

# AEESP Newsletter

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AEESP.org

### **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 October 2020.

## President's Letter

BY KARL LINDEN  
University of Colorado Boulder



Dear AEESP Community:

Each time I have sat down to write this President's letter, another monumental shift in our collective experience seems to have emerged.

Since February 2020 when we last published our AEESP Newsletter, the world as we knew it has been changed. The coronavirus pandemic has changed the way we live, interact and work. It has altered our profession, forcing us to figure out new and creative ways to teach, carry out our research, disseminate our knowledge and scholarship. The blatant and racist killings of too many African Americans; from Breonna Taylor, to Ahmaud Arbery, George Floyd, and so many others, has renewed a call to action to turn around our 400+ year problem of racism in the United States. It has forced us into the streets to demand not only justice to those killed and for their families' pain, but a commitment that enough really is enough and we cannot rest until there is systemic change and evidence that we have actually achieved that change.

I have been and remain so proud to be a part of AEESP. Our members have been leaders in providing science-based evidence around the public health implications of coronavirus, battling misinformation and serving the public and local and federal agencies with our expertise. We have also stepped up to stay connected with our students and support each other with materials and ideas for continuing our educational mission. It is going to be a strange Fall 2020 semester by any measure, and AEESP will continue to support our faculty as we learn together.

Our mission at AEESP has taken on more meaning over these last few months. We on the board have done a lot of reflection around issues of harassment, sexism, academic bullying, diversity, inclusion, racism, and our privileged roles in the system that perpetuates these numerous injustices. We have a responsibility to lead by exam-

ple. As noted in our joint "AEESP Presidents respond to social and racial strife" statement following the killing of George Floyd (see page 3), "We recognize our privileged role as professors and influencers of young minds and hearts." This gives us some power to work to help change society toward one of less fear, and more acceptance and inclusion. Our association has led by example. It is not lost on me, a white male, that my AEESP term as president falls just after Dr. Maya Trotz, the first black female to serve as AEESP president and just before Dr. Joel Ducoste, the first black male to be AEESP president. And while this and the diverse make-up of our AEESP Board does demonstrate that we as an organization have come a long way, we must continue to work hard towards being more inclusive and never rest until all forms of biases and harassments are eliminated. It is within our power, and our responsibility, to take this momentum and use it to improve our recruiting of people of color and first-generation college students. In my first address as AEESP President during our 2019 conference at ASU, I challenged you all to "broaden participation in our profession, ... reach out to a local high school .... Connect with students in your community". It all happens by intentional little steps. AEESP and our environmental engineering profession has not always been like this. For decades it was an mostly-white male organization. But we changed, we adapted, we nurtured new and diverse talent, and we opened up – we are better for it. It is single actions by individuals, like you and me, conscious actions, that do make change — systemic change.

I am so proud to be a board member of AEESP. It has been one of the most gratifying experiences of my professional career, and personally. Volunteering for something you believe in and being able to make real change in people's lives is something that money can't buy — it is earned with sweat equity; time and attention. In these last few months under stay-at-home orders, I have worked to take stock of our profession and think about the people that have influenced me and

*Continued on page 2*



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Newsletter submissions, comments, and letters to the editor may be sent to:

Laura Arias Chavez  
Newsletter Editor  
c/o AEESP Business Office  
1211 Connecticut Avenue, NW  
Suite 650  
Washington, DC 20036  
Phone: 202-640-6591  
LChavez@tntech.edu

Letters to the president may be sent to:

Karl Linden  
Dept. of Civil, Environmental & Architectural  
Engineering  
University of Colorado Boulder  
607 UCB  
4001 Discovery Drive  
Boulder, CO 80303  
Phone: 303-492-4798  
Email: [karl.linden@colorado.edu](mailto:karl.linden@colorado.edu)

Please send address changes to:

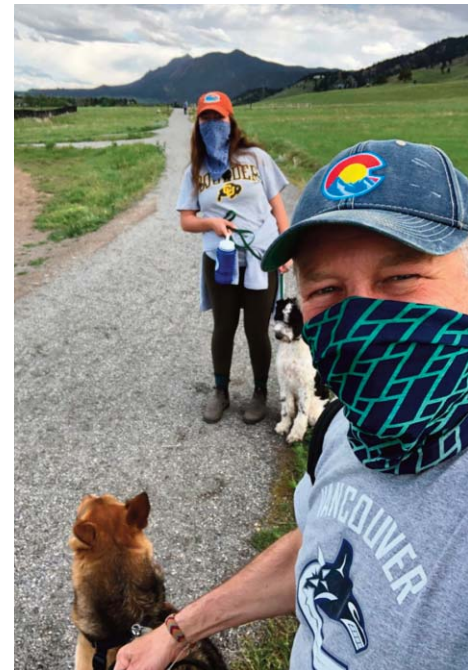
Brian Schorr  
AEESP Business Office  
1211 Connecticut Ave NW, Suite 650  
Washington, DC 20036  
phone: (202) 640-6591  
email: [bschorr@aeesp.org](mailto:bschorr@aeesp.org)

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created opportunity for me. I have reached out and written to them and set up Zoom calls with former professors, graduate school mentors, close colleagues — mostly to just check in and say hi and share stories, but inevitably we diverge into deeper questions and topics. It is very gratifying, and I encourage you all to reach out to those who have made important contributions to your growth as a professor, to your development as a thoughtful person. Some of my outreach was motivated by the loss of a few of our cherished AEESP colleagues this year, and I don't want to miss connecting with people and reminding them that they are appreciated and their efforts had impact.

As we look back and honor those that have shaped us, we also must look forward. We are planting the seed of our organization's future now. We are setting examples and standards for the future of our profession. So, also take the time to hang out with your students; be present for them - graduate, undergraduate, post-docs - appreciate them. They make us who we are - we would not be here without them. After all, it's all about the relationships we make. Of course the science and engineering is exciting and awesome, but it's good because along the way, we help shape someone's career, we help them follow their dreams and we impact their lives, as they do ours. So, thank you Maya for continued mentorship by example, and setting the bar for AEESP Presidents to come, and to Joel, who has been a great colleague and friend and will help AEESP reach even further. The collective efforts of the board, our committee chairs, committee volunteers, administrative staff, and you - our members — are what makes us a great association and a true role model for our re-



*Out on a socially distanced hike in Boulder with my daughter Yarrow, and dogs.*

lated organizations. I appreciate the opportunity to serve and look forward to continued engagement; and hopefully seeing you all soon at Wash U in 2021!

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](mailto:karl.linden@colorado.edu) or on Twitter @waterprof. You are what makes our organization amazing and impactful and I want you all to be proud of your AEESP membership.

In the February 2020 AEESP Newsletter, we inadvertently misspelled Prof. Steve Hrudey's name in the title of an article appearing on page 8 of that edition. We regret the error and have included a corrected version of the article here.

## **Steve Hrudey 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.

## ***AEESP Presidents respond to social and racial strife***

Dear AEESP Community,

AEESP is shocked and saddened by the continued injustice and brutality that is playing out in the public sphere. We are extremely disturbed by these violent acts and denounce all incidents of racism and violence. We as an organization remain committed in our pledge to support and encourage moral and ethical behavior, diversity, inclusion, and non-discrimination in all environmental engineering and science activities (<https://aeesp.org/about>). We stand with all our members and the larger community who have experienced stress and trauma around recent racial and social divisions.

We recognize our privileged role as professors and influencers of young minds and hearts. As hard as we work in our domain expertise, we need to work equally hard to build positive human relationships with our colleagues, our students, and the communities that we serve. We pledge to continue to promote and support inclusivity and the diversity of cultures and perspectives in our profession. We will continue to work together toward a more healthy, just and equitable society.

Sincerely,

Karl Linden, University of Colorado Boulder, AEESP President  
Joel Ducoste, North Carolina State University, AEESP President-Elect  
Bill Arnold, University of Minnesota, AEESP Vice President

*AEESP supports and encourages ethical behavior, diversity, inclusion, and non-discrimination in all environmental engineering and science activities. Individuals should not be discriminated against based on their race, color, ethnicity, religion, national origin, sex, age, marital status, personal appearance, sexual orientation, gender identity or expression, family responsibilities, genetic information, disability, political affiliation, or veteran status.*

## ***AEESP is a proud member of the Societies Consortium on Sexual Harassment in STEMM***



*An initiative to advance professional and ethical conduct, climate & culture*



## In Memoriam: Professor Philip C. Singer

Dr. Philip (Phil) C. Singer, Professor Emeritus in the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill's Gillings School of Global Public Health, passed away peacefully on February 17, following a December cancer diagnosis. At the time of his passing he was surrounded by his four children, his sister, and his wife of 54 years, Ellen.

A native of Brooklyn, NY, Phil earned a BCE from The Cooper Union, an MS from Northwestern, and a PhD from Harvard. A member of UNC's faculty from 1973 to 2011, Phil served as the first Daniel Okun Distinguished Professor and was an internationally renowned expert in drinking water quality, as well as a member of the National Academy of Engineering. Over the course of his career, Phil edited two books, authored more than 240 scientific articles and served as an investigator on 70 grants funded by groups such as the Environmental Protection Agency and Centers for Disease Control and Prevention, among others. In 2006, he received the Athalie Richardson Irvine Clarke prize for excellence in water research, one of the field's highest honors. In 2007, Phil was elected President of the Association of Environmental Engineering and Science Professors (AEESP), and served as a member of the AEESP Board of Directors from 2004-2007. In recent years, Phil also served on the Flint Water Interagency Coordinating Committee, which provided guidance on long-term solutions to the lead problem in Flint, Michigan.

Phil made many important contributions in the areas of drinking water quality and treatment, but what he valued most was teaching and mentoring the more than 100 masters and doctoral students he advised over his 42-year career, many of whom have gone on to become influential researchers, professionals and scholars themselves.

"Phil was a giant in the field of drinking water treatment," said Barbara Turpin, PhD, Professor and Chair of UNC's Department of Environmental Sciences and Engineering. "He was a dedicated mentor and he cared deeply about our department. One of the things that really impressed me was the large number of former students who made a contribution to the Distinguished Professorship established in his name. It was a testament to the difference he made in so many people's lives."

Upon Phil's retirement in 2011, he was honored with his own endowed professorship, as dozens of alumni, colleagues, family and friends came together to establish the Philip C. Singer Distinguished Professorship in Environmental Sciences and Engineering, recognizing his extraordinary career in research, teaching and service.

"Phil was an incredibly accomplished researcher, but what I will always remember about him is the time that he took to mentor and advise students and young faculty, including me," said Greg Characklis, PhD, the inaugural Singer Distinguished Professor, "Building a sense of community was very important to Phil, and our department will continue to benefit from his efforts through the strong bonds that he built with alumni and colleagues."

In addition to his dedication to his profession, Phil was also a pillar of his local community. A long-standing member of Beth El Synagogue in Durham



and the Kehillah Synagogue in Chapel Hill, Phil served on the board of the Jewish Federation of Durham-Chapel Hill and was President from 2015-2017. Philanthropy and community service were very important to Phil and Ellen, and together they were honored with the Sara and Mutt Evans Leadership Award by the Jewish Federation in 2012. Throughout his life, Phil loved athletics; sprinting to Ebbets Field after the school bell rang prepared him for a spot on the Midwood High School track team. Phil was a devoted fan of Tarheel basketball, and never gave up hope that the Dodgers would eventually return to Brooklyn. Phil's love of travel also led him to teach, vacation, and occasionally fish on six continents.

Phil will be long remembered for his warmth, quick wit, enthusiasm, love of performing, and complete devotion to his family. They recall that whenever a gathering called for a song parody to be written and sung, Phil never shied from duty. When a child or one of his many grandchildren was accepted to a university, he was the first to buy the corresponding t-shirt. Phil and Ellen rarely missed an opportunity to attend celebrations and milestones for friends and extended family across the country. Phil had the rare gift for making people feel uniquely appreciated and special, and he will be missed by all who were fortunate enough to know him.

The Department of Environmental Sciences and Engineering will host a symposium and reception honoring Phil on Friday, November 13th in Chapel Hill. Those interested in attending should contact Dr. Greg Characklis ([charack@email.unc.edu](mailto:charack@email.unc.edu)) for more details.

## Meet Me in St. Louis – 2021 AEESP Research and Education Conference

The Conference Organizing Committee is delighted to announce that the 2021 AEESP Research and Education Conference will be hosted by Washington University in St. Louis together with Missouri University of Science & Technology, Southern Illinois University Edwardsville, and University of Missouri-Columbia. The conference dates are July 13-15, 2021, continuing the Tuesday-Thursday format of the most recent conferences. Our theme, “Environmental Engineering at the Confluence,” is inclusive of the full breadth of environmental engineering, while providing an opportunity to explore convergence and highlight emerging developments in our field. The program will be organized around four areas of convergence: convergence of education and research, convergence of research in air, water, and soil, convergence of research and action, and convergence of research, practice, and entrepreneurship. We look forward to working with the AEESP community to develop a set of pre-conference workshops to be held on Tuesday July 13, before the opening keynote lecture and a reception of St. Louis bar-

beque and blues. We are excited to offer new “Meet the Candidate,” “Three Minute Thesis,” and “Early Career Showcase” workshops and poster sessions for doctoral students, postdocs, and early-career professors. The conference website will go live this July with information about workshop proposals, abstract submissions, housing and travel, and key features of the program. The Washington University campus is just 15 minutes from Lambert St. Louis International Airport with easy connections to the airport and downtown by light-rail. Our central location and an array of housing options, including on-campus residence hall accommodations, are designed to make the 2021 conference accessible and affordable. The Washington University campus is adjacent to Forest Park, which hosts the St. Louis Zoo, Art Museum, History Museum, and Science Center; notably admission to each of these institutions is free! We encourage conference attendees to take advantage of Forest Park and the numerous other tourism and recreation opportunities in the St. Louis region.





## Highlights of the AEESP Board of Directors Meeting March 2-3, 2020

Submitted by William Arnold (University of Minnesota, AEESP Vice President)

The AEESP Board of Directors (BOD) met on March 2-3, 2020 at the University of California, Los Angeles. The Board was joined by Brian Schorr, AEESP's Executive Administrator, from Technology Transition Corporation (TTC). A summary of highlights from this BOD meeting is provided below.

### Membership

In the first two months of 2020, 50 new members have joined AEESP (25 Regular Members, 2 Affiliates, and 23 Student/PostDoc Members). Among the Regular Members: 5 Full Professors, 3 Associate Professors, and 17 Assistant Professors joined. In 2019, 151 new members joined. As of Feb 5, 2020, there are 947 AEESP members (612 in good standing and 335 in ar-

rears). Please pay your dues! There are currently 19 Sustaining Members. Two dropped their membership and 2 merged. Recruitment of Sustaining Members is ongoing and members are encouraged to suggest companies or other organizations that could be approached about being a Sustaining Member. Please contact Brian Schorr.

### Finances and Sponsorship

There was discussion about expanding the AEESP footprint by selective sponsorship of lecturers/meetings to additional professional organizations both domestic and international beyond the current portfolio (AWWA, WQTC, WEFTEC, AAAR). This would be a way to engage potentially new members and highlight the importance of environmental engineering.



The AEESP Board of Directors from left to right: Rob Nerenberg (Notre Dame), Heileen Hsu-Kim (Duke), Shaily Mahendra (UCLA), Amy Pruden (VA Tech), William Arnold (U Minnesota), Karl Linden (CU Boulder), Joel Ducoste (NCSU), April Gu (Cornell), Brian Schorr (TTC). Not pictured: Willie Harper (AFIT) and Allison MacKay (Ohio State). Picture taken on a team-building outing to Paramount Studios in LA.

Requests for support for other meetings (e.g., by Gordon Research Seminar meetings) will be accepted twice per year.

AEESP has joined the Societies Consortium on Sexual Harassment in STEMM, a group that is developing tools and policies to advance professional and ethical conduct. Details of the organization are available at <https://societiesconsortium.com/>. AEESP board member Willie Harper participated in a recent webinar and provided a summary of recommendations for societies to develop an inclusive culture, including a code of conduct, membership surveys, and training materials. We are working on ways to deliver relevant information and content to membership.

## **AEESP Awards and Endowments**

Efforts are continuing to fully endow the Steven K. Dentel AEESP Award for Global Outreach and the Walter J. Weber Frontier in Research Award. The Endowments Fundraising Committee will be tasked with developing a fundraising plan for the three signature AEESP awards (Outstanding Contribution to Environmental Engineering & Science Education, Outstanding Teaching in Environmental Engineering & Science, Outstanding Publication Award).

## **Bylaws Update and Liability**

The board determined that the bylaws needed an update to indemnify board members who serve as volunteers. It was also recommended that AEESP purchase liability insurance to cover legal costs in the event the organization is involved in a legal suit. An amendment to the bylaws was approved by the board and will be sent to AEESP membership for a vote of approval. Other minor updates to the bylaws will also be put forward to membership for a vote.

## **AEESP Global**

Karl Linden is forming a steering committee about how to improve engagement with environmental engineers and scientists abroad. An idea under consideration is to enable formation of AEESP groups on each continent, that would operate independently, and AEESP USA could share resources and operating protocols around educational activities and outreach. An AEESP International meeting (every five years) was discussed.

## **IWA Group on Environmental Engineering Educators (E3)**

The board discussed AEESP having greater interactions between IWA and AEESP. The connection between the two organizations could occur through the E3 working group. Joint activities at annual conferences (workshops, social events) could be way to expand the reach of both groups cooperatively.

## **Activities of Committees**

The Board discussed the various committees that make AEESP work. Highlights from a few of the committees are presented below. You can find the listing of the AEESP committees and committee chairs at <http://www.aeesp.org/about/committees>. Please consider volunteering your time on one of these committees and getting more involved with AEESP.

**Awards.** Kevin Finneran is the new chair. New members have been added to the main committee and PhD subcommittee. Award submission has closed and reviews are ongoing. In the future, the awards deadline will continue to be January 31. A new subcommittee will be created to manage and evaluate the joint AEESP-AAEES awards. We are also exploring how to encourage more award submissions as some awards receive few nominations.

**Conference Planning:** Four university teams submitted full proposals to host the AEESP biennial conference. All of the proposals had strengths and were viewed as viable conference sites. The university team selected for the 2021 conference is Washington University in St. Louis/Missouri University of Science & Technology/Southern Illinois University/University of Missouri. Keep an eye out for more information, and we hope to see you all in St. Louis next summer!

### **Internet Resources Committee**

The committee is discussing more efficient ways to communicate with membership via email and the website. The board has begun to discuss plans to update the website (and make it work on mobile devices!) and make submission and distribution of news/jobs/conference announcements more efficient. Changes to communication frequency to membership will appear soon.

### **Lectures Committee**

Cliff Davidson from Syracuse will be the 2020-2021 AEESP Distinguished Lecturer. The call for host sites was released.



## AEESP Journal: Environmental Engineering Science Spotlight

Venkataramana Gadhamshetty (EES Associate Editor), Mark J. Krzmarzick (Chair of the AEESP Publications Committee), Catherine A. Peters (EES Editor-in-Chief)

The “Spotlight” column draws attention to selected articles in *Environmental Engineering Science*, the official journal of AEESP. Spotlight articles appear regularly in *EES* 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 December 2019 issue through the March 2020 issue of *EES*. Congratulations to all whose work is highlighted.

**Dixon P.J., Ergas S.J., Mihelcic, J.R. and Hobbs S.R. (2019) “Effect of Substrate to Inoculum Ratio on Bioenergy Recovery from Food Waste, Yard Waste, and Biosolids by High Solids Anaerobic Digestion.” *Environ. Eng. Sci.* 36(12), 1459-1465.**

Management of solid organic wastes is becoming increasingly difficult due to the increasing restrictions on disposal of wastes in landfills, tipping fees, and source separation requirements. Dixon et al. (2019) assessed the use of a high solids anaerobic digestion (HS-AD) method for treating food waste, yard waste and biosolids individually as well as via co-digestion. They found that co-digestion of solid organic wastes with biosolids from wastewater treatment plants provides the highest methane yield. An optimal ratio of substrate to inoculum (S/I) was reported to be the key parameter for enhancing methane production. Although HS-AD facilities can be a viable option for managing wastes in the United States, the authors suggested a need for further cost analysis and life cycle analysis of the large scale HS-AD systems.

**Chen, T., Yavuz, B.M., Delgado, A.G., Januszewski, B., Zuo, Y., Westerhoff, P., Krajmalnik-Brown, R. and Rittmann, B.E. (2019). “Multicyclic Ozonation+Bioremediation for Soils Containing Residual Petroleum.” *Environ. Eng. Sci.* 36(12), 1443-1451.**

Bioremediation is a cost-effective option for remediating petroleum-contaminated soils. Chen et al. (2019) examined an ozonation step for enhancing the feasibility of biodegradation processes designed to treat total petroleum hydrocarbons (TPHs) and the associated total organic carbon (TOC). They compared the efficiency of pre- and post-ozonation steps. They demonstrated that the two-staged process can effectively achieve the regulatory standard of 10,000 mg/kg for TPH. They suggested that it is important to measure dissolved organic carbon along with TPH to get a deeper insight on the representative dynamics in the integrated process. Overall, this process shows a promise for remediating soils contaminated with petroleum compounds.

**Lishman, L., Aqeel, H., Basuvaraj, M., Liao, B., Wang, R., & Liss, S. N. (2019). “Biofouling of an Aerated Membrane Reactor: Four Distinct Microbial Communities.” *Environ. Eng. Sci.* 37(1), 3-11.**

Membranes used for water and wastewater treatment are fouled by microorganisms, which reduces the overall performance of membrane technologies. With a goal of developing knowledge needed to design novel cleaning methods, Lishman et al. (2019) studied membrane biofouling in a mesophilic-aerated membrane bioreactor based on a polyvinylidene fluoride microfiltration membrane. They assessed the impacts of both polysaccharide producers and consumers in the microbial community responsible for fouling. They concluded that it is important to characterize the cell growth and associated extracellular polymers in the extramembrane tightly bound biofilm as well as intracore membrane biofilm. This study emphasizes the need to study biofouling on membrane surface as well as within the membrane.

**Ikuma, K., & Rehmann, C. R. (2020). “Importance of Extracellular DNA in the Fate and Transport of Antibiotic Resistance Genes Down-**

**stream of a Wastewater Treatment Plant”.** *Environ. Eng. Sci.* 37(2), 164-168.

The evolution of pathogens that resist antibiotic treatments presents as series of human health risks. The aquatic environment represents a reservoir for antibiotic resistance genes (ARGs) and presents an exposure pathway for humans to contact antibiotic-resistant pathogens. Ikuma and Rehmann (2020) developed a novel predictive model that takes into account both intracellular DNA (iDNA) and extracellular DNA (eDNA) to predict the fate and transport of ARGs in receiving waters downstream of wastewater treatment plants. The model considers that eDNA contributes to iDNA of ARGs via a horizontal gene transfer process. The predictive model was used to track eDNA and iDNA in the water column as well as in the sediment, taking into account the physical, chemical, and biological processes. The consideration of eDNA fraction of ARGs in WWTP effluent may improve our ability to predict and improve risk assessment of antibiotic resistance in the water environment.

**Maier, K.E., Cassidy N.O., Dollhopf, M.E., Mayer, B.K. & McNamara, P.J. (2020). “Removal of Estrogenic Compounds from Water Via Energy Efficient Sequential Electrocoagulation-Electrooxidation”.** *Environ. Eng. Sci.* 37(2), 99-107.

The presence of estrogens in the environment has been linked to potential human health impacts. Maier et al. (2020) studied a sequential treatment process for removing dissolved organic carbon (DOC) and estrogens simultaneously from water sources. An electrocoagulation (EC) process was used as the first step for removing DOC, followed by an electrooxidation (EO) for removing estrogenic compounds. This study used four estrogenic compounds including estrone, 17 $\beta$ -estradiol, estriol, and 17 $\alpha$ -ethynylestradiol. First, EC (iron electrodes) was employed to remove humic acid and improve downstream removal of estrogenic compounds while reducing overall energy consumption in EO (boron-doped diamond electrodes). The sequential electrocoagulation and electrooxidation system was found to reduce overall electrical energy per order (EEO) by nearly 50% compared with EO alone for each of the estrogenic compounds. The EEO was also lower than UV photolysis, UV photocatalysis, and ozone alone, respectively. However, it was higher than a photocatalytic reactor membrane and UV/H<sub>2</sub>O<sub>2</sub>. Overall, the EC-EO system effectively removed both bulk organic matter and estrogenic compounds.

**Mihelcic, J. R., & Rains, M. (2020). “Where’s the Science? Recent Changes to Clean Water Act Threaten Wetlands and Thousands of Miles of Our Nation’s Rivers and Streams.” *Environ. Eng. Sci.* 37(3), 173-177.**

Mihelcic and Rains (2020) authored an opinion piece on the recent changes to the Clean Water Act (CWA) in a 2020 regulation referred to as the Navigable Waters Protection Rule. This change was jointly mandated by the U.S. Environmental Protection Agency (EPA) and Army Corps of Engineers. Mihelcic (2020) reviewed the bipartisan history of the CWA and the historic trajectory of how “waters of the United States” are defined to provide legal jurisdiction. They mentioned that the science supported changes to the CWA made in 2015 compared to lack of science that supported the recent changes. The 2015 Clean Water Rule was based on review of ~1,200 peer-reviewed articles that served as the basis for a 408-page scientific Connectivity Report. However, for the 2020 regulation, EPA’s Science Advisory Board wrote that EPA did not incorporate the best-available science into the rule making process. Mihelcic and Rains (2020) concludes with a note that EPA and the Corps have ignored their responsibilities, mission, and vision by ignoring established science in their mandates to protect the nation’s water.



## 2020-21 AEESP Distinguished Lecturer: Cliff Davidson

Dr. Cliff Davidson of Syracuse University has been selected as the 2020-2021 AEESP Distinguished Lecturer. Lectures will be scheduled from September 2020 to April 2021.

Cliff Davidson is the Thomas and Colleen Wilmot Professor of Engineering in the Department of Civil and Environmental Engineering at Syracuse University in Syracuse, NY. He also serves as Director of Environmental Engineering Programs and as Director of the Center for Sustainable Engineering. He received his BS in Electrical Engineering from Carnegie Mellon University and his MS and PhD degrees in Environmental Engineering Science from California Institute of Technology. Following his PhD, he joined the Carnegie Mellon faculty in the Department of Civil Engineering (currently Civil and Environmental Engineering) and the Department of Engineering and Public Policy, where he served for 33 years. He joined Syracuse University in 2010. He has 140 publications in peer reviewed journals, and has given roughly 200 presentations at conferences, seminars, and workshops. He is a Fellow in four organizations: AEESP, American Association for Aerosol Research (AAAR), the American Society of Civil Engineers (ASCE), and the Syracuse Center of Excellence in Environmental and Energy Systems. He served as President of AAAR in 1999-2000. Davidson's long-term research interest is transport and fate of environmental pollutants, especially atmospheric acids and heavy metals. More recently, he has studied the role of engineers in sustainable development, focusing on green infrastructure. He has also studied changes in education needed to train an engineering workforce for the 21st century.



Two lecture topics will be presented:

*Lecture 1: "The Green Roof as a Complex System"*

*Lecture 2: "The Interactions of Airborne Particles with Surfaces"*

For more information, please see <http://www.aeespfoundation.org/content/2020-21-aeesp-distinguished-lecturer> or contact Debora Rodrigues, Chair of the AEESP Distinguished Lecturer Committee ([dfrirodrigues@uh.edu](mailto:dfrirodrigues@uh.edu)).



### **Update on Professor Diane McKnight's Distinguished Lecture Series:**

Due to COVID-19, Professor Diane McKnight's Distinguished Lecture Series is currently on hold. Professor McKnight is still scheduled to provide 4 remaining lectures in her Tour. Dates and times of these lectures have not yet been determined and are pending forthcoming information from the host schools. For more information on Professor McKnight's Distinguished Lecture Series, please visit her Tour page here:

<http://www.aeespfoundation.org/content/2019-20-aeesp-distinguished-lecturer>

## New Faculty Appointments

### Jennifer Apell joins New York University



Dr. Jennifer Apell joined the Department of Civil and Urban Engineering at New York University as an assistant professor in Spring 2020. Dr. Apell received her PhD in Environmental Chemistry from MIT and was a postdoctoral researcher at ETH Zurich before joining the faculty of NYU. Her research focuses on the transport and abiotic degradation of organic micropollutants in engineered systems and natural environments with a particular focus on sorption and photolytic processes. She aims to develop a mechanistic understanding of these processes in order to predict the environmental fate of pollutants and pursues research topics where the goals of environmental engineering, ecotoxicology, and public health overlap.

### Dr. Bezawit Getachew joins Rice University



Dr. Bezawit Getachew will be joining the George R. Brown School of Engineering, Department of Civil and Environmental Engineering, at Rice University in July 2020. She is currently a postdoctoral associate at MIT working with Prof. Jeffrey Grossman on electrically conductive water filtration membranes. She holds a PhD from Yale University in Chemical and Environmental Engineering, where she worked on making self-healing water filtration membranes. She holds a BS in Chemical Engineering (ABET) from the same institution.

Dr. Getachew's current research interests are in studying the performance of self-healing and stimuli-responsive materials in complex, environmentally-relevant media. She applies her experience in polymer membrane synthesis and surface chemistry/structure analysis to develop composite materials that improve the resilience and multi-functionalities of water treatment systems. Her goal is to leverage the advances made in smart dynamic materials to enhance water treatment processes and water quality sensing technologies.

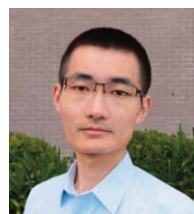
### Lei Fang and Meng Wang join University of Pittsburgh

The University of Pittsburgh has hired two new faculty into their Sustainability and Environmental Engineering group: Dr. Lei Fang and Dr. Meng Wang. Both will join as assistant professors in the Fall 2020 semester.



**Dr. Lei Fang** graduated from Colorado State University in 2015 with a BS degree and major in Environmental Engineering. He earned his PhD in Civil and Environmental Engineering (with a minor in Computational and Mathematical Engineering) in 2020 from Stanford University, where he worked with Prof. Nicholas Ouellette.

Dr. Fang is broadly interested in the behavior of complex systems far from equilibrium and applies the physical understanding of complex systems into environmental and human health applications. He is primarily focused on experimental studies but augments with numerical simulations and theoretical modeling. Current projects in his lab include turbulence in two dimensions, Lagrangian coherent structures, swimmers in turbulence, crowd dynamics, and virus transmission via exhaled airflows.



**Dr. Meng Wang's** research interests lie at the interface of bionanotechnology, microbiology, and material science. Specifically, his research seeks to (i) design novel bionanomaterials to enable sustainable and efficient water purification, (ii) harness the biochemical potential of microorganisms in bioremediation and resource recovery, and (iii) understand the effects of emerging contaminants on microbial activities in natural and engineered systems. Dr. Wang is currently a postdoctoral scholar in Dr. Shaily Mahendra's group at the University of California, Los Angeles (UCLA). He received his BS (2012) in environmental science from Nanjing University and his MS (2015) and PhD (2018) in environmental engineering from UCLA, where he worked on engineering protein nanoparticles for water treatment applications.

### Stephanie Loeb to join McGill University



This fall, the Department of Civil Engineering at McGill University will welcome Dr. Stephanie Loeb to their environmental engineering group as an assistant professor. Dr. Loeb's research efforts span the intersection of materials science and environmental engineering, with particular focus on the removal of chemical and biological contaminants in water using sunlight, engineered light sources, and advanced light-activated nanomaterials. During her post-doctoral research at Stanford University she aimed to further characterize how sunlight inactivates challenging viruses in water, such as norovirus and the novel coronavirus. Her doctoral research at Yale University focused on the development of a novel nanomaterial enabled system for sustainable solar photothermal disinfection. She has further expertise in the use of photocatalytic nanomaterials for the generation of reactive oxygen species, the application of UV-light generated by LEDs for sustainable drinking water treatment, and molecular biology techniques for the detection of viruses in the environment. Starting her independent research career at McGill in 2020, she plans to develop a research program that focuses on developing novel advanced materials and materials-based processes that can provide knowledge and solutions for maintaining healthy and resilient water infrastructure. Loeb holds a PhD from Yale University, as well as MASc and HBSc degrees from the University of Toronto.



## AEESP Environmental Engineering and Science Stories: Calvin (Herb) Ward, PhD, PE



This issue's Stories column features selections from Dr. Maya Trotz's (University of South Florida) [2011 interview](#) with Dr. Calvin Herb Ward, part of the AEESP Environmental Engineering and Science Stories video series produced by Dr. Trotz and shared on the AEESP YouTube Channel, [AEESPProf.s](#). Dr. Ward is the A.J. Foyt Family Professor Emeritus at Rice University's Department of Civil and Environ-

mental Engineering. He joined Rice university's academic programs in environmental science and engineering. His impact at Rice included service as the Foyt Family Chair of Engineering in the George R. Brown School of Engineering, Chair of the Department of Civil and Environmental Engineering, Professor in the Department of Ecology and Evolutionary Biology, and organizing Chair of the Department of Environmental Science & Engineering. In this interview, Dr. Ward discusses his background and career path, including some intersections with the founding of EPA 50 years ago. He directed the National Center for Ground Water Research (NCGWR) for 18 years, helping to anticipate and solve the nation's emerging groundwater problems.

### AEESP: What kinds of problems do you look at as an environmental engineer?

CHW: In (the) late 60's, the field of ground water was really done by the USGS and they did water flow, but not water contamination. They took care of all the ground water issues, but not contaminated water. We were just beginning to learn how we lost chemicals into the ground water, polluted major water supplies, and things like this. Then the EPA advertised the opportunity to form the National Center for Ground Water Research. I do groundwater research, groundwater remediation, and that's primarily my field. I started in surface waters.

### AEESP: What's your training background?

I did my Bachelor of Science degree at New Mexico College of Agriculture and Mechanic Arts, now called New Mexico State University, in the Agricultural Sciences. And then I went to Cornell and got a PhD in Applied Microbiology. After that, I was a Commissioned Officer, and I went to the Air Force and was assigned to the predecessor to NASA, which was the School of Aerospace Medicine. And there, for three years, I built space life support systems for the programs that many people know, like Skylab.

Then I interviewed for a position at Rice University and didn't really feel like that was a position that I wanted, so I turned it down. I continued as a civilian for the School of Aerospace Medicine. And Rice came back and offered me another job three years later. Eventually I took the job and I went to Rice University in the Department of Chemical Engineering.

### AEESP: How did you become an environmental engineer?

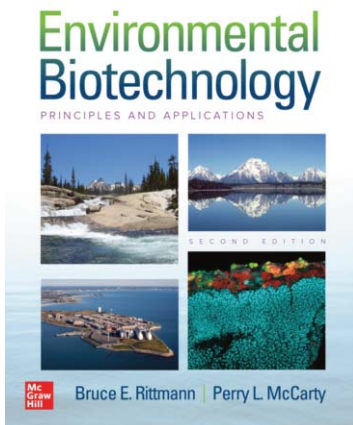
The reason that Rice wanted me to come and join the School of Engineering is that there wasn't any life science of any kind in the School of Engineering at the time. And the people that asked me to come there— Kenneth Pitzer (the former president of Stanford University), and the chairman of the Department of Chemical Engineering, and one environmental engineering professor there, in civil, his name was Arthur W. Bush— they wanted to expand the program, but the program really didn't exist, and there was just one person.

I was given \$10,000 a year and a building to build laboratories. And so, I built laboratories, one after the other, until we finally got the facilities necessary to try to have a research program. Bush was a sanitary engineer, but he was very interested in materials in the environment and things like this. So, we started hiring people— some very, very good people, like Philip Biedent and Mason Tomson in environmental chemistry. And then Bush ran for Congress. There were no engineers in the United States Congress at the time. He ran for Congress and went to bed believing that he was the new Congressman, and woke up, and had lost by a tenth of one percent. Then the EPA was formed— President Nixon, by the way, formed the EPA, perhaps for the wrong reason, but nevertheless he did— and it was divided into regions, and Arthur Bush became the regional administrator for Region Six, in Dallas. He never returned to Rice after that. He opened a consulting firm. Bush was really my mentor in environmental engineering, but he left very early, and kind of left me alone to figure it out.

### AEESP: What challenges did you face in your career?

My biggest challenge was very simple: building the facility that was required to have a fledgling department, and hiring really good people— convincing them to come to Rice. I was really an applied microbiologist parading as an environmental engineer, so, just an imposter really, and then I guess I became an environmental engineer at some time. So, that was really the biggest challenge. And then, early on, finding support for the Department. I became chairman, I was chairman of the Department for 22 years, and then after that I became the originating Director of the University's Energy and Environmental Systems Institute, and through the years, we competed for and won a number of major research centers, and graduate students profited greatly from those.

## Second Edition of Environmental Biotechnology Released



McGraw-Hill Book Company has released the second edition of *Environmental Biotechnology: Principles and Applications*, authored by Bruce E. Rittmann and Perry L. McCarty. All of the second edition has been thoroughly updated and reorganized, and it has chapters on timely new topics, such as microbial electrochemical cells and the photosynthetic biofactories. The second edition is available in hard-copy and electronic versions, and a Solutions Manual for all the problems will be available from Mc-

Graw-Hill soon. Its ISBN is 9781260441604. The second edition can be ordered from McGraw-Hill Professional at: <https://www.mhprofessional.com/9781260441604-usa-environmental-biotechnology-principles-and-applications-second-edition-group>. It also can be ordered via Amazon.

## AEESP Community Congratulates Newsletter Editor Laura Arias Chavez on the Arrival of Her Daughter!

AEESP would like to send a special congratulations to Newsletter Editor Laura Arias Chavez on the arrival of her new daughter! We are told that mother, daughter, and family are all safe, healthy and happy. Best wishes Arias Chavez family from your friends and colleagues at AEESP!





## 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.

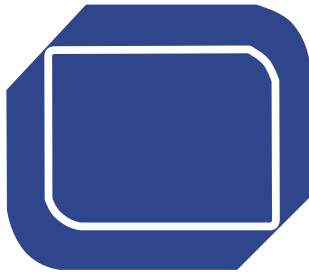
Annual dues for Sustaining members are \$500. Organizations or individuals desiring more information on sustaining membership should contact the Business Office at the phone number below.

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:

**Brian Schorr**  
 AEESP Business Office  
 1211 Connecticut Avenue, NW, Suite 650  
 Washington, DC 20036  
 Phone: (202) 640-6591  
 Fax: (202) 223-5537  
 email: bschorr@aeesp.org



# Association of Environmental Engineering and Science Professors Newsletter

Laura Arias Chavez  
Newsletter Editor  
c/o AEESP Business Office  
1211 Connecticut Avenue, NW  
Suite 650  
Washington, DC 20036  
Phone: 202-640-6591  
LChavez@tntech.edu

## AEESP Officers

### President

Karl Linden  
Dept. of Civil, Environmental  
& Architectural Engineering  
University of Colorado  
Boulder  
607 UCB  
4001 Discovery Drive  
Boulder, CO 80303  
Phone: 303-492-4798  
Email:  
karl.linden@colorado.edu

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Joel Ducoste  
Department of Civil,  
Construction, and  
Environmental Engineering,  
North Carolina State  
University  
208 Mann Hall, 2501 Stinson  
Drive, Raleigh NC 27695-7908  
Phone: 919-515-8150  
Email: jducoste@ncsu.edu

### Vice-President

Bill Arnold  
Dept. of Civil, Environmental,  
and Geo-Engineering  
University of Minnesota  
500 Pillsbury Drive, SE  
122 CIVE  
Minneapolis, MN 55455  
Phone: 612-625-8582  
arnol032@umn.edu

### Secretary

Shaily Mahendra  
5732J Boelter Hall  
Department of Civil and  
Environmental Engineering  
University of California  
Los Angeles, CA  
90095-1593  
Phone: 310-794-9850  
Email:  
mahendra@seas.ucla.edu

### Treasurer

Heileen Hsu-Kim  
Department of Civil &  
Environmental Engineering  
Duke University  
118A Hudson Hall, Box 90287  
Durham, NC 27708  
Phone: 919-660-5109  
Email: hskim@duke.edu

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