate	exp. 2017
Jacob Price, Ph.D. candidate	exp. 2018
Doug Goetz, Ph.D. candidate	exp. 2018

M.S. thesis committees

Phil Duzinski, M.S.	2010
Alisha Goldstein, M.S.	2011
Alrica Joe, M.S.	2011
Kinman Leung, M.S.	2013
Andrew King, M.S.	2013
Wei Chen, M.S.	2014
Emily Pronchik, M.S.	2016

Undergraduate students

Madison Kierod, Peace Engineering coop, Drexel University	2017
Ayesha Syed, Peace Engineering coop, Drexel University	2017
Isaac Fitts-Sprague, Peace Engineering REU, UMass – Amherst	2017
Mora Camplair, Peace Engineering REU, University of Oregon	2017
Bryce Peckman, Peace Engineering coop, Drexel University	2016
Paul DeSantis, Peace Engineering coop, Drexel University	2016
Matthew Coates, Peace Engineering coop, Drexel University	2016
Liliana Lobaton, research assistant, Drexel University	2016
Atiq Rahman, research assistant, Drexel University	2016
Benjamin Yezuita, research assistant, Drexel University	2015
Merissa Gray, research assistant, Drexel University	2015
Elise Hunter, research assistant, Drexel University	2014

Nahjan Amer Nordin, research assistant, Drexel University	2013
Danielle Fagnani, REU coop, Drexel University	2012
Elizabeth Reeves, REU, University of Pennsylvania	2012
Melika Riley, independent study, Drexel University	2012
Eliya Hurd, Drexel STAR Research	2011
Ed Davis, independent study, Drexel University	2011
Aliza Gold, REU, Queens College	2011
Easar Forgheny, REU, St. Mary's College	2010
Evan Richter, REU coop, Drexel University (co-advised with P. Gurian)	2010
Ryan Fucci, REU coop, Drexel University	2010
Ryan Dolin, part-time coop, Drexel University	2010
Nathan Rostad, independent study, Drexel University	2010
Kwabena Atakora-Owusu, Drexel STAR Research	2009
Ben Cohen, independent study, Drexel University	2009
Jon Kiechel, independent study, Drexel University	2009
David Burgy, REU, Swarthmore College	2008
Lauren Reuther, Drexel STAR Research	2008
Danny Culbert, Drexel STAR Research	2008
Kim DiGiovanni, REU coop, Drexel University	2007
David Gryger, independent study, Drexel University	2007
Megan Berg, REU, Montgomery College	2006

High school students and teachers

David Frankel, RET	2010
Kayla Weg, Drexel Summer Mentorship Program	2009-2010
Theresa Lewis-King, technical advisor for MS degree at UPenn	2008
Sarah Hoopes, RET	2008
Nikolai Gressin, Drexel Summer Mentorship Program	2007
Sherilyn Joe, Central High School	2007

PERSONAL

- Violin: Perform with the Lansdowne Symphony
- Languages: English (native), French and Hebrew (intermediate)
- Citizenship: US, Canada
- Married (1999) – 3 children (2004, 2006, 2011)