AEESP Newsletter

Published three times yearly by the Association of Environmental Engineering & Science Professors

August 2022

Volume 57 No. 2

Highlights

Need to renew your 2022 AEESP membership? Go to "Membership > Online Renewal" on the AEESP Website: https://aeesp.org/content/online-membership-renewal AEESP.org

AEESP Newsletter Submissions

Please send news, conference announcements, job postings, letters to the editor, and other contributions to the newsletter to Kyle Doudrick at kdoudrick@nd.edu. The next newsletter will appear in October 2022.

President's Letter

BY BILL ARNOLD
University of Minnesota

Perspective and Identity

For many of us, our research drives our membership in professional societies. While educational aspects are important in these organizations, the primary reason we join is often a discounted registration fee to present at a conference. AEESP is different because we are more than a research-driven group. This insight was brought home for me by a statement Belinda Sturm made during our strategic planning exercise a year ago. She pointed out that AEESP was the ONE professional organization where she could be her "whole self" – a teacher, a researcher, and an administrator. There was no need to take off or put on a certain "hat" in AEESP. This particular insight showed me that AEESP should be working to help our members in all aspects of their careers. As an organization, we need to recognize that members will self-identify in different ways depending on their career stage, interests, expectations, and experiences. Our careers, however, are not the only defining aspect of our "whole selves".

I have recently been exposed to new context about how our professional identities could be defined and developed. Risien and Storksdieck (2018) present the concept of 'professional impact identity'. They argue that by thoughtfully evaluating our own "discipline and scholarship; personal preferences, capacities, and skills; institutional context, and the various communities or social settings" in which we work, we can have deeper and more lasting societal impact from our endeavors. This would lead to a more rewarding professional career. Risien and Stoksdieck also assert the broad integration of these practices has the potential to help in recruitment and retention to a given discipline.

Even this expanded definition of identity may fall short by not fully considering our social and cultural identities. I know that, as a White cis male, my experiences in daily life are very different than many (if not most) other AEESP members. I must do my best to understand each person's perspective, even though it will never be my own. I also appreciate that many of our colleagues and students, who come from all corners of the globe (how does a round planet have corners?), have distinct perspectives from those of us who were raised and educated solely in the United States. Without taking a position in another country, I will not be able to fully appreciate all it takes to leave family, culture, and familiarity behind. Being from a city, suburb, or rural community will also affect how a person approaches work and life. Part of our identity is our knowledge. While many of us in AEESP have similar disciplinary knowledge, each of our members' community and cultural knowledge is vastly different. Thus, this will also drive what each of us sees as societal needs and equity and justice impacts of our research and outreach. Having this diversity among our membership makes us stronger, and our drive to be an inclusive professional society requires us to work to understand, honor, appreciate, and hear the diversity of perspectives and experiences of our members.

As part of AEESP's commitment to diversity, equity, and inclusion (DEI), the board of directors applied to be, and AEESP was accepted as, a participant in the second cohort of Amplifying the Alliance to Catalyze Change for Equity in STEM Success (ACCESS+; accessplusstem.com). The cohort consists of 14 professional organizations (including ASCE, ASEE, CUASHI, NSBE, SETAC, and SHPE; full list at https://accessplusstem.com/community-of-practice/). AEESP leadership will be engaging in collaborative activities over the next year to learn about ourselves, our strengths and weaknesses in regard to DEI, and methods for improvement. Being part of this community of practice is a fantastic opportunity for AEESP to share ideas and

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The AEESP Newsletter is published three times a year in February, June, and October by the Association of Environmental Engineering and Science Professors. Issues are published online at:

www.aeesp.org/news

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learn from colleagues in these other (larger) organizations.

As part of this process, we will be exploring our identity as an organization, and a key component of this is understanding the AEESP mental model. Mental models are "deeply held beliefs, assumptions, and taken-for-granted ways of operating that influence how we think, what we do, and how we talk" (Kania et al., 2018). Understanding our individual and organizational mental models offers a pathway to insight, change, and growth. The mental models of AEESP may implicitly constrain how we are organized and function (Leibnitz, et al., 2022), as well as what opportunities are available to members. Being part of the ACCESS+ cohort will help us identify our organizational barriers.

As an organization, AEESP needs to ensure that people of all personal, professional, social, and cultural identities feel welcome and are supported. By better understanding how and why we operate as we do, AEESP will be prepared for change. As a quote attributed to Mahatma Ghandi says: "You must be the change you wish to see in the world." As we embark on this yearlong ACCESS+ process, recognizing that we won't reach all of our goals in one year, I am hopeful that AEESP will embrace the changes that come and make the organization one where everyone, no matter how they identify or what perspective they have, can be their whole selves.

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Spotlight: Environmental Engineering Science, AEESP Journal

Catherine A. Peters (*EES* Editor-in-Chief), Mark J. Krzmarzick (Chair of the AEESP Publications Committee), Mengyan Li (Member of the AEESP Publications Committee)

The "Spotlight" column draws attention to selected articles in *Environmental Engineering Science* (*EES*), the official journal of the Association of Environmental Engineering and Science Professors (AEESP). Spotlight articles appear regularly in the journal as an Editor's Note, as well as in the AEESP Newsletter. Through the publication of high-quality peer-reviewed research, the *EES* journal 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 2021 through March 2022 issues of *EES*. Congratulations to all whose work is highlighted.

Chowdhury, N. N., and Wiesner, M. R. (2021). Persistence and environmental relevance of extracellular antibiotic resistance genes: regulation by nanoparticle association. *Environ. Eng. Sci.* 38 (12), 1129-1139.

Antibiotic resistance poses imminent threats to human health. In the environment, antibiotic resistance can spread through the proliferation of antibiotic-resistant bacteria and the transmission of antibiotic resistance genes (ARGs). ARGs that lurk from dead and live cells become extracellular (eARGs) and they tend to remain persistent and transmissible over the long term. In an article by Chowdhury and Wiesner (2021), naturally occurring nanoparticles can extend the half-life of eARGs as they absorb the DNA fragments or reduce the degradation by nucleases. This may also increase the bioavailability of eARGs for bacterial uptake, ultimately promoting the dissemination of antibiotic resistance. Thus, the interactions between nanoparticles and eARGs have broad implications in various environments, underscoring future attention.

Lamas-Samanamud, G., Reeves, T., Tidwell, M., Bohmann, J., Lange, K., and Shipley, H. (2022). Changes in chemical structure of n-acyl homoserine lactones and their effects on microcystin expression from Microcystis aeruginosa PCC7806. *Environ. Eng. Sci.* 39 (1), 29-38.

Algal blooms represent another major environmental issue that threatens natural biota and human health. Cyanobacteria like Microcystis aeruginosa can secrete toxic chemicals (e.g., microcystins) that are bioaccumulative once they enter the food chain. The production of toxins can be attributed to communications among the cyanobacterial populations, which are regulated by quorum sensing chemicals, such as homoserine lactones (HSLs). Lamas-Samanamud et al. (2022) investigated the effects of 18 HSLs of different chemical structures on the biofilm formation and toxin production by Microcystis aeruginosa PCC7806. They found that HSLs with phenyl, ether, and oxo moieties are most potent in inhibiting microcystin production, achieving a reduction of 80% and higher. This study revealed that structural changes to HSLs can effectively regulate cyanobacteria physiology and toxin production, promoting the development of novel approaches to mitigate algal blooms and their impacts.

Chen, S., Wang, Y., Cheng, H., Hazen, T. C., He, C., and He, Q. (2022). Identification of propionate-degrading microbial populations in methanogenic processes for waste treatment: Methanosaeta and Methanoculleus. *Environ. Eng. Sci.* 39 (3), 202-211.

In addition to their attention on natural environments, environmental engineers and scientists are also motivated in addressing relevant issues in engineered systems. Chen et al. (2022) focused their research on methanogenic processes in anaerobic digesters that treat animal waste. Methanogenic processes are widely adapted and provide a sustainable way to decompose organic wastes and generate methane as a renewable energy source. However, the stability of methanogenic processes is frequently affected by the fluctuating concentration of propionate and other volatile fatty acids (VFAs) in the system given their ability to alter the pH. Chen et al. investigated shifts in Archaeal populations in response to propionate dosed to continuous batch bioreactors. Using amplicon-based sequencing and quantitative PCR, Methanosaeta and Methanoculleus were reported as the two key propionate degraders considering their dominance and positive response to elevated propionate. This discovery does not only advance our understanding of fundamental microbial processes involved in propionate and VFA degradation, but also has the potential to promote the development of strategies feasible to maintain stable operations in methanogenic waste treatment.

Devine, C., Wang, F., and Edwards, M. (2021). A standardized test protocol for evaluation of scale reduction technologies. *Environ. Eng. Sci.* 38 (12), 1109-1119.

Scaling is a serious and prevalent problem in engineered water systems. Scaling can largely dampen energy efficiency and cause other undesirable issues, spanning from flow reduction, clogging, and corrosion damage, to the contamination of opportunistic bacteria. Scaling is caused by precipitation of calcium carbonate and can vary with temperature and chemistry changes. Devine et al. (2021) developed a standardized scaling test protocol (SSTP) for the quantitative assessment of scale deposition under varying conditions. This SSTP is designed with streamlined procedures and requires only a laboratory-scale model plumbing system and a synthetic scaling water, making it reproducible in any laboratory. This SSTP is of critical application value, improving the investigation of scaling and design of treatment. It is also applicable to natural water with high scaling potential and can be modified for systems when corrosion inhibitors are used.

Government Affairs Committee Policy Corner

A goal for AEESP is to have more of its members serving on important federal, state, industry, and municipal advisory committees. The Government Affairs Committee aims to help achieve this goal by disseminating opportunities to the membership via the listserv and AEESP Twitter and supporting members applications through identifying potential mentors and letter writers. The GAC wants to hear from you and foster nominations!

Firstly, if you hear of any opportunities or needs assistance in the nomination package, please forward them to the committee chairs (see contact information below). You can also forward opportunities to the listserv@aeesp.org and/or Twitter manager. Secondly, if you are serving or have served on important advisory committee in the past, please let us know about it by sending an email to kgregory@andrew.cmu.edu. We will be maintaining an archive so that interested members might, of course with your permission, contact you for mentoring ideas or letter writing. With this database we will also be able to promote members to the different committees and working groups. The GAC may also be able to help identifying potential letter writers.

Lastly, the GAC welcomes its incoming co-chairs Jason Ren (Princeton, zjren@princeton.edu, @zjasonren) and Colleen Naughton (UC Merced, cnaughton2@ucmerced.edu, @COVIDPoops19) and its new vice-chair, Baikun Li (U Conn, baikun.li@uconn.edu).

Current GAC co-chairs are Kelvin Gregory (CMU, kgregory@andrew.cmu.edu) & Greg Lowry (CMU, glowry@andrew.cmu.edu).

Contribution prepared by Jason Ren.

2023 AEESP Conference in Boston

The Conference Planning Committee is pleased to announce that the 2023 AEESP Research and Education Conference will be hosted by Northeastern University in Boston, MA, jointly with a large team of universities in New England including University of Massachusetts-Amherst, University of Massachusetts-Boston, Massachusetts Institute of Technology, Tufts University, University of Connecticut, University of Maine, University of New Hampshire, University of Rhode Island, and Olin College. Conference activities are planned on Tuesday, June 20 through Friday, June 23, 2023.

The conference theme, "Responding Together to Global Challenges", is designed to reflect the many contributions environmental scientists and engineers are making to address several concerning global, historical, and emerging challenges to living in a health, safe, and just society. The technical program will highlight responses to specific challenges of a changing climate, emerging environmental quality and human health threats, aging infrastructure and networks, marginalization of communities, and evolving education demands.

The conference schedule will include the conventional and highly sought-after workshops and technical presentations. Students, postdocs, and faculty will also find organized opportunities for networking, career development, and community outreach. The conference website will be launched this summer and will contain details on programming, workshop proposals, abstract submission, social events, travel & housing, and key logistical information. Northeastern University is located just south of the downtown district and is easily accessible by the subway service that connects the campus to the Boston Logan International Airport and many points of interest. Boston and its environs offer numerous cultural, historical, educational, and recreational attractions and events enjoyable to attendees and families of all ages. Within walking distance or a short transit ride are the Museum of Science, Museum of Fine Arts, New England Aquarium, USS Constitution, Freedom Trail, duck tours, and many others ready for exploration. We look forward to seeing you all in June 2023!

Update on the AEESP Foundation

Submitted by Jennifer G. Becker, AEESP Foundation Chair

The AEESP Foundation (https://aeespfoundation.org) is a Section 501(c)(3) tax-exempt organization that works to enhance the public outreach and education efforts of AEESP members and to bring new knowledge in environmental engineering and science to the public. The Foundation accomplishes this mission, in part, by managing and administering the financial resources needed to support the AEESP Distinguished Lecturer Series and AEESP Awards.

During the past several months, the Foundation has been working with the family of Edward J. Bouwer, a long-term leader and member of the AEESP community to create a new, endowed AEESP outstanding doctoral dissertation award to honor and remember Ed, who passed away in 2019. Now that the endowment fund has reached 80% of the $75,000 target, the fundraising campaign has shifted from a "silent" to a public phase. We are grateful to Ed's family members, students, and colleagues for their generous donations to the Edward J. Bouwer/AEESP Outstanding Doctoral Dissertation Award fund to date. For more information about Ed, the new dissertation award, and how to contribute to AEESP endowment funds, please visit page 8 of this Newsletter.

Although the Foundation was approved as a 501(c)(3) tax-exempt organization in 2007, its administrative handbook had not been revised since 2009, and its by-laws had not been revised since 2010. Therefore, the Foundation has been working for the past year on revising its administrative handbook and reviewing and updating its by-laws. These changes will not affect the services that the AEESP Foundation offers to the environmental engineering and science community; however, they will ensure that the Foundation is adhering to current, best practices.

Likewise, to ensure that the Foundation is providing good stewardship of its financial resources, we have been evaluating the different financial advising models available to tax-exempt organizations. The ad hoc Fiduciary Advisor Search Committee, chaired by Bill Ball (Emeritus Professor, Johns Hopkins University), led this effort and solicited proposals for financial advising services from several groups. On June 28, 2022, the Foundation selected Lillie, Ross & Associates of Towson, MD as its fiduciary advisement team. This change will help ensure that, not only are the Foundation's financial resources invested wisely, but also that these investments will be guided by environmental, social, and corporate governance considerations. In addition, this change should expand the types of financial assets that can be donated to the AEESP Foundation to include stock shares. Updates on donation options will be provided in future newsletters. As a result of these changes, the Foundation is also looking for individuals to serve on a standing financial investment oversight committee. Service on this committee will not be burdensome; however, an interest in financial matters is necessary, and some basic knowledge and experience in personal investing is desirable. If you are interested in serving on this committee, please contact me at jgbecker@mtu.edu.

Since 2016, the Foundation has been awarding "mini-grants" to support K-12 outreach efforts that lead to broader participation and education in the environmental engineering and science fields. In 2022, educational grants were awarded to the South Dakota School of Mines and Technology; University of Maryland, College Park; and University of Tennessee-Chattanooga. A report from a previous grant was submitted by Dr. Susan Mirlohi for this Newsletter and published on page 6. All previously-submitted grant reports have been uploaded to the AEESP Foundation's website at: https://www.aeespfoundation.org/grants

The work of the AEESP Foundation is administered by six elected Directors. Three Directors are members of the AEESP Board of Directors when elected, while three members are elected from the general AEESP membership. In 2022, we welcomed Treavor Boyer (Arizona State University) to the Board. Treavor currently serves as Treasurer of AEESP and will assume the role of Treasurer of the AEESP Foundation in 2023. If you are interested in nominating an AEESP member for service on the AEESP Foundation Board of Directors beginning in 2023, or learning more about the work undertaken by the AEESP Foundation Board of Directors, please contact me at the above email address by August 31, 2022. Self-nominations of Foundation Board members are accepted. Directors serve three-year terms.

AEESP Foundation Grant Final Report

Fresno, California High Schools Educational Outreach Project:

Environmental Science, Engineering, and People: How Learning in Science Classrooms Can be applied to Save Lives

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Project Overview

The project, titled "Environmental Science, Engineering, and People: How Learning in Science Classrooms can be Applied to Save Lives", was initiated in August 2021 and concluded in May 2022. The goal of the project was to motivate and inspire high school students to pursue academic and career pathways in environmental engineering and science through hands-on learning in the classroom. Teachers from mathematics and chemistry courses from Fresno, California area high schools were participants in this project. The project was designed to meet the Next Generation Science Standards (NGSS) for grades 8-12, focusing on several specific Science and Engineering Practices NGSS learning objectives and standards.[1]

The implementation of this project involved presenting two identical workshops aimed at training high school teachers to implement the lessons learned and hands-on activities from the workshop in their classrooms. The activities engaged workshop participants through hands-on learning and application of mathematics and water chemistry concepts in disinfection of water by conducting experiments to: 1) determine disinfectant demand and 2) engage in problem-solving activities to demonstrate how mathematical tools and models can be applied to water disinfection. The workshops were designed to be delivered in virtual mode of instruction, in consideration of the COVID-19 pandemic related restrictions and safety concerns.

The AEESP Foundation Grant provided the funds necessary to purchase supplies for teachers' engagement and demonstration of hands-on activities during the workshop, as well as assembling of water testing kits and associated lesson plans for teachers to take back to their schools for use in their own classrooms. The workshop events were successfully implemented. Workshop outcomes and lessons learned will be beneficially used to develop future outreach projects in order to reach and positively influence K-12 students into higher education and careers in environmental science and engineering fields.

Background and Motivation

The region of Central Valley, California experiences disparities in educational outcomes in public schools, with math and science performances ranking below the State and national averages. In Fresno County public schools, only 31% of students reported feeling "like they do things at school that make a difference", as reported by the findings from the organization, "Children Now."[2,3] Additionally, the California Department of Education considers investments in professional development of teachers and creation of more challenging curriculum programs as critical areas of attention.[4] This understanding provided motivation for this project to help high school teachers of science and mathematics make connections between what students learn in the classroom with "real-world" applications. Developing a curriculum on water disinfection using simple tools and resources that can be easily implemented in the classroom as well as in a virtual mode of instruction were among the goals of this project, with consideration of COVID-19 pandemic impacts on schools and instructions. The

target audience for the workshop were high school teachers of standard and/or Advance Placement (AP) mathematics, chemistry, and environmental science classes.

Project Implementation

Workshop Advertisement: A workshop flyer was developed and advertised, through email communications, to officials within the school district involved with STEM education and professional development of teachers, as well as several area high schools and teachers. The advertisement reached 20 different school districts, about 75 teachers within and surrounding the Fresno area school districts. An online enrollment portal was established for participants to register for the workshop, which was offered at two different dates during fall 2021 semester. Participants were given the option to participate in the workshop either virtually, through Zoom video conferencing, or in-person, at Fresno State University. Incentive for workshop participation was that the workshop is free, and participants will be provided with materials and supplies for hands-on activities learned during the workshop.

Workshop Materials and Lesson Plan Development: Workshop materials included development of pre- and post- workshop questionnaires; lesson plan development to include lecture and activity segments; and activity kit assembling (Figure 1).

Workshop Delivery: During fall 2021 semester, two identical workshop events were presented to introduce the teachers to an innovative, simple, and low-cost, hands-on activity that aimed to train the teachers in motivating their students through engagement and real-world applications in environmental science, water chemistry and engineering. Specific goals of the workshop were to: 1) highlight and discuss the role of disinfection in reducing global burden of waterborne diseases; 2) demonstrate how classroom science and engineering knowledge are critical tools for environmental scientists and engineers in designing and operating wastewater and drinking water treatment systems, which ultimately are responsible for saving numerous lives by ensuring access to safe drinking water around the world; and 3) through hands-on activities, demonstrate application of chemical and mathematical sciences and engineering principles in water disinfection systems, focusing on chlorine as the most common disinfectant in water treatment. The hands-on activity involved determining the chlorine demand of a simulated polluted water sample. Participants learned about what chlorine demand is, the difference between total combined and free residual chlorine, break-point chlorination, the roles of pH and temperature in chlorine disinfection, and how to measure total and free residual chlorine concentrations in the water sample using colorimetric test kits.

Participants recorded their experimental data from the chlorine demand experiment and created a graph to determine break-point chlorination point and identify relationship between variables of disinfectant concentration and measured disinfectant residual, and other experimental variables such as pH and temperature (Figure 2).

Attendees included both in-person and virtual participants. The workshop lecture and activity contents were directly connected to specific NGSS learning objectives. Each workshop was completed during a combined 90-minute lecture and activity period. Workshop activity kits were mailed to virtual participants for use in their classrooms. Pre- and post- workshop questionnaires were given to the participants to determine the teachers' perception of activities and outcome of the workshop in terms of potential for implementation in public school classrooms.

Workshop Outcomes: Pre- workshop questionnaire results indicated that participating teachers were interested in learning how to communicate scientific information with students without losing their interest in the topics that may be difficult to comprehend. The following are some representative examples of what teachers communicated during the workshop:

> "I expect to get an idea on how to present scientific materials to my students and applicable activities they can do."
>
> "I want to show the importance of environmental science to my students."
>
> "I hope to gain confidence in doing real-life applicable lab activity to bring to my classroom."
>
> "I would like to learn how to teach environmental science in a way that does not overwhelm students and show the hope/change that can come by learning this information".
>
> "I would most like to learn how to teach my students about the importance of safe water & cleaning."

Post- workshop questionnaire results indicated that participating teachers improved their own understanding of the concepts and were motivated to use the gained knowledge in their class-

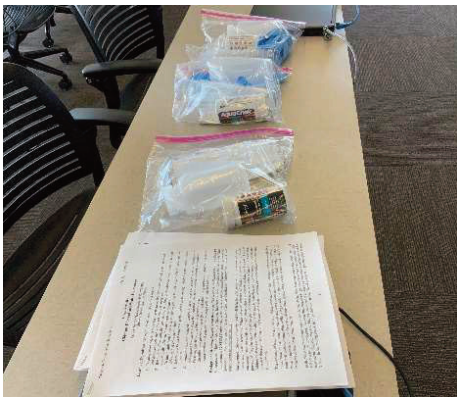

Figure 1 – Workshop activity kit: Hach water chemistry testing kit, water sample bottles, volumemeasurement tools; lesson plan and instructions.

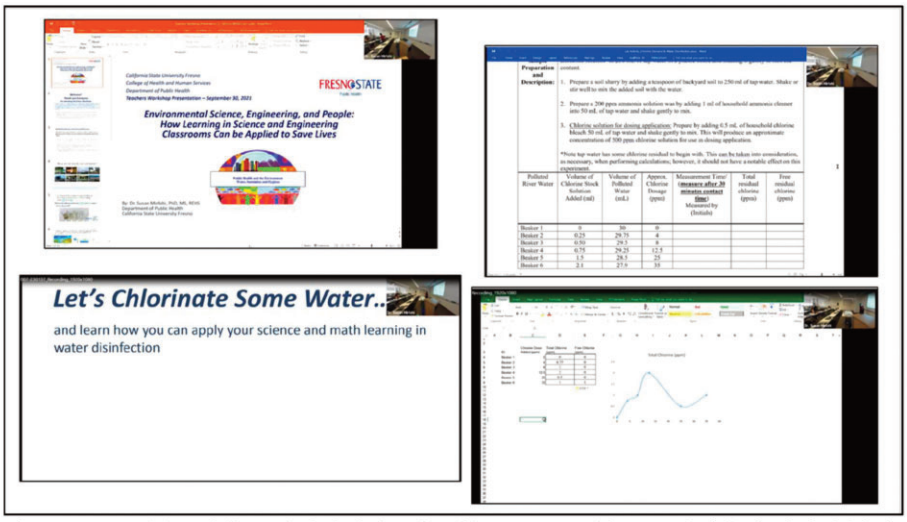

Figure 2 – Workshop delivery included virtual and in-person participants. Activity included chlorine demand determination of polluted water for disinfection purposes.

rooms with the goal of motivating their students by connecting concepts to real-world applications. The following are some representative examples of what teachers communicated during the workshop:

> "I will attempt to use this activity to teach my students about chlorine and its benefits."
>
> "I would like to teach my students about how science impacts many parts of their lives, like drinking water."

The workshop event was effective in providing a real-world context for teaching applications of science to high school teachers. Teachers felt informed and appreciated having the benefit of the provided supplies and test kits to use in their own classrooms.

Broader Impacts: The findings of the workshops were communicated to future teachers through presentation at Fresno State University to students currently under training to become future teachers in STEM fields. Additionally, the workshop findings were presented at the American Chemical Society conference in March 2022, under the Division of Chemical Education, program session, Engaging Students with Real-World Context.[5]

Conclusions and Lessons Learned

This project was successful in meeting its intended goals of reaching high school teachers in Fresno, California community, and providing interested teachers with knowledge and resources to implement engaging hands-on activities in their science classrooms. Ongoing impacts of the COVID-19 pandemic had some effect on recruitment of teachers for this workshop; however, the outreach activity was successfully executed through a hybrid mode of delivery to provide for both in-person and virtual participation.

Future activities will involve working with students, in addition to teachers to directly implement this and similar workshop events within and outside the classroom, providing more students and teachers with realworld context in applications of science and engineering.

Acknowledgment

Special acknowledgment is given to the Association of Environmental Engineering and Science Professors (AEESP) Foundation for funding support that enabled purchase of necessary supplies for the workshop activities and associated water quality testing kits for distribution to area high school teachers.

References

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2. 2020 California Children's Report Card: https://www.childrennow.org/portfolio-posts/20-report-card/

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4. California Department of Education: https://www.cde.ca.gov/re/cc/

5. Mirlohi S. (2022). "Motivating the next generation of learners through "real-world" applications:

How learning in science and engineering classrooms can be applied to save lives." Annual National Conference of the American Chemical Society (ACS); San Diego, California; Division of Chemical Education; Session: Engaging Students with Real-World Context; March 24, 2022.

Announcing the Edward J. Bouwer/AEESP Outstanding Doctoral Dissertation Award

Submitted by Jennifer Becker, AEESP Foundation Chair

Edward J. Bouwer (1955-2019) was a dedicated researcher, teacher, and mentor to graduate students. Ed was a leading researcher in microbial process engineering and performed groundbreaking work on the bioremediation of chlorinated solvents. His research group's fundamental work on bioremediation, water and wastewater treatment, and contamination in urban environments led to innovations in engineering practice and informed decisions concerning land use and national environmental policy. Ed combined pragmatism with compassion to solve environmental problems in Baltimore and across the country and always strived to positively impact human and environmental health. Ed was on The Johns Hopkins University faculty from 1985 until his passing in 2019, was the Abel Wolman Professor, and served as department chair for nine years. Ed will be remembered not only for his technical contributions, but also for his level of personal commitment to every undergraduate advisee, master's degree student and doctoral degree candidate. He treated everyone he encountered with kindness and respect.

Because mentoring Ph.D. students were especially important to him, Ed's family generously offered to help the AEESP Foundation establish the Edward J. Bouwer/AEESP Outstanding Doctoral Dissertation Award. This award will allow AEESP the opportunity to honor the excellent work done by emerging researchers in the environmental engineering and science field and honor Ed's legacy of research and mentorship. Thanks to the generous donations made by Ed's family, colleagues, and students, we have reached the stage at which we can publicly announce this award and the existence of the endowment fund. Our goal is now to fully endow the award so that it can be granted annually. As a member of AEESP, we are asking for your support in this endeavor. The inaugural award will be given in 2023.

Donations can be made online at https://aeesp-foundation.org/donate. You may also call Brian Schorr at the AEESP Business Office at (202) 640-6591 and provide him with your payment information. Wiring instructions are also available from the Business Office, upon request.

The AEESP Foundation is a 501(c)(3) organization with the mission to improve the state of knowledge in environmental engineering and science through the support and encouragement of excellent education, outreach, and scientific research.

Report of Summer 2022 AEESP Board Meeting, June 27, 2022

The AEESP Board held a hybrid Zoom/in-person meeting on the campus of Washington University in St. Louis on Monday, June 27th (in conjunction with the Research and Education Conference). Minutes from the March 3-4, 2022, Board Meeting were approved. The next Board Meeting will be on September 14–16, 2022, at the University of Notre Dame (South Bend, IN).

AEESP President Bill Arnold reported the self-assessment results of the AEESP committees, which included a brief update of committee activities in the spring, the self-evaluation pertaining to strategic planning, a brief description of plans and ideas to be implemented in 2022-2023, as well as the engagement of the committees with the 2023 Research and Education Conference. A new activity for most of the committees was the establishment of "virtual coffee hours" that allow AEESP members to learn about the activities of the different committees, provide suggestions and engage in the committees' activities. Another highlight of the self-assessment is that the Awards Committee will plan a strategy to increase nominations for Student Awards. The Fellows Committee will also be working with the Environmental Engineering Program Leaders Committee in developing a mid-career mentoring program. The Sustaining Members Engagement Committee was reorganized to include equal numbers of Sustaining Members and academics and created a subcommittee for coordination with the AEESP Conference Planning Committee.

In addition to discussions about the plans for next year, AEESP President Bill Arnold described the plans to submit a proposal to ACCESS+ (Alliance to Catalyze Change for Equity in STEM Success), which has a call in September to support AEESP in creating a more inclusive organization in the areas of Diversity, Equity, and Inclusion (DEI). AEESP conducted a self-assessment of organization operations which indicated that Association is in the 'developing' stage of its DEI efforts. ACCESS+ provides grant funding to the cohort organizations participating in this program to initiate activities and programs meant to strengthen their DEI goals and objectives. In the initial assessment for this funding opportunity, the Board discussed needs for data collection related to demographics of membership, data collection of conference participants, and how to better survey membership in general. This data will also help in the development of strategies to address DEI issues in the organization.

The Board discussed the need of a financial review, as well as the type and regularity of financial reviews, to be undertaken by the AEESP organization and the AEESP Foundation. The goal of the financial review is to identify any irregularities in the finances and ensure that the Treasurer at AEESP has a history of the activities that preceded them. Executive Administrator Brian Schorr secured quotes from two financial companies. Both the Foundation and AEESP organization decided to secure Allen Murphy & Associates to conduct the financial review. Additionally, given past Board decisions to raise dues over time and a recognition of increasing costs to the organization, the Board approved an increase in dues starting with renewal notices to be sent in November 2022. There will still be the discount for a 3-year payment. The new dues structure will be Full Professor ($130 for one year, $260 for two years, $350 for three years); Associate ($100, $200, $270); Assistant ($65, $130, $175); Affiliate ($75, $150, $200); and Student ($20; one year). Dues for Sustaining Members will be revisited after consultation with the Sustaining Members Engagement Committee.

On May 1, the new AEESP Foundation website (www.aeespfoundation.org)was launched. A revised version of the AEESP website is close to public release.

New Board Members were also elected by the AEESP community and announced at the conference. The new members of the Board are Donna Fennell (Rutgers University), Claudia Gunsch (Duke University), and Kara Nelson (UC Berkeley). Their three-year terms will begin during the transition Board Meeting this September at Notre Dame September 15-16, 2022. At this time, Bill Arnold, Rob Nerenberg, and Willie Harper will be completing their board service.

Respectfully reported by Debora F. Rodrigues (University of Houston)

AEESP Past Presidents

At the 2022 AEESP Research and Education Conference at Washington University in St. Louis (June 28-30, 2022), the AEESP past presidents gathered for a group photo.

Present in the photo:

1991: Bruce Rittmann
1998: Bruce Logan
2003: Catherine Peters
2004-05: Marc Edwards
2009: Amy Childress
2010: Peter Adriaens
2011: Nancy Love
2012: Joel Burken
2014: Jennifer Becker
2015: John Tobiason
2016: Greg Characklis
2017: Peter Vikesland
2019: Maya Trotz
2020: Karl Linden
2021: Joel Ducoste
2022: Bill Arnold
2023: Allison McKay

Absent, but sends regrets:

1988: Richard Luthy
1995: Stephen Randtke
1999: Kimberly Gray
2000: Robin Autenrieth
2001: Domenico Grasso
2002: Michael Aitken (*deceased*)
2005-06: Pedro Alvarez
2007: Phil Singer (*deceased*)
2008: James Mihelcic
2013: Mark Weisner
2018: Linda Weavers

2022 AEESP Award Recipients

Submitted by Kevin T. Finneran, AEESP Awards Committee Chair (Clemson University)

The 2022 AEESP Awards were presented during the Awards Banquet in conjunction with the Research and Education Conference hosted by Washington University in St. Louis on Thursday, June 30. Below is a list of the recipients. Congratulations to all award winners!

We appreciate the members of the Awards Committee and subcommittees for thoughtful and thorough evaluation of the nominations. We thank the Doctoral subcommittee chair Natalie Capiro, and the subcommittee consisting of Wen-Tso Liu, Kaoru Ikuma, Na Wei, and Kay Millerick. We also thank the MS Thesis subcommittee chair Brooke Mayer, and the subcommittee consisting of Roland Cusick, Prathap Parameswaran, and Wenqing Xu. Finally, we appreciate the work of the AEESP awards committee consisting of R. Scott Summers, Trina McMahon, David Ladner, Sarina Ergas, and Jacimaria Batista.

Thanks also to American Academy of Environmental Engineers and Scientists (AAEES) members for serving on joint AAEES-AEESP awards committees, and to Liz Pohland for assisting with the selection of the Frederick George Pohland award recipient. Special thanks to AEESP members that served on this committee as well. We appreciate that Karl Rockne chaired the committee, and the service of AEESP members Susan Masten, Debra Reinhart, and David Dzombak.

*Please also note that nominations for 2023 AEESP Awards will go live on November 1, 2022 and be open through February 1, 2023. See AEESP's Awards webpage (https://aeesp.org/awards) for more information and changes to this coming year's nomination eligibility.

The awards committee chair starting this year is Thanh Huong (Helen) Nguyen; we appreciate here willingness to serve in this capacity.

Student Awards

Jacobs Engineering Group /AEESP Outstanding Doctoral Dissertation Award

This award, endowed by Jacobs Engineering Group, is given annually to recognize an outstanding doctoral dissertation that contributes to the advancement of environmental science and engineering.

Dr. Danielle Webb, University of Iowa

Dissertation Title: "Sorption of Neonicotinoid Insecticides and their Metabolites to Granular Activated Carbon: Implications for Exposure, Treatment, and Biotransformation"

Advisor: Prof. Gregory H. LeFevre

Paul V. Roberts/AEESP Outstanding Doctoral Dissertation Award

This award is given annually to recognize an outstanding doctoral dissertation that advances the science and practice of water quality engineering for either engineered or natural systems.

Dr. Riley Mulhern, Indiana University

Dissertation Title: "Point-of-Use Water Treatment for Private Wells in North Carolina: Risks and Solutions for Lead, Per- and Polyfluoroalkyl Substances (PFAS), and Microbial Contaminants"

Advisor: Prof. Jacqueline MacDonald Gibson

The following recipients received Honorable Mentions for their Doctoral Dissertations:

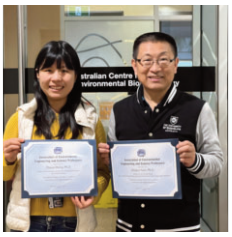
Dr. Ishi Keenum, Virginia Tech
Dissertation Title: "Assessing Vulnerabilities to the Spread of Pathogens and Antibiotic Resistance in Agricultural and Water Systems Using Culture-, Molecular-, and Metagenomic-based Techniques"

Advisor: Prof. Amy Pruden

Dr. Nicole Rockey, University of Michigan

Dissertation Title: "Novel approaches to monitor virus fate through water treatment processes"

Co-Advisors: Prof. Krista Wigginton and Prof. Lutgarde Raskin



Dr. Zhiyao Wang, University of Queensland

Dissertation Title: "Innovative nitrogen conversion to enhance wastewater and sludge management"

Advisor: Prof. Zhiguo Yuan

Dr. Nina Zhao, University of Washington
Dissertation Title: "Identification and Fate of Bioactive Transformation Products of Pharmaceuticals and Industrial Antioxidants"

Advisor: Prof. Edward Kolodziej

AEESP Master's Thesis Award

This award annually recognizes two most outstanding Master of Science theses that contribute to the advancement of environmental science and engineering. This year there were two awardees.

Awardee 1:
Ri Wang, Cornell University

Thesis Title: "Exploring the Factors that Determine the Adsorption of Per- and Polyfluoroalkyl Substances on Conventional Adsorbents and Novel Cyclodextrin Polymers with Different Surface Properties"

Advisor: Prof. Damian Helbling

Awardee 2:
Omar Sadab Chowdury, University of Waterloo
Thesis Title: "Evaluation of Potential Health Risks from Microplastics in Drinking Water"

Co-Advisors: Prof. Monica Emelko and William Anderson

W. Wesley Eckenfelder Graduate Research Award

This award, jointly administered by AEESP and AAEES, is given annually to recognize a student whose research contributes to the knowledge pool of industrial wastewater management.

Duong Thanh Nguyen, University of Colorado Boulder (Nominated by Anthony Straub)

William Brewster Snow Award

This award recognizes an environmental engineering graduate student who had made significant accomplishments in an employment or academic engineering project.

Thanh ("Misty") Lam, University of South Florida (Nominated by Sarina Ergas)

Innovyze Excellence in Computational Hydraulics & Hydrology Award

This award recognizes a student whose research contributes to the knowledge pool in the area of computational hydraulics and hydrology.

Noemi Vergopolan, Princeton University (Nominated by Justin Sheffield)

Education, Research, Practice and Outreach Awards

AEESP Award for Outstanding Teaching in Environmental Engineering and Science

This award is given annually to recognize excellence in classroom performance and related activities.

2022 Recipient: David V.P. Sanchez, University of Pittsburgh

Dr. David V.P. Sanchez had tremendous impact on his department, school, university, and community. He has taught thousands of students in laboratory, capstone and design courses, independent research, community engagement and study abroad. He is loved by his students and already recognized as a leader with the highest awards for teaching by the Swanson School of Engineering and by the University of Pittsburgh. He leads by example and his tireless commitment to personal and professional education of his students inspires a new standard of teaching excellence in Environmental Engineering, Sustainability and Science.

Steven K. Dentel AEESP Award for Global Outreach

This award, established in 2014, is given annually to recognize outstanding contributions and leadership by a faculty member through involvement in environmental engineering and science outreach activities to the global community.

2022 Recipient: Anu Ramaswami, Princeton University

Dr. Anu Ramaswami is the Swani Professor of India Studies at Princeton University, in the Dept. of Civil and Environmental Engineering. She is the founding director of Princeton's M.S. Chadha Center for Global India. Dr. Ramaswami's teaching and research advances sustainability outcomes of health, environment, equity, and wellbeing in urban infrastructure systems. She has emerged as a leader in global outreach and her work has impacted science, students, and real-world policies that impact the lives of people in cities in the US, India, and China.

Excellence in Environmental Engineering and Science Education (E4) Award

This award, jointly administered by AEESP and AAEES, is given annually by AAEES to an individual who has made a significant contribution to the profession in the area of educating practitioners.

Dr. Chad Jafvert, Purdue University (Nominated by Rao S. Govindaraju and John W. Sutherland)

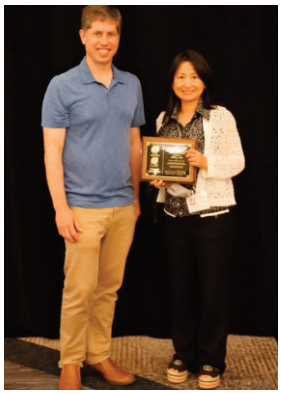
AEESP Outstanding Publication Award

This award is given annually to recognize the author(s) of a "landmark environmental engineering and science paper that has withstood the test of time and significantly influenced the practice of environmental engineering and science." At least one of the authors must be living and previous winners are ineligible for a period of three years. The selected recipient will receive a plaque.

The 2022 recipients are **Paul Tratnyek, Michelle Scherer,** and **Timothy Johnson** for their paper "Kinetics of halogenated organic compound degradation by iron metal." Environmental Science & Technology Vol. 30, Issue 8 (1996), pp. 2634-2640.

Johnson et al. was the first paper on contaminant removal with zero-valent iron to move from demonstration of a useful technology to investigation of fundamental chemical processes. The work established a standard kinetic model emphasizing normalization of rates by surface area and used this model to bring order to compiled rate data from earlier work. The resulting meta-analysis became a standard dataset that was used in a series of subsequent efforts to develop quantitative structure-activity relationships (QSARs) for dehalogenation reactions. Concepts introduced by Johnson et al. formed the basis for hundreds of future research projects on ZVI and the paper continues to be highly cited today.

AEESP/Mary Ann Liebert Award for Publication Excellence in Environmental Engineering Science Journal



This award, established in 2017, is given annually to the authors of an outstanding paper published in *Environmental Engineering Science* during the previous calendar year. *Environmental Engineering Science* is the official journal of AEESP, and this award recognizes publication excellence among its members.

The 2022 award recipients are **April Gu, Yishan Lin,** and **Carla Cherchi**. Their paper is entitled 2021 paper, "Nano-Titanium Dioxide Exposure Impacts Nitrogen Metabolism Pathways in Cyanobacteria."

This was determined to be the best paper published in EES in 2021. The investigators examined a novel electrochemical approach for removing estrogenic micropollutants in drinking water. The approach is energy efficient and it sequentially couples electrocoagulation with electrooxidation. This work makes a valuable contribution to public health because of the dangers of estrogenic compounds in initiating unwanted hormonal responses in humans. The paper is exceptionally well written, clearly conveying the significance of the work and the broader impacts.

Perry L. McCarty AEESP Founders' Award

This award, established in 1991 and newly endowed in 2015, is given annually to recognize a member of AEESP who has made "sustained and outstanding contributions to environmental engineering education and practice."

2022 Recipient: Deb Niemeier, University of Maryland, College Park

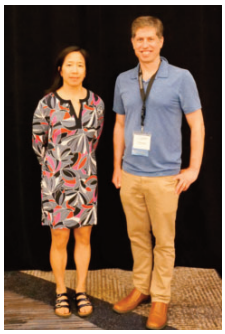
Dr. Niemeier joined the University of Maryland in 2019 after previously serving as a distinguished faculty member at UC-Davis.

Dr. Niemeier's work is transdisciplinary. She centers her work around understanding and quantifying mobile source emissions and inventories, and accelerating the implementation of regulatory guidance to: achieve more sustainable practices; improve the lives of vulnerable populations; and target environmental health disparities. She holds firm to ensuring fairness and equity in her work and in organizations, making an immense impact in areas that most academics don't dare to cross into. She is brave and visionary in ways that make her a unique and distinguished leader of environmental engineering.

Walter J. Weber, Jr. AEESP Frontier in Research Award.

This award recognizes an environmental engineering or science professor who has advanced the environmental engineering and science field through research leadership and pioneering efforts in a new and innovative research area.

2022 Recipient: Linsey Marr, Virginia Tech



Early in the Covid-19 global pandemic, Dr. Linsey Marr's research overturned dangerously misguided conventional wisdom, by proving that airborne aerosols were a dominant viral transmission pathway. Her research has guided use of masking, determining appropriate ranges for social distancing, and according to Dr. Rich Corsi has likely saved "hundreds of thousands of lives in the US and beyond." Linsey's "viral" work at the research Frontier of aerosol dynamics and environmental microbiology, is a high profile exemplar of AEESP members' ability to positivity impact public health.

Fredrick George Pohland Medal

This award honors a member of AEESP and/or AAEES who has made sustained and outstanding efforts to bridge environmental engineering research, education, and practice.

2022 Recipient: John W. Sutherland, Purdue University

John W. Sutherland is the Fehsenfeld Family Head of Environmental and Ecological Engineering (EEE) at Purdue University. He is one of the founders of Green Manufacturing where the objectives are reduced adverse environmental impacts and improved occupational health, while maintaining economic competitiveness in manufacturing processes. He is an award-winning teacher in the area of Environmentally Responsible Design and Manufacturing, educating thousands of students, many outside of the environmental engineering discipline, about environmental stewardship opportunities in design and manufacturing. As the first permanent Head of EEE he has led 19 interdisciplinary faculty in the creation of an ABET accredited undergraduate degree, graduate degrees and a research enterprise. It is for these reasons and may others, that Dr. Sutherland is being recognized with this medal.

AEESP Outstanding Contribution to Environmental Engineering & Science Education Award

This award is given annually to recognize excellence in teaching scholarship and/or professional society educational initiatives: authorship of educational or instructional material, effectiveness in course and/or curriculum development, record of activity in the educational activities of AEESP or another professional society.

2022 Recipient: Kerry Howe, University of New Mexico

Dr. Kerry Howe is a Distinguished Professor and Regents' Lecturer in the Department of Civil, Construction and Environmental Engineering at the University of New Mexico (UNM). He serves as the Director for the Center

for Water and the Environment and is the lead convener of UNM's Sustainable Water Resources Grand Challenge. Dr. Howe's impact on the environmental engineering and science field stretches from his textbooks, papers, presentations, leadership in developing nationally renowned centers, and close mentorship of junior faculty. Dr. Howe is co-author of 2 water treatment textbooks that are used to teach classes around the world: MWH's Water Treatment Principles and Design and Principles of Water Treatment. His expertise is in the field of physicochemical treatment technologies to produce safe drinking water. His primary research focus is on the use of membranes in water and wastewater applications.

AEESP Distinguished Service Awards

2022 AEESP Distinguished Service Award: AEESP President and Board Member: William Arnold

2022 AEESP Distinguished Service Award: AEESP Chief Information Officer and Board Member: Willie Harper

2022 AEESP Distinguished Service Award: AEESP Secretary and Board Member: Rob Nerenberg

2022 AEESP Distinguished Service Award: Chair of the AEESP Research and Education Organizing Committee: Dan Giammar

2022 AEESP Distinguished Service Award: Chair of the AEESP Research and Education Workshop Program: Young-Shin Jun

2022 AEESP Distinguished Service Award: AEESP Foundation Board Member: April Gu

2022 AEESP Distinguished Service Award: Chair of the AEESP Internet Resources Committee: Sanjay Mohanty

2022 AEESP Distinguished Service Award: Chair of the AEESP Education Committee: Dan Oerther

2022 AEESP Distinguished Service Award: Co-Chairs of the AEESP Government Affairs Committee: Gregory Lowry and Kelvin Gregory

2022 AEESP Distinguished Service Award: Chair of the AEESP Awards Committee: Kevin Finneran

2022 AEESP Distinguished Service Award: Chair of the AEESP Awards Committee Outstanding Doctoral Dissertation Subcommittee: Wen Zhang

2022 AEESP Distinguished Service Award: Chair of the AEESP Sustaining Member Engagement Committee: Paige Novak

AEESP Fellows

AEESP wishes to congratulate the following AEESP Fellows inducted at this year's Awards Banquet:

Chad Jafvert, Purdue University

Chad Jafvert received his Ph.D. from the University of Iowa and then worked as an EPA Research Scientist at the U.S. EPA Environmental Research Laboratory in Athens, Georgia for 6 years before joining the faculty at Purdue University in 1991. At Purdue, he currently is the Lyles Family Professor of Civil Engineering, and holds a joint appointment in Environmental and Ecological Engineering. He is an AAEES Board Certified Environmental Engineering Member, and was a co-recipient with Richard Valentine of the 2017 AEESP Outstanding Publication Award. He also received the AEESP Distinguished Service Award for his service as chair of the AEESP Awards Committee in 2013 and 2014. He is a visiting professor at Southeast University in Nanjing China, and formerly a visiting professor at Qinghai Normal University in Western China. At Purdue, he is a Fellow in the Purdue Teaching Academy, is listed in Purdue's Book of Great Teachers, and has twice been awarded an Instructional Excellence Award. There are over 150 published works by Professor Jafvert indexed in the Web of Science. His primary research interests are the chemical and physicochemical fate processes of anthropogenic substances in natural and engineered environments. His recent interests include: remediation strategies for contaminated sediments; aquatic photochemistry of pollutants including carbonbased nanomaterials; real-time continuous water quality monitoring, and drinking water treatment in rural areas of developing countries. Ten of his former students hold faculty positions at universities in the U.S. and around the globe.

JoAnn Silverstein, University of Colorado Boulder

Dr. JoAnn Silverstein is a Professor of Civil, Environmental, and Architectural Engineering at the University of Colorado Boulder. Her research has primarily focused on the control of nitrogen discharges to the environment and resilience analysis of wastewater treatment systems. She joined AEEP in 1982, served on the Board of Directors (1994-1997, as Secretary, 1996-1997) and various committees (Dissertation Awards, Endowment Committee, 50-year Legacy) and she delivered the AEESP keynote address at the

(Left to right): JoAnn Silverstein, Peter Vikesland, President Bill Arnold, Fellows Committee Chair Amy Childress. and Chad Jafvert.

50th anniversary conference. She was the first AEEP/AEESP female member and has been a member for 40 years. In 2019, JoAnn was awarded the AEESP Perry L. McCarty Founders Award. JoAnn was in the first cohort of four women to be hired by the CU Boulder College of Engineering in 1982 and in 1989 she and one other female faculty member were the first to achieve tenure. JoAnn has served as Director of the Program in Environmental Design, was the founding director of the Sustainable By Design residential academic program as has been a tireless advocate for diversity and equity in academia. Joann most recently served as the Associate Dean for Faculty Advancement, a position she held through 2021. Through her role as an AEESP Fellow, she will continue to benefit our organization and its legacy.

Peter Vikesland, Virginia Tech

Peter Vikesland is the Nick Prillaman Professor of Civil & Environmental Engineering (CEE) at Virginia Tech. He received his B.S. in Chemistry from Grinnell College and his M.S. and Ph.D. degrees in Environmental Engineering from the University of Iowa. Following his PhD, he completed postdoctoral work at Johns Hopkins before joining Virginia Tech in 2002. Pete has published over 130 articles in peer reviewed journals and serves as Editor-in-Chief of Environmental Science: Nano. At Virginia Tech, he is currently the Director of the Virginia Tech Sustainable Nanotechnology (VTSuN) interdisciplinary graduate program and a co-PI on NanoEarth, a large, integrated center funded by the NSF National Nanotechnology Coordinated Infrastructure program. He also serves as coordinator for the Environmental and Water Resources Engineering program. Pete has been highly active in the AEESP community, serving on the Internet Services Committee and Executive Advisory Board before becoming AEESP President from 2016-2017. In 2017 he co-led an effort, co-sponsored by AEESP, to consider Grand Challenges and the future of environmental engineering in the 21st Century, which has become a vital reference directing research in our field.

AEESP Lifetime Members

AEESP Wishes to congratulate the following AEESP members on achieving Lifetime Membership Status:

Dr. Pratim Biswas, Washington University in St. Louis

Dr. Terese M. Olson (*ret.*), University of Michigan

AEESP In Memoriam

It is with great sadness that the following AEESP members were recognized In Memoriam during the Awards Banquet:

Ross McKinney, Professor Emeritus, University of Kansas

Dr. McKinney was an AEESP Lifetime Member and an Emeritus Professor of Civil, Environmental, and Architectural Engineering at the University of Kansas. He is best known for his contributions to the biological engineering of wastewater treatment. Dr. McKinney received his Sc.D. in Sanitary Engineering from MIT in 1951 and later joined its faculty before relocating to Lawrence, Kansas to serve on the facility at the University of Kansas, School of Engineering from 1960 until his retirement in 1993. Dr. McKinney was elected to the National Academy of Engineering in 1977 for "contributions to the development of biological wastewater treatment processes and to the advancement of the environmental engineering profession."

Michael MacCarthy, Associate Professor, Mercer University

It is with great sadness we report the sudden passing of Dr. Michael MacCarthy. Mike was an Associate Professor in the Department of Environmental & Civil Engineering and Director of the recently created Cecil Day Family Center for International Groundwater Innovation at Mercer University; a Special Graduate Faculty at the University of Guelph; and Associate Editor & Member of the Editorial Board for the Hydrogeology Journal. In 2019 he received the American Society for Engineering Education Southeastern Section's Outstanding New Faculty Research Award. He was the epitome of a new breed of engineering educator; devoted to education and applied research that served his students and profession, but most importantly, residents of underserved communities in Georgia, the Caribbean, and Sub-Saharan Africa. His research and service interests spanned low cost groundwater development, self supply, environmental sanitation, energy poverty, and social change. He touched the lives of many including students, faculty, staff, and the greater Macon community during his seven years at Mercer University. He thought of serving others every day of his life and instilled that value with the many students he taught, mentored, and inspired over his too-short academic career. His students, colleagues, friends, family, and especially the world, will miss him greatly.

Joel Pedersen, Professor, Johns Hopkins University

In 2021, Professor Joel Pedersen joined the Department of Environmental Health and Engineering at Johns Hopkins University. Previously, he was a Vilas Distinguished Professor at University of Wisconsin - Madison. His research program focused primarily on the environmental chemistry of emerging contaminants, emphasizing interfacial processes governing the sorption, transformation, and bioavailability of organic contaminants, biomacromolecules, and nanomaterials in natural and engineered systems. Recent research topics included defining and mitigating risks associated with water reuse, processes governing the environmental transmission of prion diseases, and molecular-scale interactions of biomolecules with engineered nanomaterials.

Best Student Post Awards

Congratulations to the following Best Student Poster Awards, as determined by ACS Publications and recognized at the Awards Banquet:

Ana Grace Alvarado (University of California - Merced) - The Life of a Tomato: Environmental Life Cycle Assessment of Fresh Tomatoes Compared to Processed Tomatoes in California

Samantha Bunke (Stanford University) - Life Cycle Comparison of Battery Recycling and Conventional Material Refining

Dane Elliott (The Ohio State University) - Effect of Drinking Water Treatment Processes on the Integrity of Cyanobacteria Cells

Stefanie Huttelmaier (Northwestern University) - Understanding host-

phage interactions of nitrite oxidizing bacteria in a nitritation reactor

Roozbeh Ghasemi (University of New Hampshire) - Household preferences of decentralized solar photovoltaic and thermal systems

Jinyue (Jerry) Jiang (Princeton University) - Molecular transformation and metabolic insights during MEC treatment of post-hydrothermal liquefaction wastewater (PHW)

Kaitlyn McKinney (Texas Tech University) - Insights into Bioaerosols in Subarctic Interior Alaska

Katelin Weitzel (University of Cincinnati) - Treatment and Reuse of Agricultural Drainage Water: Opportunities and Challenges

AEESP Announces the Edward J. Bouwer / AEESP Outstanding Doctoral Dissertation Award

Beginning in 2023, AEESP will be adding a new Doctoral Dissertation Award in honor of the late Professor Ed Bouwer, to be named the Edward J. Bouwer / AEESP Outstanding Doctoral Dissertation Award!

As many of you already know, Ed was a dedicated researcher, teacher, and mentor to his graduate students at Johns Hopkins University. He was a leading researcher in microbial process engineering and performed groundbreaking work on the bioremediation of chlorinated solvents and his research group's fundamental work on bioremediation, water and wastewater treatment, and contamination in urban environments led to innovations in engineering practice and informed decisions concerning land use and national environmental policy. Ed combined pragmatism with compassion to solve environmental problems in Baltimore and across the country and always strived to positively impact human and environmental health. Ed will be remembered not only for his technical contributions, but also for his level of personal commitment to every undergraduate advisee, Master student and Doctoral candidate - treating everyone he encountered with kindness and respect. This award will allow AEESP the opportunity to honor the excellent work done by emerging researchers in the environmental engineering and science field and honor Ed's legacy of research and mentorship.

The outpouring of love and generosity by not only his family, but his friends and colleagues as well, has allowed us to reach the critical threshold to make this award a reality. But we haven't quite reached the full endowment target of $75,000 yet. So if you are able to make a donation, however big or small, to help us fully endow the Award. Donations may be made online through the Foundation website (www.aeespfoundation.org/donate) or by calling the Business Office at 202-640-6591 ext. 309.

AEESP Announces the 2023 Research and Education Conference Dates and Location

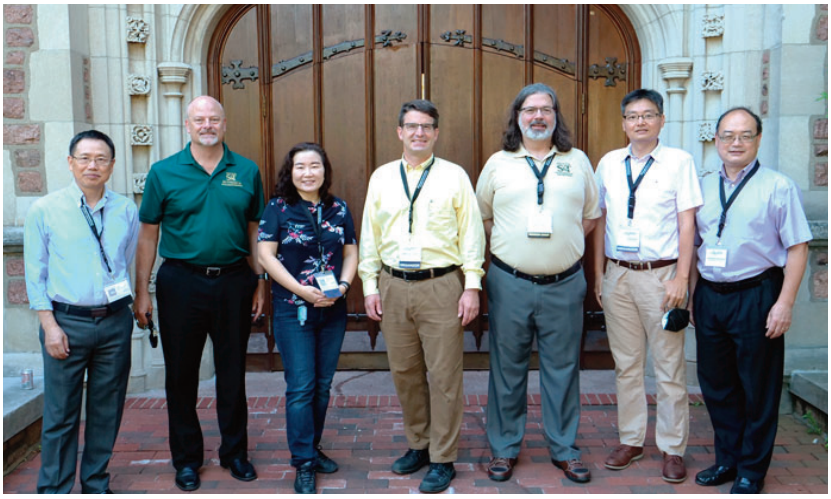
Mark your calendars for the week of June 20-23, 2023. Those are the dates for the next AEESP Research and Education Conference, and we are pleased to announce that it will be hosted by Philip Larese-Casanova and Amy Mueller, and their colleagues at Northeastern University in Boston. Congratulations Phil and Amy and thank you for stepping up to host this wonderful event next year. We look forward to visiting your campus and seeing everyone there!

Our thanks to Dan Giammar and his colleagues at Washington University in St. Louis for all their hard work under incredible circumstances, their hospitality, and strong delivery for this year's conference. It was a job well done!

Posters from left to right: Ana Grace Alvarado (University of California – Merced), Dane Elliott (Ohio State University), Jinyue (Jerry) Jiang, Samantha Bunke, Daniel Giammar (conference chair), Roozbeh Ghasemi (University of New Hampshire), and Baolin Deng (University of Missouri)

Poster winners not present for the photo: Stefanie Huttelmaier (Northwestern University), Kaitlyn McKinney (Texas Tech University), and Katelin Weitzel (University of Cincinnati)

Images from the Conference



Organizing committee group photo from left to right: Baolin Deng, Joel Burken, Young-Shin Jun, Daniel Giammar, Mark Fitch, Jason He, and Jim Zhou. Not pictured but played a major role in conference organization is Maria Fidalgo.

Wednesday Plenary: Joel Burken, U. Missouri S&T, Moderator; Amy Pruden, W. Thomas Rice Professor, Virginia Tech; Janet Hering, Director EAWAG; Gary White, CEO and Co-Founder Water.org

Thursday Plenary: Anu Ramaswami, Princeton University, Moderator; Erik Rosenfeldt, National Drinking Water Practice Leader at Hazen and Sawyer; Lilia Abron, CEO/President and Founder of PEER Consultants; Charles Bott, Director of Water Technology and Research at Hampton Roads Sanitation District

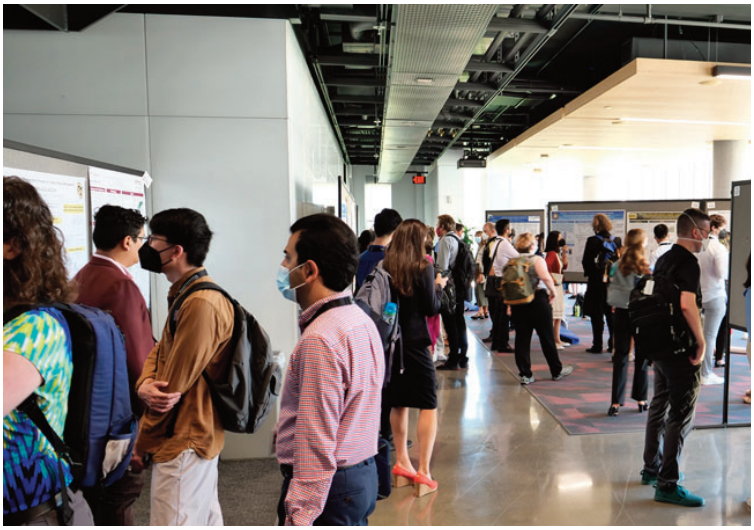
Eating lunch

Networking reception

Cooling off

Banquet

Poster sessions



Poster sessions

Poster sessions

BBQ and Blues Welcome Reception

New Faculty Appointments

Dr. Lea Winter Joins Yale University

Dr. Lea Winter will be joining the Department of Chemical and Environmental Engineering as an assistant professor in July 2022. Dr. Winter is currently a Nanotechnology Enabled Water Treatment (NEWT) Distinguished Postdoctoral Fellow at Yale. She received her B.S. in Chemical Engineering from Yale (2015) and Ph.D. in Chemical Engineering from Columbia University as an NSF Graduate Research Fellow (2020). Her research focuses on electrified processes at the food, energy, water, and climate nexus, including development of sustainable and circularized processes for conversion of CO_2 to chemicals and fuels, green nitrogen fixation to fertilizers and nitrogen-based fuels, and transformation of contaminants in wastewater into useful products while recovering fit-for-purpose water. Dr. Winter's research utilizes plasma and electrochemistry to activate chemical reactions while integrating design of earth-abundant catalysts and sustainable materials to selectively control chemical transformation pathways. Dr. Winter has significant interest in science education and outreach: she founded SciRISE at Columbia, a high school internship program for students who recently immigrated to the U.S. to pursue independent research projects, and she co-founded the Yale Summer Science Research Institute for New Haven public high school students to work in laboratories at Yale. She will be teaching new courses on Water-Energy Nexus and Engineering Solutions to Climate Change.

Dr. Shakira Hobbs Joins University of California, Irvine

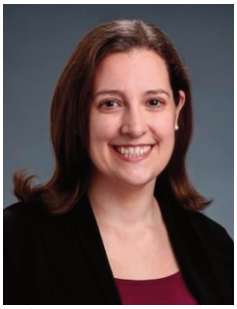
Dr. Shakira Hobbs will join the University of California, Irvine Samueli School of Engineering as an assistant professor at in the Department of Civil and Environmental Engineering July 1, 2022. Dr. Hobbs joins UCI as a Samueli Faculty Development Endowed Chair and the first Environmental Health Disparity cluster hire under the Black Thriving Initiative. Previously, she was an assistant professor at the University of Kentucky where she spearheaded the new sub-discipline, Sustainable and Humanitarian Engineering. Dr. Hobbs began her career as a postdoctoral researcher at University of Virginia after earning her PhD in 2017 from Clemson University under the supervision of Dr. Amy Landis. Dr. Hobbs has developed a research program centered on food-energy-water nexus sustainability. Her research ranges from the development of waste management techniques and energy recovery from bioplastics and food wastes; development of analytical methods for detecting and modeling transport of glyphosate in water systems; and investigating early adoption of sustainable technologies in intentionally underserved Black communities. Since 2019, Dr. Hobbs has secured over $550,000 (including $258,686 from NSF) of funding as lead PI to support her research program and will continue to make novel and timely contributions to the field and literature.

Dr. Yuxin Wang joins Binghamton University

Dr. Yuxin Wang will join Environmental Studies program at Binghamton University as assistant professor in Fall 2022. Before joining Binghamton University, Wang was a postdoctoral associate in the School of Civil and Environmental Engineering at Cornell University, and a visiting instructor in Sustainable Engineering at SUNY College of Environmental Science and Forestry. Dr. Wang has also applied her knowledge as an expert witness for water discharge litigation. Since receiving her Ph.D. in Civil and Environmental Engineering at Carnegie Mellon University, she has researched chemical contamination and engineered new remediation strategies for wastewater in both academic and private sector settings. Her research focuses on the risk assessment of contaminants arising from society and technological development. Her primary research interests are in water quality challenges arising from human activities, and in developing laboratory experiments and mechanistic models to estimate the risks of contaminants in natural and engineered systems (drinking water and wastewater treatment systems).

The University of Michigan Welcomes Three Faculty Members

Dr. Joshua Jack will join the Department of Civil and Environmental Engineering at the University of Michigan as an assistant professor in August 2022. Dr. Jack plans to develop new decarbonization and resource recovery infrastructure that can mitigate climate change and redirect resource flows within a new circular economy. His research group will focus on developing new integrated electrochemical-biological technologies that can be leveraged in diverse environmental applications including wastewater treatment, water reuse, desalination, remediation, and CO2 capture and conversion. Dr. Jack previously earned B.S. and M.S. degrees in Civil and Environmental Engineering from the University of Massachusetts, Amherst and he holds a Ph.D. in Environmental Engineering from the University of Colorado, Boulder. Prior to joining the University of Michigan, Dr. Jack served as a postdoctoral research scholar in the Andlinger Center for Energy and Environment and Civil and Environmental Engineering Department at Princeton University.



Dr. Rachel O'Brien will join the Department of Civil and Environmental Engineering at the University of Michigan as an assistant professor in August 2022. Dr. O'Brien's research group targets questions on indoor and outdoor air quality with a focus on the composition and aging of complex organic mixtures. She investigates the chemical and physical properties of indoor surface films and she studies the longer-term aging and removal processes of atmospheric organic aerosol particles. Dr. O'Brien obtained her Ph.D. in Chemistry from UC Berkeley, worked as a postdoctoral fellow at both Lawrence Berkeley National Lab and MIT in Civil and Environmental Engineering, and earned her B.A. in Chemistry from Grinnell College. Prior to joining the University of Michigan, Dr. O'Brien was an assistant professor at the College of William & Mary.

Dr. Alex Szczuka will join the Department of Civil and Environmental Engineering at the University of Michigan as an assistant professor in August 2022. Dr. Szczuka's research focuses on reducing the chronic health risks posed by contaminants and the acute health risks posed by pathogens in non-traditional water supplies. She is especially interested in emerging technologies that have the potential to reduce water treatment costs. Previously, Dr. Szczuka was a Presidential Postdoctoral Fellow at the University of Michigan. She completed her M.S and Ph.D. in Civil and Environmental Engineering at Stanford University, and a B.S. in Chemical and Biological Engineering at Princeton University. Outside of research, Dr. Szczuka enjoys taking pictures of science and engineering in action, and she curates an Instagram (@basementlabrat) filled with lab-related photos.

Congratulations to GRC Environmental Sciences: Water Poster Winners

Christina K. Remucal – University of Wisconsin-Madison

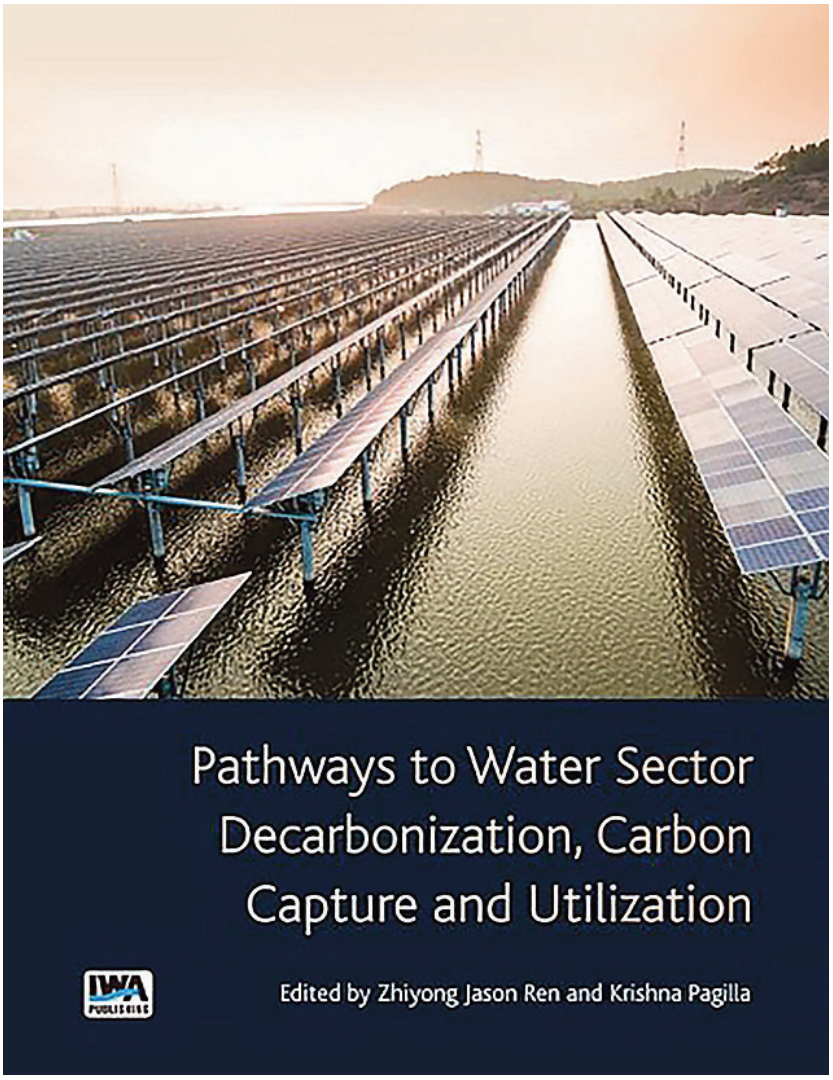
The Gordon Research Conference on Environmental Sciences: Water recognized three graduate students for their excellent poster presentations at the biennial meeting held in Holderness, NH in June 2022.

Charlotte Bopp (Department of Environmental Chemistry, Eawag) Nora Bernet, Sarah Pati, Hans-Peter Kohler, and Thomas Hofstetter; The Role of Oxygen Uncoupling by Rieske Non-Heme Iron Dioxygenases in the Biodegradation of Aromatic Contaminants.

Lucinda Li (Department of Civil and Environmental Engineering, University of Michigan) Jinyi Cai, Nancy Love, and Krista Wigginton; Virus Emissions from Toilet Flushing: Comparing Urine-Diverting to Mix Flush Toilets.

Neha Sharma (Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis) Elaine Flynn, Jeffrey Catalano, and Daniel E. Giammar; Understanding Copper Dynamics and Limitations on Nitrogen Cycling in Natural Aquatic Systems.

The 2022 GRC on Environmental Sciences: Water poster awardees: Charlotte Bopp, Lucinda Li, and Neha Sharma.



The first book on "*Pathways to Water Sector Decarbonization, Carbon Capture and Utilization*", was recently published by the International Water Association (IWA, London) as Open Access eBook online: https://doi.org/10.2166/9781789061796. The book can be downloaded for free.
The book was co-edited by Z. Jason Ren (Princeton University) and Krishna Pagilla (University of Nevada Reno). The book

- Lays out a framework on the state-of-the-art in water sector carbon footprints (Chapter 1-3).
- Provides reviews and details on different processes and technologies that enable decarbonization, resource recovery, carbon capture, and utilization (Chapter 4-14).
- Offers broader prospects in the context of policy making, intelligent water systems, as well as case studies for utilities of the future (Chapter 15-18).

AEESP Membership

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- Individuals who were members at one time and who have retired from active teaching.

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