American Chemical Society
Division of Environmental Chemistry
Call for Papers

ACS Fall 2021 – Resilience of Chemistry
Atlanta, GA – August 22-26, 2021

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 National Meeting in Atlanta, Georgia, August 22-26, 2021.

Abstract Submission Deadline: **April 12, 2021**. Please submit abstracts to the Division of Environmental Chemistry at http://MAPS.ACS.org. Abstracts will be accepted for oral and/or poster presentation in each symposium unless otherwise noted. Symposium details are available at https://callforabstracts.acs.org/acsfall2021/ENVR.

Sincerely,

ENVR Fall Program Chair
Virender Sharma
vsharma@tamu.edu

Assistant Fall Program Chair
Christie Sayes
christie_sayes@baylor.edu

ACS National Meeting Thematic Symposia: Resilience of Chemistry

---

Toxicity Assessment & Removal of "Forever Chemicals" in Environmental Matrices & Chemical Approaches for the Sustainment of Environmental Resiliency

Organizers: Mallikarjuna Nadagouda, nadagouda.mallikarjuna@epa.gov
Manoj Kolel-Veetil, manoj.kolel-veetil@nrl.navy.mil
Nancy Kelley-Loughnane, Nancy.Kelley-Loughnane.1@us.af.mil
Manoj Shukla, Manoj.K.Shukla@usace.army.mil
Christie Sayes, christie_sayes@baylor.edu
Virender K. Sharma, vsharma@tamu.edu

The per- and polyfluoroalkyl substances (PFASs) are human-made organic compounds. PFASs have been used in the manufacture of various consumer products as well as industrials products. The C-F bonds of PFASs are very strong and provide them chemical stability and prevent their breakdown. Therefore, PFAS can be bioaccumulative and persist in the environment for an extended period. Therefore, these perfluorinated chemicals are known as Forever Chemicals Health issues due to PFAS exposure have been examined, with established associations to several diseases, including cancers and thyroid infections. For treatment, granular activated carbon, anion exchange resins, and high-pressure membranes have been explored and utilized to remove PFAS. Several other promising and advanced technologies like photolysis, bioremediation, sonolysis, etc. have been investigated and are being established. This PFAS symposium welcomes all aspects of emerging treatment technologies of PFAS in environmental matrices.

Understanding Biological, Chemical, & Environmental Interactions & Transport of SARS-Co-2
Organizers: Michel Boufadel, boufadel@njit.edu

The COVID-19 pandemic emerged due to worldwide infection by the virus SARS-CoV-2. As of today, we are still enduring its effects; arguably, we do not know the extent of its debilitating condition to humans or the environment. The multiscale nature of the virus transport reveals the need for multidisciplinary approaches from the micron scale up to the meter scale with epidemiological implications at the planet scale. In addition, tracking the virus in organisms and through wastewater treatment plants is a promising but challenging venue. This symposium will focus on understanding the biological, chemical, and environmental interactions and transport of SARS-CoV-2 across the planet. Experts from around the world will present their recent findings and highlight the most pressing research needs.

Water Purification with Nanomaterials Exemplify Resilience of Chemistry
Organizers: Satinder Ahuja, sutahuja@atmc.net

Nanomaterials are too small to be seen with the naked eye or even with conventional lab microscopes. Generally, they have at least one dimension that is less than 100 nanometers. They can be created from a variety of products, such as carbon or silver. Thousands of common products, including sunscreens, cosmetics, sporting goods, stain-resistant clothing, tires, and electronics have been manufactured for human use by engineered nanomaterials. They have also been used in medical diagnosis, imaging and drug delivery, and in environmental remediation including purification of water. Nanomaterials can be seen as double-edged swords. The properties that make nanomaterials potentially beneficial in product development and drug delivery, such as their size, shape, high reactivity and other unique characteristics, are the same properties that cause concern about the nature of their interaction with biological systems and the potential effects on the environment. Nanomaterials can enter the human body by inhalation, ingestion, and through the skin. Unfortunately, there are no reliable means to detect levels of nanomaterials in the air; this is of especially great concern in workplaces where these materials are used. Resilience of environmental researchers is enabling the utilization of nanomaterials for water purification. The symposium will discuss advantages and limitations of using nanomaterials for water purification.

Honorary and Invited Symposia

C. Ellen Gonter Environmental Graduate Student Award Symposium
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.

Mössbauer Spectroscopy from Magnetic Nanoarchitectures to Environmental Science: A Symposium in Honor of Dr. Jean-Marc Greneche
Organizers: Karen Garcia, karen.garcia@udea.edu.co
Zoltan Homonnay, homonnay.zoltan@ttk.elte.hu
Xuning Li, lixn@dicp.ac.cn
Tetsuaki Nishida, tnishida3730@gmail.com

Jean-Marc Greneche, CNRS Research Director at the Institute of Molecules and Materials of le Mans (IMMM UMR CNRS 6283) France has developed a significant activity on the understanding of the structural and magnetic properties of various types of nanostructures in the frame of national and

international collaborative projects. By combining different approaches with others developed on crystalline ionic and metallic materials and metal organic frameworks, he has progressively applied his knowledge to contribute to the study of nanocomposites, mineral soils, geochemistry, and environmental science. The contributors of the symposium will discuss different materials containing Fe using as an experimental technique the 57Fe Mössbauer spectrometry where a great attention has been devoted to the modelling of the spectra. The topics of the symposium include various nanocrystalline alloys, nanostructured metallic and ionic powders, and magnetic oxide nanoparticles as a function of their conditions of elaboration, size and morphology with theme of application in various fields such as inorganic chemistry, geochemistry, and environmental chemistry.

Single Atom Applications in Environmental Processes in Honor of Professor Tao Zhang, Dalian Institute of Chemical Physics

Organizers: Yanqiang Huang, yqhuang@dicp.ac.cn
Bin Liu, liubin@ntu.edu.sg
Xuning Li, lixn@dicp.ac.cn

The symposium will honor Professor Tao Zhang, Dalian Institute of Chemical Physics (Chinese Academy of Sciences), who not only revolutionarily proposed but also validated a new concept of single-atom catalysis. The new concept of single-atom catalysis stimulates to discover next-generation of industrial catalysts and promote the understanding to an atomic level. The 2021 ACS TAO ZHANG Symposium will contain an integrated theme related to fundamentals and applications of single atom catalysts in environmental process. The Symposium will include invited and contributed oral and poster sessions; contributions are sought for these aspects.

Toward Creating a Water-Energy-Food Nexus Community of Practice: Symposium in Honor of Professor Rabi H. Mohtar

Organizers: Basel Daher, bdaher@tamu.edu
Hyunook Kim, h_kim@uos.ac.kr
Chrysi Laspidou, laspidou@uth.gr
Virender Sharma, vsharma@tamu.edu
Cosponsor: AGRO, ENFL

The symposium will honor Professor Rabi H. Mohtar, Department of Biological and Agricultural Engineering at Texas A&M University, whose leadership of multiple initiatives throughout his interdisciplinary career has resulted in seminal contributions to the development of Water-Energy-Food nexus research, education, and engagement globally. The 2021 ACS Rabi H. Mohtar Symposium will include multi-stakeholders from academia, private, civil society and public sectors in the various thematic areas related to operationalizing WEF nexus research and development and will highlight lessons learned from cross-disciplinary collaborations, with national and global case studies in this space. The symposium will also focus on the opportunities that lie in creating a cross-cutting inclusive WEF nexus Community of Practice and the role of existing disciplinary societies in it. The symposium will include invited and contributed oral and poster sessions.

WISE: Women in Environmental Science & Engineering

Organizers: Dion Dionysiou, dionysios.d.dionysiou@uc.edu
Virender Sharma, vsharma@tamu.edu
Christie Sayes, Christie_sayes@baylor.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.

Interdisciplinary Approaches to Environmental Challenges

Current Perspectives in Environmental Science

Organizers: Christie Sayes, christie_sayes@baylor.edu
Virender K. Sharma, vsharma@tamu.edu

Environmental chemistry is just one of the many fields within the discipline of environmental science. Other fields include environmental toxicology, risk, health, engineering, management, sustainability, and policy. This symposium will bring together leading experts across all of environmental science to share experiences working across fields in a highly collaborative manner. Examples will be given, and recommendations will be discussed to enable cross-disciplinary interactions between chemists and other environmental scientists.

Environmental Analysis: Current Advances & Challenges

Organizers: Aleksandar Goranov, gorana@rpi.edu
David Podgorski, dcpodgor@uno.edu
Sasha Wagner, wagnes3@rpi.edu
Phoebe Zito, pazito@uno.edu
Cosponsor: ANYL

The growth of environmental science and biogeochemistry in recent decades has been largely driven by analytical advancements. Environmental samples are particularly challenging to analyze due to their inherent complexity and matrix heterogeneity. State of the science advances in sample processing, instrumental sensitivity and specificity, and data handling have refined the analytical windows of methodologies used, enabling detailed probing of the sources, processing, and fate of environmental constituents. We invite papers on environmental analytical topics from all areas of research, including, but not limited to: novel analytical methods and instrumentation and their applications (e.g., ultrahigh resolution mass spectrometry, multidimensional NMR, isotopic approaches, spectroscopy); advances in computational techniques for "making the most" of our data (e.g., data mining and automation); analytical modelling and multivariate statistics, as well as the application of "comprehensive analysis" to study environmental systems. We also encourage submissions that identify current challenges and promote discussion of future research directions in environmental analysis.

Environmental Health & Toxicology

Organizers: Carsten Prasse, cprasse1@jhu.edu
Christie Sayes, christie_sayes@baylor.edu

Our global economy exposes the environment and humans to tens of thousands of chemicals, with more developed every day. Understanding how these exposures impact our health is critical for the development of mitigation strategies. This requires the development of techniques to measure exposures to complex mixtures and assess the resulting effects on a molecular 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 chemicals impact environmental health. The below bullet points list several potential research areas that could contribute to this symposium.

Environmental Science at the Nanoscale

Microplastics & Nanoplastics: Fate & Behavior

Organizers: Samuel Ma, samuelma@tamu.edu
Phillip Potter, potter.phillip@epa.gov
Souhail Al-Abed, al-abed.souhail@epa.gov
Cosponsor: GEOC, PMSE

About 380 million tons of plastics are currently manufactured each year and this number could triple by 2050. They are used in wide variety of industries and rapidly accumulate in the environment after disposal. They undergo natural weathering and release microplastics (MPs) and nanoparticles (NPs), which has become a global concern due to their potential toxicity and accumulation to aquatic lives and human beings. These MPs and NPs display some typical colloidal behaviors, but also exhibit unique phenomenon in the environment, such as the establishment of unique plastisphere. In addition to investigating the environmental fate and transport of MPs and NPs, however, exciting research results are emerging that reveals that MPs and NPs can undergo photolytic or biological degradation in natural environment. Pure bacterial strains and functioning enzymes have been identified, opening doors for the potential development of effective artificial enzymes to address the plastic concerns. This symposium aims to provide a central venue for the scientific community to focus on this emerging concern and share their recent findings in the fate and behavior of MPs and NPs.

Nanoparticle Interactions in Environmental Systems

Organizers: Arturo Keller, keller@bren.ucsb.edu
Adeyemi Adeleye, adeyemi.adeleye@uci.edu
Cosponsor: GEOC

This session seeks leading edge research on the interactions of nanoparticles (metallic, carbonaceous, organic, and nanoplastics) with biogenic, geogenic, and anthropogenic components in the natural environment. The interactions and processes of interest include nanoparticle transformations in different media, surface accumulation of inorganic and organic substances, transport through biological membranes, and nanoparticle-induced redox reactions. Of particular interest are studies on novel nanoparticles (e.g., nanohybrids, nanocomposites, and metal-organic frameworks) (1) used in environmentally relevant applications (e.g., agriculture, remediation, and CO_2 capture), (2) incidentally generated from manufacturing (e.g., nanoplastics produced during 3D printing), or that reach the environment due to their use in outdoor environments (e.g., coatings, and personal care products). We also seek studies that address risk of exposure to nanoparticles, by human and ecological receptors.

Advancing Water Treatment Technologies

Advanced Oxidation Processes: Progress & Challenges

Organizers: Dionysios D. Dionysiou, dionysios.d.dionysiou@uc.edu
Virender K. Sharma, vsharma@tamu.edu
Daisuke Minakata, dminakat@mtu.edu

Advanced oxidation technologies (AOTs), which are based on the generation of highly reactive radical species (e.g., hydroxyl, peroxyl, superoxide, sulfate, singlet oxygen) have been investigated in removing a wide range al of contaminants of emerging concern and for the inactivation of pathogens. Advanced reduction technologies (ARTs) are also in forefront in remediation of recalcitrant contaminants such as

per- and polyfluoroalkyl substances (PFAS) in water and soil. Water reuse and water conservation are areas in which AOTs and ARTs can contribute to break new frontiers. This symposium will focus on the latest advances made in oxidation/reduction processes, alone or coupled with other technologies, for the removal of contaminants and pathogens of emerging concern, for water conservation and water reuse. Papers on the mechanism of free radicals, fate of contaminants, AOT/ART removal efficiency, modeling, toxicity of byproducts, engineering design and optimization, and new applications of AOTs/ARTs are invited.

Advances in Chemical Oxidative Processes for Emerging Contaminants in Water & Wastewater

Organizers: Xiaohong Guan, xhguan@des.ecnu.edu.cn
Ching-Hua Huang, ching-hua.huang@ce.gatech.edu
Lefebvre Olivier Patrick, ceelop@nus.edu.sg

Organic pollutants of emerging concerns have been found in many source waters. Removal of emerging organic contaminants (EOCs) by conventional approaches are challenging. Chemical oxidants are routinely applied and researched to effectively remove EOCs. Common oxidants include hypochlorite, hydrogen peroxide, ozone, peracetic acid, persulfate, peroxymonosulfate, permanganate, ferrate, and others. In the past few years, new efforts are being made to enhance the reactivity of such oxidants to boost their performance in efficiently and rapidly removing emerging contaminants like pharmaceuticals, personal care products, and pesticides. This symposium will focus on the strategies being applied for enhanced oxidation of the EOCs in water and wastewater. Studies that advance our understanding of the mechanism of oxidative reactions through novel experimental methodology, kinetic modeling, identification of reactive oxidizing species, density functional theory calculations, and/or transformation product analysis are particularly invited for this symposium.

Current Perspectives in Water Reuse & Recycling

Organizers: Jiaqi Liu, vicky_liu@baylor.edu

There is a need to develop tools and techniques to enable water reuse and recycling. Recycled water is needed for human ingestion, agriculture sustainability, and other health related fields. This symposium will highlight some of the current perspectives, urgent needs, and innovative research being pursued across many different sectors, including but not limited to academia, government, not-for-profit organizations, and companies.

Development of Sustainable Household Water Treatment

Organizers: Yang Deng, dengy@mail.montclair.edu
Ying Wang, wang292@uwm.edu

Household water treatment (HWT), accomplished by deploying point-of-use (POU) or point-of-entry (POE) treatment devices, represents a key engineering intervention for daily and emergency water needs of billions of people in both developed and developing countries. However, established HWT technologies encounter unique challenges. For example, they mostly focus on the abatement of traditional contaminants (e.g., pathogens and arsenic), but poorly remove emerging contaminants (e.g., PFAS) in a cost and energy efficient manner. To attain quality water at an affordable cost and in an environment- and user-friendly fashion, technology innovations are required to develop new-generation HWT. Chemistry advances play a key role in the technologic transitions. This symposium will provide a platform to share our recent research and opinions on 1) innovations in HWT technology and design; and/or 2) advances in chemistry with a potential to be translated into HWT for addressing pressing challenges.

Disinfection Byproducts in Drinking Water & Wastewater: Detection, Formation & Control

Organizers: Susan Richardson, RICHA545@mailbox.sc.edu
Chii Shang, cechii@ust.hk
Paul Westerhoff, p.westerhoff@asu.edu
Xin Yang, yangx36@mail.sysu.edu.cn

This symposium will focus on the identification of emerging DBPs, the latest advances in the underlying chemistry of DBPs formation and technologies in eliminating DBP risks in water and wastewater treatment.

Electrified Water Treatment Processes

Organizers: Marta Hatzell, marta.hatzell@me.gatech.edu
Shihong Lin, shihong.lin@vanderbilt.edu
William Tarpeh, wtarpeh@stanford.edu
Xing Xie, xing.xie@ce.gatech.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.

Synergy of Experimental & Theoretical Methodologies for Advancing Redox-based Treatment of Wastewater & Emerging Contaminants

Organizers: Amalia Terracciano, aterrac1@stevens.edu
Andrew Mai, amai@stevens.edu

This interdisciplinary symposium is designed to bridge experimental and theoretical approaches in wastewater treatment research by welcoming advances in redox-based treatment of wastewater and emerging contaminants. Waste matrices include municipal, industrial, and agricultural wastewater, drinking water, and groundwater/soil. Focus is directed towards development in reagent design, application, and redox chemistry to elucidate the theoretical bases for the selection of treatment methods to complement empirical and trial-based experimental approaches. This symposium encourages research that combines, or interfaces, both the experimental and theoretical facets of water and wastewater research to expedite treatability studies for the next inevitable novel and emerging contaminants. Topics are broad and may include but not limited to 1) advanced oxidation processes (AOPs), 2) enhanced reductive methods, 3) modeling methods such as density functional theory (DFT) calculations, 4) pharmaceutical and personal care products (PPCPs), 5) per- and polyfluorinated alkyls substances (PFASs), 6) energetic compounds. The organizers of this proposed symposium are seeking interdisciplinary research revolving water/wastewater treatment (as opposed to conventionally called

wastewater treatment sessions). We also would look forward to cooperating with other organizers for other potential wastewater treatment sessions.

Addressing Sustainability Challenges

Circularity Challenges & Advances in Plastics Recycling

Organizers: John Glaser, glaser.john@epa.gov
Sahle-Demessie Endalkachew, Sahle-Demessie.Endalkachew@epa.gov

Different forms of plastics have become ubiquitous pollutants across the surface of the globe. Some 8.3 billion metric tons of plastic have been produced since the early 1950s. In the intervening time, plastic production has increased at a rate faster than that of any other manufactured material. The value of plastic is easily seen in its myriad uses ranging from durable to single-use applications. Current information suggests that the chemical building blocks of plastics might harm people and the environment. These chemicals can be absorbed by humans and some of these building blocks have been found to alter hormones or have other potential human health effects. Wildlife can be injured or poisoned through contact with plastic debris possibly contaminated with toxic chemicals. Our overuse of disposable plastic items is seen to be a major problem with severe environmental consequences. Increased use of disposables has challenges current resource management efforts. International changes to available recycling pathways have opened a field of alternatives for consideration as productive and environmentally conscious recycling technology. The repurposing of used plastics can be accomplished using technologies based on purification, decomposition, or conversion approaches to waste plastic utilization. Depolymerization technologies ranging from bench-scale demonstration to full scale implementation are becoming investment targets. Notable examples involve liquefaction, methanolysis, or cross alkane metathesis processes. Plastics-to-fuel strategies are prominent in the catalog of processes under investigation. Clearly, it is important to provide sustainable management of used plastics while employing these emerging technologies. Closed supply chain constraints offer optimal solutions to the recycling needs of our society. Assessment approaches such as life-cycle evaluation can contribute to a more complete knowledge of used plastics recycling technology development. This interdisciplinary symposium is designed to engage chemists, polymer scientists, and engineers to develop an understanding of the problem scope and to advance integrative, effective and sustainable strategies critical to the prevention of plastic pollution through the sustainable reuse of used plastic materials.

Ecosystems, Water & Food Security in a Changing World: Challenges & Solutions in Arid Regions

Organizers: Meshal Abdullah, mea1980@tamu.edu
Souhail Al-Abed, al-abed.souhail@epa.gov
Cosponsor: GEOC

Food security and water sustainability are the two most significant global challenges, especially in arid and semiarid regions, covering about 25.8% of the land on earth. More than 400 million people living in those regions are vulnerable to undernourishment and poverty. The challenge is daunting in that many countries have limited arable lands and scarce water resources worsened by climate change. According to the Intergovernmental Panel on Climate Change (IPCC), the observed global mean surface temperature has increased by 0.6 C since the late 19th century, which may shift some arid ecosystems to hyper-arid ecosystems in the future. Thus, it is essential to determine sustainable strategies and applications for managing water scarcity and food security in such drought seasons, as well as considering the ecosystem services and climate change impacts.

Innovative Materials for Environmental Sustainability
Organizers: Alex 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.

Sustainable Agriculture & Food Systems
Organizers: Evan Braswell, evan.braswell@usda.gov
Christie Sayes, christie_sayes@baylor.edu
Cosponsor: AGRO

Sustainability in agriculture and food systems is of growing interest, yet the path to get there is far from clear. From gene editing to mitigate transmission of pathogenic infections to targeted delivery of nutrients for improved plant health, tools for sustainable agriculture are actively being developed. These tools lay at the intersection of biology, biochemistry, and environmental chemistry. This symposium will bring together scientists from these diverse backgrounds to highlight recent advances and newly developed methods for detecting, charactering, and eradicating plant diseases.

Chemical, Physical and Biological Processes in the Environment

Current Perspectives in Perfluorinated Chemicals: Fate & Behavior
Organizers: Hui Peng, hui.peng@utoronto.ca
Carla Ng, carla.ng@pitt.edu

The global use of per- and polyfluoroalkyl substances (PFAS), a class of thousands of structurally diverse chemicals with application in a wide array of industrial and consumer products, has posed challenges to the conventional chemical-by-chemical risk assessment approach. Indeed, most past studies focused on the so-called legacy PFAS, representing a narrow subset of substances, while limited information is available on the identities, environmental behaviors and toxicokinetics of the majority of PFAS. In response to this challenge, parallel and complementary efforts have emerged across analytical chemistry, computational approaches, and multiple branches of toxicology to prioritize and assess the environmental fate, human health, and ecological risks of the vast number of PFAS in a cost-effective and efficient manner. Examples of these efforts range from non-targeted chemical analysis, in silico computation, and high-throughput in vitro and in vivo toxicity screening. In all these cases, scientists need to overcome challenges in handling PFAS mixtures consisting of multiple or even hundreds of compounds with diverse structures and physicochemical properties. This session seeks contributions that reflect the state of art and ongoing efforts focused on the analysis or effects screening of PFAS mixtures. We particularly welcome studies that develop experimental (e.g., non-targeted analysis, toxicity screening) or computational approaches (e.g., molecular modeling) that reduce the time- and financial cost for the risk assessment of PFAS.

Current Progress in Emission Control Catalysis

Organizers: Pranaw Kunal, kunalp@ornl.gov
Todd Toops, toopstj@ornl.gov

Since the 2nd half of the 19th century, internal combustion engines (ICE) and fossil fuels have produced and met ~80% of global energy needs. Unfortunately, this has resulted in several environmental problems originally identified in the 1950s. Emissions regulations beginning in the 1970s have led to many exciting new technologies, a prime example of which is three-way catalytic converter. Platinum group metals (PGM) can attain simultaneous oxidation of CO + hydrocarbons as well as reduction of nitrogen oxides (NOx) under strict stoichiometric combustion conditions. With the implementation of diesel engines, new technologies had to be developed for meeting emission regulations under lean exhaust conditions and to handle carbonaceous particulate matter. This resulted in advances in oxidation catalysts, particulate filters, and selective catalytic conversion of NOx (SCR). Federally regulated emission standards require improved fuel efficiency while simultaneously mandating lower emissions. This necessitates high activity of catalysts at low temperatures and/or storage of emissions during periods when the catalysts are not operational. This symposium invites work in the field of environmental catalysis which are relevant to such technologies and modern-day vehicles, broadly speaking for oxidation, passive storage/release, and selective catalytic reduction chemistries. The goal is to address and discuss current challenges in the field, for instance attaining PGM-reduction while also improving efficacy of catalytic formulations. Research from academia and industry are essential for a well-rounded discussion and hence submissions from these sectors are welcome.

Natural Organic Matter: Fate & Characterization

Organizers: Yang Deng, dengy@mail.montclair.edu
Michael Gonsior, gonsior@umces.edu
Joel Pedersen, joelpedersen@wisc.edu
Fernando Rosario-Ortiz, Fernando.Rosario@colorado.edu
Weihua Song, wsong@fudan.edu.cn

Dissolved organic matters (DOM) are ubiquitous in environmental waters and play a critical role in biological and chemical processes. In different water matrix, the physical and chemical properties of DOM vary significantly. Thus, DOM can be named according to their sources, such as: natural organic matter (NOM), effluent organic matter (EfOM), algae organic matter (AOM), leachate organic matter (LOM) etc. DOM can associate with organic pollutants and obviously reduce/enhance their transformation rates in natural and engineering system. Importantly, DOM can also react with disinfectants to yield disinfection by products (DBPs). Therefore, the transformation and fate of DOM have gained significant attention among scientists and engineers. This symposium focuses on advances in the transformation of DOM in natural and engineering processes.

Reactivity of Biochar & Its Modification

Organizers: Patryk Oleszczuk, patryk.oleszczuk@poczta.umcs.lublin.pl
Bo Pan, panbocai@aliyun.com
Jörg Rinklebe, rinklebe@uni-wuppertal.de
Baoshan Xing, bx@umass.edu
Cosponsor: GEOC, CARB

Biochar, as a kind of carbonaceous material, has attracted a great deal of research concern and has been demonstrated to be beneficial in the global biogeochemical processes, environmental remediation, greenhouse gas emission reduction, and soil productivity enhancement. Nowadays, more and more attention has been focused on the surface property and reactivity of biochar, which are mainly determined by surface functional groups, electron conductivity, redox potential as well as transition metals and

environmental persistent free radicals (EPFRs) detected in biochar. The reactivity of biochar plays a vital role in pollutant degradation, microbial activity, and the elemental biogeochemical cycles. Exploring the mechanism, analytical techniques, and ecological risk related to biochar reactivity demands timely research aiming at sustainable and effective biochar application. This symposium welcomes all the discussion related to biochar reactivity and application, including, but not limited to, biochar characterization, environmental implications, preparation and modification, as well as research challenges.

Role of Nitrogen-Containing Compounds in Formation & Transformation of Ambient Aerosols: Past, Present, & Future

Organizers: Chong Qiu, acenvironment@newhaven.edu
Yuan Wang, yuan.wang@caltech.edu
Jun Zheng, zheng.jun@nuist.edu.cn

The symposium invites abstracts that focus on how atmospheric nitrogen-containing compounds (such as nitrogen oxides, ammonia, and amines) may contribute to the formation and transformation of ambient aerosols via physical and chemical interactions with other gaseous and condensed species in the air. Nitrogen-containing compounds are ubiquitous in the atmosphere and may contribute significantly to new particle formation, the aging of aerosols, and changes in particle properties, potentially posing profound impacts on our environment and the climate. We welcome studies encompassing all research areas pertaining to the topic, including, but not limited to, laboratory experiments, field observations, molecular-level computations, atmospheric modeling, and policy analyses. This symposium will review our current knowledge and to share the most recent development on how nitrogen-containing compounds influence the chemical composition and properties of ambient aerosol. The symposium may also inspire future research topics in this area.

ENVR Poster Session

Division of Environmental Chemistry General Poster Session

Organizers: Virender Sharma, vsharma@tamu.edu
Christie Sayes, christie.sayes@baylor.edu

Poster abstracts in all areas of environmental chemistry and engineering are welcome. This is an interactive session designed to encourage dialogue among scientists while sharing highlights of new research. Presentation format for posters at the ACS Fall 2021 meeting has not been announced. *Please note: **Only one poster per presenter** is allowed in the ENVR Poster Session.*