AEESP Newsletter

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Highlights

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AEESP Newsletter Submissions

Please send news, conference announcements, job postings, letters to the editor, and other contributions to the newsletter to Laura Arias Chavez at LChavez@tntech.edu. The next newsletter will appear in June 2020.

President's Letter

BY KARL LINDEN
University of Colorado Boulder

Dear AEESP Community:

The President's Letter is usually filled with news and ideas of initiatives of AEESP. These columns are meant to inform and inspire you all. Today I want to inspire you in a different way through discussing a problem in our community that we have not had the chance to directly address. We have a harassment problem. All of us know someone or have had some personal experience with harassment in our professional lives. It's time for AEESP as an organization to address it.

Harassment can take many forms. I recently had an experience with my research group that really woke me up to this issue. We work a lot with industry and collaborate on technology development and testing. A male industry representative came to the lab to observe the testing we were doing with their product. He then offered to take the two female students who were working on the project out for a beer. I was out of town and due to return the next day. As it turned out, only one of the students could join him in the outing. This particular student was due to graduate soon and this presented a great opportunity for her to do some networking, to get some mentorship and possible insights into industry research opportunities. During their outing, the industry representative offered jobs and opportunities, and an invitation to go out to dinner together to discuss the opportunities further. The invitation and pending discussions were prefaced with a plea to keep what they discussed a secret and to not tell her advisor (me) about these plans and offers. This obviously predatory behavior was picked up on. Concerned that a rejection of these "offers" would anger the visitor, the student texted her boyfriend to meet her at the end of the visit in case there was any problem or aggression. She also texted a senior lab member to ask what she should do, scared and nervous, knowing this was not right.

What ensued in the days following was a trial-by-fire education in harassment for me; served up by my insightful and experienced women graduate students. One senior grad student intervened that evening and confronted the visitor by phone, banning him from coming back to the lab the next day and demanding he meet with me immediately upon my return. After personally connecting with the students involved, I contacted the visitor with our unified message: We know what you are up to and we are taking action. We gave the harassed student time off and contacted more experienced faculty and appropriate offices at the university to get support and understand our options. I made a few mistakes along the way and was immediately righted and appropriately educated by my women students. Handling this took days of time including contacting the industry's legal representatives so they could take action with their employee (which they did rapidly and decisively), along with numerous individual and research group meetings. Working with the university Office of Victims Assistance and Office of Institutional Equity and Compliance, I provided support for the students involved, held subsequent meetings about this with my research group, faculty and other students affected, and organized a department seminar on "Skills for addressing gender bias and harassment and supporting peers".

The fallout of this experience for the student affected was a hesitancy to trust those in power with jobs and offers of support, an apprehension of meeting up with people and networking, wondering if this would happen again. This is severely damaging to an early career and taints our profession.

Unfortunately, this was not my only experience. At conferences and meetings outside the university environment, we all work to give students the best opportunities for networking and outreach as we can. This includes taking them to lunches with other researchers, students and professors we want them to meet, or consultants or industry

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representatives, depending on their career goals and aspirations. There are so many inspiring people among us! I specifically make sure to strategically plan conference evening outings, often with other research groups, scoring free food and drinks hopping around to various consulting engineering parties and events, and taking every opportunity to introduce my students to interesting industry and professional colleagues. I also stick with my students closely and we work as a team, making sure everyone is accounted for, heading between bars and events. An all too common scene, and one I have experienced at conferences I frequent regularly with my students, is inappropriate and highly improper behavior by male industry professionals, sometimes who are quite well-known, toward our female students. We should not stand by and watch this happen anymore. It is imperative that we call this behavior out and create increased awareness around this form of harassment. My typical way of handling this is to call our group and the students affected out of the event and make sure everyone gets back to their residence safely. But I now realize this is not enough.

These are just two examples of the kind of predatory behavior that often happens when women try to develop professional networks. The problem is pervasive, and we must increase our vigilance and call out those who perpetuate this behavior. The issue is well documented in our community. In 2018, the NASEM came out with a poignant report that should be on your electronic bookshelf: "Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine". You can download it here (http://nap.edu/24994) It is a comprehensive report about sexual harassment in science, engineering and medicine, including toward graduate students and post-docs. Please use this as a starting point to talk with your students; distribute it to them and your colleagues. I challenge you all to spend at least one research group meeting discussing these issues. I also suggest hosting a seminar during your normal seminar series time, addressing this topic with support from professionals within your university. This issue is just as important as hearing from the latest researcher in our field.

Finally, I invite you to share your experiences with our community via Twitter using the hashtag #MeTooAEESP — link us @AEESProfs to your stories in blogs or news pieces, or just tweet about your experiences directly. I am sure we are not alone, and by sharing our experiences we are empowered. As a male professor and someone in a leadership position in our community, I thought I was knowledgeable and caring; but I know I need to do more.

Early winter Rocky Mountain National Park hike in Colorado with a few students in the Linden Research Group

The AEESP Board has been talking about what we can do to help educate our community about harassment. This has been a significant topic at our last two board meetings. As a start, we have decided to have AEESP join the Societies Consortium on Sexual Harassment in STEMM (https://educationcounsel.com/societiesconsortium/). This organization of over 110 members provides research, resources, and guidance to address sexual harassment in the member societies, as well as more broadly in the fields they represent. From their website: "The mission and role of societies is to set standards of excellence in STEMM fields, requiring high quality research, teaching and practice and high standards of professional and ethical conduct. That is only possible in a community that includes all talent and is actively intolerant of sexual and intersecting bases of harassment." As a board we will learn more what this society is doing and make sure our membership has resources they need to better understand and confront these issues. Key to their mission is that our community needs to be "actively intolerant" toward all forms of harassment, and we all must pledge to do just that.

As always, I appreciate your feedback and comments about my newsletter column or anything going on with AEESP. Contact me by email at karl.linden@colorado.edu or on Twitter @waterprof. You are what makes our organization amazing and impactful and I want you all to to be proud of your AEESP membership.

AEESP Journal Environmental Engineering Science Spotlight

Derick G. Brown, Lehigh University (Member of the AEESP Publications Committee)
Mark J. Krzmarzick, Oklahoma State University (Chair of the AEESP Publications Committee)
Susan J. Masten, Michigan State University (*EES* Deputy Editor), Catherine A. Peters, Princeton University (*EES* Editor-in-Chief)

The "spotlight" column draws attention to selected articles in *Environmental Engineering Science* (*EES*), the official journal of AEESP. Spotlight articles appear regularly in the journal as an Editor's Note, as well as in the AEESP Newsletter. Through publication of high-quality peer-reviewed research, *EES* helps AEESP achieve its mission of developing and disseminating knowledge in environmental engineering and science. In this entry, we shine the spotlight on selected articles from the August 2019 issue through the November 2019 issue of *EES*. Congratulations to all whose work is highlighted.

Community engagement is an important aspect of environmental engineering projects. It is often overlooked, however, and this can lead to division among the community and engineers, resulting in project failure. In a study conducted in Sittee River Village, Belize, **Hobbs et al.** (2019) examined the impacts of community engagement, with a focus on the importance of perceived empathy, warmth, and competence of black women engineers on the adoption of anaerobic digestion by local residents. The villagers perceived the engineers as warm and competent, and these characteristics influenced the likelihood of the villagers to adopt anaerobic digesters for waste management and energy production. The community members also perceived the black women engineers as their allies, and they felt engaged in the design process. These results underscore the importance of community engagement in the design and implementation of engineering projects, and they highlight unique contributions that underrepresented groups can make in the field of environmental engineering.

The process of remediating contaminated sites itself can have environmental impacts, such as emissions of greenhouse gases, SO_2 and NO_x, along with excessive energy use and water consumption. Following the concept of green and sustainable remediation (GSR), **Huang et al.** (2019) implemented 10 best management practices (BMPs) to reduce the environmental impact of a soil remediation project in China. Incorporating BMPs, such as using equipment with appropriate power, optimizing driving routes, increasing reuse of on- and off-site materials, and optimizing the remediation process, they demonstrated large reductions in air pollutant emission and water and energy consumption. This study emphasizes the positive impact GSR can have on reducing the environmental impact of remediation projects.

Solid waste management practices vary across different geographic locations and socioeconomic levels. In a novel study conducted in six cities in the hAmericas, Europe, the Middle East, and India, **Ghanimeh et al.** (2019) examined the impacts of these factors on the strategic development plans for upgrading each city's waste management systems. They found that across the geographic locations and socioeconomic levels, incineration was perceived by the local authorities as the preferred approach for upgrading their systems, even though this solution may not be appropriate for low- and middle-income cities. The authors also showed that methods having less environmental and socioeconomic impacts were seldom considered in the strategic plans, highlighting the need for environmental engineers to include additional socioeconomic factors when identifying potential waste management approaches.

The use of wastewater for recharge of potable aquifers requires treatment of the water to sufficient quality so that it does not degrade the native groundwater. In a pilot-plant scale study, **Vaidya et al.** (2019) did a side-by-side comparison of the performance of carbon-based and membrane-based treatment systems for tertiary-treated biological nutrient removal wastewater effluent. They demonstrated that both systems provided water that met all the United States Safe Drinking Water Act primary maximum contaminant levels. These results provide useful information for implementing advanced wastewater treatment systems for potable aquifer recharge.

References

Ghanimeh S., Gómez-Sanabria A., Tsydenova N., Štrbová K., Iossifidou M., and Kumar A. (2019) Two-Level Comparison of Waste Management Systems in Low-, Middle-, and High-Income Cities. *Environ. Eng. Sci.* 36, 1281.

Hobbs S.R., Gordon, B., Morton E.V., and Leidy K. (2019) Black Women Engineers as Allies in Adoption of Environmental Technology: Evidence from a Community in Belize. *Environ. Eng. Sci.* 36, 851.

Huang S., Tan X. and Zhu Y. (2019) Implementation of a Green and Sustainable Concept to Evaluate Footprint and Optimize Contaminated Site Remediation in China: A Case Study. *Environ. Eng. Sci.* 36, 1269.

Vaidya R., Buehlmann P.H., Salazar-Benites G., Schimmoller L., Nading T., Wilson C.A., Bott C., Gonzalez R., and Novak J.T. (2019) Pilot Plant Performance Comparing Carbon-Based and Membrane-Based Potable Resuse Schemes. *Environ. Eng. Sci.* 36, 1369.

2021 AEESP Research and Education Conference

Four teams were selected to submit full proposals to host the 2021 AEESP conference. The proposals will be evaluated by the site selection committee, and the announcement of the host(s), theme, and conference dates is expected in April 2020.

AEESP Foundation Grant Report:

Preparing our future scientists and engineers to advance sustainability at the food-energy-water nexus: The SAFE-Water Project

PI: Dr. Simeng Li, Department of Civil and Environmental Engineering

Organization: Florida Agricultural & Mechanical University (FAMU) – Florida State University (FSU) College of Engineering, Tallahassee, FL

Project time period: February – June 2019

Overview

The goals of the SAFE-Water Project were to 1) introduce sciences, technologies and applications at the nexus of food, energy and water to K-12 students (ages from 11 to 16 years old) and teachers, especially women and underrepresented minorities, with the intention of heightening students' interest in pursuing higher education in Science, Technology, Engineering and Mathematics (STEM); 2) provide the FAMU-FSU College of Engineering undergraduate students opportunities to develop their communication and leadership skills; 3) create a platform for K-12 students/teachers and undergraduate students to receive education/career advice and support from experts in local universities, government agencies and industry. To achieve these goals, three workshops were organized between March and June 2019.

Accomplished Tasks

Undergraduate student training

Three environmental/civil engineering undergraduate students (Lindsey Furrow, Pranav Muthuraman Geetha, and Kyle Long) were trained by Dr. Simeng Li on a weekly basis to familiarize them with diverse food-energy-water nexus topics. The student team worked together and managed to 1) build a microbial fuel cell reactor using everyday materials (e.g., soda bottles, cotton rope, aluminum wire mesh); 2) construct a groundwater flow demonstration model; 3) grow different plants (e.g., lima beans, radish and wheatgrass) in silica sand with/without the addition of biochar. The three students were also trained in technical communication and public speaking to a wide variety of audiences.

Building up the advisory committee

An advisory committee consisting of professors, scientists and engineers was formed for this project in January 2019. Members of this committee include Dr. Gang Chen from FSU, Dr. Johnny Grace from FAMU, Dr. Liang Li from Florida Department of Environmental Protection, and Mr. Cale Madden from Mott McDonald.

Our committee members provided advice and support for students' career development. A project website (https://simengineering.wixsite.com/aeesp-safewater) was built and updated regularly to facilitate the communications between participating students, teachers, and advisory committee members.

First Workshop

The first workshop was held on the FAMU-FSU College of Engineering campus and welcomed 34 students of 11 or 12 years old from the Richardson Sixth Grade Academy (RSGA) of Lake City, FL. The RSGA serves a diverse and underprivileged student population (approximately 40% African American and 9% Hispanic), with nearly 70% from low-income families.

Led by our undergraduate volunteers, the visiting students were divided into small groups to explore our Water Treatment Laboratory. With the demonstrations using a groundwater flow model (Figure 1), the children learned how groundwater contamination could happen due to leaky landfills and chemical spills. They also learned different in-situ and ex-situ remediation technologies. The children performed jar testing (consisting of coagulation, flocculation and sedimentation) to determine the optimal coagulant (alum) dosage for water treatment. The children used different materials such as wood chips, pebbles, gravels, sand, cotton balls and cotton balls to construct their own filters to purify the sedimented water samples. They discovered how they arranged the different filter layers could have significant influences on the performance of their filters. The children were surprised by how these simple physical and chemical processes could make hazy water look cleaner. The children also learned different parameters (e.g., turbidity, pH, hardness, and color) for the evaluation of water quality, as well as the various devices for water quality analyses. They were impressed at how the turbidity was lowered from several hundred NTU to less than five NTU. During their two-hour visit, all the children asked many great questions about the real-world applications and technologies for water and wastewater treatment.

Figure 1. Undergraduate student Pranav Muthuraman Geetha explaining groundwater contamination and answering questions from RSGA students

Second Workshop

For the second workshop, we invited a group of 28 female students (ages 12 to 14) from the FAMU Developmental Research School (FAMU-DRS) and FSU Schools (FSUS) to visit our Hydraulics Laboratory for undergraduate teaching on the campus of the FAMU-FSU College of Engineering. In FAMU-DRS, 95% of the students are African American and 3% are Hispanic, and in FSUS, the total minority enrollment is more than 51%. Among the twenty-eight girls from FAMU-DRS and FSUS, twenty-one are African Americans.

The workshop began with the presentation by Dr. Simeng Li on the energies of flow in pressurized pipes. The students learned the different energy forms

Figure 2. Students observing hydraulic jumps in an open-channel flume

as well as the possible causes of energy losses in water supply systems. The students were then encouraged to discuss how the energy losses could be minimized to reduce energy consumption. All the students expressed high levels of engagement during the discussion. The students also observed hydraulic jumps over weirs of different shapes (Figure 2). The students were motivated to relate these observations with real-world applications such as dams. The workshop ended with an interactive game, in which the students made paper boats and let their boats sail in the flume as we changed the tailgate depths to create different flow conditions.

Third Workshop

We incorporated four one-hour presentations introducing the topic of sustainability at the food-energy-water nexus in the Advanced Placement (AP) Environmental Science classes for freshmen high school students (ages 14 to 16) at Leon High School (Tallahassee, FL). For each session, there were at least 20 students, making the total number of our attendees nearly 100. In Leon High School, 44% of the students are underrepresented minorities (34% African American, 8% Hispanic and 2% Asian) and 26% are from economically disadvantaged families.

The presentation covered different topics including energy/resource recovery using bioelectrochemical systems, groundwater remediation, water treatment, and soil amendment with biochar. We brought a microbial fuel cell reactor built with everyday materials, a groundwater flow model, and different plants grown in silica sand with/without biochar to the AP classroom to engage our young students (Figure 3). We introduced the concept of system thinking for solving the food-energy-water nexus issues, which was new to these budding engineers and was in line with the high school curriculum. As our collaborator AP teacher Ms. Colleen Graham wrote in our follow-up survey, "This ties to a lot of things we are talking about in class, including wastewater and sustainability. Our students learned a new way to think about things and the need for research and funding for environmental engineering." According to Ms. Graham, hosting this presentation was a great dovetail and would also inspire her students to pursue a career in this field. This event was reported by the FAMU-FSU College of Engineering. The story can be found on the College's website (https://www.eng.famu.fsu.edu/news/simeng-li-AEESP) as well as the Instagram page (https://www.instagram.com/famufsucoeng/) (#famufsucoeng).

Figure 3. Dr. Simeng Li giving welcome remarks to the students at Leon High School

Conclusions and Future Prospects

The SAFE-Water Project was a success. We engaged diverse activities involving nearly 150 students of different ages, genders and ethnic groups. We also formed an advisory committee to advise and support all the participants (both students and teachers). According to our exit survey for our student participants, 96.4% of them found this project very interesting and they had a great learning experience; 76.2% indicated that this project motivated them to consider STEM majors in colleges because they are very interested in solving sustainability issues in the future.

Acknowledgement: The project team is grateful for funding provided by the AEESP Foundation and support from the FAMU-FSU College of Engineering.

Nominations for 2020 AEESP Fellows

Nominations for 2020 AEESP Fellows are open now through 11:59 pm ET (U.S.) on March 15, 2020. AEESP Fellows will be selected based on their accomplishments in environmental engineering and science research, teaching and professional service, with emphasis on service within the AEESP. Eligible nominees must have a minimum of 10 years of faculty-level membership in AEESP. It is expected that nominees will have achieved full promotion or emeritus status at their respective home institutions. 2020 and 2021 Fellows will be recognized together at the 2021 AEESP Biennial Conference (location and date to be determined).

Details for the electronic application requirements are available at http://www.aeesp.org/fellows.

Please contact the AEESP Fellows Steering Committee Chair, Morton Barlaz (E-mail: barlaz@ncsu.edu, telephone: 919-515-7212), with any questions.

New Faculty Appointments

Katherine Alfredo joins the University of South Florida

Dr. Katherine Alfredo joined the University of South Florida Department of Civil and Environmental Engineering as an assistant professor in August 2019. Alfredo's research focuses on sustainable potable water provisions to include technical treatment and regulatory policy in both the US and internationally. Alfredo received her BE in Civil Engineering at The Cooper Union for the Advancement of Art and Science in NY, NY and subsequently completed her MSE and PhD in Civil Engineering at The University of Texas at Austin on the chemical interactions between fluoride, aluminum, and natural organic matter during drinking water treatment. During grad school, Alfredo spent a year in Ghana, West Africa on a 2008 US Student Fulbright Fellowship investigating cultural complications involved in rural water treatment and management. After completing her PhD, Alfredo was a Researcher at the American Water Works Association policy division in Washington, DC investigating water quality compliance and policy. Before starting her Columbia University Earth Institute Postdoctoral Fellowship at the Columbia Water Center, Alfredo was a Critical Language Scholar (2013) and studied Hindi in Jaipur, India, allowing her to oversee survey administration and speak directly to water treatment operators in India. At Columbia, Alfredo researched a wide range of utility-related issues from US drinking water policy to the sustainability of rural water treatment in India. As a 2015 Fulbright-Nehru Postdoctoral Scholar, Alfredo continued to investigate how and why rurally-implemented drinking water treatment plants both succeed and fail when their management is transferred to the community. Prior to joining the faculty at USF, she was a research program manager at DC Water focused on the difficulties that large, urban utilities face in ensuring a constant supply of high quality, potable water. She holds a Professional Engineering license in the state of Virginia.

Sara Behdad joins the University of Florida

Dr. Sara Behdad is joining the University of Florida in Spring 2020. She has been an associate professor of Mechanical and Aerospace Engineering, and Industrial and Systems Engineering, at the University at Buffalo, SUNY before joining UF. She received her PhD from the University of Illinois at Urbana-Champaign in 2013. Her research focuses on sustainable design, e-waste management, and sustainability of blockchain and IoT. Her work has been covered in media outlets such as PBS, Daily Mail, The Chicago Tribune and Motherboard. She is the recipient of the 2017 International Life Cycle Academy Award for her contribution to the sustainable consumption field, the 2018 UB Early Career Researcher of the Year Award, and the 2019 and 2017 best paper awards from the ASME Design for Manufacturing and Life Cycle Conference. She has over 100 publications in a variety of outlets, among them are the most downloaded and most cited papers of her field.

Dr. Diana Byrne joins the University of Kentucky

Dr. Diana Byrne joined the Department of Civil Engineering at the University of Kentucky as an assistant professor in January 2020. She previously completed a PhD in Environmental Engineering from the University of Illinois at Urbana-Champaign working with Dr. Jeremy Guest. Her research focuses on applying and adapting quantitative sustainable design tools such as life cycle assessment and quantitative microbial risk assessment to guide decision-making for water and sanitation infrastructure in both technologically advanced and resource-limited settings. She earned an MS in Civil Engineering from the University of Illinois at Urbana-Champaign and a BS in Civil Engineering from Saint Louis University. At the University of Kentucky, Byrne joins the new departmental area of Sustainable and Humanitarian Engineering in efforts to pursue research and teaching that focus on applying engineering to pursue meaningful impacts for people and the environment.

Natalie Cápiro joins Auburn University

Dr. Natalie Cápiro joined the Department of Civil Engineering at Auburn University in January 2019 as an assistant professor with an adjunct appointment in Biosystems Engineering. Previously, Cápiro was a research assistant professor in the Department of Civil and Environmental Engineering at Tufts University. She completed her postdoctoral studies at the Georgia Institute of Technology, her MS and PhD in Civil and Environmental Engineering at Rice University, and her BS in Biological and Environmental Engineering at Cornell University. Cápiro's research interests include environmental biotechnology, molecular techniques to monitor microbial communities, fate and transport of legacy and emerging contaminants in natural systems, and nanotechnology-biological interactions in the environment. Her work is primarily supported by funding from the National Science Foundation and the Strategic Environmental Research and Development Program (SERDP), including a study that won the 2012 SERDP Environmental Restoration Project of the Year.

Daniel Gingerich joins The Ohio State University

Dr. Daniel Gingerich joined the Departments of Civil, Environmental and Geodetic Engineering and Integrated Systems Engineering at The Ohio State University as an assistant professor in January 2020. Dr. Gingerich's research leverages life-cycle assessment, process modeling, and systems analysis techniques to inform public and private decision making about energy and water infrastructure. At OSU, his research agenda will focus on creating resilient and sustainable infrastructure systems by evaluating the environmental and economic impacts of emerging technologies, analyzing policy options, and studying how people perceive their infrastructure. Before his appointment at OSU, Gingerich performed post-doctoral research with the National Energy Technology Laboratory while visiting Stanford University and Carnegie Mellon University. He earned a PhD in Engineering and Public Policy from Carnegie Mellon University in 2017. Gingerich's doctoral and post-doctoral work sought to quantify and evaluate mitigation strategies for risk trade-offs between air and water pollution. He obtained an MS in Civil and Environmental Engineering from Auburn University and Bachelor's degrees in Civil Engineering and Political Science from Mississippi State University.

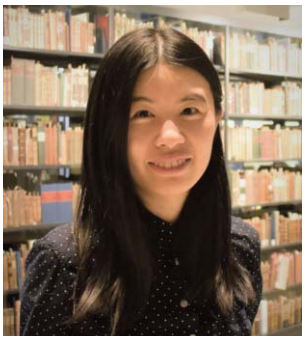
Grace Panther and Tirthankar Roy join the University of Nebraska-Lincoln

Dr. Grace Panther joined the Department of Civil and Environmental Engineering at the University of Nebraska-Lincoln as an assistant professor in August 2019. Panther conducts discipline based educational research in engineering. Her research interests include the role of 3D spatial skills in the development and success of engineering students, inclusivity issues within teamwork, and the knowledge practices of practicing engineers. She completed her BS in Environmental Sciences and her MS and PhD in Environmental Engineering at Oregon State University. Prior to her new faculty appointment, Panther worked as a post-doctoral researcher in the Department of Engineering Education at the University of Cincinnati.

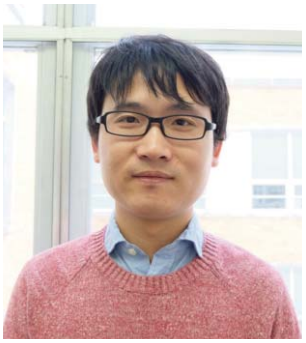
Dr. Tirthankar Roy joined the Department of Civil and Environmental Engineering at the University of Nebraska-Lincoln (UNL) in the fall of 2019. Prior to joining UNL, he was a postdoc in the Department of Civil and Environmental Engineering at Princeton University (2017-2019). He holds a PhD in Hydrology from the University of Arizona (2017), an MTech in Civil Engineering from the Indian Institute of Technology Kanpur (2012), and a BTech in Agricultural Engineering from Bidhan Chandra Krishi Viswavidyalaya, India (State Agricultural University). During his MTech,

he received the DAAD Scholarship to work on his thesis at Technische Universität Dresden, Germany. He is an Early Career Committee member at the International Association of Hydrological Sciences (IAHS). Roy's research interests include satellite remote sensing applications in hydrology, hydrologic extremes, catchment hydrology, land-atmospheric interactions, statistics and machine learning, water resources management, water and health, and socio-hydrology.

Mohan Qin and Haoran Wei join University of Wisconsin – Madison



Dr. Mohan Qin's research develops and analyzes environmental technologies to address issues at the food-water-energy nexus. Her research interests include development of hybrid bioprocesses and electrochemical systems for resource recovery from wastewater and selective ion removal from brackish water. Prior to her appointment, she was a postdoctoral scholar in the Department of Chemical and Environmental Engineering at Yale University, where she worked on the energy consumption analysis of electro-driven technologies for brackish water desalination. Qin graduated with her PhD in the Department of Civil and Environmental Engineering at Virginia Tech, where her research was focused on the recovery of energy, water, and nutrients from wastewater by osmotic bioelectrochemical systems.



Before starting his independent academic career, **Dr. Haoran Wei** worked as a postdoctoral associate in the Department of Chemical and Environmental Engineering at Yale University, where he developed synergistic photothermal and photocatalytic technologies for solar degradation of aqueous organic micropollutants. Meanwhile, he was also an active member in the NSF-funded Engineering Research Center for Nanotechnology-Enabled Water Treatment (NEWT). Prior to joining Yale, Wei obtained his PhD in civil engineering from Virginia Tech in 2018, where he worked on advanced sensors for environmental analysis based on the intriguing optical properties of gold nanoparticles. He was the recipient of the Jacobs Engineering Group/AEESP Outstanding Doctoral Dissertation Award and ACS Ellen Gonter Environmental Chemistry Award.

Based in the Water Science and Engineering Laboratory at UW-Madison, Wei's lab aims to solve urgent environmental problems using fundamental physical, chemical, and engineering principles. Particularly, they are interested in developing innovative optical technologies for emerging contaminant detection and remediation. They are also interested in passive sampling methods and data analytics.

Borchardt-Glysson Water Treatment Innovation Prize awarded to Karl Linden

Karl Linden has been selected to receive the Borchardt-Glysson Water Treatment Innovation Prize. Linden is a Professor of Environmental Engineering and the Mortenson Professor in Sustainable Development at the University of Colorado Boulder.

Receiving the Borchardt-Glysson Water Treatment Innovation Prize is a tremendous honor that serves to recognize a professional whose accomplishments in the water or wastewater treatment fields have been particularly influential. Linden will accept the Prize at the 25th triennial Borchardt Conference on February 25-26, 2020, where he will also give a lecture on "Mixing electricity and water: The evolving role of light in water treatment."

Dr. Linden's research investigates novel water and wastewater treatment systems, including advanced and innovative UV systems; the efficacy of UV and ozone disinfection for inactivation of pathogens; the use of UV and advanced oxidation processes for the degradation of organic and other emerging contaminants in water and wastewater; and sustainable implementation of water and sanitation technologies in developing countries. He is Director of the CU Boulder College of Engineering Water-Energy Nexus Interdisciplinary Research Theme, has authored over 180 peer-reviewed publications, and currently serves as President of AEESP.

This prize consists of a $10,000 cash award and reimbursement for travel to attend the Borchardt Conference. It was recently established through a generous gift by Tom (BSE CE '60, MSE '61) and Greta Newhof to the College of Engineering of the University of Michigan. The donors chose to recognize Professors Borchardt and Glysson by selecting the name of the prize.

Borchardt Conference Registration

Every three years, the Michigan-based Borchardt Conference brings together a diverse group of engineers, scientists, practitioners, and students to present and discuss the latest issues and advances in water and wastewater science and engineering. The 2020 Borchardt Conference keynote speakers are:

Dr. Michèle Prévost, Professor and Principal Chairholder, NSERC Industrial Chair on Drinking Water, Department of Civil, Geological and Mining Engineering, Polytechnique Montreal.

Dr. Charles Bott, Director of Water Technology and Research, Hampton Roads Sanitation District (HRSD) and Adjunct Professor at Virginia Tech and Old Dominion University.

The deadline for online registration is February 18, 2020.

The conference is co-sponsored by the University of Michigan Department of Civil and Environmental Engineering; the Michigan Section of the American Water Works Association; the Michigan Water Environment Association; and the Michigan Department of Environment, Great Lakes, and Energy.

Steve Hrudley appointed Member of the Order of Canada

Dr. Steve E. Hrudey, P.Eng. Emeritus Professor, Environmental & Analytical Toxicology, Faculty of Medicine & Dentistry, University of Alberta and member / emeritus member of AEESP for 43 years, was appointed in December 2019 by Governor General (and former Canadian astronaut) Julie Payette as a Member of the Order of Canada. Previously, he has been recognized with the Alberta Order of Excellence (Alberta's highest civilian honor) in 2017, Fellow of Engineers Canada in 2015, Fellow of the Canadian Academy of Engineering in 2014, Queen Elizabeth II Diamond Jubilee Medal in 2013, an Honorary Doctor of Science from the University of Alberta in 2012, the AWWA A.P. Black Research Award in 2012, IWA Fellow in 2010, Society for Risk Analysis Fellow in 2007 and Fellow of the Royal Society of Canada, Academy of Science in 2006.

Bruce Logan elected to Chinese Academy of Engineering

Bruce Logan, Evan Pugh University Professor in Engineering and Kappe Professor of Environmental Engineering at Penn State University, and a former AEESP President (1997-1998), was admitted in 2019 into the Chinese Academy of Engineering (CAE). The CAE is an independent advisory board to the central and local Chinese governments regarding the direction of engineering research and development. Logan is widely recognized in China for his work on sustainable water infrastructure technologies, such as microbial fuel cells and microbial electrolysis cells, renewable energy, and bioremediation technologies. Logan was the former (and inaugural) Editor of the journal *Environmental Science & Technology Letters*. He has collaborated with a number of researchers in China, and his university affiliations include Tsinghua University, Harbin Institute of Technology, Nankai University, and Dalian University of Technology. Logan is also a member of the US National Academy of Engineering, and a fellow of the American Association for the Advancement of Science, the International Water Association, the Water Environment Foundation, and AEESP.

Daniel Oerther receives Lillian Wald Award from NLN

Daniel B. Oerther, professor of environmental health engineering at the Missouri University of Science and Technology, was recognized with the 2019 Lillian Wald Humanitarian Award from the National League for Nursing (NLN). The Wald Award recognizes an individual who improves the lives of those in need through selfless, courageous, creative, and compassionate acts while promoting the NLN core values of caring, integrity, diversity, and excellence. The Wald Award is one of only three named national awards presented annually by the NLN - the premiere organization for nurse faculty and leaders in nursing education including its 40,000 individual and 1,200 institutional members. Oerther was recognized, in part, for his Global Research on WaSH (water, sanitation, and hygiene) to Eliminate childhood Stunting (GRoWES). Founded in Guatemala and replicated in Brazil, Ghana, India, Kenya, South Africa, and Tanzania, GRoWES is a nursing-inspired, engineering-designed, program of care and interventions that impact costs, improve healthcare quality, and enhance consumer satisfaction among mothers and their children — during the first 1,000-days of life and up to age five years old — in developing communities where stunting is prevalent. Oerther's global research to improve the lives of mothers and their children was previously recognized with the 2015 Steven K. Dentel AEESP Award for Global Outreach and the 2018 Dr. John L. Leal Award from the American Water Works Association.

Call for Papers: Special Issue of Water

Applied Modeling and Scenario Analysis for Managing Health Outcomes from Excreted Pathogens

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Special Issue
Applied Modeling and Scenario Analysis for Managing Health Outcomes from Excreted Pathogens

The journal *Water* is inviting authors to submit innovative original full articles, critical reviews and timely short communications to a Special Issue on "Applied Modeling and Scenario Analysis for Managing Health Outcomes from Excreted Pathogens." Papers should contribute to a systems approach and use models and scenarios for analyzing microbial water quality and consequent health risk. The deadline for manuscript submissions is May 31, 2020.

For questions, please contact one of the guest editors:

Dr. Nynke Hofstra (nynke.hofstra@wur.nl)
Dr. Heather Murphy (heather.murphy@temple.edu)
Dr. Matthew Verbyla (mverbyla@sdsu.edu)

ACS Spring meeting: Events of interest to AEESP members

259th American Chemical Society National Meeting & Exposition
Philadelphia, PA • March 22 – 26, 2020

The following is a brief, inexhaustive list of ACS meeting symposia from the Division of Environmental Chemistry Program that may be of interest to AEESP members. Many will feature AEESP members as speakers or organizers, and several are cosponsored by AEESP.

ACS Theme: Macromolecular Chemistry—The Second Century

Macromolecule Biosynthesis, Biodegradation, & Applications in Environmental Bioprocesses

Awards

- ACS Award for Creative Advances in *Environmental Science & Technology*
- Great Achievements in *ES&T:* James J. Morgan Environmental Science & Technology Early Career Award Symposium

Aquatic Chemistry

- Aquatic Photochemistry
- Current Status of Environmental Research on Water Contaminants*
- Performance of Stormwater Treatment Systems Under Changing Environments
- Transformation of Organic Pollutants in Aquatic Systems: A Celebration of the Career of A. Lynn Roberts

Challenges, Innovations & Assessments in Environmental Chemistry

- Innovative & Practical Approaches for the Treatment of Per- & Polyfluoroalkyl Substances (PFASs)*
- Sensors & Biosensors for Widespread Environmental Monitoring*

Chemical, Physical & Biological Processes in the Environment

- Accurate Mass/High Resolution Mass Spectrometry for Environmental Monitoring & Remediation
- Advancing Chemical Oxidation & Reduction for Addressing Emerging Environmental Issues*
- Biogeochemical Transformation in Underground Environments: Natural Processes & Engineered Implementations for Contaminant Abatement
- Green Chemistry & the Environment*

Environmental Chemistry in Industry

- Advanced & Additive Manufacturing Materials & Technologies for Environmental Applications
- Applications of Artificial Intelligence, Machine Learning & Data Analytics in Environmental Science & Engineering*
- Industrial Applications of Environmental Chemistry*

General Environmental Chemistry

- General Papers in Environmental Chemistry
- General Posters

Nanomaterials & Nanotechnology

- Applications & Implications of Nanomaterials in the Environment*
- Impact of Engineered & Natural Nanomaterials on the Environment: A symposium in Honor of Dr. Michael F. Hochella
- Micro- & Nano-Plastics in the Environment: Detection, Characterization, Fate & Impact

Sustainable Chemistry & Engineering

- Re-envisioning Chemistry's Role in Environmental Sustainability: Perspectives on Progress & Future Directions

**AEESP Cosponsored*

Call for Papers: Special Issue of Environmental Engineering Science

Addressing Society's Water and Energy Challenges with Reactive Transport Modeling

Reactive transport models provide a powerful tool for investigating complex interplays between biogeochemical reactions, flow, transport, and heat exchange; and thus, the dynamic behaviors of various natural and engineered systems. This special issue of *Environmental Engineering Science* seeks high-quality, high-impact papers that focus on advancing fundamental understanding of coupled chemical–physical processes using reactive transport models and informing sustainable use of water and energy resources and appropriate design of water and energy systems. Planned topics include:

Prediction of contaminant fate and transport (e.g., migration of arsenic, hydraulic fracturing fluids) and assessment of remediation efficiency

Modeling of fluid flow and mass/heat transfer and prediction of resources and energy production (e.g., geothermal systems)

Design of appropriate water treatment systems (e.g., membrane scaling)

Estimation of in situ reaction rates and implications for mitigating climate change (e.g., carbon cycling, CO_2 mineralization)

Advances of reactive transport modeling (e.g., data–model integration, machine learning & physical model coupling)

Please submit abstracts for preliminary review by the editorial committee to hangdeng@lbl.gov by February 28, 2020. This preliminary review will ensure that the intended work fits within the theme of the special issue. Note that abstract approval does not guarantee acceptance of the final manuscript for publication. Full manuscripts will undergo peer review and must be submitted online by June 30, 2020.

Visit our website to read about the journal and to view a sample issue: http://online.liebertpub.com/loi/ees

Guest Editors:
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Alexis Navarre-Sitchler (asitchle@mines.edu), Colorado School of Mines
Elanor Heil, (eheil@mymail.mines.edu), Colorado School of Mines

Editorial questions:
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Manuscript preparation or technical questions:
Contact the Manuscript Manager Dawn Densmore at dawndensmore@gmail.com

Call for Papers: Special Issue of Environmental Engineering Science

Global Environmental Engineering for and with Historically Marginalized Communities

The vision for this Special Issue is to report cutting-edge interdisciplinary environmental engineering and science research contextualized by the unique challenges and the resource and economic constraints faced by historically marginalized communities in the United States and around the world. Papers should address at least one of the Grand Challenges documented in the NASEM Report, Environmental Engineering for the 21st Century:

1. Sustainably Supply Food, Water, and Energy
2. Curb Climate Change and Adapt to Its Impacts
3. Design a Future Without Pollution or Waste
4. Create Efficient, Healthy, Resilient Cities
5. Foster Informed Decisions and Actions

The Special Issue's cross-cutting theme must be addressed through research conducted for and with the participation of historically marginalized communities. Studies should reflect "a keen awareness of the needs of people who have historically been excluded from environmental decision-making, such as those who are socioeconomically disadvantaged, members of underrepresented groups, or those otherwise marginalized." Furthermore, "transparency and inclusiveness should be prioritized in all aspects of the process, from data collection to decision making, by creating genuine opportunities for public participation, especially within communities that are seemingly disinterested, disadvantaged, or marginalized."

The deadline for manuscript submission is July 15, 2020. Submit articles online at https://mc.manuscriptcentral.com/environmental.

Visit our website to read about the journal and to view a sample issue: http://online.liebertpub.com/loi/ees

Questions regarding this special issue: Contact Guest Editors and AEESP Members:

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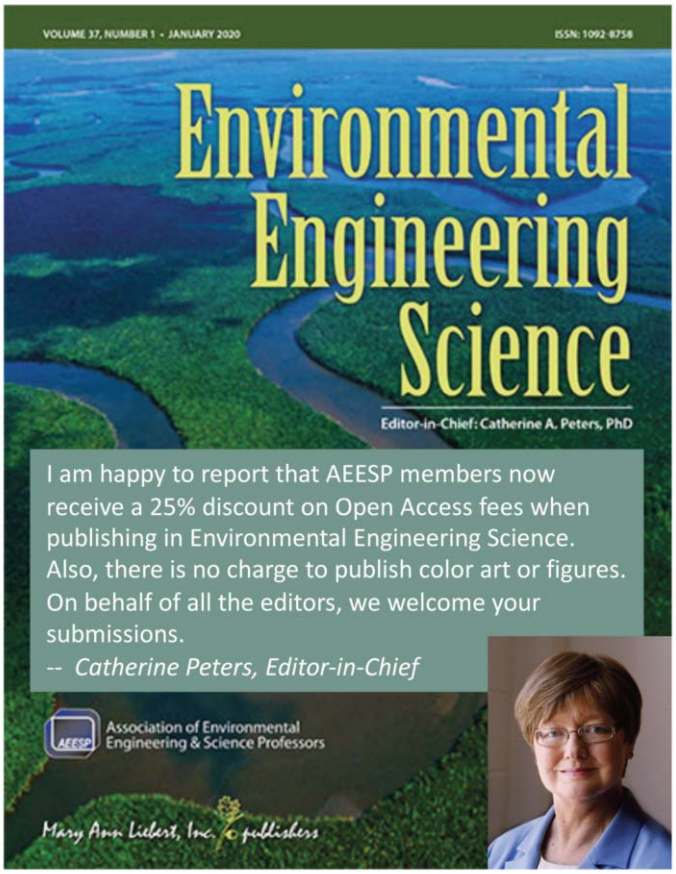
Editorial questions:
Contact **Catherine Peters, Editor-in-Chief,** at cap@princeton.edu or Susan Masten, Deputy Editor, at masten@egr.msu.edu

Manuscript preparation or technical questions:
Contact the Manuscript Manager **Dawn Densmore** at dawndensmore@gmail.com



Gordon Conference on Microbiology of the Built Environment

The 2nd Biennial Gordon Research Conference focused on Microbiology of the Built Environment: Microbes at the Interface of Water, Air and Human Health in Built Environments will be held at Proctor Academy, Andover, NH June 7-12, 2020. Abstracts are now being accepted at: https://www.grc.org/microbiology-of-the-built-environment-conference/2020/

AEESP members Kyle Bibby and Amy Pruden are chairing the meeting, and AEESP is a Contributor.

New Open Access eBook Available for Free Download:

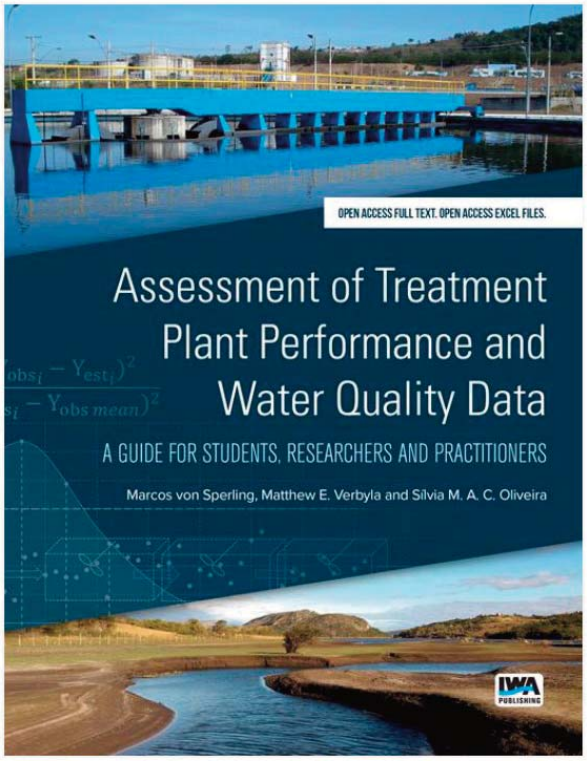
"Assessment of Treatment Plant Performance and Water Quality Data: A Guide for Students, Researchers and Practitioners"

Marcos von Sperling, Matthew E. Verbyla, and Silvia M. A. C. Oliveira

IWA Publishing

https://www.iwapublishing.com/books/9781780409313/assessment-treatment-plant-performance-and-water-quality-data-guide-students

This book presents the basic principles for evaluating water quality and treatment plant performance in a clear, innovative and didactic way, using a combined approach that involves the interpretation of monitoring data associated with (i) the basic processes that take place in water bodies and in water and wastewater treatment plants and (ii) data management and statistical calculations to allow a deep interpretation of the data. The book is problem-oriented and works from practice to theory, covering the following topics: (a) obtaining flow data and working with the concept of loading, (b) organizing sampling programs and measurements, (c) connecting laboratory analysis to data management, (e) using numerical and graphical methods for describing monitoring data (descriptive statistics), (f) understanding and reporting removal efficiencies, (g) recognizing symmetry and asymmetry in monitoring data (normal and log-normal distributions), (h) evaluating compliance with targets and regulatory standards for effluents and water bodies, (i) making comparisons with the monitoring data (tests of hypothesis), (j) understanding the relationship between monitoring variables (correlation and regression analysis), (k) making water and mass balances, (l) understanding the different loading rates applied to treatment units, (m) learning the principles of reaction kinetics and reactor hydraulics, and (n) performing calibration and verification of models.



Call for Submissions:
The First Global Conference on Environment & Sustainability: Environmental Challenges in the Developing World

Kathmandu, Nepal
November 22-24, 2020

https://globalconferencenepal.org/

The First Global Conference on Environment & Sustainability (GCES) will be held from November 22 to 24, 2020 in the ancient mystical city of Kathmandu, the capital of Nepal located at the foot of the Himalayas. The conference has three themes, but is not limited to air pollution and climate change, solid waste management, and sustainable development and environmental policies. Dr. George Tchobanoglous of University of California at Davis and Dr. Jason Shogren, who was recognized by the Intergovernmental Panel on Climate Change for his contributions to their 2007 Nobel Peace Prize winning reports, will be two plenary speakers among others. The call for abstracts for GCES is open, and we encourage you to submit your abstract for an oral or a poster presentation before May 15, 2020. You may find more about the call for abstracts at https://globalconferencenepal.org/abstract-submission/. The conference will be a place to share your research with a global audience, mingle with scientists from around the planet, and have a firsthand experience with the tallest mountains in the world and indulge in age-old Nepali traditions.

Following the conference, there will be an option to hike to the famous Annapurna Circuit Trek.

Proposals for session call, workshops, and side events are now open. Please contact mdangi@csufresno.edu for details. We sincerely welcome your participation at this important gathering and we look forward to seeing you in Nepal!

GCES 2020 Co-Chairs

John J. Boland, The Johns Hopkins University, Baltimore, MD, USA
Rejina M. Byanju, Tribhuvan University, Kirtipur, Nepal
Mohan B. Dangi, California State University, Fresno, CA, USA

AEESP Membership

Membership in AEESP offers important benefits to educators, researchers, students, professionals, corporations and organizations engaged in the environmental engineering and science profession. All who are eligible for membership are welcome to join the Association and to participate in the full range of benefits and opportunities. Membership categories and fees are described below, with complete definitions provided in the AEESP Bylaws. Applying online is easy! We welcome your participation!

Regular and Student Membership

Regular Membership in AEESP is open to persons of full-time faculty or instructional rank (instructors, lecturers, assistant, associate, full professors) in environmental engineering or environmental science at academic institutions that offer baccalaureate, diploma, or graduate degrees in environmental engineering, environmental science or related fields.

Rank	Annual Fee
Full Professors	$100
Associate Professors	$75
Assistant Professors	$50
Students and Post-docs	$15

**Members residing in low and middle income countries as identified by the World Bank may request a discount by contacting the Business Office.*

Applying for Regular membership is made by submitting a completed application form and a brief two page curriculum vitae online with payment. Alternatively, application materials may be mailed to the Business Office with a check enclosed.

Affiliate Membership

Affiliate Membership is open to individuals who are not eligible for regular membership including:

- Individuals primarily employed outside academia who also hold academic appointments in an environmental engineering or related academic program (e.g. adjunct faculty).
- Individuals primarily employed outside academia who have made contributions to education in environmental engineering or related fields.
- Educators in environmental engineering or related fields who are employed at junior colleges or other educational institutions that do not offer the degrees specified above.
- Individuals who were members at one time and who have retired from active teaching.

Application for Affiliate membership is the same as for regular membership. The annual dues for Affiliate members are $60.

Sustaining Membership

Sustaining Membership is open to individuals and organizations whose concern for education in environmental engineering and related fields stimulates them to assist in strengthening university programs devoted to this area. Sustaining members are often those who employ or interact closely with graduates of environmental engineering and science programs such as consultants, utilities, research foundations, professional organizations, publishers and equipment manufacturers. The financial support provided by Sustaining Members allows AEESP to carry out a variety of special programs that benefit all members of the profession. Sustaining Members have access to all AEESP publications and are invited to all AEESP events. Organizations or individuals desiring more information on Sustaining Membership should write to the Secretary, the President, or the Business Office.

Annual dues for Sustaining members are $500. Organizations or individuals desiring more information on sustaining membership should contact the Business Office at the phone number below.

Ready to join? You can apply for membership online!

https://aeesp.org/user/register

More information can also be obtained from the AEESP Business Office:

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