

Corey M. G. Carpenter, E.I.T.

“Improving environmental monitoring for micropollutants”

Graduate Research Assistant – Cornell University

School of Civil and Environmental Engineering

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EDUCATION

- Cornell University** Ithaca, NY
Ph.D., Civil & Environmental Engineering 2016 – Present
Dissertation title: “Environmental monitoring for micropollutants using high-resolution mass spectrometry and data-driven methods”
Committee: Damian Helbling, David Rossiter, and M. Todd Walter
Concentrations: Environmental Processes, Environmental Information Science, Water Resources
- Cornell University** Ithaca, NY
M.S., Civil & Environmental Engineering 2014 – 2016
Thesis title: “Removal of micropollutants in biofilters: hydrodynamic effects on biotransformation rates”
Committee: Damian Helbling, Ruth Richardson, and Monroe Weber-Shirk
Concentration: Environmental Processes; *Minor:* Environmental Quality
- Syracuse University** Syracuse, NY
B.S., Environmental Engineering 2010 – 2014
Minor: Energy Systems

WORK EXPERIENCE

- Graduate Research Assistant with Dr. Damian Helbling** Cornell University
School of Civil and Environmental Engineering June 2014 – Present
- Conduct independent laboratory, field, and computational research on the fate and transport of chemical contaminants in surface waters by employing high-resolution mass spectrometry and data-driven methods.
 - Act as equipment manager in the Helbing Research Group; main duties include running, maintaining, and training new researchers on laboratory instrumentation including a Q-Exactive Hybrid Quadrupole-Orbitrap Mass Spectrometer.
 - Mentor undergraduate students through laboratory activities and research projects.
 - Participated in the EPA’s Non-Targeted Analysis Collaborative Trial (ENTACT), an international collaborative research trial that was designed to benefit exposome and chemical screening research using high-resolution mass spectrometry.
 - Contributed to collaborative research projects with Dr. George Wells (Northwestern University), Dr. Hélène Marquis (Cornell University), Dr. April Gu (Cornell University), and Dr. Nancy Love (University of Michigan).
- Intern** Manama, Kingdom of Bahrain
Raymond International Pipeline Services Group May – June 2013
- Studied the means and ways of treating and transporting potable water in arid regions with hands-on experiences while traveling the Arabian Peninsula.

- Daily responsibilities included construction and factory site visits, classroom discussions, and meetings with professionals.

Undergraduate Research Assistant with Dr. Charles Driscoll

Syracuse University

Center for Environmental Systems Engineering (CESE)

June 2012 – May 2014

- Conducted independent and joint research (with Dr. Dimitar Todorov, Utica College) on water quantity and quality response of green roofs to storm event.
- Daily responsibilities included the collection and analyses of water samples for various analytes and the management of datasets for local green infrastructure sites.

Peer Advisor

Syracuse University

Programs Rooted in Developing Excellence (PRIDE)

August 2011 – May 2012

- Mentored incoming undergraduate engineering students and led team building activities.
- Additional responsibilities included planning, promotion, implementation, and assessment of college wide events.

SELECTED AWARDS AND HONORS

Conference Travel Grant Award (\$390)	Cornell University	March 2018
Graduate Student Award in Environmental Chemistry (\$125)	American Chemical Society	February 2018
SPARK Talks Certificate of Scholarship	Cornell University	October 2017
Best Aesthetic for Poster Presentation (\$25)	Cornell University, CEE Graduate Research Symposium	March 2017
People's Choice for Poster Presentation (\$25)	Cornell University, CEE Graduate Research Symposium	March 2017
Certificate of Merit	American Chemical Society	August 2016
Conference Travel Grant Award (\$235)	Cornell University	August 2016
Integral Research Award (\$2,000)	Integral Consulting Inc.	July 2016
Honorable Mention	National Science Foundation GRFP	March 2016
Bernard Meyers Graduate Fellowship Award (\$3,000)	Cornell University	June 2016
Earl H. Devoe Prize for Outstanding Undergraduate Research (\$200)	Syracuse University	May 2014
Samuel Clemence Senior Design Award for Most Innovative Project (\$100)	Syracuse University	May 2014

SCHOLARSHIPS AND FELLOWSHIPS

McMullen Fellowship	Cornell University	August 2015 – May 2016
Graduate School Fellowship	Cornell University	August 2014 – May 2015
Chancellor's Scholarship	Syracuse University	August 2010 – May 2014

LEADERSHIP AND MENTORSHIP

CURIE Academy

Diversity Programs in Engineering

Cornell University

18 July 2018

- Introduced female high school students to the field of environmental engineering.
- Facilitated discussions about water use, scarcity, and footprints.

Colman Leadership Program

*Diversity Programs in Engineering and
The Graduate School Office of Inclusion & Student Engagement*

Cornell University

12-15 June 2018

- Learned practical skills and theory pertaining to leadership including self-awareness, group dynamics, creating teams, and appreciating diversity in all contexts.

Secretary (Executive board)

CEE Graduate Student Association

Cornell University

August 2017 – present

- Worked as a team to lead and the support the CEE graduate community through social, academic, and professional events and opportunities including the organization of student, faculty, and professional seminars, a yearly department-wide symposium, and social gatherings.

Undergraduate Researcher Mentor

Helbling Research Group

Danyeh Gutema

February 2018 – present

- Building an MS chemical database.
- Fall Creek Monitoring Station: field sampling and sample preparation.

Undergraduate Researcher Mentor

Helbling Research Group

Lok Yee Jacqueline Wong

August 2017 – present

- Fall Creek Monitoring Station: field sampling and sample preparation.
- Fall Creek Monitoring Station: environmental covariate data collection and risk assessment.

Undergraduate Researcher Mentor

Helbling Research Group

Catherine Johnson

March 2017 – August 2017

- Fall Creek Monitoring Station: field sampling and sample preparation.

PEER REVIEWED PUBLICATIONS

5. Gao, H.; LaVergne, J.M.; **Carpenter, C.M.G.**; Desai, R.; Zhang, X.; Gray, K.; Helbling, D.E.; and Wells, G., 2018. Exploring co-occurrence patterns between organic micropollutants and bacterial community structure in a restored riparian zone. *In Prep.*
4. **Carpenter, C.M.G.**; Wong, L.Y.J.; Johnson, C.A.; Helbling, D.E., 2018. Fall Creek Monitoring Station: prioritization and identification of non-target micropollutants using highly resolved temporal sampling. *Submitted.*
3. **Carpenter, C.M.G.**; Helbling, D.E., 2018. Widespread micropollutant monitoring in the Hudson River Estuary reveals spatiotemporal micropollutant clusters and their sources. *Environmental Science & Technology*, 52 (11), 6187-6196, doi: 10.1021/acs.est.8b00945

2. **Carpenter, C.M.G.**; Helbling, D.E., 2017. Removal of micropollutants in biofilters: Hydrodynamic effects on biofilm assembly and functioning. *Water Research*, 120, 211–221. doi:10.1016/j.watres.2017.04.071
1. **Carpenter, C.M.G.**; Todorov, D.; Driscoll, C.T.; Montesdeoca, M., 2016. Water quantity and quality response of a green roof to storm events: Experimental and monitoring observations. *Environmental Pollution*, 218, 664–672. doi:10.1016/j.envpol.2016.07.056

OTHER PUBLICATIONS

4. **Carpenter, C.M.G.**; Helbling, D.E., 2018. Screening for agricultural and wastewater-derived micropollutants at the mouth of the Mohawk River. Proceedings of the 2018 Mohawk Watershed Symposium, (10), 7-11. Available [here](#).
3. LaVergne, J.; Gao, H.; **Carpenter, C.M.G.**; Helbling, D. Gray, K.; Wells, G., 2017. Control of Pharmaceuticals, Personal Care Products, and Other Micropollutants: Probing the Ability of Restored Riparian Systems to Remove Trace Pollutants. Proceedings of the 2017 Water Environment Federation (9), 3537-3550. Available [here](#).
2. **Carpenter, C.M.G.**; Helbling, D.E., 2017. Tributaries and sewage outfalls: Identifying the relative contribution of sources of micropollutants in the Hudson River Estuary. Prepared for New York State Department of Environmental Conservation’s Hudson River Estuary Program. Available [here](#).
1. **Carpenter, C.M.G.**, 2017. Removal of micropollutants in biofilters: Hydrodynamic effects on biotransformation rates. Cornell University, ProQuest Dissertations Publishing, 10246696. Available [here](#).

SELECTED PRESENTATIONS

21. **Carpenter, C.**; Helbling, D., “Environmental monitoring for organic micropollutants: How large datasets can lead to novel insights,” *Environmental Engineering Graduate Seminar, Syracuse University*. Syracuse, NY, 17 September 2018 (Oral, invited).
20. **Carpenter, C.**; Helbling, D., “Identifying nontarget emerging contaminants using highly resolved temporal sampling,” *Gordon Research Conference – Environmental Sciences: Water*. Holderness, NH, 24-29 June 2018 (Poster).
19. **Carpenter, C.**; Helbling, D., “Identifying nontarget emerging contaminants using highly resolved temporal sampling,” *Gordon Research Seminar – Environmental Sciences: Water*. Holderness, NH, 23-24 June 2018 (Oral).
18. **Carpenter, C.**; Helbling, D., “Identifying nontarget emerging contaminants using highly resolved temporal sampling,” *Gordon Research Seminar – Environmental Sciences: Water*. Holderness, NH, 23-24 June 2018 (Poster).
17. **Carpenter, C.**; Helbling, D., “Fall Creek Monitoring Station: An automated workflow to identify emerging contaminants using highly resolved temporal sampling,” *255th American Chemical Society National Meeting: Division of Environmental Chemistry*. New Orleans, LA, 18-22 March 2018 (Oral).

16. **Carpenter, C.**, “An automated workflow to assess emerging contaminants in water,” *Graduate Student Seminar (GraSS), Cornell University*. Ithaca, NY, 15 November 2017 (Oral).
15. **Carpenter, C.**; Helbling, D., “Water quality monitoring for micropollutants: a detailed look at two case studies,” *Environmental Processes Seminar, Cornell University*. Ithaca, NY, 23 October 2017 (Oral).
14. **Carpenter, C.**, “Expanding our environmental monitoring capabilities to assess emerging contaminants in water,” *Scholars Present About Research and Knowledge (SPARK) Talks, Cornell University*. Ithaca, NY, 19 October 2017 (Oral). Awarded Certificate of Scholarship.
13. **Carpenter, C.**, “Tributaries and sewage outfalls: Identifying the relative contribution of sources of micropollutants in the Hudson River Estuary,” *9th Annual CEE Graduate Research Symposium, Cornell University*. Ithaca, NY, 23 March 2017 (Poster). Awarded Best Aesthetic and People’s Choice.
12. **Carpenter, C.**, “Removal of micropollutants in biofilters: hydrodynamic effects on biotransformation rates,” *M.S. Defense, Cornell University*. Ithaca, NY, 21 November 2016 (Oral).
11. **Carpenter, C.**; Helbling, D., “Removal of micropollutants in biofilters: hydrodynamic effects on biotransformation rates,” *Environmental Processes Seminar, Cornell University*. Ithaca, NY, 31 October 2016 (Oral).
10. **Carpenter, C.**; Helbling, D., “Removal of micropollutants in biofilters: hydrodynamic effects on biotransformation rates,” *252nd American Chemical Society National Meeting: Division of Environmental Chemistry*. Philadelphia, PA, 21-25 August 2016 (Oral). Awarded Certificate of Merit.
9. **Carpenter, C.** “Biofiltration of a complex mixture of micropollutants,” *Environmental Processes Seminar, Cornell University*. Ithaca, NY, 2 November 2015 (Oral).
8. Dimitar, T.; **Carpenter, C.**; Driscoll, C.; Montesdeoca, M. “Using a Tracer Technique to Investigate Variation in Stormwater Runoff Volume from the Vegetated Roof at SyracuseCoE” *13th Annual SyracuseCOE Symposium: Urban Reinvention and Resilience*. Syracuse, NY, 21-22 October 2013, (Oral).
7. **Carpenter, C.**; Driscoll, C.T.; Todorov, D.; Clinkhammer, A.; Glick, A.; Valdez, S.; Montesdeoca, M. “The Center of Excellence Efficiency Confirmation” *13th Annual SyracuseCOE Symposium: Urban Reinvention and Resilience*. Syracuse, NY, 21-22 October 2013 (Poster).
6. **Carpenter, C.**; Driscoll, C.T.; Todorov, D.; Clinkhammer, A.; Glick, A.; Valdez, S.; Montesdeoca, M. “The Center of Excellence Efficiency Confirmation,” *Syracuse University Summer Research Program seminar*. Syracuse, NY, 2 August 2013, (Poster).
5. **Carpenter, C.**; Driscoll, C.T.; Todorov, D.; Clinkhammer, A.; Glick, A.; Valdez, S.; Montesdeoca, M. “The Center of Excellence Efficiency Confirmation,” *Syracuse University Summer Research Program seminar*. Syracuse, NY, 2 August 2013 (Oral).
4. **Carpenter, C.**; Driscoll, C.T.; Todorov, D.; Larrota, J.; Montesdeoca, M. “Water Quantity & Quality Response of The Center of Excellence,” *Central Chapter of the New York Water Environment Association (CCNYWEA) Spring Meeting and Exhibition*. Skaneateles, NY. 9 April 2013 (Oral, invited).

3. **Carpenter, C.;** Driscoll, C.T.; Todorov, D.; Larrota, J.; Montesdeoca, M. “Water Quantity & Quality Response of The Center of Excellence,” *The New York Water Environment Association (NYWEA) 85th Annual Meeting and Exhibition*. New York City, NY, 4-6 February 2013 (Poster).
2. **Carpenter, C.;** Driscoll, C.T.; Todorov, D.; Larrota, J.; Montesdeoca, M. “Water Quantity & Quality Response of The Center of Excellence,” *Syracuse University Summer Research Program Seminar*. Syracuse, NY, 10 August 2012 (Poster).
1. **Carpenter, C.;** Driscoll, C.T.; Todorov, D.; Larrota, J.; Montesdeoca, M. “Water Quantity & Quality Response of The Center of Excellence,” *Syracuse University Summer Research Program Seminar*. Syracuse, NY, 3 August 2012 (Oral).