JOE DALLAS MOORE, PH.D.

Assistant Teaching Professor

Carnegie Mellon University
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EXPERIENCE

Carnegie Mellon University, Civil and Environmental Engineering, Pittsburgh, PA
Assistant Teaching Professor (Fall 2021 – Present), Staff Instructor (Spring 2020 – Fall 2021); Effectively taught lecture-, lab-, and project-based courses at graduate and undergraduate levels independently and as a co-instructor; Concurrently taught multiple new courses; Reoriented isolated units of course content into an applied context, emphasizing environmental justice and engineers' human impacts; Created and led the department's only education-focused group; Voluntarily enlisted support from the university teaching center (Eberly Center) to assess and improve my teaching efficacy; Facilitated teaching assistants' experiential learning in applying best pedagogical practices and developing student projects

National Energy Technology Laboratory, Biogeochemistry Group, Pittsburgh, PA
Postdoctoral fellow (2018 – 2020); Enlisted colleagues in founding young researcher seminar series to foster collaboration across research groups and improve workplace culture; Designed and implemented four month-long microbial coal-to-methane stimulation study; Engaged multiple distinct research groups to support my research efforts

University of Pittsburgh, Department of Chemical and Petroleum Engineering, Pittsburgh, PA
Postdoctoral associate (2017 – 2018); Mentored undergraduate and graduate student researchers academically, professionally, and for their research pursuits; Established and managed laboratory featuring seven new research trainees; Served on department safety committee

Carnegie Mellon University, Department of Civil and Environmental Engineering, Pittsburgh, PA
Doctor of Philosophy student (2013 – 2017); Founded a department journal club for Ph.D. students and postdocs; Earned National Science Foundation Graduate Research Fellowship; Served as department delegate to Graduate Student Assembly; Served on department's Graduate Student Advisory Council

Roswell Daily Record, Roswell, NM
Reporter (2010); Published five-part series on past and future of New Mexico's water resources

Farragut Career Academy (Chicago Public Schools), Chicago, IL
Teach For America High School Science Teacher (2006 – 2009); Obtained $10,000 Philips Lighting grant to improve energy efficiency of school's lighting systems; Founded cross country program and environmental club; The Little Village Environmental Justice Organization's educator of the year

EDUCATION

Postdoctoral Fellow, National Energy Technology Laboratory, Biogeochemistry Group (2018 – present)
Research: Microbial coal-to-methane with nutrient amendments, Advisor: Djuna M. Gulliver

Postdoctoral Associate, Chemical and Petroleum Engineering, University of Pittsburgh (2017 – 2018)
Research: Development of silica-metal nanohybrids with pH-responsive antibiotic binding affinity to target recalcitrant biofilm infections, Advisor: Tagbo H.R. Niepa

Doctor of Philosophy, Civil and Environmental Engineering, Carnegie Mellon University (2017)
Dissertation: "Probing nano-specific interactions between bacteria and antimicrobial nanoparticles using microbial community changes and gene expression," Advisors: Kelvin B. Gregory, Gregory V. Lowry

Master of Science, Civil (and Environmental) Engineering, Carnegie Mellon University (2012)

Bachelor of Arts, Biology (French), *magna cum laude*, Wabash College (2006)

TEACHING

Assistant Teaching Professor, Carnegie Mellon University, Civil and Environmental Engineering (Fall 2021 – Present)

Staff Instructor, Carnegie Mellon University, Civil and Environmental Engineering (Spring 2020 – Fall 2021)
Biological Wastewater Treatment (12-724, 11 graduate students and 1 undergraduate student)
CEE Projects: Designing the Built, Natural and Information Environments (12-301, co-taught 35 undergraduate students)
Environmental Engineering (12-351, 37 undergraduate students)
Environmental Engineering Laboratory (12-352, 34 undergraduate students)
Environmental Microbiology for Engineers (12-629/729, 15 graduate students and 2 undergraduate students)
Fundamentals of Water Quality Engineering (12-702, 22 graduate students and 3 undergraduate students)
Grand Challenge Freshman Seminar: Climate Change (66-109/39-109, co-taught 45 undergraduate students)

Instructor, Carnegie Mellon University, Civil and Environmental Engineering, Environmental Microbiology for Engineers, 12-629 and 12-729 (Fall 2017 – Fall 2019)

Instructor, University of Pittsburgh, Civil and Environmental Engineering, Environmental Engineering Microbiology, CEE-2500 (Fall 2017)

Teaching Assistant, Fluid Mechanics (Fall 2015), Environmental Microbiology for Engineers (Spring 2014 and 2015)

Guest Lecturer, "Amplicon sequencing and metagenomics," Environmental Microbiology for Engineers (2014)

FELLOWSHIPS AND AWARDS

Certificate of Merit, American Chemical Society 252nd National Meeting, Division of Environmental Chemistry (2016)
Outstanding Student Poster Award, American Society for Microbiology General Meeting (2015)
Graduate Research Fellowship, National Science Foundation (2013)
Science & Engineering Ambassador, National Academies of Sciences and Engineering (2012)
Harold A. Thomas Scholar, Carnegie Mellon University (2011 and 2012)

PUBLICATIONS

1. Moore, J.D., Avellan, A., Noack, C.W., Guo, Y., Lowry, G.V., Gregory, K.B. "Time-dependent bacterial transcriptional response to CuO nanoparticles differs from that of Cu^{2+} and provides insights into CuO nanoparticles toxicity mechanisms," *Environmental Science: Nano*, 2017, 4(12): 2321-2335. DOI: 10.1039/C7EN00600D
2. Moore, J.D., Stegemeier, J.P., Bibby, K., Marinakos, S., Lowry, G.V., Gregory, K.B. "Impacts of pristine and transformed Ag and Cu nanomaterials on surficial sediment microbial communities appear short-lived," *Environmental Science and Technology*, 2016, 50(5): 2641-2651. DOI: 10.1021/acs.est.5b05054

CONFERENCE PROCEEDINGS

1. Moore, J.D., Lin, C. Flanigan, Flanigan, K.A. "Enhancing undergraduate students' sensing and data-informed decision-making through a smart cities project," American Society of Engineering Education Conference, June 26-29, 2022, Minneapolis, MN.
2. Moore, J.D., Cotterman, T., Wynn, J. "Improving climate change educational outcomes for first-year students through multidisciplinary instruction," American Society of Engineering Education Conference, July 26-29, 2021, virtual.
3. Christian, S.C., Armanios, D., Moore, J.D. Nock, D., Wang, G.J., Samaras, C., McElwee, M., Rooney, A.F. "Diversity, Equity, and Inclusion in Civil and Environmental Engineering Education: Social Justice in a Changing Climate," American Society of Engineering Education Conference, July 26-29, 2021, virtual.

PRESENTATIONS

Oral

1. Moore, J.D., Gulliver, D.M., "Experimentally assessing potential of inducing microbial coal-to-methane with Appalachian basin coal," American Chemical Society National Meeting, August 25-29, 2019, San Diego, CA.
2. Moore, J.D., Niepa, T.H.R., "Hollow nickel-silica nanoparticles and antibiotics: Exploring the effects of a 'nanocarrier' on *Staphylococcus aureus*", Pittsburgh Bacterial Meeting, March 10, 2018, Pittsburgh, PA.
3. Bertuccio, A.J., Moore, J.D., Lowry, G.V., Tilton, R.D. "Natural organic matter and bacterial inoculum concentrations affect copper toxicity to *Escherichia coli*," American Institute of Chemical Engineers Annual Meeting, October 29-November 3, 2017, Minneapolis, MN.

4. Moore, J.D., Avellan, A., Noack, C.W., Guo, Y., Lowry, G.V., Gregory, K.B. "Probing nano-specific effects of CuO nanoparticles on bacteria with time-resolved transcriptional assays," Goldschmidt, August 13-18, 2017, Paris, France.
5. Moore, J.D., Bertuccio, A., Tilton, R.D., Lowry, G.V., Gregory, K.B. "Updating the mechanism of CuO ENM bacterial toxicity and shedding light on the importance of time and ionic controls in nanotox studies," Center for Environmental Implications of NanoTechnology (CEINT) Internal Meeting, April 27-28, 2017, Durham, NC.
6. Moore, J.D., Bertuccio, A., Avellan, A., Tilton, R.D., Lowry, G.V., Gregory, K.B. "Antimicrobial effects of Cu-based engineered nanomaterials in environmental and engineered systems," Sustainable Nanotechnology Organization Conference, November 10-12, 2016, Orlando, FL.
7. Moore, J.D., Bertuccio, A., Tilton, R.D., Lowry, G.V., Gregory, K.B. "Differentiating Cu^{2+} and CuO nanoparticulate antimicrobial effects in engineered and environmental systems," American Chemical Society National Meeting, August 21-25, 2016, Philadelphia, PA.
8. Moore, J.D., Stegemeier, J.P., Bibby, K., Marinakos, S., Lowry, G.V., Gregory, K.B. "Impacts of Ag and Cu nanoparticles on freshwater microbial communities appear short-lived," Sustainable Nanotechnology Organization Conference, November 8-10, 2015, Portland, OR.
9. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Differential impacts of pristine and transformed Ag nanomaterials and of Cu nanomaterials and Cu ion on freshwater wetland surficial sediment microbial communities," International Conference on the Environmental Effects of Nanoparticles and Nanomaterials, September 6-10, 2015, Vienna, Austria.
10. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Effects of pristine and transformed Ag and Cu nanomaterials on freshwater microbial communities," American Chemical Society Colloid and Surface Science Symposium, June 15-17, 2015, Pittsburgh, PA.
11. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Differential impacts of pristine and transformed Ag NPs and Cu NPs and Cu ion on CEINT mesocosm surficial sediment microbial communities," Center for Environmental Implications of NanoTechnology (CEINT) Internal Meeting, May 14-15, 2015, Durham, NC.
12. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Potential functional impacts of pristine and transformed nanomaterials on freshwater wetland microbial communities," Pittsburgh Bacterial Meeting, March 7, 2015, Pittsburgh, PA.
13. Moore, J.D. "High-throughput, next-generation DNA sequencing for engineering research," Carnegie Mellon University Civil and Environmental Engineering Seminar, November 14, 2014, Pittsburgh, PA.
14. Moore, J.D. Stegemeier, J.P., Lowry, G.V., Gregory, K.B. "Impacts of transformed versus Ag and Cu NPs on sapropel microbial communities," Center for Environmental Implications of NanoTechnology (CEINT) Internal Meeting, May 22-23, 2014, Durham, NC.

Poster

1. Moore, J.D., Avellan, A., Noack, C.W., Guo, Y., Lowry, G.V., Gregory, K.B. "Time-resolved transcriptional assays to differentiate nanoparticulate and ionic Cu impacts on *Escherichia coli*," Applied and Environmental Microbiology Gordon Research Conference and Seminar, July 15-21, 2017, South Hadley, MA.

2. Moore, J.D., Avellan, A., Lowry, G.V., Gregory, K.B. "Differential antimicrobial effects of and bacterial transcriptional responses to nanoparticulate copper oxide and copper ion under oxic and anoxic conditions," Engineering Sustainability, April 9-11, **2017**, Pittsburgh, PA.
3. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Impacts of silver and copper nanomaterials on freshwater wetland surficial sediment microbial communities," Applied and Environmental Microbiology Gordon Research Conference and Seminar, July 11-17, **2015**, South Hadley, MA.
4. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Potential functional impacts of pristine and transformed nanomaterials on freshwater surficial sediment microbial communities are short-lived," American Society for Microbiology, May 29-June 2, **2015**, New Orleans, LA.
5. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Environmentally transformed metal nanomaterials affect freshwater microbial communities differently than pristine and ionic forms," Engineering Sustainability, April 19-21, **2015**, Pittsburgh, PA.
6. Moore, J.D., Stegemeier, J.P., Bibby, K., Lowry, G.V., Gregory, K.B. "Environmental factors mitigate long-term impacts of nanomaterials on freshwater wetland microbial communities," Carnegie Mellon University Innovation with Impact, April 9, **2015**, Pittsburgh, PA.
7. Moore, J.D., Stegemeier, J.P., Lowry, G.V., Gregory, K.B. "The effects of inorganic nanomaterials on microbial mats in freshwater wetland mesocosms," Pittsburgh Bacterial Meeting, March 8, **2014**, Pittsburgh, PA.

ENTREPRENEURSHIP

My US PREP, LLC

Founder (2018 – present); Recruited international and domestic clients; Guided clients through job and academic application process; Advised on programs and careers that matched clients' interests and professional aspirations; Assisted clients with transition to living in a new location

PROFESSIONAL DEVELOPMENT

Michigan State University, Quantitative Microbial Risk Assessment Interdisciplinary Instructional Institute (2016)

American Society for Microbiology, General Meeting Workshop: Antibiotic Resistance in Significant Bacterial Pathogens: Tragedy, Triumph, Trepidation, Problems, Breakpoints, Mechanisms, and Phenotypic/Molecular Detection (2015)

Joint Genome Institute (Department of Energy), Microbial Genomics and Metagenomics Workshop (2014)

Improving Kids' Environment, Teach For America Policy and Leadership Initiative (2010)