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Editors: Dr. Nga Lee Ng, Georgia Institute of Technology; Dr. Kerry Kelly, University of Utah; Dr. Marwa-El Sayed, Embry-Riddle Aeronautical University

Current Leadership of the Division

- Chair: Dr. Alexander Orlov
- 1st Vice Chair: Dr. Kerry Kelly
- 2nd Vice-Chair: Dr. Matthew Alexander, PE
- Past Chair (2021): Dr. Kristina Wagstrom
- Treasurer: Dr. Larry Erickson
- Secretary: Dr. Robert Peters
- Directors (2020-2022): Dr. William Patrick Linak & Dr. Kirti Yenkie
- Directors (2021-2023): Dr. Marwa El-Sayed & Dr. Yinlin Huang
- Directors (2022-2024): Dr. Shweta Singh & Dr. Coty Jen
- Technical Programming Chair: Dr. Jason Trembly
- Technical Programming Co-Chair: Dr. Richard Siegel

Message from the Chair

Dear Colleagues,

It is a great privilege to serve you as a new Chair of the Division. We have outstanding members, exceptional programming activities and important mission of disseminating



information about the role that chemical engineers play in improving the environment. Several members of our Committee are stepping down from their leadership positions and I would like to thank our Past Chair Prof. Kristina Wagstrom for guiding our Division during the difficult time, Prof. Fengqi You for his leadership in running very successful webinars and Dr. Gerardo Ruiz-Mercado for outstanding technical programming activities. As always, we are grateful to our Treasurer Prof. Larry Erickson and Secretary Prof. Bob

Peters for all their hard work in keeping our Division on track. I would also like to welcome Prof. Jason Trembly as our new Programming Chair and Dr. Richard Siegel as a co-Chair. In addition to their important work, the role of programming session chairs and co-chairs is exceedingly important for a continuing success of our Division and all of us have immense appreciation of their important efforts. It is also a great pleasure to welcome our new Directors Profs. Shweta Singh and Coty Jen.

It is important to mention several challenges we are facing as a Division. We will need to find new ways of serving you better and reversing a trajectory of decreasing membership and revenues. It will be also important to develop new areas for technical programming and we hope we can count on a collective wisdom of our membership. Your ideas and inputs on what we can change and improve in our Division will be much appreciated. We also hope you can take leadership roles in our executive committee and find time to participate in the AIChE Annual Meetings and webinars. If you or a colleague you know is interested in getting involved, please send an email to members of Executive Committee.

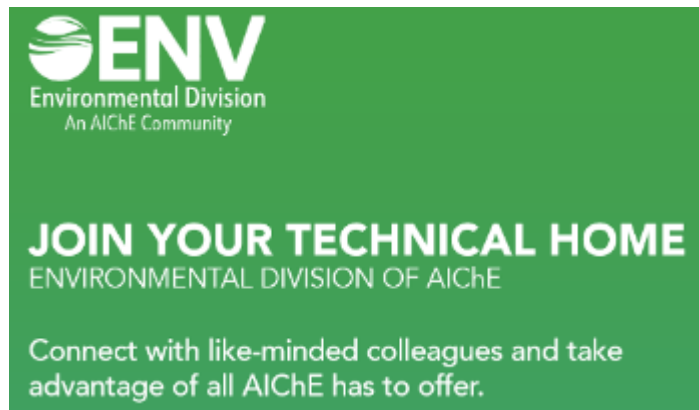
Finally, please join our newly formed linked group to get the latest updates about our Division activities: <http://linkedin.com/company/aiche-environmental-division/>

I am looking forward to working with everyone in the Division to make a positive and sustaining change to our professional home.

Sincerely,
Alex Orlov
AIChE Environmental Division Chair (2022)

Community Counts Program

Environmental Division Flyers (Community Counts Program)



Two new collateral pieces about ENV have been created as part of the AIChE Community Counts Program. Please share widely and download the materials below.

[ENV Brochure](#)

[About us flyer](#)

2021 Award Announcement

Congratulations to Our Winners!



Lawrence K. Cecil Award

[Dr. Robert Peters](#)

Professor Emeritus

Department of Civil, Construction, and Environmental
Engineering

University of Alabama at Birmingham

Early Career Award

[Dr. Shweta Singh](#)

Assistant Professor

Agricultural and Biological Engineering

Environmental and Ecological Engineering

Purdue University



Graduate Student Paper Award



First place - Duong Nguyen
Environmental Engineering
University of Colorado Boulder

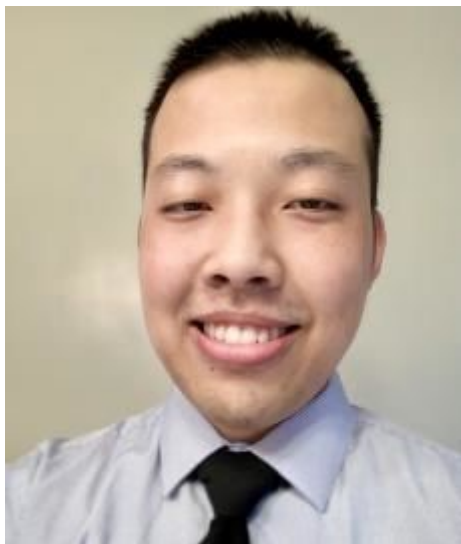
Duong Nguyen is currently a Ph.D. student in Environmental Engineering at the University of Colorado, Boulder. He earned an MS in environmental engineering from Arizona State University and a BS in environmental science from Vietnam National University.



Second Place - Laxmicharan Samineni
McKetta Department of Chemical Engineering
University of Texas at Austin

Laxmicharan Samineni is currently working on developing protein enhanced affordable point-of-use filters for enhanced pathogen removal. His research interests include protein-protein interactions, clean bed filtration models, plant based antimicrobial proteins. Before pursuing doctoral studies, he finished his master's degree in chemical engineering from Indian Institute of Technology, Kanpur (2013-2015), India and

then worked for two years as a Process Scientist in the area of Crystallization process development at a pharmaceutical company in India (2015-2017). He graduated from National Institute of Technology in Warangal, India with a bachelor's degree in chemical engineering in 2011. He is co-advised by Dr. Manish Kumar and Dr. Thomas Truskett.



Third place - John Chea
Chemical Engineering
Rowan University

John Chea, a Ph.D. candidate in Chemical Engineering, a member of the Sustainable Design and Systems Medicine Lab, and the Advanced Materials and Manufacturing Institute from Rowan University. Currently, he is working on tackling key sustainability issues involving bio-based material extractions, polymer synthesis, and solvent recovery practice enhancement. He is also working as a Chemical Exposure Analyst Intern with the US EPA on tracking and minimizing toxic chemical releases in the end-of-life phase of the plastic life cycle.

Undergraduate Student Paper Award



Ember Chadwick
Chemical Engineering
University of Utah

Ember Chadwick is pursuing a combined BS/MS degree in Chemical Engineering with an emphasis in Energy Engineering at the University of Utah. She is currently a senior and is working on her undergraduate thesis for the Honors College. Her project aims to investigate particle interactions between ammonium nitrate salt and soot. Her previous work involved air quality monitoring with a low-cost sensor network.

Katrina Le
Chemical Engineering
University of Utah

Katrina Le is an undergraduate student in Chemical Engineering at the University of Utah and is bound to graduate in Spring 2022. Her research experiences range from air quality to biological soft materials and



medical devices to batteries. She strives to continue research in the future. In her free time, she likes to engage in the environment in other (arguably cooler) ways besides research (although research is hard to beat).

Member Spotlight

Dr. JoAnn S. Lighty



Dr. JoAnn S. Lighty

Dean, College of Engineering
Boise State University

How did you get involved in the environmental aspects of chemical engineering?

My dissertation focused on the desorption of hazardous chemicals from soils. This started me toward work in the combustion laboratory at Utah in terms of high temperature gas/solid interactions. As we began to look at waste fuels for use in combustion systems, it became apparent that fine particulate matter was an important consideration. At this point, I shifted toward PM_{2.5} and PM₁₀ formation and, in particular soot.

Which people or programs in our field have been the most influential to you and your path?

Adel Sarofim – he was generous and a brilliant individual. These two qualities helped me redirect my research and publications.

What are, in your opinion, the most interesting contributions you've made so far?

Partnering with Kerry Kelly in my work early on 😊 – seriously, I often think my best contributions were forming alliances and partnerships with the best people to solve interesting problems. That said, my work in understanding more about the mechanisms of the oxidation of soot particles with oxygen.

As a researcher and an educational leader, what do you see as opportunities for Chemical Engineering researchers to contribute to addressing our environmental challenges?

We continue to contribute with our knowledge of kinetics and transport to, not only research at the fundamental scale, but also translate this work to application. This is evident in solid, liquid, and gas phase challenges. Our challenges include the results from climate uncertainty, for example: drought and water use/reuse; air quality from wildfires; and, floods.

Are there new directions that you see as particularly important or interesting?

Especially in the context of the environment, a systems approach is becoming more important. This approach requires transdisciplinary collaborations. For example, I am working with the American Society of Agriculture and Biological Engineering (ASABE) on the Transforming Food and Agriculture to Circular Systems (TFACS) initiative (see: B. P. Verma, J. W. Jones, K. Migliaccio, L. Moody, and C. A. Madriamootoo, "The TFACS Initiative," Resource, November/December 2021, p. 15-19). TFACS can only be accomplished with this in mind.

Student Feature

Kira Zeider



Kira Zeider

Chemical Engineering
University of Arizona

Tell us about yourself.

My name is Kira Zeider and I am a second-year graduate student pursuing my PhD in chemical engineering. I was born and raised in Tucson, Arizona and obtained my degrees in chemical engineering and environmental engineering at the University of Arizona. In my free time, I like to cook and bake gluten-free and vegan food, hike and do yoga, and spend time with my friends and family.

How did you first become interested in the environmental field of chemical engineering?

I have been interested in environmental science since I was in the fourth grade. I had a research project on global warming and my mom checked out Al Gore's "An Inconvenient Truth" from the library to help guide my research. I was so inspired and moved by that assignment that afterwards, I was determined to work in a field where I could perform environmental research and work on environmental remediation projects. Originally, I declared environmental engineering as my major, however after I discovered the

mathematics- and physics-driven chemical engineering, I decided to double major. I felt that the two complimented each other, both in the fundamentals and the research side.

Can you describe your research? publications?

I have two main research projects. The first project was sponsored by the Center for Environmentally Sustainable Mining and resulted in a paper published last year, "Foliar surfaces as dust and aerosol pollution monitors: An assessment by a mining site" (<https://doi.org/10.1016/j.scitotenv.2021.148164>). That work investigated the effectiveness of plants as low-cost air quality monitors. The research was conducted through Gardenroots, which is a citizen-driven science program in Arizona. For this project, the data collection was conducted by community members living close to mine sites in Arizona who were concerned about local pollution. I am currently working on a follow-up project that continues to focus on community-driven research into air quality.

I have also been actively working on field sample characterization and data analysis in support of the NASA Aerosol Cloud Meteorology Interactions over the western Atlantic Experiment (ACTIVATE) campaign and separately the ONR California Smoke Mission (CSM) campaign. The data from the summer of 2020 show that western U.S wildfires affected both coasts and I have been drawn to the topic of the presence of supermicron-sized aerosol particles in these smoke plumes.

Additionally, I helped advise a summer intern through the Institute for Tribal Environmental Professionals (ITEP) program. We hosted a college student with the goal of teaching them basic aerosol data analysis for a site with tribal significance and focused on very high PM_{2.5} (particulate matter with a diameter less than or equal to 2.5 micrometers) concentration days over a period of almost 30 years. The work led to a publication, "Extreme Aerosol Events at Mesa Verde, Colorado: Implications for Air Quality Management," (<https://doi.org/10.3390/atmos12091140>).

What are the most important contributions you have made in the field?

My paper (Zeider et al., 2021) was selected as an NIEHS Extramural Paper of the Month in October 2021. These Extramural Papers are selected based on their important findings and potential for public health impact, so I was really honored by this selection and motivated to keep moving forward with this research idea. Additionally, I was interviewed on Tucson's community-based research station, KXCI, to talk about my research with ACTIVATE, which was utilizing machine learning to categorize aerosol size distributions from dozens of flights.

How did the AIChE Environmental Division benefit your career?

One of the biggest benefits of the AIChE Environmental Division is the networking opportunities, both on- and offline. I attended an AIChE Annual Conference my senior undergraduate year and made great connections with students from all over the country, and additionally strengthened the relationships I had with my classmates. This is also possible via AIChE Engage, so you don't have to wait a whole year to start interacting with other professionals. To supplement AIChE's CareerEngineer, the Environmental Division helped me to search for green collar opportunities in both industry and academia that

weren't otherwise promoted. Additionally, the division's publication, Environmental Progress & Sustainable Energy (EP&SE), and newsletters are excellent resources to stay up to date regarding current environmental challenges, successes, and technological advances, which are beneficial to researchers and professionals alike.

Can you share some advice for other students in the AIChE Environmental Division?

My biggest piece of advice would be to use AIChE Engage and to go to the Annual Conference. The relationships you make through these resources can have lasting beneficial impacts on your career, no matter if you continue to graduate school or start working in a government or industry job. Additionally, start reading up on environmental issues now; the more informed you are, the better! With the combination of the webinars, newsletters, and EP&SE, you'll be well-versed in the environmental realm, which leads to better research ideas and grants or inspires a change at work.

In your opinion, what are some new initiatives or opportunities that the Environmental Division can provide for student members?

Most students at my university don't typically travel to the AIChE Annual Conference for a myriad of reasons. If there was a way to better way to pull in both undergraduate and graduate students, it would help to engage them more before and after the conference, especially at the graduate level. This could be through student paper features, student spotlights, or even travel scholarships to the Conference.

Another idea would be to have a student-run webinar series where they invite speakers that they are interested in hearing from, whether it be faculty members, industry professionals, or even undergraduate and graduate students themselves.

Student Feature

Sabrina Westgate



Sabrina Westgate

School of Chemical and Biomolecular Engineering
Georgia Institute of Technology

Tell us about yourself.

My name is Sabrina Westgate, and I grew up in Western Massachusetts. I went to the University of Rochester for my B.S. in Chemical Engineering. While there, I tried my hand at research using electrochemistry for potential medical applications

(<https://pubs.acs.org/doi/abs/10.1021/acs.langmuir.9b00919>), and discovered my interest in performing research. Now, I am in my third year as a Ph.D. candidate at the Georgia Institute of Technology in the School of Chemical and Biomolecular Engineering. I am also working towards obtaining a certificate in public policy and hope to someday be a bridge between science and environmental policy decisions.

How did you first become interested in the environmental field of chemical engineering?

I have always cared about and been drawn to the environment. I grew up in a rural area and spent most of my weekends hiking or exploring the outdoors. Going into college, I wasn't sure what I wanted to study, and was torn between environmental research and biomedical research. I ended up deciding to study chemical engineering because I knew that the fundamental principles taught in the field would support a career in whichever direction I chose. Once I began applying to different graduate schools, I had the opportunity to talk with chemical engineering professors in many different fields. Through this process I found that I was most drawn to the area of air quality after speaking with my current PI (Dr. Sally Ng).

Can you describe your research? publications?

My research group, the Ng group at Georgia Tech, focuses on aerosol chemistry, air quality, and health effects. My specific research is in the field of Indoor Air Quality. In the beginning of the COVID-19 pandemic, my group assisted Georgia Tech with assessing the indoor air quality in classrooms throughout campus. I used a combination of research-grade instruments and low-cost sensors that we installed around campus to monitor and characterize indoor pollutant levels. I also tested a number of commercial air purifiers in campus rooms in order to recommend which ones the university should deploy during in person classes (press article: <https://news.gatech.edu/news/2020/08/28/improving-air-quality-classroom>). Following this, I contributed to a project on testing the effectiveness of electronic air cleaners (i.e., air cleaners that use various technologies other than mechanical filtration). One of our tests gave startling results, indicating that the use of an oxidant-generating electronic air cleaner produces secondary organic aerosols, contributing to levels of indoor air pollution rather than improving them.

(<https://pubs.acs.org/doi/abs/10.1021/acs.estlett.1c00416>). I am currently continuing to work on best methods to characterize indoor air quality and hope to have a first-author publication regarding this soon.

What are the most important contributions you have made in the field?

So far, most of my contributions have been related to indoor air quality during pandemic times. Primarily, I have assisted my university in making data-driven decisions to improve and optimize indoor air quality around our campus. I have also contributed to research investigating the impacts of electronic air cleaners on indoor environments. Studies of this nature are particularly important since commercial air cleaners are not regulated by any organization such as the FDA, and the effects of some of these devices on indoor air-and subsequently to human health- is largely unquantified.

How did the AIChE Environmental Division benefit your career?

The AIChE Environmental Division has provided me with a network and resource to keep connected with research in the environmental field. In doing research as a graduate student, it is easy to become pigeon-holed and focused on just your own work. However, it is vital to keep up to date on what is going on outside your own research, and the AIChE Env Division helps me to do this.

Can you share some advice for other students in the AIChE Environmental Division?

My main advice for other students is to focus on what makes you happy. We have all experienced the tumult of this pandemic, and now more than ever it is important to take care of ourselves. I think a lot of us in this field are driven by a desire to help make the world a better place. But, it is important to remember and appreciate the reasons why you want to make this world better – be it for the sake of your own family, your friends, or even just to help preserve the beauty of our nature outdoors.

In your opinion, what are some new initiatives or opportunities that the Environmental Division can provide for student members?

I think a useful opportunity that the Environmental Division could provide for members is semi-recurrent virtual meetups or mentor-mentee pairings. I believe one of the most important ways of choosing and learning about your future career direction is through mentorship and speaking with others in your field. One initiative could be to host lunch meetups, pairing faculty or professionals and students (both undergrad and graduate) for informal meetings. Another initiative could be to directly pair interested students and professionals, across many different universities, to connect and converse about their career paths.

I also think organizing meet ups or mentor-mentee pairings among students, (such as graduate students with undergrads considering grad school, or even a mix of students of all levels), would be beneficial. I know many universities have alumni and student networks, but I think there the AIChE Environmental Division is in a unique position to encourage inter-university connections and even collaborations.

Other News & Events

- Video Recordings of Environmental Division Webinars: Climate Change & Air Quality
 - **Prof. Nestor Y. Rojas**, *National University of Colombia*: November 29, 2021. [View Here](#)
 - **Prof. Drew Gentner**, *Yale*: October 28, 2021. [View Here](#)
 - **Prof. Ted Russell**, *Georgia Institute of Technology*: September 30, 2021. [View Here](#)
 - **Prof. Lea Hildebrandt Ruiz**, *UT-Austin*: August 23, 2021. [View Here](#)
 - **Prof. Jesse Kroll**, *MIT*: July 26, 2021. [View Here](#)
 - **Prof. Herb Cabezas**, *University of Miskolc*: June 28, 2021. - [View Here](#)
 - **Prof. Allen Robinson**, *Carnegie Mellon University*: May 24, 2021. - [View Here](#)
- Establishment of the Division LinkedIn group to better connect with our membership: <https://www.linkedin.com/company/81734152/>

- Creation of the Environmental Division Fund to establish endowed funds for the Lawrence K. Cecil, Early Career and Student Paper Awards. We hope that the Division membership will help us to recognize outstanding faculty and students. <https://ecommerce.aiche.org/aiche-online/Donation/Home/Donation?setskin=giving&productid=976738123>
- Dr. Larry Erickson published a new book titled “Phytotechnology with Biomass Production: Sustainable Management of Contaminated Sites”. The book is available electronically free through the open access system from the publisher Taylor and Francis www.routledge.com/9780367522803
- Dr. Robert Peters has been appointed to the Texas Air Research Center Advisory Board.
- Dr. Matthew Alexander and Dr. Robert Peters have been appointed to the Texas Hazardous Waste Research Center Advisory Board. (Dr. Larry Erickson is also a member of the Advisory Board).

CONTACT US

Have a question about your AIChE or ENV Division membership, upcoming events or awards? Contact us at membership@aiiche.org
