**American Chemical Society**

**Division of Environmental Chemistry**

**Call for Papers**

**260th National Meeting & Exposition**

**San Francisco, CA – August 16-20, 2020**

Abstract Submission Deadline: **April 6, 2020**

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 of the American Chemical Society at the 260th ACS National Meeting in San Francisco, CA August 16-20, 2020.

Abstract Submission Deadline is extended to **April 20, 2020**. 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.

Sincerely,



*Jillian Goldfarb, Ph.D.*

***ENVR Fall Program Chair***

Department of Biological & Environmental Engineering

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***ACS National Meeting Thematic Symposia: Moving Chemistry from Bench to Market***

**Environmental Chemistry for New Product Development**

*Organized by: Robert Giraud (robert.j.giraud@outlook.com), Michael Abel (mtabel@dow.com), Steven Lingenfelter (steven.lingenfelter@glwater.org)*

Moving new products from bench to market goes through environmental chemistry. Environmental chemistry plays a major part in assuring new chemical products meet the environmental, health, and safety requirements of regulatory agencies, customers, and standard-setting organizations. Environmental chemistry ensures that the processes to make new chemical products fit within the constraints of the environmental protection infrastructure at the manufacturing plant and to the development of new treatment processes where indicated. Environmental chemistry has a role in promoting the sustainability of the new product and the associated process. This symposium will focus on the methods and practices used by environmental chemists to enhance conditions for product commercialization.

**Harmful Algal Blooms: Translating Benchtop Scientific Discoveries into Actionable Solutions at Market Scale**

*Organized by: Michelle Newcomer (**mnewcomer@lbl.gov**), Ali Douraghy (**adouraghy@lbl.gov**), Yiwei Cheng (**yiweicheng@lbl.gov**)*

Harmful algal blooms (HABs) pose a major and constant threat to our ability to satisfy societal needs for food, water, and energy derived from coastal and inland water ecosystems. HABs have increased in intensity and frequency in the past decade—they alter food web dynamics, create hypoxic dead zones, shut down fisheries, contaminate drinking water sources, and disrupt coastal desalination. New scientific understanding coupled to timely management strategies is essential to better predict the onset of blooms and to implement actions that prevent and mitigate ensuing environmental and economic damage. Decades of HAB research translate into various HAB assessment, mitigation and prediction technologies at different stages of maturity along the bench to market (B2M) continuum. We seek contributions from novel interdisciplinary studies along the B2M continuum that integrate physical, molecular, chemical, biological, geological observations/experiments, and modeling to understand bloom dynamics, and how to translate benchtop and field-based scientific findings into actionable market scale solutions and policies tailored to the physical and chemical conditions of specific outbreaks.

**Sustainable Technologies for a Circular Economy: From Benchtop Experimentation through System Analyses**

*Organized by: Yalin Li (yalinli2@illinois.edu), Jeremy Guest (jsguest@illinois.edu)*

This symposium invites research papers that focus on the development of sustainable technologies toward a circular economy, including recent advancements in experimental research, model development, and system analyses that evaluate emerging technologies and chart “bench-to-market” pathways. Example research areas include, but are not limited to, resource recovery from wastes, biofuels and bioproducts, the water-food-energy nexus, as well as techno-economic analysis and life cycle assessment.

***Chemical, Physical and Biological Processes in the Environment***

**Atmospheric Chemistry: Advances in Fundamental and Applied Research**

*Organized by: Tran Nguyen (**tbn@ucdavis.edu**), Ezra Wood (ew456@drexel.edu),*

Our understanding of the complex cascade of chemical reactions occurring in the troposphere, and how they are impacted by human activities such as fossil fuel combustion or agricultural practices, continues to evolve. The advances in atmospheric chemistry are driven by laboratory, field, modeling, and theoretical investigations. Furthermore, rapid developments in analytical techniques enable the experimental investigations by expanding the breadth of gaseous and particulate characterizations in the air. This session will cover a range of topics key to Atmospheric Chemistry, including: Fundamentals of atmospheric oxidation; Condensed phase and heterogeneous chemistry of aerosols; Urban and indoor atmospheric chemistry; Biomass Burning; Agricultural emissions; Atmospheric measurement techniques.

**Chemistry at Solid-Water Interfaces**

*Organized by: C.P. Huang (**huang@udel.edu**), Ruey-an Doong (**radoong@mx.nthu.edu.tw**), Hyunook Kim (**hyn\_ook@uos.kr.ac**), Jillian Goldfarb (goldfarb@cornell.edu), Cheng-di Dong*

Chemical reactions at the solid-water interfaces have great implications in both the natural and built environment. The distribution of chemical species in natural water systems, largely, is controlled by mineral and biological interactions at solids surfaces. The congruent and incongruent dissolution and formation of minerals holds key to the chemical composition of natural water. Ion transport across the microbial surface is essential to microbial survival and the chemical speciation of chemical constituents including biosynthetic nanoparticles. There are numerous applications of interfacial reactions on water purification and water quality control. The applications of interfacial reactions include adsorption, coagulation, filtration, membrane separation, heterogeneous photocatalysis, catalytic conversation, and the development of multifunctional mesoporous adsorbents, nano-catalysts. The symposium will provide a forum for researchers to share results of their recent research on the study of interfacial reactions governing the chemical composition of natural waters and soil-water systems and the applications to water purifications. Specifically, the symposium welcome contributions on the synthesis and testing of new and multifunctional materials for water purification, new tools and instrumentation for the characterization of interfacial reactions, new design for particulates and impurities separation processes, and new interpretation of conventional theories on ion adsorption, surface acidity and system design.

**Geochemical Processes Affecting Water Quality in Water Distribution Systems**

*Organized by: Lucia Rodriguez-Freire (lrfreire@njit.edu), Michael Schock (schock.michael@epa.gov), Michael DeSantis (desantis.mike@epa.gov)*

This symposium will bring together presentations on new developments addressing the potential pathways and mechanisms affecting the quality of the water in distribution systems, including aging infrastructure, corrosion control methods, disinfection protocols, and physical, chemical and biological processes.

**Legacy and Emerging Per- and Polyfluoroalkyl Substances: Identification, Fate, Transport, Exposure, and Removal**

*Organized by:* *Feng Xiao (**Feng.Xiao@UND.edu**), Jinxia Liu (**Jinxia.Liu@McGill.ca**), Yin Wang (wang292@uwm.edu)*

This symposium invites both oral and poster presentations related to the occurrence and fate of legacy and emerging per- and polyfluoroalkyl substances (PFASs) in natural and engineered systems, treatment of PFAS-contaminated water and soil, exposure and risk assessment, and novel analytical methods. Of particular interest are contributions that address: 1) occurrence, fate, transport, and removal of emerging PFASs in the water cycle, 2) secondary formation of legacy PFASs from precursor compounds, and 3) fate and migration of PFASs in vadose and saturated zones.

**Subsurface Fate and Transport: Experimental Observations and Model Development**

*Organized by: Gang Chen (**gchen@eng.famu.fsu.edu**), Hefa Cheng (**hefac@pku.edu.cn**)*

Subsurface fate and transport are key determinants in understanding risks posed by pollutants, such as via drinking water contamination, and for designing processes like in situ remediation. Understanding interactions between solid phases, at the air-water interface, between particles and at the liquid-gas-solid three phase interface are critical to predicting, modeling, and controlling subsurface fate and transport. This session will explore experimental observations and computational modeling of subsurface fate and transport. Papers are especially solicited in the areas of colloidal transport (biological and non-biological) across a variety of physicological and chemical systems, interactions between phases and their governing equations, and applications of models to laboratory and field studies. In particular, multiphase systems and interfaces are of keen interest, especially in light of recent studies that show that colloid and bacterial adhesion at the liquid-gas-solid three phase interfaces plays a key role in their retention in the pore system.

***Advancing Water Treatment Technologies***

**Biomimetic and other Emerging Membranes for Water Purification and Reuse**

*Organized by: Mihail Barboiu (**mihail-dumitru.barboiu@umontpellier.fr**), Dibakar Bhattacharyya (**DB@uky.edu**)*

The development of synthetic biomimetic membranes and processes offer new strategies to generate highly selective, advanced materials for water purification and reuse systems. Despite the elegant work by synthetic chemists to produce sophisticated membrane materials, most efficient based work has been conducted with natural systems as the selectivity components, embedded in the diverse materials. Experimental results have demonstrated that artificial molecules can be used as building blocks for the construction of highly selective biomimetic and emerging membranes. Such studies aim to use artificial membranes for highly selective water transport to select functions similar to the natural structures. This symposium will cover key scientific challenges including: design of highly selective water biomimetic channels and membranes for desalination, ultrapure water production, food industry; self-assembled polymeric membranes for virus filtration; graphene oxide and carbon nanotube membranes; catalytic and enzymatic membranes for water detoxification; responsive membranes.

**Chemistry and Applications of Advanced Oxidation and Reduction Technologies for Water Treatment and Purification**

*Organized by: Daisuke Minakata (**dminakat@mtu.edu**), Kevin O’Shea (**osheak@fiu.edu**), Dionysios (Dion) Dionysiou (dionysios.d.dionysiou@uc.edu), Weihua Song (wsong@fudan.edu.cn), Gianluca Li Puma, Xuexiang He*

Advanced oxidation and reduction technologies (AORTs) that use highly reactive radicals and solvated electrons have shown great potential for the degradation of contaminants of emerging concern and for the inactivation of pathogens in water. This symposium will focus on the latest advances in the materials, underlying chemistry, and applications of AORTs alone or coupled with other technologies, for the remediation of contaminants and pathogens of emerging concern.

**Disinfection and Oxidation Byproducts**

*Organized by: Daniel McCurry (**dmccurry@usc.edu**), David Hanigan (**dhanigan@unr.edu**), Jean Van Buren (jeanvanburen@berkeley.edu)*

This symposium focuses on the formation, precursors, prevention, and treatment of disinfection and oxidation byproducts. We welcome submissions on DBPs in a broad sense, inclusive of byproducts from drinking water treatment, wastewater recycling (including AOP byproducts), wastewater ozonation for micropollutant control, and chemical oxidation of groundwater pollutants. Submissions emphasizing fundamental chemical advances in DBP science rather than black-box engineering empiricism are encouraged.

**New Materials and Early-Stage Processes for Sustainable and Accessible Water Treatment in Off-grid and Remote Locations**

*Organized by: Francois Perreault (francois.perreault@asu.edu), Santiago Romero-Vargas Castrillon (**Santiago@ed.ac.uk**), Onur Apul (**Onur\_Apul@uml.edu**)*

Advances in water treatment processes have dramatically increased the quality of life and life expectancy of human populations. However, water treatment remains an energy- and chemical-intensive process that may not be affordable to every community. Increasing strict water regulations result in increasingly complex, costly, and environmentally impactful water treatment trains to meet higher water quality standards. This result in systems that may be hard to operate in off-grid conditions, where the infrastructure or technical knowledge may be lacking. In this symposium, we will explore the progresses in the fabrication of new materials, or the development of new processes, that can increase the sustainability or accessibility of water treatment processes. Welcomed are innovations that can improve the performance, reduce the energy cost, or eliminate the need for chemicals in water treatment. In addition, new technologies that can make water treatment processes more accessible to a wider population, in their affordability, capacity to operate off grid, or that uses locally-sourced materials, are also of interest.

**The Next Generation of Urban Water Infrastructure: A Challenge for Environmental Chemists and Engineers**

*Organized by: Richard G. Luthy (luthy@stanford.edu), David L. Sedlak (**sedlak@berkeley.edu**), Alexandria Boehm (**aboehm@stanford.edu**), Christopher Higgins*

Cities worldwide have begun to consider new approaches for obtaining, treating and distributing water. To protect public health and the environment, these systems will need to meet treatment objectives without producing byproducts that are toxic or difficult to manage. This symposium will address the fate, transport and transformation of contaminants in unit processes and managed natural new treatment systems that will become more common as cities adapt to water scarcity and climate change.

**Reactive Materials & Processes for Sustainable, Resource-Efficient Water Treatment**

*Organized by: Jessica Ray (**jessray@uw.edu**), William Tarpeh (wtarpeh@stanford.edu)*

Conventional processes and materials may be insufficient to maintain the security of the urban water supply under stress from rapid urbanization, growing populations, and industrial production amidst increasingly scarce resources. Resource efficiency, or minimizing inputs such as cost, chemical inputs, and energy, will play an increasing role in decisions on water treatment technologies. Adverse impacts on the hydrologic cycle due to climate change and the increase in anthropogenic contamination of drinking water supplies place additional pressure on current water treatment processes and aging infrastructure. New materials and approaches in applied urban water systems are required to ensure drinking water and environmental safety. This symposium welcomes research papers that describe novel approaches and materials for remediation of waste streams including wastewater, groundwater, surface water, and urban stormwater. Examples include new separation techniques for desalination, purification, and chemical separation; novel electrodes, electrode configurations, or electrochemical processes for water treatment; and hybrid composite and modified low-cost media for contaminant removal. Research describing incorporation of new materials or processes in existing water treatment infrastructure, or life-cycle assessments of proposed technologies are welcome.

***Environmental Science at the Nanoscale***

**Environmental Applications and Implications of Two-Dimensional Nanomaterials**

*Organized by: Indranil Chowdhury (**Indranil.chowdhury@wsu.edu**), Mark C. Hersam (**m-hersam@northwestern.edu**), Adeyemi Adeleye (adeyemi.adeleye@uci.edu)*

Two-dimensional (2D) materials have become a major focus in materials chemistry research worldwide with substantial efforts centered on synthesis, property characterization, and technological applications. Environmental applications of these nanomaterials include adsorbents for wastewater and drinking water treatment, membranes for desalination, and coating materials for filtration. However, it is also important to address the environmental interactions and implications of these nanomaterials in order to develop strategies that minimize environmental and public health risks. Moreover, the increased production of 2D nanomaterials increases the potential for their release in the environment and necessitates a thorough understanding of their fate and transport in aquatic and terrestrial ecosystems. In this symposium, experts on 2D nanomaterials will discuss the challenges and opportunities of 2D nanomaterials for environmental applications and implications. This symposium welcomes theoretical and experimental research that describes recent advances on the environmental implications and applications of two-dimensional nanomaterials.

**Environmental Implications of Nano-Enabled Consumer Products and Processes**

*Organized by: Souhail Al-Abed (**al-abed.souhail@epa.gov**), Phillip Potter (**potter.phillip@epa.gov**),* Adeyemi S. Adeleye (Adeyemi S. Adeleye)

As more products containing nanomaterials enter the consumer marketplace each year, the likelihood of these nanomaterials reaching the environment increases. In addition, there are emerging concerns about incidental nanomaterial formation such as nanoplastics. Understanding the potential for nanomaterials to reach the environment and the chemical changes they may undergo is of the utmost importance to prevent damage to human health and the ecosystem. Despite the ability to characterize every aspect of a given nanomaterial, there is no accepted standard for nanomaterials used in consumer products and therefore it is very difficult to predict their fate once they enter the waste stream. This symposium will feature state-of-the-art techniques for characterizing nanomaterials in existing consumer products or in the environment; and trials that simulate use and end-of-life phases for these nanomaterial-containing products/processes. Special attention will be given to how to best evaluate nanomaterials’ ability to enter and alter the environment.

***Advances in Measurement and Detection***

**Animal Agriculture Emission Measurement Technologies**

*Organized by: Kyoung S Ro (**Kyoung.ro@usda.gov**), Melynda Hassouna (**Melynda.hassouna@inra.fr**)*

Animal agricultural sites such as livestock production facilities are significant emission sources for ammonia, odorous volatile organic compounds (VOCs), particulate matter (PM), and greenhouse gases. Accurate assessment of pollutant emission from distributed animal agricultural sites such as animal houses, treatment lagoons, land spread of manure, and feedlots requires sophisticate methods and sensors for control, mitigation and environmental assessment. The proposed symposium will provide a platform for researchers from diverse disciplines ranging from chemists, engineers, soil scientists, and micrometeorologists to present and discuss recent discoveries and development in modelling, sensors, and techniques to measure more accurately emissions from animal agricultural sites.

**Detection and Quantification of (the next generation of) Emerging Contaminants**

*Organized by: Ruth Marfil-Vega (**rmmarfilvega@shimadzu.com**), Damia Barcelo Culleres (**dbcqam@cid.csic.es**)*

The term Emerging Contaminants has become a staple in the environmental chemistry field during the past decade and it is normally used to refer to Pharmaceuticals and Personal Care Products, Endocrine Disrupting Compounds and even Per- and Polyfluoroalkyl Substances. While understanding the occurrence and removal of these chemicals in the water cycle is still relevant, it is also essential to identify, quantify and asses the fate of the next generation of Emerging Contaminants, such as microplastics, Antibiotic Resistance Genes, and any new chemicals being introduced in the market. Abstracts focused on state-of-the-art analytical technologies (e.g. GC-tandem MS, LC- and GC – high resolution MS, molecular spectroscopy, qPCR…) and workflows for the identification and quantification of the next generation of Emerging Contaminants in wastewater and other environmental samples, and studies aimed at improving the knowledge about their fate are encouraged to be submitted to this symposium.

***Addressing Sustainability Challenges***

**Catalysis for Environmental and Energy Applications**

*Organized by: Yin Wang (**wang292@uwm.edu**), Aditya Savara (**savaraa@ornl.gov**), Alexandar Orlov (**alexander.orlov@stonybrook.edu**), Jinyong Liu (jyliu@engr.ucr.edu)*

This symposium will address opportunities and challenges of developing innovative and efficient catalytic processes for environmental and energy applications, including, but are not limited to, chemical catalysis, electrochemical catalysis, photocatalysis, and biocatalysis. We encourage cross-pollination of knowledge, with applications ranging from vehicle emissions to mitigating water pollution to CO2 and biomass conversion. Both original experimental and computational simulation investigations are welcome.

**Chemistry and Biotechnology Advances in Plastics Recycling**

*Organized by: John Glaser (**glaser.john@epa.gov**)*

Plastics are ubiquitous pollutants across the globe. The chemical building blocks of plastic can be absorbed by humans and some of these building blocks have been found to alter hormones or have other potential health effects. The repurposing of used plastics can be accomplished through technologies based on purification, decomposition or conversion. 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 catalogue of processes under investigation. 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 symposium is designed to engage chemists, polymer scientists, engineers, and biotechnologists 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.

***ENVR Poster Session***

**Division of Environmental Chemistry General Poster Session**

*Organized by: Jillian Goldfarb (goldfarb@cornell.edu)*

Abstracts in all areas of Environmental Chemistry and Engineering are welcome in the Division’s Poster Session. This is an interactive session design to encourage dialogue among scientists while sharing highlights of new research. *Please note: as we cannot guarantee neighboring poster locations,* ***only one poster per presenter is allowed*** *in the ENVR Poster Session.*

***Honorary and Invited Symposia***

**C. Ellen Gonter Environmental Chemistry Awards**

*Organized by: Kevin O’Shea (osheak@fiu.edu) and Dion Dionysiou (dionysios.d.dionysiou@uc.edu)*

This award is presented to graduate students at U.S. and international universities who submit the highest quality research papers. The format to be followed is that of Environmental Science and Technology, except that the paper should be limited to 15 pages total, including figures and references. Award winners are expected to present their papers at the Fall American Chemical Society Meeting, where they receive a $1,000 cash award at the Environmental Division Reception. The deadline for submission of a single pdf file via email to *osheak@fiu.edu* is January 8th. These awards represent the highest honor granted by the Division of Environmental Chemistry for students.

*Please note: Presentations by Invitation Only*

**Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals**

*Organized by: Simon Neil (neils@rsc.org), Kristopher McNeill, Paige Novak, Peter Vikesland*

This invitation-only symposium will highlight high-quality, cutting-edge research being done by up-and-coming scientists in the field. The symposium will feature presentations by Emerging Investigators of the Royal Society of Chemistry’s Environmental Science: Processes & Impacts, Environmental Science: Nano, and Environmental Science: Water Research & Technology.

*Please note: Presentations by Invitation Only*