Chul Park

Professor
Department of Civil & Environmental Engineering
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Education

Ph.D. Civil Engineering, Virginia Tech, 2007

M.S. Environmental Engineering, Virginia Tech, 2002

B.S. Environmental Engineering, Yeungnam University, 2000

Study Abroad Scholar. Civil Engineering, Washington State University, 1998-99

Professional Experience

Professor, Department of Civil & Environmental Engineering, University of Massachusetts Amherst, USA, Sep 2019-present

Associate Editor, Journal of Water and Environment Technology (JWET), 2019-present

Visiting Fellow (Japan Society for the Promotion of Science), Department of Earth Sciences, Chiba University, Japan, Jan-Mar 2020

Visiting Professor, Department of Environmental Engineering, Kyoto University, Japan, Dec 2019-Aug 2020

Overseas Invited Professor, School of Urban and Environment Engineering, Ulsan National Institute of Science & Technology (UNIST), South Korea, June-Aug 2019

Associate Professor, Department of Civil & Environmental Engineering, University of Massachusetts Amherst, Sep 2013-Aug 2019

Visiting Researcher, INRAE-LBE, Narbonne, France, Dec 2013-Aug 2014

Assistant Professor, Department of Civil & Environmental Engineering, University of Massachusetts Amherst, Sep 2007-Aug 2013

Graduate Instructor, Department of Civil & Environmental Engineering, Virginia Tech, Spring 2007

Graduate Research Assistant, Department of Civil & Environmental Engineering, Virginia Tech, 2001-2006

Recognitions

Manning/IALS Innovation Awards (on NaturaFloc), University of Massachusetts Amherst, 2022

Manning/IALS Innovation Awards (on Oxygenic Photogranules), University of Massachusetts Amherst, 2021

Office of Technology Commercialization & Ventures Technology Development Fund Award. The President's Office, University of Massachusetts, 2021

Invitational Fellowships for Research in Japan, Japan Society for the Promotion of Science, 2019

Invitational Overseas Scholar Award, Ulsan National Institute of Science & Technology, 2019

Office of Technology Commercialization & Ventures Technology Development Fund Award. The President's Office, University of Massachusetts, 2018

Manning Proof of Concept Fund Award. University of Massachusetts Amherst, 2015

Paul L. Busch Award. Water Environment Research Foundation, 2013

Commercial Ventures & Intellectual Property Technology Development Award. The President's Office, University of Massachusetts, 2010

Graduate Research & Development Program Award, Virginia Tech, 2006

Sussman Fellowship, Edna Bailey Sussman Foundation, 2004

Paul E. Torgersen Research Excellence Award, Virginia Tech, 2003

International Exchange Program (1 year) Scholarship, Yeungnam University, 1998

Patents

Park, C., Abouhend, A.S., Gikonyo, J.G. (June 2023) System and method for auto-flocculation of wastewater. Non-provisional patent application. Attorney Docket Number: 3724.083US1.

Park, C., Gikonyo, J.G., Abouhend, A.S. (May 2023) System and method for cultivation of oxygenic photogranules. Non-provisional patent application. Attorney Docket Number: 3724.073US1.

Gikonyo, J.G., Park, C. (December 2021) System and method for hydrodynamic cultivation of seed OPGs. Non-provisional patent application. Application number: 63/121,624; File reference number: 3724.069WO1.

Park, C. and Dolan, S. (2019) Algal-sludge granule for wastewater treatment and bioenergy feedstock generation, US Patent 10189732.

Park, C. and Chon, D.H. (2016) Wastewater treatment system to reduce sludge generation. US Patent 9,422,178.

Registration and Training

NSF I-Corps national cohort: 2023 (Team 3213 NaturaFloc - NSF Process Master Award); 2020 (Team 2062 BreathSpheres)
UMass I-Corps, 2020, 2023
Engineer in Training, Virginia, 2008

Research Interests

Microbial physiology and the role of extracellular polymeric substances in bioaggregation

Photogranulation phenomenon in diverse environments

Production and fate of microbial dissolved organic nitrogen and its impact on algal blooms in estuarine and coastal waters

Minimizing sludge production during wastewater treatment

Role of metals in bacterial aggregation and digestion of biomass

Biological water and wastewater treatment

Anaerobic digestion

Recovery of energy and nutrients in wastewater

Research Students and Postdocs

Graduate Student Committee Chair

1. Joshua Fiorentino (MS student, summer 2024): MS Project: Acid/Gas anaerobic digestion
2. Nadine Ali (MS, 2024) MS Thesis: Enhancing photogranulation by manipulating second messengers.
3. Ahmed S. Abouhend (PhD, 2021) PhD Dissertation: Size progression of oxygenic photogranules (OPGs) and its effect on OPG wastewater treatment.
4. Andrew Keyser (MS, 2021) MS Project: pre-denitrification BNR for the formation of organic nitrogen

5. Abeera A. Ansari (PhD, 2020) PhD Dissertation: Investigating the role of iron in the photogranulation phenomenon.
6. Joseph G. Gikonyo (PhD, 2020) PhD Dissertation: Scaling up the oxygenic photogranule (OPG) wastewater treatment process. (co-chair: Dr. John Tobiason)
7. W. Camilla Kuo-Dahab (PhD candidate, 2012-2020): PhD research on EPS of OPG; anaerobic co-digestion of food waste and sludge
8. Siwei Chen (MS, 2018) MS Thesis: Formation of low-molecular-weight dissolved organic nitrogen in two-stage and four-stage pre-denitrification biological nutrient removal processes.
9. Adam McNair (MS, 2017) MS Thesis: Pilot reactor operation of the oxygenic photogranule (OPG) wastewater treatment process.
10. Heonseop Eom (PhD, 2016) PhD Dissertation: Investigation of effluent nitrogen derived from conventional activated sludge (CAS) and biological nutrient removal (BNR) systems and its impact on algal growth in receiving waters.
11. Chris Watt (MS, 2015) MS Project: Using novel algae-sludge granules in sequencing batch reactors to treat wastewater.
12. Meng Wang (PhD, 2013) PhD Dissertation: Investigation of microalgae cultivation and anaerobic co-digestion of algae and sewage sludge for wastewater treatment facilities.
13. Dong-Hyun Chon (PhD, 2012) PhD Dissertation: Investigation of excess sludge reduction by an anaerobic side-stream reactor (ASSR): the role of EPS and enzymes in sludge floc.
14. Arianne Bazilio (MS, 2012) MS Thesis: Biodegradation of disinfection by-products in drinking water systems.
15. Aaron Brennan (MS, 2012) MS Thesis: Investigating pilot scale performance of an activated sludge wastewater treatment system with a high rate anaerobic side stream reactor
16. Dongke Yu (MS, 2011) MS Thesis: Evaluation of effluent organic nitrogen and its impacts on receiving water bodies
17. Diane Sheppard (MS, 2011) MS Thesis: An evaluation of the effects of wastewater treatment plant effluent in eutrophication in receiving waters
18. Philip Teague (MS, 2011) MS Thesis: The role of substrate gradient in determining EPS generation, sludge properties, and the anaerobic digestibility of activated sludge
19. Robert McKeever (MS, 2011) MS Thesis: Biodegradation of ethylene dibromide (EDB) under in situ and biostimulated conditions at MMR
20. Pamela Westgate (MS, 2009) MS Thesis: Characterization of proteins in effluents from three wastewater treatment plants that discharge to the Connecticut River

Postdocs and Research Fellows

1. Dr. Ahmed S. Abouhend (Postdoctoral researcher): Jan 2022 – Jan 2024
2. Dr. Joseph G. Gikonyo (Postdoctoral researcher): Apr 2020 - present
3. Arfa Ansari (Research fellow): Mar 2019 – Dec 2019
4. Dr. Heonseop Eom (Postdoctoral researcher): Oct 2016 - Oct 2017
5. Ahmed S. Abouhend (Research fellow): Nov 2015 - June 2016
6. Dr. Sona Dolan (Senior research fellow): April 2012 - Feb 2014; deceased in 2014
7. Dr. Young Mo Kim (Postdoctoral researcher): Aug 2010 - July 2011

Committee Member (*Students outside CEE or at different institutions)

1. Harita Sistu* (PhD student in Microbiology at UMass; Chair: James Holden)

2. Vikas Kuma* (PhD 2023; UBC Okanagan, Canada; Chair: Cigdem Eskicioglu)
3. Hyungjung Yu* (PhD 2022; UNIST, South Korea; Chair: Changsoo Lee)
4. Esmee Joosten* (PhD 2021; INRAE-LBE, France; Chairs: Kim Milferstedt and Jérôme Hamelin)
5. Samuel Downes (MS 2019; Chair: Caitlyn Butler)
6. Megan Hann (MS 2018; Chair: Caitlyn Butler)
7. Kristie Stauch-White (MS 2016; Chair: Caitlyn Butler)
8. Joshua Jack (MS 2015; Chair: Caitlyn Butler)
9. Laurine Seynhaeve* (MS 2014; INRA-LBE, France; Chair: Hélène Carrere)
10. Camelia Rotaru (PhD 2012; Chair: Dave Ostendorf)
11. Chen Wu (MS 2012; Chair: Dave Reckhow)
12. Zachary Monge (MS 2010; Chair: Erik Rosenfeldt)
13. Xin Yuan (MS 2010; Chair: Sarina Ergas)
14. Matt Hross (MS 2010; Chair: Erik Rosenfeldt)
15. Marina Pereira (MS 2008; Chair: Dave Ostendorf)
16. Ryan Siegel (MS 2008; Chair: Sarina Ergas)

Department of Microbiology AMB Project Faculty Mentor

1. Samantha Belculfine: Project: Diguanylate cyclase and phosphodiesterase in mycobacteria. Microbiology faculty: Dr. Yasu Morita, Department of Microbiology
2. Jacob Prince (MS, 2024) Project title: Oxygenic photogranules: Controlling cyanobacterial cell aggregation. Microbiology faculty: Dr. Yasu Morita, Department of Microbiology
3. Edward York (MS, 2023) Project title: Cloning and expressing cyanobacterial outer membrane protein in *E. coli*. Microbiology faculty: Dr. Yasu Morita, Department of Microbiology

Advisee Students Honors & Awards

Ahmed S. Abouhend, February 2021, Perrell Fellowship, Department of Civil & Environmental Engineering, University of Massachusetts Amherst

Joseph G. Gikonyo, March 2020, BRIGGS Award, Department of Civil & Environmental Engineering, University of Massachusetts Amherst

Joseph G. Gikonyo, January 2019, NOGA Award, Department of Civil & Environmental Engineering, University of Massachusetts Amherst

Ahmed S. Abouhend, January 2018, NOGA Award, Department of Civil & Environmental Engineering, University of Massachusetts Amherst

Joseph G. Gikonyo, Spring 2017, Graduate Student Fellowship, Graduate School, University of Massachusetts Amherst

Abeera, A. Ansari, 2015-2018, Faculty Development Program Scholar, National University of Sciences and Technology, Pakistan

Ahmed S. Abouhend, 2015-2016, Egyptian National Student Fellowship, Egypt

W. Camilla Kuo-Dahab, 2015-2016, STEM Chateaubriand Fellowship, Embassy of France in the U.S.; nine-month visiting research at INRA-LBE, France

Adam McNair, 2015, Massachusetts Water Resources Research Center Student Travel Scholarship; one-week visiting research at University of Hawaii

W. Camilla Kuo-Dahab, 2014, Best Poster Award, Investigating anaerobic co-digestion of sewage sludge and food waste using a bench-scale pilot study, Annual Conference NEWEA Student Poster Competition

Undergraduate Research Theses and Project Reports (*Students outside CEE or at different institutions)

1. Sean McMeniman (BS CEE), Commonwealth Honor College Thesis: Enhanced Nitrogen Removal in Wastewater using Oxygenic Photogranules, Chair (co-Chair: Dr. Mariana Lopes), May 2024
2. Joshua Fiorentino (BS CEE), Commonwealth Honor College Thesis: Photodegradation of acetaminophen using chlorination, Co-chair (Chair: Dr. Mariana Lopes), May 2023
3. Claire Delaney (BS CEE), NSF REU, Summer 2022
4. Patrick Hanlon (BS CEE), Commonwealth Honors College thesis: Comparison of activated sludge characteristics in light and dark condition, 2012, Chair
5. Jack Barry (BS CEE), Commonwealth Honors College REU, Community Research, Summer 2012
6. Meghan Krupka (BS CEE), Commonwealth Honors College thesis: Bench-scale co-anaerobic digestion of microalgae and wastewater sludge, 2010, Chair
7. Thomas Gostanian* (BS Chemical Engineering), NSF REU, Summer 2010
8. Philip Teauge (BS CEE), NSF REU, Summer 2008

Undergraduate Research Assistants (*Students outside CEE or at different institutions)

Rillary Madruga (Fall 2024-present); Wyatt Baker (Fall 2024-present); Caitlin Hartman (Fall 2024-present); Swapnil Ghandi (Fall 2023-Spring 2024); Riley Cole (Fall 2022-Fall 2023); Sean McMeniman (Fall 2022-present); Claire Delaney (Spring 2022-Fall 2022); Brady Bell (Spring 2022); Yanwen Li* (Environmental Sciences, Summer 2021-Summer 2022); Ingrid Chan (Fall 2018-Spring 2019); Victoria Epstein (Fall 2018-Spring 2019); Arfa Ansari* (Holyoke Community College, Summer 2017, 2018); Anastasia Ivanova* (Biology, Fall 2015-Spring 2018); Caitline Barber (2016); Mason Saleeba (Summer 2014-Spring 2015); Joseph Murphy (Fall 2013-Fall 2014); Joshua Jack (Fall 2013-Spring 2014); Jack Barry (Spring 2012-Summer 2013); Alex Surreira (Spring 2012-Fall 2012); Brian Tafe (Spring 2012-Summer 2013); Chris Watt (Spring 2012-Summer 2013); Patrick Hanlon (Honors Student, Summer 2011-Spring 2012); Zhiren Zhu (Honors Student, Summer 2011-Summer 2012); David Choi (2011); Meghan Krupka (Honors Student, Summer 2009-Summer 2010); McNamara Rome (Spring 2009-Spring 2010); Anna May Tilley* (Chemical Engineering; Summer 2009); Philip Teauge (Fall 2007-Summer 2009); Chengyan Zhang (CEE, Fall 2007-Summer 2008)

Research Experience for high school students

Thomas Nuesslein (Pioneer Valley Chinese Immersion Charter School, 2024-present), Gregory Davidson (Amherst Regional High School, 2024-present), Kelly Heo (Longmeadow High School, 2023-present), Eugena Choi (Longmeadow High School, 2019), Anastasia Ivanova (Amherst Regional High School, 2012-2015), Sabrina Ho (Andover High School, Summer 2014), Brynn O'Sullivan (Holyoke High School, Summer 2014), Ryan Kirton (Holyoke High School, Summer 2012), Ryan Beauregard (Holyoke High School, Summer 2012)

Hosting Visiting Scholars

Dr. Jérôme Hamelin (Senior Scientist and Deputy Director, INRA-LBE): Apr-July 2019

Dr. Changsoo Lee (Associate Professor, UNIST, Korea): Jan 2018-Jan 2019

Ahmed S. Abouhend (Visiting researcher, Marine Environment Division. National Institute of Oceanography and Fisheries, Egypt): Feb 2015-July 2016

Dr. Jeongmi Seo (Postdoc, University of Seoul, Korea): Feb 2015-Jan 2016

Dr. Ki Young Park (Associate Professor, Konkuk University, Seoul, Korea): Jul 2010-Jul 2011

Dr. Hee Sik Kim (Principal Investigator, Korea Research Institute of Bioscience and Biotechnology, Daejon, Korea): Aug 2008-Jul 2009

Refereed Journal Publications

1. Gikonyo, J.G., Abouhend, A.S., Keyser. A., Li, Y., Park, C. (2023) Scaling-up of oxygenic photogranular system in selective-CSTR. *Bioresource Technology Reports* 23, 101523
2. Ansari, A.A., Ansari, A.A., Gikonyo., J.G., Abouhend, A.S., Park, C. (2023) The coupled effect of light and iron on the photogranulation phenomenon. *Environmental Science & Technology* 57,24, 9086-9095.
3. Eom, H., Park, C. (2023) Evaluation of phytoplankton-stimulating potency of effluent nitrogen depending on its chemical forms: A comparison between inorganic and organic nitrogen. *Journal of Environmental Management* 336, 117601, doi.org/10.1016/j.jenvman.2023.117601.
4. Abouhend, A.S., Gikonyo, J.G., Patton, M., Butler, C.S., Tobiason, J., Park, C. (2023) Role of hydrodynamic shear in the oxygenic photogranule (OPG) wastewater treatment process. *ACS ES&T Water*. 3, 3, 659-668. DOI: 10.1021/acsestwater.2c00317.
5. Gikonyo, J.G., Ansari, A.A., Park, C., Tobiason, J.E. (2022) Physical characterization of oxygenic photogranules. *Biochemical Engineering Journal* 186, 108592. doi.org/10.1016/j.bej.2022.108592
6. Ansari, A.A, Ansari, A.A., Khoja, A.H., Gikonyo, J.G., Abouhend, A.S., Park, C. (2022) The fate and dynamics of iron during the transformation of activated sludge into oxygenic photogranules (OPGs) under hydrodynamic batch conditions for environmental applications. *Journal of Environmental Chemical Engineering* 10(4), 108190. doi.org/10.1016/j.jece.2022.108190
7. Park, C., Takeuchi, N. (2021) Unmasking photogranulation in decreasing glacial albedo and net autotrophic wastewater treatment. *Environmental Microbiology* 23(11), 6391-6404. doi.org/10.1111/1462-2920.15780.
8. Ansari, A.A, Ansari, A.A., Abouhend, A.S., Gikonyo, J.G., Park, C. (2021) Photogranulation in a hydrostatic environment occurs with limitation of iron. *Environmental Science & Technology* 55(15), 10672-10683.
9. Gikonyo, J.G., Keyser, A., Tobiason, E.T., Jeong, J., Park, C. (2021) In vivo evaluation of oxygenic photogranules' photosynthetic capacity by pulse amplitude modulation and phototrophic-irradiance curves. *ACS ES&T Engineering* 1(3), 551-561.
10. Eom, H., Park, C. (2021) Investigation of characteristics of effluent DON derived from conventional activated sludge (CAS) and predenitrification biological removal (BNR): In terms of proteins and humic substances. *Environmental Research* 196, 110912.
11. Gikonyo, J.G., Ansari, A.A., Abouhend, A.S., Tobiason, J.E., Park, C. (2021) Hydrodynamic granulation of oxygenic photogranules. *Environmental Science: Water Research & Technology* 7, 427-440.
12. Brockmann, D., Gérand, Y., Park, C., Milferstedt, K., Hamelin, J., Hélias, A. (2021) Wastewater treatment using oxygenic photogranule-based process has lower environmental impact than conventional activated sludge process. *Bioresource Technology* 319, 124204.
13. Abouhend, A., Milferstedt, K., Hamelin, J., Ansari, A.A., Butler, C.S., Carbajal-González, B.I., Park, C. (2020) Growth progression of oxygenic photogranules and its impact on bioactivity for aeration-free wastewater treatment. *Environmental Science & Technology* 54(1), 486-496.
14. Ansari, A.A., Abouhend A.S., Park, C. (2019) Effects of seeding density on photogranulation and the start-up of the oxygenic photogranule process for aeration-free wastewater treatment. *Algal Research* 40, 101495.

15. Kuo-Dahab, W.C., Stauch-White, K., Butler, C., Gikonyo, G.J., Carbajal-González, B.I., Ivanova, A., Dolan, S., Park, C. (2018) Investigation of the fate and dynamics of extracellular polymeric substances (EPS) during sludge-based photogranulation under hydrostatic conditions. *Environmental Science & Technology* 52(18), 10462-10471.
16. Park, C., Chon, D.H., Brennan, A., Eom, H. (2018) Investigation of sludge reduction and biogas generation in high-rate anaerobic side-stream reactors for wastewater treatment. *Environmental Science: Water Research & Technology* 4, 1829-1838.
17. Abouhend, A.S., McNair, A., Kuo-Dahab, W. C., Watt, C., Butler, C. S., Milferstedt, K., Hamelin, J., Seo, J., El-Moselhy, K. M., Gikonyo, J.G., Park, C. (2018) The oxygenic photogranule process for aeration-free wastewater treatment. *Environmental Science & Technology* 52(6), 3503-3511.
18. Milferstedt, K., Kuo-Dahab, W.C., Butler, C.S., Hamelin, J., Abouhend, A.S., Stauch-White, K., McNair, A., Watt, C., Carbajal-González, B.I., Dolan, S., Park, C. (2017) The importance of filamentous cyanobacteria in the development of oxygenic photogranules. *Scientific Reports* 7(17944); doi:10.1038/s41598-017-16614-9.
19. Eom, H., Borgatti, D., Paerl, H., Park, C. (2017) Correction to formation of low-molecular-weight dissolved organic nitrogen in predenitrification biological nutrient removal systems and its impact on eutrophication in coastal waters. *Environmental Science & Technology* 51(22), 13514–13514.
20. Milferstedt, K., Hamelin, J., Park, C., Jung, J., Cho, S., Jung, K., Kim, D. (2017) Biogranules applied in environmental engineering. *International Journal of Hydrogen Energy* 42, 27801-27811.
21. Lee, J., Lee, J.W., Kim, Y.M., Park, C., Park, K.Y. (2017) Performance and fouling in pre-denitrification membrane bioreactors treating high strength wastewater from food waste disposers. *Water* 9(7), 512; doi:10.3390/w9070512.
22. Stauch-White, K., Srinivasan, V., Kuo-Dahab, W.C., Park, C., Butler, C.S. (2017) The role of inorganic nitrogen in successful formation of granular biofilms that support cyanobacteria and bacteria. *AMB Express* 7, 146.
23. Eom, H., Borgatti, D., Paerl, H., Park, C. (2017) Formation of low-molecular-weight dissolved organic nitrogen in predenitrification biological nutrient removal systems and its impact on eutrophication in coastal waters. *Environmental Science & Technology* 51(7), 3776-3783.
24. Park, C., Sheppard, D., Yu, D., Dolan, S., Eom, H., Brooks, J., Borgatti, D. (2016) Comparative assessment on the influences of effluents from conventional activated sludge and biological nutrient removal processes on algal bloom in receiving waters. *Environmental Engineering Research* 21(3), 276-283.
25. Kim, D.H., Lee, M.K., Hwang, Y., Lim, W.T., Yune, Y.M., Park, C., Kim, M.S. (2016) Microbial granulation for lactic acid production. *Biotechnology and Bioengineering* 113, 101-111.
26. Park, C., Chon, D.H. (2015) High-rate anaerobic side-stream reactor (ASSR) processes to minimize the production of excess sludge. *Water Environment Research* 87, 2090-2097.
27. Wang, M., Park, C. (2015) Investigation of anaerobic digestion of *Chlorella* sp. and *Micractinium* sp. grown in high-nitrogen wastewater and their co-digestion with waste activated sludge. *Biomass and Bioenergy* 80, 30-37.
28. Wang, M., Kuo-Dahab, W.C., Dolan, S., Park, C. (2014) Kinetics of nutrient removal and expression of extracellular polymeric substances of microalgae, *Chlorella* sp. and *Micractinium* sp., in wastewater treatment. *Bioresource Technology* 154, 131-137.
29. Nguyen, L.N., Hai, F.I., Nghiem, L.D., Kang, J., Price, W.E., Park, C., Yamamoto, K. (2014) Enhancement of removal of trace organic contaminants by powdered activated carbon dosing into membrane bioreactors. *Journal of the Taiwan Institute of Chemical Engineers* 45(2), 571-578.
30. Baek, K., Wang, M., McKeever, R., Rieber, K., Park, C., Nüsslein, K. (2014) Biodegradation of low concentration of 1,2-Dibromoethane in groundwater is enhanced by phenol. *Applied Microbiology and Biotechnology* 98, 1329-1338.

31. Wang, M., Sahu, A.K., Rusten, B., Park, C. (2013) Anaerobic co-digestion of microalgae *Chlorella* sp. and waste activated sludge. *Bioresource Technology* 142, 585-590.
32. Lee, J.W., Jutidamrongphan, W., Park, K.Y., Moon, S., Park, C. (2012) Advanced treatment of wastewater from food waste disposer in modified Ludzack-Ettinger type membrane bioreactor. *Environmental Engineering Research* 17(2), 59-63.
33. Baek, K., McKeever, R., Rieber, K., Sheppard, D., Park, C., Ergas, S.J., Nüsslein, K. (2012) Molecular approach to evaluate biostimulation of 1,2-dibromoethane in contaminated groundwater. *Bioresource Technology* 123, 207-213.
34. Kim, Y.M., Chon, D.H., Kim, H.S., Park, C. (2012) Investigation of bacterial community in activated sludge with an anaerobic side-stream reactor (ASSR) to decrease the generation of excess sludge. *Water Research* 46, 4292-4300.
35. Yuan, X., Wang, M., Park, C., Sahu, A.K., Ergas, S.J. (2012) Microalgae growth using high strength wastewater followed by anaerobic co-digestion. *Water Environment Research* 84(5), 396-404.
36. McKeever, R., Sheppard, D., Nüsslein, K., Baek, K., Rieber, K., Ergas, S.J., Forbes, R., Hilyard, M., Park, C. (2012) Biodegradation of ethylene dibromide (1,2-Dibromoethane [EDB]) in microcosms simulating in situ and biostimulated conditions. *Journal of Hazardous Materials* 209-210, 92-98.
37. Chon, D.H., Rome, M., Kim, Y.M., Park, K.Y., Park, C. (2011) Investigation of the sludge reduction mechanism in the anaerobic side-stream reactor process using several control biological wastewater treatment processes. *Water Research* 45, 6021-6029.
38. Chon, D.H., Rome, M., Kim, H.S., Park, C. (2011) Investigating the mechanism of sludge reduction in activated sludge with an anaerobic side-stream reactor. *Water Science and Technology* 63(1), 93-99.
39. Kim, J., Park, C., Novak, J.T. (2011) Combination of coagulating agents, alum and cationic polymer, for sludge dewatering and odors. *Korean Society of Civil Engineers Journal of Civil Engineering* 15(3), 447-451.
40. Kim, Y.M., Lee, D.S., Park, C., Park, D., Park, J.M. (2011) Effects of free cyanide on microbial communities and biological carbon and nitrogen removal performance in the industrial activated sludge process. *Water Research* 45, 1267-1279.
41. Kim, Y.M., Cho, H.U., Lee, D.S., Park, C., Park, D., Park, J.M. (2011) Response of nitrifying bacterial communities to the increased thiocyanate concentration in pre-denitrification process. *Bioresource Technology* 102(2), 913-922.
42. Gu, A., Nerenberg, R., Sturm, B.M., Park, C., Goel, R. (2010) Molecular methods in biological systems. *Water Environment Research* 82, 908-930.
43. Baek, K.H., Park, C., Oh, H.M., Yoon, B.D., Kim, H.S. (2010) Diversity and abundance of ammonia-oxidizing bacteria in activated sludge treating different types of wastewater. *Journal of Microbiology and Biotechnology* 20(7), 1128–1133.
44. Westgate, P., Park, C. (2010) Evaluation of proteins and organic nitrogen in wastewater treatment effluents. *Environmental Science & Technology* 44, 5352–5357.
45. Park, C., Fang, Y., Murthy, S.N., Novak, J.T. (2010) Effects of floc aluminum on activated sludge characteristics and removal of 17-α-ethinylestradiol in wastewater treatment systems. *Water Research* 44, 1335-1340.
46. Ostendorf, D., Park, C., Rotaru, C., Pereira, M. (2009) Case study of steady oxygen concentration gradients in a groundwater plume from a highway infiltration basin. *ASCE Journal of Environmental Engineering* 135, 1237-1243.
47. Park, C., Novak, J.T. (2009) Characterization of lectins and bacterial adhesins in activated sludge flocs. *Water Environment Research* 81(8), 755-764.
48. Park, C., Helm, R.F. (2008) Application of metaproteomic analysis for studying extracellular polymeric substances (EPS) in activated sludge flocs and their fate in sludge digestion. *Water Science and Technology* 57, 2009-2015.

49. Park, C., Helm, R.F., Novak, J.T. (2008) Investigating the fate of activated sludge exocelluar proteins in sludge digestion using sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). *Water Environment Research* 80, 2219-2227.
50. Park, C., Novak, J.T., Helm, R.F., Ahn, Y., Esen, A. (2008) Evaluation of the extracellular proteins in full-scale activated sludges. *Water Research* 42, 3879-3889.
51. Novak, J.T., Park, C., Higgins, M.J., Chen, Y.-C., Morton, R., Gary, D., Forbes, R., Erdal, Z. (2007) Impacts of the MicroSludge™ process on odor causing compounds in anaerobically digested biosolids. *Water Practice* 1.
52. Park, C., Novak, J.T. (2007) Characterization of activated sludge exocellular polymers using several cation-associated extraction methods. *Water Research* 41, 1679-1688.
53. Park, C., Muller, C.D., Abu-Orf, M.M., Novak, J.T. (2006) The effect of wastewater cations on activated sludge characteristics: effects of aluminum and iron in floc. *Water Environment Research* 78, 31-40.
54. Park, C., Abu-Orf, M.M., Novak, J.T. (2006) The digestibility of waste activated sludges. *Water Environment Research* 78, 59-68.
55. Novak, J.T., Park, C., Abu-Orf, M.M. (2005) Conditioning and dewatering of digested waste activated sludges-Closure. *Journal of Residuals Science and Technology* 2, 110-112.
56. Novak, J.T., Park, C. (2004) Chemical conditioning of sludge. *Water Science and Technology* 49, 73-80.
57. Novak, J.T., Park, C., Abu-Orf, M.M. (2004) Conditioning and dewatering of digested waste activated sludges. *Journal of Residuals Science and Technology* 1, 45-51.
58. Abu-Orf, M.M., Muller, C.D., Park, C., Novak, J.T. (2004) Innovative technologies to reduce water content of dewatered municipal residuals. *Journal of Residuals Science and Technology* 1, 83-91.

Preprints or Manuscripts in Review/Revision

1. Abouhend, A.S., Ansari, A.A., Gikonyo., J.G., Park, C. (2024) Iron (Fe) and Extracellular Polymeric Substances (Eps) Synergistically Promote Cyanobacterial Dominance within Photogranules Growing in Wastewater Treatment Systems. *SSRN https://dx.doi.org/10.2139/ssrn.4905542*
2. Goto, M., Hidaka, T., Nomura, Y., Fujiwara, T., Park, C. (under review) Effect of solids retention time on wastewater treatment and methane recovery by oxygenic photogranules.

Sponsored Research Projects

1. Environmental and Economic Benefits from an Innovative Treatment of Food Waste Digestate. PI (Co-PIs: Joseph Gikonyo; Klaus Nüsslein), Jan-Dec 2025. $100,000. UMass Center for Agriculture, Food & the Environment.
2. Bioengineered Granulation to Catalyze Sustainable and Carbon-neutral Wastewater Treatment Worldwide. PI (Co-PI: Joseph Gikonyo), Dec 2024-June 2025. $36,000. Acorn Innovation Grant. MassVentures.
3. Revolutionizing Wastewater Treatment: NaturaFloc's Path to Commercialization. PI, Oct 2023-Oct 2024. $50,000. NSF (NSF I-Corps).
4. Enhanced auto-clarification in wastewater treatment. PI, Jun 2023-May 2024, $25,000. Massachusetts Water Resources Authority (Deer Island Wastewater Treatment Plant).
5. NaturaFloc: Technology Proofing for Enhanced Auto-Clarification in Wastewater Treatment. PI, Nov 2022, $100,000. Manning/IALS Innovation Awards. University of Massachusetts Amherst.
6. PFI-RP (SPRINT): Developing light-controlled mixing to advance energy efficient wastewater treatment by oxygenic photogranules. PI (co-PIs: David Schmidt, John Tobiason, Daehwan Rhu), Aug 2019-Jul 2023, $110,000. SPRINT Supplemental Funding. NSF.

7. PFI-RP (REU): Developing light-controlled mixing to advance energy efficient wastewater treatment by oxygenic photogranules. PI (co-PIs: David Schmidt, John Tobiason, Daehwan Rhu), Aug 2019-Jul 2023, $16,000. REU Supplemental Funding. NSF.
8. Industrial-scale OPG pilot for aeration-free and net autotrophic wastewater treatment. PI (co-PI: John Tobiason), Mar 2022-Jul 2023, $100,000. MassCEC AmplifyMass.
9. OPG Derisking for Commercial Licensing in Wastewater Treatment and Other Applications. PI, Nov 2021, $100,000. Manning/IALS Innovation Awards. University of Massachusetts Amherst.
10. Investigating and Optimizing Acid Gas Anaerobic Digestion. PI, Nov 2021-Oct 2022, $105,000. Brown and Caldwell (prime funding source: the Water Research Foundation).
11. Scale up oxygenic photogranules for sustainable wastewater treatment. PI, July 2021, $25,000. The OTCV Tech Development Fund. The Office of Technology Commercialization & Ventures. University of Massachusetts.
12. Public Service Endowment Grant. Collaboration between university and municipality to decrease economic and environmental burden of sludge disposal. PI, Aug 2020-Jul 2021, $15,000. University of Massachusetts Amherst.
13. PFI-RP: Developing light-controlled mixing to advance energy efficient wastewater treatment by oxygenic photogranules. PI (co-PIs: David Schmidt, John Tobiason, Daehwan Rhu), Aug 2019-Jul 2023, $550,000. NSF.
14. Gift donation for the research on oxygenic photogranules. PI, April 2019, $30,000. BKT Co., Ltd.
15. Piloting anaerobic side-stream reactor (ASSR) to decrease sludge production at Montague Water Pollution Control Facility. PI, Sep 2018-June 2019, $45,000. Town of Montague (prime funding source: MassCEC).
16. Collaborative Research: Re-evaluating pre-denitrification BNR for low molecular weight dissolved organic nitrogen and its impact on phytoplankton bloom dynamic in coastal waters. PI, Aug 2018-Jul 2021, $329,991. UMass (lead institution, $180,000), University of North Carolina (PI: Hans W. Paerl). NSF.
17. Promoting the co-op anaerobic digestion for communities in New England using the UMass Anaerobic Side-stream Reactor Process. PI, April 2018, $29,000. The OTCV Tech Development Fund. The Office of Technology Commercialization & Ventures. University of Massachusetts.
18. Gift donation for the research on oxygenic photogranules. PI, Feb 2018, $20,000. BKT Co., Ltd.
19. Development of wastewater treatment process to reduce energy consumption by more than 50% in carbon diversion using oxygenic photogranules. PI, July 2017-June 2018, $33,600. Korea Institute of Energy Technology Evaluation and Planning (subcontract through BKT Co., Ltd.).
20. Working with Montague WPCF for the Montague sludge reduction process. PI, May 2017-Apr 2018, $17,000. Town of Montague.
21. Advancing the oxygenic photogranule process for energy positive wastewater treatment. PI (co-PI: Caitlyn Butler), Jan 2017-Dec 2018, $15,000. Water Environment & Reuse Foundation.
22. Gift donation for the research on oxygenic photogranules. PI, Feb 2017, $30,000. BKT Co., Ltd.
23. Oxygenic Photogranules for Energy Efficient Wastewater Treatment. 2016 MassCEC Catalyst Program Award. PI, Aug 2016-July 2017, $40,000. Massachusetts Clean Energy Center.
24. GOALI: Advancing the oxygenic photogranule process for energy positive wastewater treatment. PI (co-PIs: Caitlyn Butler, Christopher Wilson), June 2016-May 2019, $330,000. NSF.
25. Recovery of energy from wastewater using algae-sludge granules. Manning Proof of Concept Fund Award. PI, June 2015-Aug 2016, $45,000. University of Massachusetts Amherst.
26. Integration of industrial effluents treatment and biofuel production by using microalgal-bacterial consortium: Mr. Ahmed Salah Abdelmongy Abouhend's visiting research at UMass Amherst. PI,

Feb 2015-Jan 2016, $4,500. The Egyptian Cultural & Educational Bureau, Embassy of Egypt in the U.S.

27. Removal of water-borne pathogens and heavy metals using novel biogranules. PI (co-PI: Yasu Morita), Mar 2015-Feb 2016, $13,500. U.S Geological Survey's Water Resources Annual Institute Program from the Massachusetts Water Resources Research Center.
28. MRI: Acquisition of a versatile high resolution MS system for determination of small molecules of environmental and health concern. co-PI (PI: David Reckhow; other co-PIs: John Tobiason, Caitlyn Butler), Sep 2014-Aug 2016, $455,000. NSF.
29. Water innovation network for sustainable small systems. co-PI (PI: David Reckhow; other Co-PIs: John Tobiason, Caitlyn Butler et al.), Jul 2014-June 2017, $4,100,000. EPA.
30. Algal-sludge granules: an innovative wastewater treatment and energy recovery process. 2013 Paul L. Busch Award. PI, Oct 2013, $100,000. Water Environment Research Foundation.
31. Elucidating novel algal-sludge granules for wastewater treatment and biomethane feedstock generation. PI (co-PI: Caitlyn Butler), Sept 2013-Aug 2016, $334,606. NSF.
32. Evaluating the effect of upgrading wastewater treatment systems to BNR processes on algal blooms in Long Island Sound. PI, July 2013-June 2014, $20,000. Springfield Water and Sewer Commission.
33. Anaerobic co-digestion of sewage sludge and food wastes. PI, Oct 2012-Nov 2013, $47,108. Massachusetts Water Resources Authority (subcontract through Fay, Spofford & Thorndike).
34. The impact of upgrading municipal wastewater treatment facilities for nitrogen removal on Long Island Sound. PI, June 2012-May 2013, $25,000. Springfield Water and Sewer Commission.
35. Elucidating the impact of upgrading wastewater treatment for nitrogen removal on eutrophication and algal bloom in Long Island Sound. Graduate student project. PI (Graduate student: Heonseop Eom), Apr 2012-Mar 2013, $5,000. U.S Geological Survey's Water Resources Annual Institute Program from the Massachusetts Water Resources Research Center.
36. Assessing the effect of effluent nitrogen released from Western Mass WWTPs on Long Island Sound. PI, June 2011-May 2012, $30,000. Springfield Water and Sewer Commission.
37. Enhanced natural attenuation of ethylene dibromide (1,2-Dibromoethane [EDB]) at MMR. PI (co-PI: Klaus Nüsslein), Apr 2011-Mar 2012, $135,246. Air Force Center for Engineering and the Environment.
38. Investigation of advanced adsorbent for arsenic and phosphorous removal. co-PI (PI: John Tobiason), Aug 2010-May 2012, $94,054. Korea Association of Industry, Academy, and Research Institute (subcontract through Dankook University).
39. Natural attenuation of ethylene dibromide (1,2-Dibromoethane [EDB]) at MMR II. PI (co-PI: Klaus Nüsslein), Sep 2010-Jan 2011, $53,971. Air Force Center for Engineering and the Environment.
40. Assessing the effects of conventional and advanced nitrogen removal wastewater treatment on receiving water eutrophication. PI, Jul 2010-May 2011, $25,000. Springfield Water and Sewer Commission.
41. Pilot-scale operation of algae photobioreactor and anaerobic digester at Frevar, Fedrikstad, Norway. PI, June 2010-Sep 2010, $20,072. Aquateam Co., Ltd.
42. A new sludge and nutrient reduction method for wastewater treatment. CVIP Technology Development Award. PI, Apr 2010, $25,000. University of Massachusetts.
43. Fate of non-regulated DBPs in distribution systems. co-PI (PI; Dave Reckhow, co-PI; William Mitch), May 2010-Apr 2012, $399,127. Water Research Foundation.
44. A sustainable process to capture and store CO_2 to increase production of renewable bioenergy. PI (co-PI: Sarina Ergas), Oct 2009-Sep 2012, $144,771. Norwegian Research Council (subcontract through Biowater Technology Co., Ltd.).

45. Natural attenuation of ethylene dibromide (1,2-Dibromoethane [EDB]) at MMR. PI (co-PIs; Sarina Ergas and Klaus Nüsslein), Jul 2009-June 2010, $183,111. Air Force Center for Engineering and the Environment.
46. Assessing the transport and fate of effluent organic nitrogen in the Connecticut River and Long Island Sound using mass-mapping proteomics technology. PI, Apr 2009-Mar 2010, $30,000. Springfield Water and Sewer Commission.
47. Assessing the transport and fate of effluent organic nitrogen in the Connecticut River and Long Island Sound using mass-mapping proteomics technology. PI, Apr 2009- Mar 2010, $30,000. U.S Geological Survey's Water Resources Annual Institute Program from the Massachusetts Water Resources Research Center.
48. Phenotypic characteristics of activated sludge generated under different feeding conditions and implications for wastewater treatment performance and sludge treatment. Faculty Research Grant/Healey Endowment Grant. PI, Sep 2008-Aug 2009, $15,000. University of Massachusetts Amherst.
49. Characterization of wastewater effluent from Western Massachusetts publicly owned treatment works using metaproteomic analysis. Graduate student project. PI (Graduate student: Pamela Westgate), Apr 2007-Mar 2008, $5,000. U.S Geological Survey's Water Resources Annual Institute Program from the Massachusetts Water Resources Research Center.

Invited Research Council, Symposium Presentations

1. MassCEC. Climate Tech Innovation Series. Industrial-scale OPG pilot for aeration-free and net autotrophic wastewater treatment. July 2024
2. Central States Water Environment Association. Webinar Series. Granule Galore, The Photogranulation Phenomenon – Aeration free wastewater treatment, Feb 2022
3. Water Research Foundation. Paul L. Busch Award 20th Anniversary - Webcast. Role of Nutrients and Resource Recovery in a One Water Paradigm, Aug 2021
4. WEF/WRF. Advancing the oxygenic photogranule process for energy positive wastewater treatment. Treatment Intensification for Resource Recovery: Advances in Granules and Membrane Bioreactor Technologies. December 2018
5. MassDEP. Presentation: Formation of LMW-DON in BNR and its impact on estuarine eutrophication: comparison with CAS. June 2016
6. Metropolitan Water Reclamation District of Greater Chicago. Monitoring and Research Department 2015 Seminar Series. Presentation: Algal-sludge granules: an innovative wastewater treatment and energy recovery process. April 2015
7. Korea Institute of Energy Research. Korean-Danish Green Technology Bioenergy Project Research symposium. Presentation: Recovery of bioenergy from waste solids and wastewater. Oct 2014
8. US EPA Region 1 Science Council. Webinar presentation: Connecticut River and Long Island Sound nitrogen research: the influences of BNR and CAS effluent on eutrophication in receiving waters of varying salinity. June 2012

Conference Keynote Speech

1. Park, C., Gikonyo, J., Abouhend, A. (2024) Inducing natural flocculation and photogranulation of wastewater. International Society of Bioprocesses and Sustainability (ISBS) 2024. Shanghai, China, August 2024.
2. Park, C., Gikonyo, J., Abouhend, A. (2023) Scale up oxygenic photogranules (OPG) using CSTR and internal biomass selectors. International Society of Bioprocesses and Sustainability (ISBS) 2023. Tsukuba, Japan, March 2023.

3. Park, C. (2019) Photogranulation in wastewater treatment and elsewhere. International Environmental Engineering Conference and International Conference on Biological Waste as Resource. Busan, South Korea, December 2019.
4. Park, C. (2016) Photogranules and wastewater treatment with bioenergy recovery. Asian Biohydrogen and Biogas Symposium. Jeju, Korea
5. Park, C. (2015) Recovery of chemical energy in wastewater using a new biogranule process: oxygenic photogranules (OPGs). International Environmental Engineering Conference & Annual Meeting of Korean Society of Environmental Engineers, Busan, Korea.

Conference Proceedings

1. Muller, C., Abouhend, A., Park, C., Fiorino, D., Perez, N., Ramalingam, K., Willis, J., Schweinfurth, G., Dhanasekar, A. (2024) Acid+ A Novel Treatment Process Configuration for Simultaneous Process Intensification and Struvite Management. Oral presentation and conference proceeding, Water Environment Federation, Residuals and Biosolids Conference, Oklahoma City, OK.
2. Kitagawa, Y., Hidaka, T., Kawaguchi, K., Fujiwara, T., Park, C. (2024) Effect of inorganic carbon concentration on carbon fixation properties of photogranules used for sewage treatment. Oral presentation and conference proceeding, The 61th Annual Technical Conference on Sewerage. Japan Sewage Association (JSWA), August, Tokyo, Japan.
3. Goto, M., Hidaka, T., Nishimura, F., Park, C. (2021) Wastewater treatment and removal of radioactive material using oxygenic photogranules (OPGs). Oral presentation and conference proceeding, The 58th Japan Annual Technical Conference on Sewerage (JATCS), Aug 18, Osaka, Japan.
4. Abouhend, A., Butler, C., El-Moselhy, K.M., Park, C. (2016) The oxygenic photogranule (OPG) for aeration-free and energy-recovery wastewater treatment process. Oral presentation and conference proceeding, Water Environment Federation 89th Annual Technical Exhibition and Conference (WEFTEC 2016), New Orleans, LA.
5. Park, C., Sauvenheav, L., Sialve, B., Carrère, H. (2015) The anaerobic digestibility of algal-sludge granules. Oral presentation and conference proceeding, Water Environment Federation/International Water Association Residual and Biosolids Conference, Washington D.C.
6. Kuo-Dahab, W.C., Amirhor, P., Zona, M., Duest, D., Park, C. (2014) Anaerobic co-digestion of food waste and sewage sludge. Oral presentation and conference proceeding, Water Environment Federation 87th Annual Technical Exhibition and Conference (WEFTEC 2014), New Orleans, LA.
7. Kuo-Dahab, W.C., Amirhor, P., Zona, M., Duest, D., Park, C. (2014) Investigation of anaerobic co-digestion of sewage sludge and food waste using a bench-scale pilot study. Oral presentation and conference proceeding, Water Environment Federation 28th Annual Residuals and Biosolids Management Conference, Austin, TX.
8. Wang, M., W.C. Kuo-Dahab, Park, C. (2013) Investigation of characteristics of microalgae grown in different wastewater and their enhancing anaerobic digestibility of waste activated sludge. Oral presentation and conference proceeding, Water Environment Federation 86th Annual Technical Exhibition and Conference (WEFTEC 2013), Chicago, IL.
9. Eom, H., Brennan, A., Watt, C., Chon, D.H., Park, C. (2013) Performance of a pilot-scale high-rate anaerobic side-stream reactor (ASSR) process: minimized sludge production and generation of biogas. Oral presentation and conference proceeding, Water Environment Federation 86th Annual Technical Exhibition and Conference (WEFTEC 2013), Chicago, IL.
10. Brennan, A., Eom, H., Watt, C., Chon, D.-H., Park, C. (2013) Achieving biogas generation and minimized sludge production using a high-rate anaerobic side-stream reactor (ASSR) process - pilot study. Oral presentation and conference proceeding, Water Environment Federation 27th Annual Residuals and Biosolids Management Conference, Nashville, TN.

11. Park, C., Sheppard, D., Yu, D., Dolan, S., Eom, H., Brooks, J., Borgatti, D. (2012) Laboratory investigation on the influences of field BNR and CAS effluents on algal bloom in Connecticut River and Long Island Sound. Oral presentation and conference proceeding, Water Environment Federation 85th Annual Technical Exhibition and Conference (WEFTEC 2012), New Orleans, LA.
12. Chon, D.H., Park, C. (2012) Activated sludge with a novel high rate anaerobic side-stream reactor (ASSR) for sludge reduction and biogas generation. Oral presentation and conference proceeding, Water Environment Federation 85th Annual Technical Exhibition and Conference (WEFTEC 2012), New Orleans, LA.
13. Wang, M., Zhu, Z., Dolan, S., Park, C. (2012) Investigation of algal cultivation and anaerobic co-digestion of sewage sludge and algae at wastewater treatment plant (WWTP). Oral presentation and conference proceeding, Water Environment Federation 85th Annual Technical Exhibition and Conference (WEFTEC 2012), New Orleans, LA.
14. Wang, M., Zhu, Z., Dolan, S., Park, C. (2012) Cultivation and anaerobic co-digestion of microalgae for wastewater treatment systems. Oral presentation and conference proceeding, International Water Association (IWA) Water Congress, Busan, Korea.
15. Chon, D.H., Rome, M., Park, K.Y., Park, C. (2012) Investigation of a new anaerobic side-stream reactor process for sludge reduction in biological wastewater treatment. Oral presentation and conference proceeding, International Water Association (IWA) Water Congress, Busan, Korea.
16. Wang, M., Park, C. (2012) Improving the digestibility of green algae by anaerobic co-digestion with waste activated sludge. Oral presentation and conference proceeding, Water Environment Federation 26th Annual Residuals and Biosolids Management Conference, Raleigh, NC.
17. Chon, D.H., Park, C. (2012) Investigation of a new anaerobic side-stream reactor (ASSR) process for sludge reduction in biological wastewater treatment. Oral presentation and conference proceeding, Water Environment Federation 26th Annual Residuals and Biosolids Management Conference, Raleigh, NC.
18. Teague, P., Wang, M., Park, C. (2011) Predicting the digestibility of sludge using EPS analysis, Oral presentation and conference proceeding, Water Environment Federation 84th Annual Technical Exhibition and Conference (WEFTEC 2011), Los Angeles, CA.
19. Chon, D.H., Rome, M., Park, K.Y., Park, C. (2011) Investigation of sludge reduction in the activated sludge system with a high rate short SRT anaerobic side-stream reactor. Oral presentation and conference proceeding, Water Environment Federation 25th Annual Residuals and Biosolids Management Conference, Sacramento, CA.
20. Chon, D.H., Rome, M., Kim, H.S., Park, C. (2010) Biological solids reduction in activated sludge with an anaerobic side-stream reactor. Oral presentation and conference proceeding, Water Environment Federation 83rd Annual Technical Exhibition and Conference (WEFTEC 2010), New Orleans, LA.
21. Wang, M., Teague, P., Park, C. (2010) Effects of feeding patterns on extracellular polymer substances (EPS) and digestibility of activated sludge. Poster presentation and conference proceeding, Water Environment Federation 83rd Annual Technical Exhibition and Conference (WEFTEC 2010), New Orleans, LA.
22. Yuan, X., Wang, M., Park, C., Sahu, A.K., Ergas, S.J. (2010) Microalgae growth using high strength wastewater followed by anaerobic co-digestion. Oral presentation and conference proceeding, Water Environment Federation 83rd Annual Technical Exhibition and Conference (WEFTEC 2010), New Orleans, LA.
23. Chon, D.H., Rome, M., Kim, H.S., Park, C. (2010) Investigating the mechanism of sludge reduction in activated sludge with an anaerobic side-stream reactor. Oral presentation and conference proceeding, International Water Association (IWA) Water Congress, Montreal, Canada.

24. Wang, M., Teague, P., Park, C. (2010) Effects of activated sludge reactor and EPS on anaerobic digestion and sludge pretreatment. Oral presentation and conference proceeding, Water Environment Federation 24th Annual Residuals and Biosolids Management Conference, Savannah, GA.
25. Chon, D.H., Kim, H.S., Park, C. (2010) The comparison of biological sludge reduction processes. Oral presentation and conference proceeding, Water Environment Federation 24th Annual Residuals and Biosolids Management Conference, Savannah, GA.
26. Park, C., Nüsslein, K., Teague, P, Wang, M. (2009) Effects of feeding patterns on activated sludge characteristics and its digestibility in anaerobic digestion. Oral presentation and conference proceeding, Water Environment Federation 82nd Annual Technical Exhibition and Conference (WEFTEC 2009), Orlando, FL.
27. Westgate, P., Park, C. (2009) Evaluation of effluent proteins: toward characterizing effluent organic nitrogen. Poster presentation and conference proceeding, Water Environment Federation 82nd Annual Technical Exhibition and Conference (WEFTEC 2009), Orlando, FL.
28. Park, C., Nüsslein, K., Zhang, C., Teague, P., Wang, M. (2009) Effects of feeding conditions on activated sludge characteristics and anaerobic digestion. Oral presentation and conference proceeding, Water Environment Federation 23rd Annual Residuals Biosolids Management Conference, Portland, OR.
29. Park, C., Novak, J.T. (2008) Characterization of lectins and bacterial adhesins in activated sludge flocs. Oral presentation and conference proceeding, Water Environment Federation 81th Annual Technical Exhibition and Conference (WEFTEC 2008), Chicago, IL.
30. Park, C., Helm, R.F. (2008) Application of metaproteomic analysis for studying extracellular polymeric substances (EPS) in activated sludge flocs and their fate in sludge digestion. Oral presentation and conference proceeding, International Water Association (IWA) Water Congress, Vienna, Austria.
31. Park, C., Novak, J.T. (2007) Investigating the fate of activated sludge exocelluar proteins in sludge digestion using sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Oral presentation and conference proceeding, Water Environment Federation 80th Annual Technical Exhibition and Conference (WEFTEC 2007), San Diego, CA.
32. Novak, J.T., Park, C., Higgins, M.J., Chen, Y.-C., Morton, R., Gary, D., Forbes, R., Erdal, Z. (2007) WERF Odor study phase III: Impacts of the microsludge process on odor causing compounds. Oral presentation and conference proceeding, Water Environment Federation 21st Annual Residuals Biosolids Management Conference, Denver, CO.
33. Muller, C.D., Park, C., Verma, N., Novak, J.T. (2007) The influence of anaerobic digestion on centrifugally dewatered biosolids odors. Oral presentation and conference proceeding, Water Environment Federation 21st Annual Residuals Biosolids Management Conference, Denver, CO.
34. Verma, N., Park, C., Novak, J.T., Erdal, Z., Forbes, B., Morton, R. (2006) Effects of anaerobic digester sludge age on odors from dewatered biosolids. Oral presentation and conference proceeding, Water Environment Federation 79th Annual Technical Exhibition and Conference (WEFTEC 2006), Dallas, TX.
35. Park, C., Abu-Orf, M.M., Novak, J.T. (2006) Investigation of extracellular polymeric substances in activated sludge flocs; their structural links with key floc cations and fates in sludge digestion. Oral presentation and conference proceeding, International Water Association (IWA) Specialized Conference-Sustainable sludge management: state of the art, challenges and perspectives, Moscow, Russia.
36. Park, C., Abu-Orf, M.M., Novak, J.T. (2005) Activated sludge extracellular polymeric substances extracted by different cation-targeted extraction methods: their key roles in floc structure and sludge digestibility. Poster presentation and conference proceeding, International Water Association (IWA) 3rd Leading Edge Conference on Water and Wastewater Treatment Technology, Sapporo, Japan.

37. Park, C., Novak, J.T. (2005) Characterization of floc structure using different extraction methods. Oral presentation and conference proceeding, Water Environment Federation 19th Annual Residuals Biosolids Management Conference, Nashville, TN.
38. Park, C., Abu-Orf, M.M., Novak, J.T. (2004) Analysis of floc structure and predicting sludge digestibility using different cation-associated EPS extraction methods. Oral presentation and conference proceeding, Water Environment Federation 77th Annual Technical Exhibition and Conference (WEFTEC 2004), New Orleans, LA.
39. Abu-Orf, M.M., Laquidara, M., Muller, C.D., Park, C., Novak, J.T. (2004) Adjusting floc cations to improve effluent quality: the case of aluminum addition at Sioux City wastewater treatment facility. Oral presentation and conference proceeding, Water Environment Federation 77th Annual Technical Exhibition and Conference (WEFTEC 2004), New Orleans, LA.
40. Holbrook, R.D., Wagner, M., Mahoney, C., Wight, S., Park, C., Novak, J.T. (2004) Investigating the structure of activated sludge flocs: morphologic and compositional characterization of surface and bulk components. Oral presentation and conference proceeding, Water Environment Federation 77th Annual Technical Exhibition and Conference (WEFTEC 2004), New Orleans, LA.
41. Novak, J.T., Park, C. (2003) Chemical conditioning of sludge. Oral presentation and conference proceeding, International Water Association (IWA)-International Conference on Wastewater Sludge as a Resource - Biosolids 2003, Trondheim, Norway.
42. Park, C., Abu-Orf, M.M., Novak, J.T. (2003) Predicting the digestibility of waste activated sludges using cation analysis. Oral presentation and conference proceeding, Water Environment Federation 76th Annual Technical Exhibition and Conference (WEFTEC 2003), Los Angeles, CA.

Conference Abstracts and Presentations

1. Park, C., Gikonyo, J., Abouhend, A. (2024) Inducing natural flocculation and photogranulation of wastewater. International Society of Bioprocesses and Sustainability (ISBS) 2024. Shanghai, China, August 2024.
2. Park, C., Gikonyo, J., Abouhend, A. (2023) Scale up oxygenic photogranules (OPG) using CSTR and internal biomass selectors. International Society of Bioprocesses and Sustainability (ISBS) 2023. Tsukuba, Japan, March 2023.
3. Park, C., Gikonyo, J., Abouhend, A. (2023) Scale up oxygenic photogranules (OPG) using CSTR and internal biomass selectors. ISBS 2023. Tsukuba, Japan, March 2023.
4. Park, C., Abouhend S.A, Ansari, A.A., Gikonyo, J.G. (2022) The photogranulation process: potential for aeration-free and net autotrophic wastewater treatment. International Water Association. Wastewater, Water and Resource Recovery Conference 2022, Poznan, Poland
5. Park, C., Abouhend S.A, Ansari, A.A., Gikonyo, J.G. (2020) Aerobic but aeration-free wastewater treatment using oxygenic photogranules (OPGs). International Water Industry Conference. Daegu, South Korea, September 2020.
6. Park, C. (2019) Photogranulation in wastewater treatment and elsewhere. International Environmental Engineering Conference and International Conference on Biological Waste as Resource. Busan, South Korea, December 2019.
7. Gikonyo, J.G., Abouhend, A.S., Ansari, A.A., Ansari, A., Park, C., Tobiason, J.E. (2019). The physical properties of oxygenic photogranules (OPGs) produced in stirred tank reactors treating primary effluent wastewater. International Water Association, Particle Separation Specialist, UMass Amherst, MA, November 2019.

8. Ansari, A.A., Gikonyo, J.G., Ansari, A., Park, C. (2019) Effect of light intensity on the formation of oxygenic photogranules under hydrostatic conditions. New England Graduate Student Water Symposium, Amherst, MA, September 2019.
9. Abouhend, A.S., Hann, M., Butler, C.S., Park, C. (2019) The effect of shear force on the formation of oxygenic photogranules (OPGs) in stirred-tank reactors. New England Graduate Student Water Symposium, Amherst, MA, September 2019.
10. Keyser, A., Park, C. (2019) Formation of low-molecular-weight dissolved organic nitrogen in full-scale wastewater treatment plants. New England Graduate Student Water Symposium, Amherst, MA, September 2019.
11. Keyser, A., Park, C. (2019) Piloting the anaerobic side-stream reactor treatment process to reduce waste activated sludge production. New England Graduate Student Water Symposium, Amherst, MA, September 2019.
12. Park, C., Kuo-Dahab, W.C., Gikonyo, J.G., Takeuchi, N. (2018) A comparative study of the formation of cryoconite granules and sludge-originated photogranules. Oral presentation, International Symposium on Cryosphere and Biosphere, Kyoto, Japan.
13. Park, C., Abouhend, A., Kuo-Dahab, W.C., Butler, C., Milferstedt, K., Hamelin, J., Dolan, S. (2017) Formation of oxygenic photo-granules and its application for aeration-free wastewater treatment. Oral presentation, Water Environment Federation 90th Annual Technical Exhibition and Conference (WEFTEC 2017), Chicago, IL.
14. Kuo-Dahab, W.C., Stauch-White, K., Butler, C., Cabajal-Gonzalez, B., Ivanova, A., Park, C. (2017), Characterization and elucidation of oxygenic granule formation in a static environment, Podium presentation, Association of Environmental Engineering and Science Professor Conference, University of Michigan, Ann Abor, MI, 2017.
15. Park, C. (2016) Photogranules and wastewater treatment with bioenergy recovery. Asian Biohydrogen and Biogas Symposium. Jeju, Korea.
16. Milferstedt, K., Park, C., Hamelin, J. (2016) Oxygenic photogranules may shake sewage treatment up. International Society for Microbial Ecology. Montreal, Canada
17. Kuo-Dahab, W.C., Stauch-White, K., Butler, C., Dolan, S., Park, C. (2015) Photosynthetic sludge granule for wastewater treatment. New England Graduate Student Water Symposium, Amherst, MA, September 2015.
18. Stauch-White, K., Kuo-Dahab, C., Milferstedt, K., Hamelin, J., Park. C., Butler, C. (2015) Filamentous cyanobacteria in granular biofilms containing microalgae and bacteria, Meeting of the American Chemical Society, Denver, CO March 2015
19. Stauch-White, K., Kuo-Dahab, C., Park. C., Butler, C. (2015) The ecology of granular biofilms containing microalgae and bacteria used for treating wastewater, Association of Environmental Engineering and Science Professor Conference, Yale University, New Haven, CT, June 2015
20. Park, C. (2015) Recovery of chemical energy in wastewater using a new biogranule process: oxygenic photogranules (OPGs). 2015 International Environmental Engineering Conference & Annual Meeting of Korean Society of Environmental Engineers (IEEC2015), Busan, Korea, Oct 2015
21. Stauch-White, K., Park, C., Butler, C. (2014) Investigation of DNA extraction protocols for granular biofilms containing microalgae and bacteria, New England Graduate Student Water Symposium, Amherst, MA, September 2014
22. Eom, H., Barry, J., Brooks, J., Borgatti, D., Park, C. (2013) Evaluating the impact of upgrading wastewater treatment to BNR process on algal blooms in the receiving estuary. Oral presentation and

abstract, Water Environment Federation 86th Annual Technical Exhibition and Conference (WEFTEC 2013), Chicago, IL.

23. Bazilio, A., Park, C., Reckhow, D. (2013) Biodegradation of disinfection by-products in drinking water systems, AWWA ACE, Denver, CO.
24. Wang, M., Park, C. (2011) Anaerobic co-digestion of microalgae and activated sludge from wastewater treatment systems. Oral presentation, Annual Northeast Residuals & Biosolids Conference, Seekonk, MA.
25. Chon, D.H., Park, C. (2011) Sludge reduction in the high rate anaerobic side-stream process, Oral presentation, Annual Northeast Residuals & Biosolids Conference, Seekonk, MA.
26. Chon, D.H., Rome, M., Park, K.Y., Park, C. (2011) Development of a high rate anaerobic side-stream reactor. Poster presentation, Water Environment Federation 84th Annual Technical Exhibition and Conference (WEFTEC 2011), Los Angeles, CA.
27. Park, C., Borgatti, D., Nowak, M., Yu, D., Westgate, P. (2011) Evaluation of effluent organic nitrogen and proteins and their fate in receiving waters for three WWTPs in Western Massachusetts. 2011 NEWEA Annual Conference and Exhibition, Boston, MA.
28. Teague, P., Wang, M., Park, C. (2010) The effect of iron concentration and aeration basin configuration on susceptibility to sonication pretreatment and subsequent anaerobic digestion. Poster presentation, Water Environment Federation 83rd Annual Technical Exhibition and Conference (WEFTEC 2010), New Orleans, AL.
29. Gostanian, T., Teague, P., Park, C. (2010) Investigation of relationship between extracellular polymeric substances and digestibility of sludge. Poster presentation, 2010 REU Poster Session at UMass Amherst.
30. Westgate, P., Park, C. (2009) Characterizing the proteins in domestic wastewater effluent discharged to the Connecticut River using proteomics technology. Oral presentation, 2009 Sixth Annual Massachusetts Water Resources Research Conference: Integrating Water Resources Management at UMass Amherst.
31. Teague, P., Zhang, C., Park, C. (2008) Effect of reactor configuration on activated sludge characteristics and subsequent anaerobic digestion. Poster presentation, 2008 REU Poster Session at UMass Amherst.
32. Park, C. (2008) Impact of wastewater metals on bioflocculation of activated sludge and its effect on wastewater effluent quality. Oral presentation, 2008 Fifth Annual Massachusetts Water Resources Research Conference: Integrating Water Resources Management at UMass Amherst.

Seminars & Invited Presentations

1. Photogranulation: from hydrostatic and hydrodynamic batches, and a leap to CSTR (Trying to understand granulation with oxygenic photogranules). Department of Water Supply, Sanitation and Environmental Engineering, IHE Delft Institute for Water Education (host: Dr. Tania Fernandes), Netherlands, Nov 7, 2024.
2. Trying to understand granulation with oxygenic photogranules. School of Urban and Environmental Engineering, UNIST (host: Dr. Changsoo Lee), South Korea, Sep 30, 2024.
3. Photogranulation in wastewater systems, glaciers and beyond. Department of Civil Engineering, Inha University (host: Dr. Dong-Hoon Kim), South Korea, October 2021.
4. Photogranulation in wastewater systems, glaciers and beyond. School of Urban and Environmental Engineering, UNIST (host: Dr. Changsoo Lee), South Korea, May 2021.

5. Activated sludge & aeration-free aerobic wastewater treatment. Bruce Podwal Seminar Series, Department of Civil Engineering, The City College of New York (host: Krish Ramalingam and Dr. John Fillos), April 2021.
6. Photogranulation: from wastewater systems to glaciers. Chiba University (host: Dr. Nozomu Takeuchi), Feb 2020.
7. Introduction of oxygenic photogranules for wastewater treatment. Pusan National University (host: Dr. Taeho Lee), Jan 2020.
8. Photogranulation. Institute of Marine Sciences. University of North Carolina Chapel Hill (host: Dr. Hans Paerl), May 2019.
9. Photogranulation in wastewater treatment, on glacier surface & elsewhere. Department of Civil & Environmental Engineering, University of Massachusetts Amherst, Sep 2017.
10. Photogranulation and wastewater treatment. Graduate program seminar. Department of Earth Sciences, Chiba University (host: Dr. Nozomu Takeuchi), Japan, July 2017.
11. Oxygenic photogranules and aeration-free wastewater treatment. School of Urban and Environmental Engineering, UNIST (host: Dr. Changsoo Lee), South Korea, July 2017.
12. Oxygenic photogranules and aeration-free wastewater treatment. Department of Environmental Engineering, Sungkyunkwan University (host: Dr. Am Jang), South Korea, July 2017.
13. Oxygenic photogranules and aeration-free wastewater treatment. Department of Civil & Environmental Engineering, KAIST (host: Dr. Seoktae Kang), South Korea, June 2017.
14. Photogranules: biogranules formed without hydrodynamic selection pressures and application for wastewater treatment. Graduate program seminar. Department of Microbiology, University of Massachusetts Amherst (host: Dr. Yasu Morita), Nov 2016.
15. Formation of LMW-DON in BNR and its Impact on Estuarine Eutrophication: Comparison with CAS. Presentation. HRSD, June 2016
16. Minimizing excess sludge generation and introduction of algal-sludge. Department of Chemical Engineering, Tokyo University of Agriculture and Technology (host: Dr. Akihiko Terada), Japan, Dec 2014.
17. Novel bio-granule technology for renewable bioenergy production and waste reclamation. UKC-KIER research forum, San Francisco, Aug 2014.
18. Algae-based wastewater treatment and introduction of algal-sludge granules. URS Ltd., Webinar presentation, June 2014.
19. High-rate anaerobic side-stream reactor (ASSR) processes to degrade extracellular polymeric substances (EPS) and minimize the production of excess sludge. INRA-LBE, Narbonne, France, Jan 2014.
20. Evaluation of proteins and organic nitrogen in wastewater treatment effluents and their impact on receiving water productivity. Graduate program seminar, Department of Civil and Environmental Engineering, University of Massachusetts Amherst, Oct 2010.
21. Assessing the role of activated sludge microbial physiology in sludge treatment, three talks at Korea Institute of Science and Technology, Samsung Engineering, Jul 2009.
22. Assessing the role of activated sludge microbial physiology in sludge treatment, three talks at Korea Institute of Science and Technology, Seongkyunkwan University, Jul 2009.
23. Novel and better H_2 yielding wastewater treatment technology, University Research Entrepreneur Symposium, Cambridge, MA, Mar 2009.
24. Flocs, metals, extracellular polymers, and metaproteomics in biological wastewater engineering, Graduate program seminar, Department of Microbiology, University of Massachusetts Amherst, Oct 2007.

25. Exocellular polymers and cations: their impact on activated sludge flocs and a vision for the future of wastewater treatment, Graduate program seminar, Department of Civil and Environmental Engineering, University of Massachusetts Amherst, Sep 2007.
26. The impact of metals on activated sludge characteristics and sludge digestibility, Graduate program seminar, Department of Civil and Environmental Engineering, Virginia Tech, Sep 2004.
27. Cations and Activated sludge floc structure, Department of Civil and Environmental Engineering, Korea University, Jul 2004.
28. The role of cations in bioflocculation of activated sludge, Paul E. Torgersen Research Excellence Award Ceremony, Virginia Tech, Sep 2003.

TEACHING

CEE 370 Introduction to Environmental and Water Resources Engineering (4 cr)
Junior-year required course in Civil and Environmental Engineering. Designed for introduction to environmental engineering with a focus on physical, chemical, and biological principles. Topics include environmental standards and legislation, material balances, reaction kinetics, environmental chemistry and microbiology, biogeochemical cycles, water quality, water resources, air quality, and solid and hazardous wastes. The course also has a laboratory session.

CEE 471 Water and Wastewater Systems (3 cr)
Elective course for junior/senior undergraduate students in Civil and Environmental Engineering. Designed for introduction to the design of water and wastewater systems. Topics include water supply, design of transmission and distribution systems, drinking water treatment, wastewater collection and design of sanitary sewers, and wastewater treatment systems.

CEE 476 Solid and Hazardous Waste Management (3 cr)
Elective course for senior undergraduate students in Civil and Environmental Engineering. Designed for study on solid and hazardous waste management. Topics include: legislation for solid and hazardous waste management, types and properties of chemicals considered hazardous, contamination pathways, and remediation/treatment technologies.

CEE 575 Advanced Solid and Hazardous Waste Management (3 cr)
Advanced version of CEE 476 designed for graduate students in Civil and Environmental Engineering. In addition to materials for CEE 476, students study organic chemistry and conduct critical reviews for peer-reviewed journal articles on solid and hazardous waste management.

CEE 671 Environmental Biological Processes (4 cr)
Graduate course for the students in Environmental and Water Resources Engineering. This course presents an overview of microbiology and examines the biological processes used in environmental engineering. Laboratory experiments are integrated into the course to illustrate important concepts in environmental microbiology and environmental engineering.

CEE 691/692A Environmental Engineering Seminar (1 cr)
Weekly graduate seminar series with invited speakers and program graduate students.

CEE 697X Advanced Topics in Environmental Engineering (1 cr)
Weekly graduate seminar series with invited speakers and program graduate students. This is a graduate level course on reading and analyzing current literature in the field of water quality, water and wastewater treatment, aquatic systems modeling, environmental microbiology, and environmental bioprocesses.

Supervising Independent Studies (*Students outside CEE or at different institutions)

1. Nadine Ali, CEE 696, Spring 2024
2. Sean McMenimen, CEE 370 Independent study, Spring 2024
3. Andrew Keyser, CEE 696, Fall 2017
4. Anastasia Ivanova* (Biology), CEE 396, Spring 2017
5. Siwei Chen, CEE 696, Spring 2017
6. Joseph Gikonyo, CEE 696, Fall 2016
7. Chantalle Dolim* (BS Environmental Science), iCons 4 Research, iCons capstone project: Anaerobic digestion of algae from sewage sludge, 2014
8. Colleen Puzas* (BS Environmental Science), iCons 4 Research, iCons capstone project: Co-digestion of microalgae *Chlorella* and activated sludge, 2014
9. Brian Tafe, CEE596, Spring 2013
10. Matthew Jessop, CEE 396, Fall 2013
11. Steve Auyeung, CEE 396, Spring 2013
12. Roland Barbeito, CEE 396, Spring 2013
13. John Barry, CEE 499T Honors Thesis, Spring 2013
14. John Barry, CEE 499Y Honors Research, Fall 2012
15. Brian Tafe, CEE 396, Fall 2012
16. Ryan Morris, CEE 396, Fall 2012
17. Jason Miller, CEE 396, Spring 2012
18. Patrick Hanlon, CEE 499T Honors Thesis, Spring 2012
19. John Barry, CEE 396, Spring 2012
20. Patrick Hanlon, CEE 499Y Honors Research, Fall 2011
21. David Choi, CEE 396, Fall 2011
22. Devon Jones, CEE 396, Fall 2010
23. Grey Larsen, CEE 396H Honors, Spring 2010
24. Meghan Krupka, CEE 499T Honors Thesis, Spring 2010
25. Meghan Krupka, CEE 499Y Honors Research, Fall 2009
26. Philip Teague, CEE 396, Spring 2009

Guest Lectures

Environmental Microbiology (host faculty: Dr. Fumitake Nishimura), Department of Environmental Engineering, Kyoto University, June 2020, June 2021, June 2022

Advanced Water Quality Engineering (host faculty: Dr. Fumitake Nishimura), Department of Environmental Engineering, Kyoto University, April 2020, April 2021, April 2022

MICROBIO 562 Environmental Biotechnology (host faculty: Klaus Nüsslein), Department of Microbiology, UMass Amherst, Fall 2013; Fall 2015; Fall 2021; Fall 2023

MICROBIO 562 Environmental Biotechnology (host faculty: Kristen DeAngelis), Department of Microbiology, UMass Amherst, Spring 2015

GEOL 326 Global Climate Change (host faculty: Kinuyo Kanamaru), Department of Geology and Geography, Mount Holyoke College, Spring 2016

CEE771, Environmental and Water Resources Engineering Design (host faculty: John Tobiason), Department of Civil & Environmental Engineering, UMass Amherst, Spring 2010; Spring 2015

Support from UMass Teaching Excellence and Faculty Development Center

Instruct: Echo360 Lecture Capture, Fall 2018

Mid-term evaluation, Fall 2010; Fall 2020

SERVICE, PUBLIC ENGAGEMENT AND OUTREACH

University Services

Adhoc Department Personnel Committee, Fall 2023

College of Engineering Personnel Committee, 2020-2023 (Chair 2023)

Institutional Chemical Safety Committee (ICSC), 2020-2024

EWRE PhD Exam Coordinator, 2016-present

EWRE Graduate Student Awards Coordinator, 2016-2019

EWRE Graduate Student Fall Social Events, 2016-2019

EWRE Faculty and Staff Holiday Gathering, 2016-2019

CEE Graduate Program Director, Sep 2018-Aug 2019

Interdepartmental Faculty Spouse Hire, Coordinator, Spring 2015

Opinion provider, Western Mass Anaerobic Digestion Facility at UMass, 2012

CEE Feng Lecture Series Coordinator, 2009, 2010

Committee of Professional Society

Editorial Board, Journal of Water and Environmental Technology, 2019-present

WEFTEC Program Committee, Research Symposium Subcommittee, Nov 2011-Oct 2015

Environmental and Water Resources Institute (EWRI) Residuals Management Technical Committee (RMTC), Secretary, Nov 2010-Oct 2011

New England Water Environment Association Residuals Management Committee, Feb 2008-2010

International Water Association, Membrane Conference, Program Committee, Aug 2008

Taskforce Workshops and Panels

1. EDC/UMass Conference "Innovations and Opportunities in Water Technologies, Oct 15, Panel, 2018
2. Nutrient Visioneering II Workshop, the National Academy of Sciences, Woods Hole, Challenging Nutrient Coalition, June 2018
3. WERF Technology Maturity Expert Panel, WERF, June 2015
4. DOE-NSF-EPA Energy-positive water resource recovery workshop, NSF, April 2015
5. New England Water Innovation Network Water Leadership Conference, NEWIN, Nov 2014

Proposal Panel and Review

1. NSF Panels: 2013 (CBET); 2016 (CBET); 2018 (CBET); 2019 (CBET); 2020 (BIO/EF)
2. Kuwait Foundation for the Advancement of Sciences, Kuwait, 2019
3. FWF Austrian Science Fund, Austria, 2018
4. Agence nationale de la recherché (ANR), France, 2018
5. Natural Environment Research Council (NERC), UK, 2015
6. Danish Council for Independent Research (DCIR), Denmark, 2014
7. Fonds National de la Recherche (FNR), Luxembourg, 2013
8. Illinois-Indiana Sea Grant / Illinois Water Resources Center, USA, 2011
9. Korea Institute of Construction Technology (KICT), South Korea, 2011
10. Ontario Centres of Excellence (OCE), Canada, 2010

Conference Abstract/Proceeding Reviews & Moderators

1. Water Environment Federation Annual Technical Exhibition and Conference (WEFTEC), 2013, Chicago, IL.
2. Water Environment Federation Annual Residuals and Biosolids Management Conference, 2012, Raleigh, NC.
3. Water Environment Federation 84th Annual Technical Exhibition and Conference (WEFTEC), 2011, Los Angeles, CA.
4. Water Environment Federation 25th Annual Residuals and Biosolids Management Conference, 2011, Sacramento, CA.
5. Water Environment Federation 84th Annual Technical Exhibition and Conference (WEFTEC), 2010, New Orleans, LA.
6. Water Environment Federation 24th Annual Residuals and Biosolids Management Conference, 2010, Savannah, GA.
7. Water Environment Federation 82nd Annual Technical Exhibition and Conference (WEFTEC), 2009, Orlando, FL.
8. International Water Association Water Congress, 2010, Montreal, Canada.
9. International Water Association Water Congress, 2008, Vienna, Austria.
10. International Water Association Membrane Conference, 2008, Amherst, MA.

Journal Review

ACS ES&T Engineering
ACS ES&T Water
Algal Research
Applied Microbiology
Applied Microbiology and Biotechnology
Bioenergy and Biomass
Bioresource Technology
Biotechnology Advances
Biotechnology and Bioengineering
Chemical Engineering Journal
Clean Technologies and Environmental Policy
Energy and Fuels
Environmental Engineering Research
Environmental Engineering and Science
Environmental Monitoring and Assessment
Environmental Progress
Environmental Science & Technology
Environmental Science & Technology Letters
Environmental Science: Water Research & Technology
The ISME Journal
Journal of Applied Microbiology
Journal of Environmental Management
Journal of Hazardous Materials
KSCE Journal of Civil Engineering
PLOS One
Proteomics
STOTEN
Waste Management
Water Environment Research
Water Practice
Water Research

Working with Municipality and Local/Regional Public Agencies

Greenfield Wastewater Treatment Plant & Montague Wastewater Pollution Control Facility (Greenfield, Montague, MA): Co-op anaerobic digestion in Western Massachusetts

Montague Wastewater Pollution Control Facility (Montague, MA): Minimizing sludge production, Reviewing Montague Sludge Reduction Process

Amherst Wastewater Treatment Facility (Amherst, MA): Nitrogen and sludge handling

Upper Blackstone Water Pollution Abatement District (Millbury, MA): Nitrogen removal

Springfield Water and Sewer Commission (Springfield, MA): Organic nitrogen in effluent

Deer Island Wastewater Treatment Plant (Winthrop, MA): Co-digestion of food waste and sewage sludge

Town of Amherst, Town of Hadley, UMass Amherst: Western Mass anaerobic digester

City of Gardner (Gardner, MA): Sludge reduction and disposal

Westfield Wastewater Treatment Plant (Westfield, MA): Minimizing sludge production

MassDEP: Organic nitrogen in wastewater treatment effluents; Sludge reduction and disposal

Fee-for-Services

This fee-for-services work is a joint effort between Environmental Analysis Laboratory at UMass Amherst and the UMass Environmental and Water Resources Engineering. Our lab has provided measurements and analytical services to the clients with fees occurring.

– Anaerobic Digestion, $80,000, May-Dec 2024

Media Interview

Daily Hampshire Gazette, Lake Metacomet algae bloom prompts concern, July 2018
https://www.gazettenet.com/Algal-bloom-on-Lake-Metacomet-leaves-18776558

Public Presentation

Korean Graduate Student Association of University of Massachusetts Amherst and Consulate General of Republic of Korea in Boston. Microbial granulation to catalyze sustainable and carbon-neutral wastewater treatment. Nov 15, 2024