

Division of Environmental Chemistry
Call for PapersACS Fall 2023 – Harnessing the Power of Data
San Francisco, California – August 13-17, 2023

Dear Colleagues,

On behalf of the ACS Division of Environmental Chemistry, it is my pleasure to invite you to share your recent research and results in the Division of Environmental Chemistry at the American Chemical Society Fall 2023 Meeting. ACS Fall 2023 will include in-person, virtual, and hybrid technical programming.

Abstract Submission Deadline: April 4, 2023. Please submit abstracts to the Division of Environmental Chemistry at <http://MAPS.ACS.org>. Abstracts will be accepted for oral and poster presentation in each symposium unless otherwise noted. Symposium details are available at <https://callforabstracts.acs.org/acsfall2023/ENVR>.

Sincerely,

ENVR Fall Program Chair

Virender Sharma
vsharma@tamu.edu

Assistant Fall Program Chair

Mallikarjuna Nadagouda
nadagouda.mallikarjuna@epa.gov

Thematic Symposia: Harnessing the Power of Data

(Thematic symposia are also listed categorically below)

Exposome Meets Chemistry - Assessing Exposures to Complex Chemical Mixtures and their Impacts [TOXI, MEDI, ANYL]

Organizers: Carsten Prasse, cprassel@jhu.edu
Matthew N. Newmeyer, mnewmey1@jhmi.edu

Our global economy exposes the environment and humans to tens of thousands of chemicals, with more developed every day. Understanding how these exposures, which represent an important part of the exposome impact our health and the environment is critical for the development of mitigation strategies. This requires the development of analytical techniques to measure exposures to complex mixtures and assess the resulting effects on a molecular, cellular, and organism level and via different pathways. The focus of this symposium is to encourage submissions that present novel research and development activities designed to improve the understanding of how chemical exposures impact environmental and human health. This includes i) novel analytical approaches to identify and assess chemical exposures, ii) methodologies to elucidate the toxicity of chemicals if present as complex mixtures, iii) approaches to evaluate strategies to minimize exposures to toxic compounds, and iv) development and application of novel data analysis and machine learning approaches to elucidate chemical exposures and their health impacts.

Harnessing Data to Improve Oxidation and Disinfection Processes

Organizers: Kirin Furst, kfurst@gmu.edu
Alex Szczuka aszczuka@umich.edu

Oxidation and disinfection processes are becoming increasingly complex, with tradeoffs associated with pathogen and contaminant removal, byproduct formation, and antibiotic resistance proliferation. We will highlight the intersections of emerging analytical and modeling approaches for understanding complex oxidation/disinfection data, including kinetic and treatment process modeling.

Processes and Risks of Micro- and Nano-Plastics in the Environment [AGFD, ANYL, CHAS, COLL, GEOC]

Organizers: Baoshan Xing, bx@umass.edu
Jian Zhao, jzhao@ouc.edu.cn
Fei Dang, fdang@issas.ac.cn
Collin Ward, cward@whoi.edu
Virender Sharma, vsharma@tamu.edu

Experts from academia, government, and industry will share latest research on the critical processes (e.g., transformation, degradation, aggregation) of micro- and nanoplastic particles in the environments, accumulation/distribution in living organisms and transfer along the food chains, risks to environmental and human health, models for tracing sources and predicting toxicity, and the associated data-driven machine learning to decipher the complex relationships.

Honorary and Invited Symposia

(Honorary symposia do not include poster sessions)

Aquatic Science and Technology at Environmental, Disciplinary, and Societal Interfaces: A Symposium Honoring the Career of Janet Hering

Organizers: Daniel Giammar, giammar@wustl.edu
Kate Campbell, kcampbell@usgs.gov
Stephan Kraemer, stephan.kraemer@univie.ac.at
Giehyeon Lee, ghlee@yonsei.ac.kr

The symposium will include invited and contributed presentations across the wide range of topics in aquatic science and technology in which Dr. Janet Hering has had deep impacts. Topics of interest for this symposium include, but are not limited to trace element biogeochemistry, water treatment for the removal of inorganic contaminants, and the translation of scientific advances into policy and practice.

C. Ellen Gonter Graduate Student Award Symposium *(Invited presentations only)*

Organizer: Kevin O'Shea, osheak@fiu.edu

Invited abstracts only. This annual Division of Environmental Chemistry award is presented to graduate students at universities who submit the highest quality research papers for consideration by the awards committee.

Environmental Chemistry and Nanotechnology: A Tribute to Joel Pedersen

Organizers: Fernando Rosario-Ortiz, fernando.rosario@colorado.edu
Mel Suffet, msuffet@ucla.edu
Howard Fairbrother, howardf@jhu.edu
Robert J. Hamers, rjhamers@wisc.edu

This symposium is being held in honor of Dr. Joel Pedersen. Joel's research was focused on environmental chemistry, emphasizing investigations of interfacial processes, organic microcontaminants and biomacromolecules in natural and engineered environments. Please join us and submit an abstract celebrating Joel Pedersen's many contributions to environmental chemistry. We welcome submissions from any of the areas related to Joel's work.

Improving Water Quality by Understanding Environmental Chemical Processes: A Symposium in Honor of Richard G. Luthy

Organizers: Christopher P. Higgins, rjhamers@wisc.edu
Catherine Peters, cap@princeton.edu
Jim Mihelcic, jm41@eng.usf.edu
Jordyn Wolfand, wolfand@up.edu

This symposium will be held in honor of Dick Luthy's numerous contributions to employing an understanding of environmental chemical processes to improve water quality, with a particular focus on organic contaminants. The symposium will span Dr. Luthy's nearly half-century of research on environmental fate, treatment, and management of chemical contaminants. Topics to be covered include fate models and interventions to control the bioavailability and transport of hydrophobic organic contaminants, treatment of industrial wastewaters, and approaches to enable the use of non-traditional water sources. Presentations on innovations in environmental engineering education are also strongly encouraged.

Radiation Chemistry, Aquatic Photochemistry, and Advanced Oxidation Processes in Environmental Chemistry: In Honor of William J. Cooper

Organizers: Virender K. Sharma, vsharma@tamu.edu
Kevin O'Shea, osheak@fiu.edu
Dion Dionysiou, dionysios.d.dionysiou@uc.edu

An important area within environmental chemistry involves reaction kinetics, which is fundamental to studies in fate and transport and treatment processes. Kinetic modeling is an important tool used to provide an understanding of a process or system. Radiation chemistry (pulse radiolysis) and aquatic photochemistry (flash photolysis) are techniques used to probe fast reaction kinetics. Laboratory studies using "steady state" solar simulators can be directly applied to natural surface waters. Contributions in this symposium may be in the area of fate and transport of chemicals in surface waters or in free radical chemistry of treatment processes (advanced oxidation processes).

Women in Science and Engineering (WISE) [AGRO]

Organizers: Ching-Hua Huang, ching-hua.huang@ce.gatech.edu
Virender K. Sharma, vsharma@tamru.edu
Dion Dionysiou, dionysios.d.dionysiou@uc.edu

Invited abstracts only. This symposium will highlight advances and pioneering efforts made by women in the field of environmental science and engineering, and environmental policy. The symposium will celebrate and recognize important scientific discoveries, breakthrough technological advances, and new paradigms and policies made by both established and emerging scientists on transformative topics.

Environmental Sustainability Challenges

Electrochemical Materials and Interfaces for Environmental and Sustainability Challenges [CATL, COLL, ENFL, I&EC]

Organizers: Taeyoung Kim, tkim@clarkson.edu
Xitong Liu, xitongliu@gwu.edu
Chris Arges, cga5126@psu.edu
Chong Liu, chongliu@uchicago.edu

This symposium focuses on how materials and interfaces in electrochemical systems enable efficient separation, recovery, remediation, detection, and conversion to mitigate traditional and emerging environmental problems for a more sustainable future. Both fundamental and practical studies from experiments, simulations, and theory investigating these topics are encouraged.

Innovative Materials for Environmental Sustainability [CELL]

Organizers: Alexander Orlov, alexander.orlov@stonybrook.edu
Rafael Luque, q62alsor@uco.es

Improving the quality of human life without depleting the natural resources is the focus of environmental sustainability. This challenging task requires new approaches in designing new materials that can either have a reduced environmental footprint or contribute to environmental improvements, or preferably both. The focus of this symposium is to highlight the latest science and engineering that can have a transformative impact on our planet. Examples of innovative materials science and engineering can include the latest

developments in more sustainable concrete synthesis and production, a new generation of air purifying and self-cleaning surfaces, advanced environmental catalysts, synthesis of novel eco-friendly materials for environmental remediation, conversion of organic waste into biodegradable plastic and other pioneering themes. Moreover, additional topics related to development of more efficient and environmentally friendly materials for sustainable energy production will also be included in this symposium.

Materials Development to Address Environmental and Sustainability Challenges

Organizers: Michael Bentel, mbentel@clemson.edu
Mallikarjuna Nadagouda, nadagouda.mallikarjuna@epa.gov
Dionysios Dionysiou, dionysios.d.dionysiou@uc.edu

This symposium aims to focus on materials development for technologies addressing environmental and sustainability challenges, including environmental remediation and resource recovery; energy harvesting and storage; chemical production and separation; and sensing technologies. Materials of interest include zeolites, metal oxides, metal- and covalent-organic frameworks, polymers, membranes, and carbonaceous materials.

Role of Chemistry in Developing Sustainable Infrastructures [BIOT, ENFL, I&EC]

Organizers: Hyunook Kim, h_kim@uos.ac.kr
Ingyu Lee, ingyu@uos.ac.kr
Byungin Sang, biosang@hanyang.ac.kr
Shu-Yuan Pan, sypan@ntu.edu.tw
C. Fan, chfan@ntu.edu.tw

The sustainability of various infrastructures like water and wastewater treatment facilities or energy production systems is questioned in this carbon-neutral-emphasizing era. Although water infra is asked to supply adequate and crystal clean water, it is asked to use minimal resources and energy. In addition, alternative fuels are desired for energy supply. In order to meet the social demand and make the infrastructures sustainable, a better understanding of the fundamental chemistry beneath them is required. In this symposium, critical issues in developing sustainable infrastructures are discussed. Then, the role of chemistry in resolving the issues and eventually developing the sustainable infrastructures is identified.

Integrated Processes in the Environment

Harnessing Data to Improve Oxidation and Disinfection Processes

Organizers: Kirin Furst, kfurst@gmu.edu
Alex Szczuka, aszczuka@umich.edu

Oxidation and disinfection processes are becoming increasingly complex, with tradeoffs associated with pathogen and contaminant removal, byproduct formation, and antibiotic resistance proliferation. We will highlight the intersections of emerging analytical and modeling approaches for understanding complex oxidation/disinfection data, including kinetic and treatment process modeling.

Wildfires: Chemistry and Environmental Impacts on Air, Water, and Soil [AGFD, AGRO, TOXI, CEI]

Organizers: Mark A Benvenuto, benvenma@udmercy.edu
Elizabeth Roberts-Kirchhoff, robkires@udmercy.edu

Wildfires affect the air, water, and soil in their locale. This symposium is designed to discuss and examine what occurs when a wildfire consumes an area.

Per- and Polyfluoroalkyl Substances Research

Advanced Materials and Technologies for Detection and Treatment of PFAS and Other Emerging Contaminants [ANYL]

Organizers: Silvana Andreescu, eandreesc@clarkson.edu
Nirupam Aich, nirupama@buffalo.edu
Kalumbu Malekani, kmalekani@smithers.com

Cosponsor: AGRO

The goal of this session is to provide a forum for scientific and technical exchanges for researchers to discuss recent advances in the development of advanced nanomaterials and technologies for the detection and treatment of emerging environmental contaminants; such as pharmaceuticals, endocrine disrupting chemicals, personal care products, and per/poly-fluorinated alkyl substances (PFAS).

Advances in Isolation, Removal, Sensing, Detection, Degradation, and Replacement of PFAS and Future Outlook

Organizers: Manoj K Shukla, mshukla@icnanotox.org
Manoj Kolel-Veetil, manoj.kolel-veetil@nrl.navy.mil
Mallikarjuna Nadagouda, nadagouda.mallikarjuna@epa.gov
Nancy Kelley-Loughnane, nancy.kelley-loughnane.1@us.af.mil

Per-and polyfluoroalkyl substances (PFAS) are manmade chemicals and have been widely used since their development in the 1940s. These synthetic compounds are resistant to degradation due to the presence of carbon-fluorine (C-F) bonds and are nicknamed as ‘forever chemicals’. PFAS have been also used heavily in military within aqueous film forming foams (AFFF) for fire training and emergency response purposes. It is estimated that around 110 million Americans find PFAS contamination in their drinking water supplies. Exposure of PFAS including their short-chain cousins has been linked to several health-related issues such as cancer, elevated cholesterol, and obesity in humans. Recently, EPA released new health advisory limits on 6 PFAS compounds in drinking water with recommendation for PFOA as low as 0.004 ppt. Various traditional techniques have been attempted to degrade and remove PFAS from contaminated media, but, real success is still elusive. The incineration of PFAS with other wastes have potential to produce the active greenhouse gases. This symposium will discuss recent advances in research efforts on the degradation, destruction, detection, isolation, removal, and sensing of PFAS. Moreover, research in the area of fluorine free PFAS alternatives and future outlook on PFAS research will also be discussed.

Field Applications of Developed and Emerging PFAS Treatment Technologies

Organizers: Purshotam Juriasingani, purshotam.juriasingani@tetrattech.com
Richard Arnseth, rick.arnseth@tetrattech.com

A symposium addressing the global contamination caused by field applications of technology and treatments for ubiquitous per- and polyfluoroalkyl substances (PFAS).

Impact of PFAS on Environment and Health

Organizers: Narasimhan Loganathan, naresh20@msu.edu
Angela Slitt, angela_slitt@uri.edu
Scott Belcher, smbclch2@ncsu.edu
Angela K. Wilson, akwilson@msu.edu

The interactions of per- and poly-fluoroalkyl substances (PFAS) with different phases of natural settings, human and animal proteins is central to developing effective mitigation strategies and alleviate health impacts. This symposium will discuss the research advancements in determining the critical factors that are responsible for partitioning of PFAS in air, water and near surface regions, and binding and toxicology of PFAS and ongoing measures to ease their impacts in human and animals.

Interfacial PFAS Processes and Mechanisms [BIOL, COLL, ORGN]

Organizers: Jessica R Ray, jessray@uw.edu
Christopher Olivares, chris.olivares@uci.edu

Per- and polyfluoroalkyl substances continue to be a pervasive, global, environmental and human health concern. Increased understanding of the wide range of chemical and physical properties influencing PFAS fate and transport in the environment have helped identify new methods for PFAS separation, transformation, and destruction, as well as emerging sources and sinks of PFAS. This symposium welcomes abstracts that describe interfacial reactions, driving chemical and biological processes of PFAS in aquatic environments. Abstracts can feature interfacial processes with respect to such applications as: PFAS partitioning to biosolids, PFAS separation facilitated by materials (e.g., adsorbents, membranes), PFAS complexation with dissolved and particulate organic carbon, PFAS retention in the subsurface, PFAS foam fractionation, heterogeneous reactions, bioaccumulation and bioavailability studies.

Separation, Destruction, and Monitoring of Per- and Polyfluoroalkyl Substances (PFASs) and Fluorinated Alternatives [ANYL, CATL]

Organizers: Jong Kwon Choe, jkchoe@snu.ac.kr
Yongju Choi, ychoi81@snu.ac.kr
Yin Wang, wang292@uwm.edu
Jinxia Liu, jinxia.liu@mcgill.ca

Our symposium focuses on innovative and practical solutions for treatment and monitoring of PFASs and fluorinated alternatives in water and soil environment. These approaches include rapid separation and concentration technologies, physicochemical and biological technologies for destruction of C-F bonds, treatment train for water and/or soil, and analytical and sensing methods.

Plastics in the Environment

Methods and Modeling for Evaluating and Mitigating Plastic Pollution in Air, Land, and Water [AGFD, ORGN, POLY, RUBB]

Organizers: Souhail Al-Abed, al-abad.souhail@epa.gov
Phillip Potter, potter.phillip@epa.gov
Miranda Gallagher, mirandajgallagher@gmail.com

Growing concerns over increasing amounts of plastic waste entering the environment have led to the focus of scientists worldwide to evaluate the impact on the environment and human health. Plastics from consumer products, clothing fibers, tire rubber break down to on micro and nanoplastics particle in the air, water and on land. Plastics exposed to environmental conditions undergo physical and chemical degradation into micro- (< 5 mm) and nano-sized (< 1 µm) particles. We invite presenters to showcase their research related to detection, quantification, characterization, and mitigation methods for plastics in the environment. We also invite modelers for indoor air, and water transport of micro and nano plastics to present their research. Other plastics research topics such as biological, chemical, and photolysis degradation are welcomed. Innovative plastics waste upcycling methods and its relation to polymer chemistry and circular economy are other welcome topics.

Plastic Pollution and E-Waste [BIOT, POLY, PMSE, CEI]

Organizers: Eman Sallam, emansallam2008@gmail.com

The study of interactive adverse effects of low-density polyethylene microplastics on marine microalga *Chaetoceros calcitrans*' growth and performance were adversely affected by LDPE-MPs in a concentration-dependent manner. Under low concentrations of LDPE-MPs, extracellular polymeric substance and monosaccharide contents of *C. calcitrans* were enhanced, which may have facilitated the adsorption of MPs particles on cell wall of microalgae.

Plastic Waste Treatment and Valorization [BIOT, CATL, CELL, I&EC]

Organizers: Byoung-In Sang, biosang@hanyang.ac.kr

Gil Seo, Jeong, jgseo@hanyang.ac.kr

Plastic waste, which is one of the major sources of pollution in the landfills and oceans, has raised global concern, primarily due to the huge production rate, high durability, and the lack of utilization of the available waste management techniques. Recycling methods are preferable to reduce the impact of plastic pollution to some extent. However, most of the recycling techniques are associated with different drawbacks, high cost and downgrading of product quality being among the notable ones. The sustainable option is to upcycle the plastic waste to create high-value materials to compensate for the cost of production. Several upcycling techniques are constantly being investigated and explored, which is currently the only economical option to resolve the plastic waste issue. This symposium provides a comprehensive insight on the promising chemical and biological routes available for upcycling and valorization of the most widely used plastic and mixed plastic wastes. The development of effective upcycling and valorization processes within a circular economy approach is of utmost importance, ideally producing not only monomers for new plastics, but value-added products or intermediates for other supply chains. Herein, a sustainable concept is introduced in this symposium, enabling efficient plastic upcycling and valorization through combined catalytic and biological processing with biomass-derived chemicals, yielding high-value platform chemicals.

Processes and Risks of Micro-and Nano-Plastics in the Environment [AGFD, ANYL, CHAS, COLL, GEOC]

Organizers: Baoshan Xing, bx@umass.edu

Jian Zhao, jzhao@ouc.edu.cn

Fei Dang, fdang@issas.ac.cn

Collin Ward, cward@whoi.edu

Virender Sharma, vsharma@tamu.edu

Experts from academia, government, and industry will share latest research on the critical processes (e.g., transformation, degradation, aggregation) of micro- and nanoplastic particles in the environments, accumulation/distribution in living organisms and transfer along the food chains, risks to environmental and human health, models for tracing sources and predicting toxicity, and the associated data-driven machine learning to decipher the complex relationships.

Public Health / Water Quality

Electrified Water Treatment Processes [AGFD, CATL]

Organizers: Wensi Chen, wensi.chen@yale.edu

Xing Xie, xing.xie@ce.gatech.edu

William Tarpeh, wtarpeh@stanford.edu

Lea Winter, lea.winter@yale.edu

Most existing water treatment processes highly rely on the use of chemicals, such as coagulants, oxidants, and disinfectants. The transportation and storage of these chemicals can jeopardize the resilience of centralized water treatment and create intrinsic challenges for distributed water treatment. Recent attention has been drawn to treatment processes that mainly consume electricity instead of chemicals. These processes use electricity to drive separation processes (e.g., electrodialysis), provide direct redox power (e.g., electrochemical redox processes), or generate chemicals in situ (e.g., electrocoagulation, electrochemical acid/base production). Compared to chemical inputs, electricity is easier to deliver, can be generated locally upon grid disruption, and can be produced using sustainable energy for remote applications. As energy cost decreases and the treatment needs evolve (e.g., more stringent standards, zero-liquid discharge, and resource recovery), previously cost-prohibitive electrified processes may become economically favorable. In the meantime, new high-performance and energy-efficient electrified treatment processes are emerging. Therefore, we invite abstract submissions on electrified water treatment processes.

The relevant technical areas include, but are not limited to, electrocoagulation, electrochemical redox processes, electrodialysis, electrosorption and capacitive deionization, electrochemical or electrophysical water disinfection, electric-field assisted processes, and electrochemical resource recovery. Abstracts on the techno-economic analysis (TEA) and life cycle assessment (LCA) of electrified water treatment processes are also welcome.

Electrocatalysts and Electrochemical Processes for Water Reuse [CATL, ENFL, I&EC]

Organizers: Kangwoo Cho, kwcho1982@postech.ac.kr
Seok Won Hong, swhong@kist.re.kr
Jaesang Lee, lee39@korea.ac.kr
Jin Yong Kim, jykim.mse@snu.ac.kr

The ongoing climate change stimulates blooming needs on reuse of domestic and industrial wastewater effluent. To this end, electrochemical processes with electrocatalysts as core components would be one of the most direct methods to control and monitor redox transformation and separation of aqueous pollutants within the water reuse processes. For example, electrocatalytic redox reactions can cope with the nutrients and recalcitrant total organic carbon (TOC) compounds in reverse osmosis (RO) brine water. In addition, electrochemical deionization separates total dissolved solids (TDS) and recover rare-earth elements. Broader implementation of these techniques necessitates minimal usage of precious catalysts and energy-neutral-to-positive processes partly in connection with renewable energy sources. This symposium invites state-of-the-art developments on electrocatalysts and electrochemical processes for water reuse. Specific areas of interest include novel electrocatalysts for TOC control, electro-oxidation/reduction of nutrients, electrochemical generation or activation of reactive oxidants, and electrochemical deionization for TDS control/recourse recovery. In parallel, variable strategies to enhance the energy-efficiency and application in field environments can be shared in this symposium.

Exposome Meets Chemistry: Assessing Exposures to Complex Chemical Mixtures and their Impacts [TOXI, MEDI, ANYL]

Organizers: Carsten Prasse, cprassel@jhu.edu
Matthew N. Newmeyer, mnewmeyer1@jhmi.edu

Our global economy exposes the environment and humans to tens of thousands of chemicals, with more developed every day. Understanding how these exposures, which represent an important part of the exposome impact our health and the environment is critical for the development of mitigation strategies. This requires the development of analytical techniques to measure exposures to complex mixtures and assess the resulting effects on a molecular, cellular, and organism level and via different pathways. The focus of this symposium is to encourage submissions that present novel research and development activities designed to improve the understanding of how chemical exposures impact environmental and human health. This includes i) novel analytical approaches to identify and assess chemical exposures, ii) methodologies to elucidate the toxicity of chemicals if present as complex mixtures, iii) approaches to evaluate strategies to minimize exposures to toxic compounds, and iv) development and application of novel data analysis and machine learning approaches to elucidate chemical exposures and their health impacts.

Oceanborne and Other Waterborne Pollution: Effects and How to Deal with Them [AGRO, CEI, CHAS, TOXI]

Organizers: Mark A Benvenuto, benvenma@udmercy.edu
Elizabeth Roberts-Kirchhoff robkires@udmercy.edu

This symposium seeks to examine and discuss how persistent pollutants in our oceans and fresh water bodies affects local, regional, and the greater environments. All research and studies into any form of oceanborne, or freshwater-borne pollutants are welcome.

Remediation of Contaminated Water for Reuse [ANYL, CHED, CEI]

Organizers: Satinder Ahuja, ahujasut@gmail.com
Krishnamoorthy Sathiyar, sathiyar.krishna@exchange.tamu.edu

Availability of clean water is very important to ensure our health. Unfortunately, surface and ground water are being contaminated by various pollutants. The conventional ways to purify water, by coagulation, flocculation, and membrane filtration, are inefficient or expensive. One of the best way to purify water is to use nanomaterials like graphene oxide. Graphene oxide and its modified forms are excellent adsorbents because they have high surface area and can have functional groups which make them hydrophilic and hydrophobic. As a result, they can adsorb not only conventional pollutants but also emerging contaminants. However, some issues need to be addressed before we can use these materials safely: their potential toxicity, recovery, and regeneration. Discussion will focus on these issues and the best ways to address them.

Sensors for Water Quality Monitoring in Resource Limited Environments [ANYL]

Organizers: Eric Brack, eric.m.brack.civ@army.mil
Todd Alexander, Todd.e.alexander3.civ@army.mil

Rapid identification of chemical and biological contaminants in water is important in numerous resource limited environments such as agricultural fields, military theaters, economically disadvantaged regions, and areas affected by natural disaster. Current water quality assessment practices typically rely on acquiring samples from remote locations that are shipped to a distant laboratory for analysis. A need exists for new technologies for rapid contaminant detection at the source to assess potential hazards in real time. The focus of this symposium is to highlight novel and innovative technologies amenable for portable sensors to detect chemical and biological water contaminants in remote environments. Presentations may include summaries of existing sensor technologies and needs, novel detection systems, or innovative methods to address current research gaps. Possible chemical contaminants of interest include heavy metals, toxic industrial chemicals, pesticides/herbicides, perfluorinated carbons, and others not listed here. Possible biological contaminants of interest include bacterial and viral pathogens, parasites, toxins, and others not listed here. The symposium will showcase a diverse array of research topics within the theme for professionals actively working on sensing technologies and those wanting to acquire knowledge of the state of the art. The session will facilitate future collaborations to provide scientific solutions to address gaps in portable sensors for real-time water quality assessment.

United Nations Sustainable Development Goal #6-Clean Water and Sanitation: Current Progress, Challenges, and Future Outlook [

Organizers: Gagan Matta, drgaganmatta@gkv.ac.in
Dionysios Dionysiou, dionysios.d.dionysiou@uc.edu
Virender Sharma, vsharma@tamu.edu
Katie Weitze, weitze@mail.uc.edu

This symposium will focus on on-going research across the world focusing on the United Nations Sustainable Development Goal #6-Clean Water and Sanitation. The symposium invites abstracts for presentations on impactful research, innovative solutions, current challenges, and future directions towards achieving UN Goal #6. Specific topics of interest include: Progress in sanitation in isolated communities; Water treatment technologies for decentralized and remote applications; Contaminants of emerging concern (microbiological, organic, metals, etc.); Challenges and progress on the treatment for reuse of non-traditional wastewater; Natural wastewater treatment systems; Effect of climate change on water supplies: quantity and quality; Cross-boundary water issues; and Impacts of other society challenges.

Water-Energy-Food Nexus as it Affects Public Health

Organizer: Meshal Abdullah, m.abdullah1@squ.edu.om
Yassine Charabi, yassine@squ.edu.om
Talal Al Awadhi, alawadhi@squ.edu.om

Water, energy, and food systems are becoming increasingly interconnected and affect public health from suppliers to consumers. This symposium invites WEF stakeholders from academia, private, civil society,

and public sectors to present WEF nexus research and development, to highlight lessons learned from cross-disciplinary collaborations, and expound on opportunities to improve public health.

General Environmental Chemistry

Virtual Graduate Students Symposium in Asia-Pacific Region on Current Environmental Issues

Organizers: Chunxiao Zheng, czheng@acs-i.org
Chun Zhao, pureson@163.com
Yanbiao Liu, ashen8212@gmail.com

This virtual symposium is initiated and co-organized by Southwestern China ACS Chapter. The graduate students in Asia-Pacific region are welcome to showcase their most recent research on Environmental Chemistry and gain experience as oral speakers at an international setting. We will try to arrange all the presentations during day time in the region. The symposium will cover all aspects of Environmental Chemistry, but encourages research on harnessing the power of data to further our understanding of Environmental Chemistry.

Current Perspectives in General Environmental Chemistry

Organizers: Virender Sharma, vsharma@tamu.edu
Mallikarjuna Nadagouda, nadagouda.mallikarjuna@epa.gov

The occurrence of new chemicals, next-generation products, and advanced processes used in industrial and environmental applications has grown tremendously over the last decade. This symposium includes latest advances, current trends, and innovative advances related to environmental chemistry today. Current perspectives from other fields of study including environmental toxicology, risk, health, engineering, management, sustainability, and policy are also welcomed to contribute. Specific case studies may be presented, and recommendations will be discussed to enable cross-disciplinary interactions between chemists and other environmental scientists.

General Environmental Chemistry Poster Session

Organizers: Virender Sharma, vsharma@tamu.edu
Mallikarjuna Nadagouda, nadagouda.mallikarjuna@epa.gov

This symposium is open to all posters on environmental chemistry or engineering that may be beyond the focus of the specific topics addressed in other ENVR symposia.

COSPONSORED SYMPOSIA

AGFD: Forever Chemicals in the Environment, Distribution and Risk [ENVR, AGRO]

Organizers: Christie Sayes, John W. Finley

Symposium will present a contemporary discussion of environmental exposure chemistry and toxicology of Phthalates and PFOS, particularly to what extent they remain in use, the long-term environmental effects, health effects and any approaches to decontamination.

AGRO: Adapting Agricultural Chemistry and Practices to a Changing Climate [TOXI, ENVR, ENFL, CELL, AGFD]

Organizers: Patricia Engel, Nnemeka Ihegwuagu, Pamela Rice, Amy Ritter, Frederick Salzman
This symposium is intended to highlight the current science and associated regulatory plans to address climate change. Specific areas of interest include carbon sequestration, impacts to crop production and pest complexes, associated risk to the environment, potential changes to pesticide environmental risk assessment, and changes to pesticide use or chemistry.

AGRO: Biorational Technologies for Control of Invasive Pests in a Changing Climate [ENVR, ORGN, ANYL, AGFD]

Organizer: Baldwyn Torto

This symposium will convene the world's leading experts in biorational technology development for pest management to share the latest research results. The talks should be of interest to academic faculty, researchers, early career scientists, students and policy.

AGRO: Early Career Symposium: Harnessing Chemical Ecology to Achieve Food Security [ENVR, BIOT, ANYL, AGFD]

Organizers: Nurhayat Tabanca, Gareth Thomas

The aim of the symposium is to provide a platform for early career scientists to gain experience presenting their research, as well as to learn about cutting edge technologies used across other laboratories studying plant-insect-microbe chemical signaling.

AGRO: Effect of EPA's Endangered Species Enforcement on the Future of Agrochemicals [ENVR, ANYL]

Organizers: Phillip Cassidy, Huajin Chen

The impact of pesticides on endangered species continues to be a topic of interest. This symposium will include experiences, innovative solutions, technologies, federal and state regulatory updates, and future directions for research on the topic.

AGRO: Environmental Fate, Transport, and Modeling of Agriculturally Related Chemicals [ENVR, ANYL, AGFD]

Organizers: Scott Jackson, Ralph Warren

Understanding the environmental fate and behavior of chemical inputs, outputs, and byproducts associated with agriculture is imperative for sustainable production. This symposium includes a wide range of related research using laboratory, field, in silico modeling and GIS methods to explore processes from the molecular to regional scales and beyond.

AGRO: Environmental Monitoring Data Collection, Utility, and Use in Pesticide Risk Assessment and Registration [ENVR, ANYL, AGFD]

Organizers: Andrew Newcombe, Sara Whiting

This symposium seeks to bring together international stakeholders involved in the generation, collection, processing, reporting, and interpretation of large datasets of environmental pesticide monitoring data.

AGRO: Epidemiology: A Growing Field in Agrochemistry and Agrochemical Regulation [TOXI, ENVR, CHAL, AGFD]

Organizers: David Miller

This symposium will introduce the area of epidemiology and its increasing role in evaluating the safety of agricultural chemicals.

AGRO: Expectations and Deliverables to Ease Trade of Crops Treated with Agricultural Chemicals [ENVR, ORGN, ANYL, AGFD]

Organizers: Anna Gore, Heidi Irrig, Jane Stewart, Carmen Tiu

This symposium will delve into the many science and non-science factors limiting trade of crops treated with pesticides.

AGRO: Food Waste: The Weakest Links and Possible Solutions [ENVR, CHAS, CHAL, BIOT, ANYL, AGFD]

Organizers: Brian Roe, Carmen Tiu

This symposium will review main sources of food waste in North America and identify possible scientific, regulatory and policy solutions to reduce contribution from this region within the global impact of this issue. Interested parties representing food producers, processors and traders, official agencies for food standards and members of the academia.

AGRO: Measuring, Modeling, and Mitigating Airborne Transport of Pest Control Products [ENVR, ANYL, AGFD]

Organizers: Jerri Lynn Henry, Leah Riter, Amy Ritter, Frederick Salzman

This symposium will convene the world's leading experts in biorational technology development for pest management to share the latest research results.

AGRO: Multi-Stressor Risk Assessment as a Tool to Prioritize Actions for Ecosystem Restoration [ENVR]

Organizers: Chiara Accolla, Scott Dyer, Tilghman Hall, W Williams

This ACS-sponsored symposium series will highlight some of the most prominent research on multi-stressor risk assessment and ecosystem protection among both new and well-established researchers in the field.

AGRO: Pesticide Runoff Mitigation: Characterization, Quantification, and Implementation [ENVR, AGFD]

Organizers: Huajin Chen, Patrick Havens, Phil Janney, Amy Ritter

This symposium will discuss advances in approaches to quantify the effectiveness of mitigation measures for pesticide runoff, characterization of mitigation measures that are currently implemented, field studies on effectiveness of runoff mitigation measures, research on new mitigation practices, and strategies to incorporate mitigations in risk assessments and management of pesticides.

AGRO: Pesticides and Other Organics in Urban Environments [ENVR, ANYL]

Organizers: Rob Budd, Jianying Gan, Michelle Hladik, Rebecca Sutton

Pesticides and other organics in urban environments: Sources, off-site transport pathways, risk assessment, and mitigation and management.

AGRO: Transitioning from the Laboratory to the Landscape: Challenges and Opportunities [TOXI, ENVR, ANYL, AGFD]

Organizers: Jennifer Collins, John Purdy, Tom Steeger, Katrina White

This symposium will survey efforts to integrate new approach methodologies with existing standardized tests and to provide a means for extrapolating from laboratory to landscape level pesticide assessments, focusing mainly on social and solitary bees, in view of their importance as pollinators.

AGRO: Unmanned Aerial Systems (aka Drones): Pesticide Spraying and Other Agricultural Applications [ENVR, ANYL]

Organizers: Ross Breckels, Shanique Grant, Zhenxu Tang

This symposium focuses on technology development and applications of unmanned aerial systems (UASs, aka drones) in agriculture, public health, and industrial vegetative management. Regulatory and policy development, and best management practices for UAS uses in these areas will also be highlighted.

AGRO: Uses of HPLC-Mass Spectrometry in Support of Agricultural Research and Development - Trends and Best Practices [ENVR, ANYL, AGFD]

Organizers: James Ferguson, Rory Mumford, Yelena Sapozhnikova

New uses for accurate mass, high resolution and low-resolution LC-mass spectrometry in support of regulatory submissions and R&D in the agricultural chemical field.

CATL: Developments and Future Challenges in Environmental Catalysis [ENVR]

Organizers: Abhay Gupta, Surya Pratap Solanki

Sustainable environment is the need of the hour and catalysis plays an important role to develop technologies required for reducing effect of hazardous substances. This symposium is focused on ongoing progress and challenges in the applications of catalysis for sustainable environment. This symposium will put together knowledge gained from catalytic systems across varying catalytic materials and reaction chemistries, linking fundamental principles to practical applications.

CATL: Electrocatalysis for Sustainable Energy: Fundamental, Applications, and Perspective [ENVR, ENFL, PHYS]

Organizers: Duy Le, Talat Rahman

Electrocatalysis is a rapidly developing field, with technologies poised to make significant contributions toward energy sustainability, climate change mitigation, and reducing societal carbon demand. Realizing these outcomes requires searching for promising, new electrocatalysts and developing a more fundamental understanding of the mechanisms of electrocatalysis. This symposium highlights recent developments, novel materials and concepts, and emerging perspectives on how the field can move past current barriers to enable increased deployment of electrocatalytic technologies in sustainable energy applications.

CATL: Molecular and Heterogeneous Photocatalysts: Advances in Experiments and Theory [INOR, ENVR, ENFL, PHYS]

This symposium will focus on the experimental, computational, and spectroscopic knowledge used for discovering and designing molecular and heterogeneous photocatalysts for sustainable energy applications.