PABLO K. CORNEJO

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EDUCATION

Ph.D. Environmental Engineering Aug '15
University of South Florida, Tampa, FL

Master of Environmental Engineering Aug '12
University of South Florida (USF), Tampa, FL

B.S. Civil Engineering Dec '06
Emphasis on Water Resources and Environment
University of Colorado, Boulder, CO

ACADEMIC EXPERIENCE

Assistant Professor, California State University, Chico, CA Aug '16-Present

- Developing project-based green engineering design pedagogy that integrates life cycle assessment, life cycle cost analysis, sensitivity analysis, and decision analysis
- Developing a national implementation plan to disseminate a multi-criteria decision analysis framework for small drinking water systems through the EPA DeRISK Center
- Investigating metrics for a national network of testbed facilities to that spurs innovation in integrated resource recovery strategies for wastewater management

Post-doctoral Researcher and Instructor, CU, Boulder, CO Jul '15-Jul '16

- Developed a decision support framework for innovative and conventional drinking water treatment technologies in small communities in collaboration with Rural Community Assistance Partnerships (RCAP) and the EPA DeRISK Center (Grant No. R835603)
- Collaborated with various researchers, utilities, stakeholders, and regulators to integrate disinfection by-product health risk, environmental sustainability, cost, and stakeholder preferences into a decision support framework for planning of technology selection
- Designed a strategy to improve the alternatives assessment process of small drinking water systems, which was tested on a pilot project
- Taught two courses in sustainability focused on triple-bottom line, water-energy-nutrient nexus, systems thinking, planning and design, cost analysis, and biomimicry
- Developed a water and energy conservation initiative (FLOWS Program) to train students and community members to conduct residential upgrades for low-income community members in collaboration with the University of Colorado's Environmental Center
- Helped organize a workshop to advance a collaborative vision of a national network of test bed facilities for innovative resource recovery technologies

Doctoral Researcher, USF, Tampa, FL Aug '10-Jun '15

- Conducted Ph.D. research (Dissertation Title: Environmental Sustainability of Wastewater Treatment Plants Integrated with Resource Recovery: The Impact of Context and Scale; Advisors: Dr. James R. Mihelcic and Dr. Qiong Zhang)
- Developed life cycle assessment (LCA) and greenhouse gas (GHG) emission modeling framework to assess the environmental sustainability of energy, water, and nutrient recovery from wastewater treatment facilities across different scales
- Evaluated the embodied energy, carbon footprint, and eutrophication potential of wastewater treatment technologies integrated with resource recovery using life cycle assessment (LCA) and GHG modeling under NSF Grants ORISE IRES #0966410 and HRD LSAMP #1139850
- Compiled life cycle inventory of material, waste, water quality, and emission parameters during construction and operation and maintenance phases of wastewater treatment plants
- Led an interdisciplinary team of engineers, anthropologists, and undergraduate student from the University of South Florida and Universidad Technologica Boliviana to conduct research on sustainable wastewater management that resulted in peer-reviewed publications
- Conducted in-depth investigation of greenhouse gas estimation tools for water reuse and desalination facilities for the WateReuse Research Foundation under Grant No. 10-12 collaborating with various utilities and consulting engineers
- Conducted a webcast online lecture for approximately 40 water and wastewater practitioners on carbon footprint models for water reuse and desalination facilities
- Identified major trends and challenges associated with comparing GHG estimation from these facilities and investigated the availability and applicability of existing GHG estimation tools to determine the limitations, knowledge gaps, and recommendations for GHG estimation tools for water reuse and desalination
- Conducted laboratory research the hydraulic performance, material characteristics, physical and biological water quality performance of ceramic water filters

TEACHING EXPERIENCE

Assistant Professor, California State University, Chico, CA Aug '16-Present

- Teaching a project-based green engineering design course that integrates environmental, economic, and social sustainability
- Developing environmental engineering curriculum that will incorporate sustainability into interdisciplinary engineering courses for undergraduates

Instructor, Design: Sustainable Communities, CU-Boulder, CO Aug '15-Dec '15

- Developed and administered curriculum to provide teach students about the key principles of sustainability and design for an interdisciplinary course
- Guided engineering students through an open-ended, hands-on design experience teaching teamwork skills, communication skills, and engineering design methodology
- Challenged students to integrate electrical circuits through the Sparkfun curriculum with a design-build project focused on the water-energy-food nexus
- Integrated systems thinking, the triple-bottom line, life cycle assessment, and biomimicry as key concepts to guide the course

Instructor, Introduction to Sustainability, CU-Boulder, CO Aug '15-Dec '15

- Administered lectures, trained students, and provided an interactive learning environment for interdisciplinary, entry-level engineering students
- Utilized a critical democratic pedagogy teaching philosophy, where students were empowered to discuss literature and co-facilitate lectures on sustainability.
- Introduced social, economic, and environmental sustainability issues across various scales (e.g., personal, residence hall, university, community, and global)
- Encouraged to critically think about sustainability, engage in thoughtful dialogue, understand systems theory, the triple-bottom line, and a wide range of ideas, tools, and practices related to sustainable development locally and globally

PEER-REVIEWED PUBLICATIONS

1. **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R. "How does scale of implementation impact the environmental sustainability of wastewater treatment integrated with resource recovery?", *Environmental Science and Technology*, 50, 6680-6689, 2016
2. Ouedraogo, F.R., Zhang, J., **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R., Tejada-Martinez, A. E., "Impact of sludge layer geometry on the hydraulic performance of a waste stabilization pond", *Water Research, 99*, 253-262, 2016
3. **Cornejo, P.K.**, "Environmental sustainability of wastewater treatment plants integrated with resource recovery: the impact of context and scale", Ph.D. Dissertation, University of South Florida, Tampa, FL, 2015
4. **Cornejo, P.K.**, Santana, M.V., Zhang, Q., Hokanson, D.R., Mihelcic, J.R., "Carbon footprint of water reuse and desalination: a review of greenhouse gas emissions and estimation tools", *Journal of Water Reuse and Desalination*, 4, 238-252, 2014
5. **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R. "Quantifying Benefits of Resource Recovery from Sanitation Provision in a Developing World Setting", *Journal of Environmental Management, 131*, 7-15, 2013
6. Mihelcic, J.R., Zhang, Q., Hokanson, D.R., **Cornejo, P.K.**, Santana, M.V., Rocha, A.M., Ness, S.J. "Feasibility study on model development to estimate and minimize greenhouse gas concentrations and carbon footprint of water reuse and desalination facilities", 118 pgs, WateReuse Foundation, Alexandria, VA, 2013

PRESENTATIONS AND LECTURES

1. **Cornejo, P.K.**, Zhang, Q., Anderson, D., Mihelcic, J.R., "A life cycle tale of carbon, energy, and nutrients: the impact of centralized and decentralized wastewater treatment management and resource recovery strategies" oral presentation at WEF/IWA Nutrient Removal and Recovery 2016 Conference, Denver, CO, July 10-13, 2016
2. **Cornejo, P.K.**, Hogrewe, B., Cook, S., Jones, C., "Improving decision support for small drinking water systems: an innovative approach to alternatives assessment" oral presentation at 2016 American Water Works Association Annual Conference and Exposition, Chicago, IL, June 19-22, 2016

3. **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R., "Implications of implementation scale on the environmental sustainability of wastewater treatment with resource recovery" oral presentation at the 4th International Congress of Sustainability Science & Engineering, Balatonfured, Hungary, May 26-29, 2015
4. **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R., "How does scale of implementation impact embodied energy and carbon footprint of water reuse systems?" oral presentation at the Water Environment Federation Technical Exhibition and Conference (WEFTEC), New Orleans, Louisiana, September 27 - October 1, 2014
5. Zhang, Q., Hokanson, D.R., **Cornejo, P.K.**, Santana, M.V.E., Mihelcic, J.R., "Evaluating carbon footprint for water reuse and desalination," webcast presentation at the WateReuse Research Foundation Webcast seminar, online, December 12, 2013
6. **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R., "Life-cycle assessment of wastewater infrastructure and resource recovery strategies in a developing world context", oral presentation at the Association of Environmental Engineering and Science Research and Education Conference at the Colorado School of Mines, Golden, CO, July 14-16, 2013
7. **Cornejo, P.K.**, Zhang, Q., Mihelcic, J.R., "Embodied energy and carbon footprint of wastewater treatment infrastructure: water reuse and energy recovery in Rural Bolivia", oral presentation at the Advanced Biological Waste-to-Energy Technologies Conference, Tampa, Florida, July 11, 2012

CONSULTING EXPERIENCE

Project Engineer, WSI International, Denver, CO May '09-Aug '10

- Conducted planning, research studies, evaluations, and preliminary designs of various biological wastewater treatment processes
- Analyzed and developed process flow diagrams for various packaged wastewater treatment technologies and facilities

Project Engineer, Stewart Environmental, Fort Collins, CO Oct '07- Jun '08

- Prepared reports, developed process flow diagrams, and conducted calculations for small scale wastewater treatment facilities
- Performed pilot-scale studies and on-site wastewater sampling to ensure regulatory compliance for agricultural and industrial customers
- Conducted operation and maintenance of a produced water treatment facility including cartridge filters, walnut shell filters, and granular activated carbon processes

HONORS AND CERTIFICATIONS

- EIT Certification
- Graduate Certificate in Water, Health and Sustainability
- McKnight Doctoral Fellowship
- National Science Foundation Bridge to Doctorate Award
- Sloan Minority PhD Program
- Honorable Mention for the 2012 National Science Foundation Graduate Fellowship
- Dean's Scholar 2012-13, USF Graduate School

SKILLS

- Utilized life cycle assessment and life cycle cost analysis to assess wastewater systems
- Conducted analytical hierarchy process and weight decision matrix for alternatives analysis of innovative water treatment systems
- Utilized food and agricultural organization's (FAO) CROPWAT and CLIMWAT software programs to model water irrigation needs in Beni, Bolivia
- Used GIS to model reclaimed water usage patterns in Tampa, FL
- Implemented both simple and sophisticated carbon footprint modeling methods to evaluate the environmental impact of wastewater treatment systems
- Software experience with Microsoft Office, AutoCAD, SimaPro, multi-criteria decision analysis, and Solidworks
- Fluent in English, Spanish, and Portuguese

PROFESSIONAL ORGANIZATION

- Water Environment Federation (WEF)
- American Water Works Association (AWWA)
- Society of Hispanic Professional Engineers (SHPE)
- COMPACT for Faculty Diversity: Institute for Teaching and Mentoring
- Chi Epsilon Civil Engineering Honor Society