



#### AMERICAN CHEMICAL SOCIETY DIVISION OF ENVIRONMENTAL CHEMISTRY CALL FOR PAPERS

252<sup>nd</sup> ACS National Meeting Philadelphia, Pennsylvania – August 21-25, 2016

Dear Colleagues,

Join us and share your research progress and results in the Division of Environmental Chemistry program at the 252nd ACS National Meeting in Philadelphia, PA, August 21-25, 2016. ENVR symposia, many based on the meeting's theme, "*Chemistry of the People, by the People, and for the People,*" are listed below by topic.

**ENVR Fall Program Chair**: Dionysios (Dion) D. Dionysiou, Ph.D., UNESCO Co-Chair Professor of "Water Access and Sustainability" and Professor of Environmental Engineering, Center of Sustainable Urban Engineering; Drinking Water, Water Supply, Quality, and Treatment, and Environmental Nanotechnology Laboratories; Environmental Engineering and Science Program; Department of Biomedical, Chemical and Environmental Engineering (DBCEE), 705 Engineering Research Center, University of Cincinnati, Cincinnati, OH 45221-0012; Phone (513) 556-0724; Email: dionysios.d.dionysiou@uc.edu

**Abstract Submission**: January 25, 2016 - March 21, 2016. Submit abstracts to the Division of Environmental Chemistry at <u>http://MAPS.ACS.org</u>.

#### **BIOLOGICAL ANALYSIS AND TRANSFORMATION**

**Bioanalytical Tools for Chemicals of Emerging Concern in the Environment**, Organizers: Ruth Marfil-Vega, *Ruth.Marfil-Vega@amwater.com*; Lauren Weinrich, *Lauren.weinrich@amwater.com* 

**Chemical & Biological Transformations in Produced Fluids From Unconventional Hydrocarbon Extraction**, Organizers: Desiree L. Plata, *Desiree.plata@yale.edu*; Paula J. Mouser, *mouser.19@osu.edu* 

**Combined Biological-Chemical Reactions for Contaminant Transformation**, Organizers: Kevin T. Finneran, *ktf@clemson.edu*; Ed Bouwer, *bouwer@jhu.edu* 

**Microbial & Molecular Tools to Determine the Fate & Biotransformation of Emerging Contaminants** (Cosponsor: AEESP), Organizers: Berat Haznedaroglu, *berat.haznedaroglu@boun.edu.tr*; Spyros G. Pavlostathis, *spyros.pavlostathis@ce.gatech.edu*; Ulas Tezel, *ulas.tezel@boun.edu.tr* 

Nanomaterials in the Environment & Biological Systems: Physicochemical & Biological Processes Affecting Their Transformation & Transport, Organizers: Sung Hee Joo, *s.joo1@miami.edu*; Peng Yi, *pyi@fau.edu*; Woo Hyoung Lee, *woohyoung.lee@ucf.edu* 

#### FOOD, WATER AND ENERGY

Advances & Challenges in Food-Energy-Water Nexus (Cosponsor: ENFL), Organizers: Indranil Chowdhurry, Indranil.chowdhury@wsu.edu; Yuehe Lin, yuehe.lin@wsu.edu; Dionysios D. Dionysiou, dionysios.d.dionysiou@uc.edu; Sorong Chae, chaesg@ucmail.uc.edu

Advances in Innovative Designs & Process Cost Estimation Techniques for Advanced Water Purification Technologies, Organizers: Yusuf G (Debo) Adewuyi, adewuyi@ncat.edu; E. Sahle-Demessie, sahle-demessie.endalkachew@epa.gov

Advances in Understanding PPCP Fate in Wastewater Collection & Treatment Systems, Organizers: Lisa Rodenberg, rodenburg@envsci.rutgers.edu; Nicole Fahrenfeld, nfahrenf@rutgers.edu

**Chemistry of Biomass Wastes Conversion to Energy & Chemicals**, Organizers: Ming Zhao, *ming.zhao@mail.tsinghua.edu.cn*; Maobing Tu, *tumg@ucmail.uc.edu* 

**Creating & Exploiting Salinity Gradients**, Organizers: Christopher Gorski, *gorski@psu.edu*; Meagan Mauter, *mauter@cmu.edu*; Bruce E. Logan, *blogan@psu.edu* 

Nanotechnology for Sustainable Agriculture & Food Systems (Cosponsor: AEESP, Sustainable Nanotechnology Organization), Organizers: Navid B. Saleh, *navid.saleh@utexas.edu*; Greg V. Lowry, *glowry@cmu.edu*; Phillip Demokritou, *pdemokri@hsph.harvard.edu*; Jason C. White, Jason.White@ct.gov

**Impacts of Energy Systems On Drinking Water Treatment Plants** (Cosponsor: AEESP), Organizers: Jeanne M. VanBriesen, *jeanne@cmu.edu*; Kelly D. Good, *kdg@cmu.edu* 

Water Purification Systems, Organizers: Sut Ahuja, sutahuja@atmc.net

#### NEW DISCOVERIES/LIFE-CYCLE CHEMISTRY

Advances in Understanding Antibiotics, Antibiotic Resistance Genes, & Antibiotic-Resistant Bacteria in Engineered & Natural Environments, Organizers: Kung-Hui (Bella) Chu, *kchu@civil.tamu.edu*; Ching-Hua Huang, *ching-hua\_huang@ce.gatech.edu*; Jean E. McLain, *mclainj@email.arizona.edu* 

Advancing Teaching & Learning in Environmental Chemistry Courses: Innovative Tools & Techniques (Cosponsor: AEESP), Organizers: John Sivey, *ningdai@buffalo.edu*; Ning Dai, *ningdai@buffalo.edu*; Amisha Shah, *adshah@purdue.edu* 

**Crystal Defects on Surface Reactivity & Heterogeneous Photocatalysis** (Cosponsor: AEESP), Organizers: C.P. Huang, *huang@udel.edu*; Dionysios Dionysiou, *dionysios.d.dionysiou@uc.edu*; Ruey-an Doong, *radoong@nctu.edu.tw*; Ong Hui-lin, *ong.huilin@gmail.com* 

Elements Old & New: Discoveries, Developments, Challenges, & Environmental Implications (Cosponsor: HIST; Committee on Nomenclature), Organizers: Tracy Williamson, *williamson.Tracy@epa.gov*; Mark Benvenuto, *benvenma@udmercy.edu* 

**Nanoceria & the Environment: Assessment Throughout the Entire Life Cycle**, Organizers: Christopher M. Sims, *christopher.sims@nist.gov*; Bryant Nelson, *bryant.nelson@nist.gov* 

Next Generation Techniques for Prevention & Precise Growth of Biofilms at the Interface of Nanomaterials & Electrochemistry, Organizers: Venkata R. Gadhamshetty, venkata.gadhamshetty@sdsmt.edu; Appala Raju Badireddy, abadired@uvm.edu; Srijan Aggarwal, saggarwal@alaska.edu

**Understanding Nanomaterial Behavior – Breakthroughs & Challenges**, Organizers: Alexander Orlov, *alexander.orlov@stonybrook.edu*; Nora Savage, *nosavage@nsf.gov* 

#### SUSTAINABILITY AND REMEDIATION

Applied Catalysis for Environmental Applications, Organizers: Alexander Orlov, alexander.orlov@stonybrook.edu; Adita Savara, savaraa@ornl.gov; Shen Zhao, szhao@bnl.gov

Disinfection By-Products: What Have we Learned about Dissolved Organic Matter Precursors? (Cosponsor: AEESP), Organizers: Michael Gonsior, *gonsior@umces.edu*; Olya Keen, *okeen@uncc.edu*; Julie Korak, *Julie.Korak@usbr.gov*; Lee Blaney, *Blaney@umbc.edu*; Alex Chow, *achow@clemson.edu*; Haizhou Liu, *haizhou@engr.ucr.edu* 

Innovative Materials & Technologies for Environmental Sustainability (Cosponsor: ENFL), Organizers: Wen Zhang, *wzhang81@njit.edu*; Qilin Li, *qilin.li@rice.edu*; John C. Crittenden, *john.crittenden@ce.gatech.edu* 

Laboratory Environmental Safety, Organizers: Olubunmi Ogunsola, Olubunmi.Ogunsola@howard.edu

Nanotechnology for Environmental Solutions & Remediation, Organizers: Kiril Hristovski, kiril.hristovski@asu.edu; Maximiliano Cledon, Maximiliano.cledon@ete.inrs.ca; Damià Barceló Cullerès, dbcqam@cid.csic.es

**Occurrence, Behavior & Remediation of Mixed Organic Pollution in Soil & Sediment** (Cosponsor: AGRO), Organizers: Lizhong Zhu, *zlz@zju.edu.cn*; Baoshan Xing, *bx@umass.edu*; Xiang-dong Li, *cexdli@polyu.edu.hk* 

**Poly- & Perfluoroalkyl Substances: Environmental Behavior & Pollution ControL**, Organizers: Qingguo (Jack) Huang, *qhuang@uga.edu*; Erica McKenzie, *ermckenzie@temple.edu*; Linda S. Lee, *lslee@purdue.edu*; Dora Chiang, *dora.chiang@aecom.com*; David Woodward, *david.woodward@aecom.com* 

**Recent Advances in Remediation Strategies & Technologies for the Cleanup of Hazardous Waste Sites**, Organizers: Anh Pham, *a.pham@carleton.ca*; Erica McKenzie, *ermckenzie@temple.edu* 

#### HONORARY SYMPOSIA

Aquatic Chemistry: Interfaces of Organic, Inorganic & Surface Chemistry in Natural & Engineered Systems, A Symposium in Honor of Professor Alan T. Stone, Organizers: Ching-Hua Huang, ching-hua.huang@ce.gatech.edu; Baolin Deng, DengB@missouri.edu; Timothy Strathmann, strthmnn@mines.edu; Dharni Vasudevan, dvasudev@bowdoin.edu

**C. Ellen Gonter Graduate Student Award Symposium**, Organizers: Todd Anderson, *todd.anderson@ttu.edu* 

Chemistry of Environmental Sorptive & Oxidative Processes: A symposium in honor of Joseph J. Pignatello, Organizers: Feng Xiao, *fxiaoee@gmail.com*; Allison MacKay, *mackay.49@osu.edu*; Dongye (Don) Zhao, *zhaodon@auburn.edu*; Michael Sander, *michael.sander@env.ethz.ch*; Baoshan Xing, *bx@umass.edu* 

Formation & Transformation of Atmospheric Aerosols: Air Pollution to Climate Change--A Symposium in Honor of Professor Renyi Zhang, Organizers: Alexei Khalizov, *alexei.khalizov@njit.edu*; Min Hu, *minhu@pku.edu.cn*; Yuan Wang, *yuan.wang@jpl.nasa.gov*; Chong Qiu, *cqiu@una.edu*; Virender Sharma, *vsharma@sph.tamhsc.edu* 

#### GENERAL ENVIRONMENTAL CHEMISTRY

General Posters, Organizer: Dionysios D. Dionysiou, dionysios.d.dionysiou@uc.edu

#### SYMPOSIA COSPONSORED BY ENVR

[AGRO] Good Laboratory Practices for the Agrochemical Professional

[ENFL] Water-Energy Nexus

[PHYS] Physical Chemistry of Atmospheric Processes



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Bioanalytical Tools for Chemicals of Emerging Concern in the Environment

## 252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"* **Philadelphia, Pennsylvania** August 21-25, 2016

Abstract Deadline: March 21, 2016

This symposium will explore the presence of chemicals of emerging concern in various environmental compartments and in food with a particular focus on bioanalytical techniques. Increasing concern about the ever-growing list of chemicals present in our food and water is driving the development of more sensitive analytical methodologies and instrumentation. But does traditional targeted chemical analysis provide relevant evidence for unregulated and emerging contaminants of concern when determining down to sub-ppt levels? Will the focus on achieving the lowest quantifiable level possible alone help us to assess the risk in the environment? Core areas that will be covered in this discussion include instrumentation and new technologies, chemicals of emerging concern and associated risks, minimizing occurrence at the treatment plant, and the road ahead for regulations. Combining biological assays and advanced mass spectrometry are tools for understanding and minimizing risks to humans and effects on ecosystems. Current approaches for critical monitoring points in drinking water systems and contaminant removal by fully available treatment technologies will provide practical guidance. Alternative and advanced treatment applications will be presented for potable and non-potable water supplies.

The topics that would be covered in this session are, but are not limited to:

- Bioanalytical tools and applications
- Characterizing risk and exposure
- Matrices including drinking water, indirect and direct potable reuse
- Application NF and RO membranes
- Sources for occurrence and removal (pharma, health care facilities, and landfills)
- DBPs, PPCPs, cyanotoxins, hydraulic fracturing waste, microbial contaminants

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Ruth Marfil-Vega, PhD Ruth.Marfil-Vega@amwater.com

Lauren Weinrich, PhD Lauren.weinrich@amwater.com



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### CALL FOR PAPERS

# Chemical and biological transformations in produced fluids from unconventional hydrocarbon extraction

252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

#### Abstract Deadline: March 21, 2016

Unconventional hydrocarbon production techniques, such as oil sands extraction, high volume horizontal drilling and hydraulic fracturing, and acid stimulation, rely on the use of a broad array of chemical additives in the industrial process. Whether introduced intentionally or accidentally released to the environment, these materials will undergo a series of both biological and abiotic transformation reactions that could give rise to a diverse suite of chemical materials with structures anticipated and unanticipated. In order to predict and prevent environmental damages associated with these burgeoning industries, we must develop a detailed understanding of these transformation pathways, timescales, and end products. Here, we solicit abstracts that attempt to elucidate these pathways, so that the salient risks and opportunities can be identified to aid in the sustainable development of these unconventional fuel extraction processes, which have become a critical component of the American energy portfolio.

The topics that would be covered in this session are, but are not limited to:

- Biological degradation of produced and flowback fluids
- Abiotic transformations of produced and flowback fluids
- Composition and fate of hydraulic fracturing water or oil sands extraction waters
- Transformations at high pressures and elevated temperatures typical of subsurface geologic environments
- Halogenation reactions of organic additives in association with brines or chlorination agents
- Analytical methods in transformation and pathway prediction
- Fate of fluids and chemicals in surface waters and subsurface environments

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Paula J. Mouser, PhD	Desiree L. Plata, PhD
Assistant Professor,	Assistant Professor,
Department of Civil, Environmental, and	Department of Chemical and Environmental Engineering
Geodetic Engineering	Yale University
The Ohio State University	Desiree.plata@yale.edu
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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# Combined Biological-Chemical Reactions for Contaminant Transformation

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, for the People and by the People"*  **Philadelphia, Pennsylvania** August 21-25, 2016

#### Abstract Deadline: March 21, 2016

This session will exhibit strategies and technologies for in situ and ex situ remediation that combine biological processes with chemical reactions for faster and more complete contaminant transformation. Recently, researchers and practitioners alike have recognized that combining biological and chemical technologies can lead to better overall contaminant reduction, oxidation, or detoxification. This session will focus on biological metabolism and secondary chemical reactions, as well as chemical remediation strategies followed by stimulated microbial processes.

The topics that would be covered in this session are, but are not limited to:

- Fe(III) reduction and ferrous iron mediated reduction
- Combining ZVI with microbial metabolism
- Extracellular electron transfer via soluble compounds or electrodes
- Chemical oxidation followed by microbial respiration
- Delivery of microbes plus substrates in emulsified, hydrophobic molecules
- Sulfate reduction and sulfide mineral mediated reductive processes
- Activated carbon electron transfer via microbial biofilms

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Kevin Finneran Clemson University Environmental Engineering and Earth Sciences <u>ktf@clemson.edu</u> 864-656-4143 Ed Bouwer Johns Hopkins University Department of Geography and Environmental Engineering bouwer@jhu.edu 410-516-7437



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### CALL FOR PAPERS

## Microbial and Molecular Tools to Determine the Fate and Biotransformation of Emerging Contaminants

252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

#### Abstract Deadline: March 21, 2016

This symposium invites studies on the use of both conventional and more recent, high-throughput microbial ecology tools relative to the fate and biotransformation of emerging contaminants. The advent of emerging contaminants requires interdisciplinary approaches for their detection and safe removal from environmental matrices. The symposium aims to bring researchers from diverse backgrounds to contribute different perspectives and provide new skillsets towards addressing this environmental challenge. Subjects of interest are isolation, identification, and enrichment of cultures, along with community structure analysis at the population and species level. Studies on functional analyses of specific genes, enzymes, and metabolic pathways to provide detailed information on cellular and molecular mechanisms of biotransformation are particularly invited. Evaluations of the impact of emerging contaminants in environmental matrices, such as antibiotic resistance, toxicity, mutations, etc., as well as studies on fundamental topics applied to engineered treatment systems are encouraged to apply. Overall, topics to be covered in this session are, but not limited to:

- Microbial biotransformation
- Biochemical and enzymatic assays
- Antibiotic resistance
- Toxicity

- Biological sensors and markers
- Microbial community analyses
- Metagenomics & Metatranscriptomics
- Environmental bioinformatics

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at <u>https://maps.acs.org</u>. General information about the conference can be found at <u>www.acs.org/meetings</u>. Any other inquiries should be directed to the symposium organizers:

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#### CALL FOR PAPERS

## Nanomaterials in the Environment and Biological Systems: Physicochemical and Biological Processes Affecting Their Transformation and Transport

## At 252nd ACS National Meeting & Exposition Philadelphia, Pennsylvania August 21-25, 2016

#### Abstract Deadline: March 21, 2016

Nanomaterials have been developed for multiple uses and are commonly found in many consumer products. Additionally, nanotechnology tools are widely used to analyze physical-chemical properties of materials in a variety of industrial and commercial applications. Nanotechnologies are among the fastest growing topics of scientific research and are on the cutting edge in many interdisciplinary research areas, and have already impacted textile production, biomedicine, renewable energy, environmental systems, health care, electronics, and food agriculture. The increased manufacturing of nanomaterials has attracted more attention to both the release routes of nanoparticles and their potential adverse effects on the environment and human health. However, the physicochemical and biological processes affecting the transformation and transport of nanomaterials after being released have been relatively neglected and therefore provide new research avenues to explore in this field.

Issues being discussed around nanotechnology applications in general include the lack of long-term safety data, assessments limited to a case-by-case basis, lack of evidence regarding human risk, and a lack of analytical tools to evaluate the safety of nanomaterials used in consumer products. These results will not be informative without prior research that investigates the environmental processes that may affect the transport and transformation of nanomaterials being used in the environmental and biological systems. From the perspective of the impact of nanomaterials on the environment and biologically relevant entities, the overall objective of this symposium is to discuss recent discoveries on the behavior of nanomaterials in environmental systems and the versatile properties of nanomaterials and the environmental factors influencing their transformation and mobility. The symposium's specific aims are to 1) focus on the behavior of nanomaterials; 3) comprehend the interaction of nanomaterials in abiotic and biotic systems as to how the physicochemical and biological processes affect nanomaterials released into the environment; 4) identify the transformation and transport pathways of nanomaterials in the environment, cells, animals, and humans, which will help in determining the ultimate impact of nanomaterials on health and the environment; and 5) offer a forum to discuss sustainable applications for nanomaterials.

Papers concerning any of the topics relevant to the aforementioned objectives are welcome and will be considered. The general guidelines and instructions for submissions can be found at <u>www.acs.org/meetings</u> and the ACS Meeting Abstracts Programming System (MAPS) at http://maps.acs.org.

Should any authors have questions or need further information, they can contact the symposium organizers listed below:

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 

ACS Division of Environmental Chemistry

CALL FOR PAPERS

# Advances and Challenges in Food-Energy-Water Nexus

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"*  **Philadelphia, Pennsylvania** August 21-25, 2016

Abstract Deadline: March 21, 2016

Providing an adequate supply of fresh water, food and energy is one of the grand challenges in the current century due to climate change, population and industrial growth. Moreover, food, energy and water (FEW) sectors are interrelated. Sustainable management of the integrated FEW system relies on balancing a complex set of technological and institutional approaches. Sustainable and energy efficient technologies are needed to combat current and future global challenges in the context of food-energy-water nexus.

This symposium welcomes research papers that describe recent advances in the context of food-energy-water nexus. The topics that would be covered in this session are, but are not limited to:

- Increasing water usage efficiency in energy and agricultural sectors
- Energy efficient water treatment and distribution
- Water reuse in energy and irrigation
- Management of agriculture runoffs

- Sensors including water and food quality monitoring
- Membranes in the context of FEW nexus
- Reduction and beneficial usage of food waste
- Integrated modeling for management of water

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Indranil Chowdhury, Ph.D. Assistant Professor Civil and Environmental Engineering Sloan Hall 111 Washington State University Pullman, WA <u>Indranil.chowdhury@wsu.edu</u> 509-335-3721 (Phone) Yuehe Lin, Ph.D. Professor, School of Mechanical and Materials Eng. Adjunct Professor, Paul G. Allen School for Global Animal Health Washington State University Pullman, WA 99164-2920 Tel: (509) 335-8523 Email: <u>yuehe.lin@wsu.edu</u> Dionysios (Dion) D. Dionysiou, Ph.D. UNESCO Co-Chair Professor of "Water Access and Sustainability" Professor of Environmental Engineering Department of Biomedical, Chemical and Environmental Engineering (DBCEE) 705 Engineering Research Center University of Cincinnati Cincinnati, OH 45221-0012 Phone (513) 556-0724 Email: dionysios.d.dionysiou@uc.edu Soryong Chae, Ph.D. Assistant Professor Department of Biomedical, Chemical and Environmental Engineering University of Cincinnati Cincinnati, OH 45221-0012 Email: chaesg@ucmail.uc.edu



## **CALL FOR PAPERS** Advances in innovative designs and process cost estimation techniques for advanced water purification technologies

At 252nd ACS National Meeting & Exposition Philadelphia, PA August 21-25, 2016 Abstract Deadline: March 21, 2016

Water scarcity and lack of safe drinking and recreational water are some of the most serious challenges of our time. Water, our most vital element for life and the fundamental building block for human civilization and economic development, is becoming perilously scarce in many parts of the world. Although the problem persisted throughout human history, the rapid growth of the population and the increased per capita consumption, together with the fast growth of urbanization, are creating critical water demand. In addition to water scarcity, water quality continues to be a major threat to human health and well-being. At present, over 1 billion people lack access to clean water, nearly all of them in developing countries. Processes for treating drinking water, wastewater, and water reclamation face several current and future challenges. These include less efficient treatment of trace-level emerging organic micro-pollutants, reactivation of bacteria and viruses, and high-energy consumption operations. Development of innovative, eco-friendly, cost-effective approaches to solving water scarcity and safety problems, is of great technological, societal, cultural, economical and political importance. In this symposium, we invite submissions of new designs and technological approaches for advanced water purification, from academic, industrial and government sectors, which advance the goals of energy reduction, cost reduction, performance improvement, applicability in developing countries and versatility of use. This symposium also seeks contributions that advance the fundamentals and understanding of energy and process cost estimation techniques for advanced water purification technologies, including advanced oxidation, membrane, catalytic, physical-chemical, biological and hybrid or combinative purification processes.

Please submit your short abstracts (150 words or less) using the ACS Meeting Abstracts Programming System (MAPS) at <u>https://maps.acs.org</u> between January 25 – March 21, 2016. Any other inquiries should be directed to the symposium organizers:

Yusuf G (Debo) Adewuyi, PhD North Carolina A&T State University Chemical, Biological and Bioengineering 317 McNair Hall Email: <u>adewuyi@ncat.edu</u> Phone: (336) 285 - 3651

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Advances in understanding PPCP fate in wastewater collection and treatment systems

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"*  **Philadelphia, Pennsylvania** August 21-25, 2016

Abstract Deadline: March 21, 2016

Since the publication of Kolpin et al. (2002) there has been identification of new pharmaceutical and personal care products (PPCP) of emerging interest in wastewater, advances in treatment processes, and increasing interest in using sewage systems for monitoring public health. This symposium offers an opportunity to share the latest in our understanding of the processes controlling PPCP and other pollutant fate in wastewater collection and treatment systems.

The topics that would be covered in this session are, but are not limited to:

- Illicit drug surveillance
- Sewage epidemiology
- Microplastics
- PPCP transformations

- Advanced oxidation processes
- Emerging contaminants

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# Chemistry of Biomass Waste Conversion to Energy and Chemicals

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"*  **Philadelphia, Pennsylvania** August 21-25, 2016

Abstract Deadline: March 21, 2016

Biomass waste presents significant environmental challenges if not managed properly, but also has great potential to be used as renewable resource for production energy and chemicals. Three major pathways have been developed to convert biomass waste to energy and chemicals: biochemical, thermochemical and physicochemical. Fundamental understanding the chemistry of these processes will lead to significant advancements in developing cost-effective conversion technologies. This symposium aims to create a multidisciplinary platform for chemists and engineers with diverse expertise to communicate the latest scientific discoveries and applied engineering on biomass waste conversion. The organizers particularly encourage submissions of 3 areas: lignocellulosic biorefinery, municipal biowaste conversion and industrial biowaste utilization

The topics that would be covered in this session are, but are not limited to:

Lignocellulosic Biorefinery

- Deconstruction of lignocellulosic biomass
- Thermochemical and biological pretreatment
- Enzymatic hydrolysis
- Microbial fermentation
- Microalgal cultivation and utilization
- Catalytic conversion of biomass

Municipal biowaste conversion

- Biomass waste conversion and utilization
- Production of biochar from biomass waste
- Biomass waste incineration
- Biomass waste combustion

Industrial biowaste utilization

- Sewage sludge reuse
- Sludge treatment and disposal
- Wet oxidation of biowaste

- Biomass power generation
- Biorenewables
- Biorefinery
- Pyrolysis
- Liquefaction
- Gasification
- Anaerobic digestion
- Production of activated carbon from biowaste
- Pyrolysis or gasification of biowaste
- Sewage sludge combustion
- Food wastes recycling
- Paper sludge conversion and utilization

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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#### Maobing Tu, Ph.D.

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### CALL FOR PAPERS

# **Creating and Exploiting Salinity Gradients**

## 252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

#### Abstract Deadline: March 21, 2016

Salinity gradients exist when two waters have different salt concentrations, and they can be created to desalinate water or exploited to produce renewable, carbon-less electricity. Currently, several technologies are being developed that rely on membranes and/or electrochemical principles to achieve these tasks efficiently. Naturally occurring salinity gradients occur when freshwater mixes with seawater, releasing an immense amount of potential energy equivalent to freshwater flowing over a 270 m tall dam into the ocean. Artificial salinity gradients can also used to generate electricity from other untapped energy supplies. For example, waste heat can be used to generate salinity gradients from thermolytic salts, which have highly temperature-dependent solubilities. In this session, we invite contributions that explore all aspects of capturing and generating salinity gradient energy, ranging from experimental measurements to calculations and simulations.

The topics that will be covered in this session include, but are not limited to:

- Capacitive Deionization
- Reverse Osmosis
- Forward Osmosis
- Electrodialysis
- Distillation
- Electrode Materials

- Capacitive Mixing
- Pressure Retarded Osmosis
- Mixing entropic batteries
- Reverse Electrodialysis
- Waste Heat Recovery /Thermal batteries
- Thermolytic Salts

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

#### Christopher Gorski

- Asst. Professor Department of Civil & Environmental Engineering Pennsylvania State University University Park, PA gorski@psu.edu
- Asst. Professor Department of Chemical

**Meagan Mauter** 

Engineering and Engineering and Public Policy Carnegie Mellon University Pittsburg, PA mauter@cmu.edu

#### Bruce Logan

Kappe Professor of Environmental Engineering Pennsylvania State University University Park, PA blogan@psu.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 

#### **CALL FOR PAPERS**

# Nanotechnology for Sustainable Agriculture and Food

## **Systems**

At 252<sup>nd</sup> ACS National Meeting & Exposition

## Philadelphia, Pennsylvania

August 21 – 25, 2016 Abstract Deadline: November 25, 2015

Safely and sustainably feeding an estimated 9.6 billion people by 2050 is one of the most daunting tasks facing society today. Food quality and safety is an important aspect of promoting sustainability at the Food-Energy-Water (FEW) Nexus, and is strongly dependent on its interrelationship with water and energy use. Nanotechnology will play a critical role in sustainably meeting society's demand for food while minimizing energy and water inputs. This session invites papers on nano-scale materials, devices, and nano-enabled processes aimed at improving food security and overall sustainability at the FEW nexus. We welcome technical abstracts that include but are not limited to nano-enabled approaches to minimize food waste; nano-enhanced antimicrobial techniques to reduce risks from food-borne illnesses and also decrease food spoilage; sensor development for water management, detection of food pathogens and toxicants, detection of macro- and micro-nutrients, and animal health monitoring; nanomaterials for advanced food packaging; nanomaterials and nano-enabled devices for water treatment relevant to agricultural and food industry needs; nano-enabled technology development for agricultural waste management and nutrient recovery; development of nano-enabled and multifunctional materials for efficient fertilizer, pesticide, and nutrient delivery; nano-scale vaccines for efficient food production; and techno-economic analyses of components of the food-energy-water system. Talks that present findings in the context of overall minimization of system inputs will be prioritized.

#### **Organizers:**

Navid B Saleh, Ph.D. Assistant Professor Civil, Architectural and Environmental Engineering University of Texas at Austin Austin, TX 78712 email: navid.saleh@utexas.edu

Jason C. White, Ph.D. Vice Director and Chief Analytical Chemist The Connecticut Agricultural Experiment Station 123 Huntington Street P.O. Box 1106 New Haven, CT 06504-1106 email:Jason.White@ct.gov

Gregory V. Lowry, Ph.D. Walter J. Blanko Sr. Professor Civil and Environmental Engineering Carnegie Mellon University Pittsburgh, PA 15213 email: glowry@cmu.edu Phillip Demokritou, Ph.D. Associate Professor, Director, Center for Nanotechnology and Nanotoxicology Department of Environmental Health T.Chan Harvard School of Public Health Harvard University Boston, MA 02115 email: pdemokri@hsph.harvard.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Impacts of energy systems on drinking water treatment plants

252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

Interest in how energy systems affect water quality has grown over the last several years, which has led to research and regulations around this topic. For instance, the EPA initiated a detailed on the potential impacts of hydraulic fracturing on drinking water resources in 2011, and a draft report was issued in August 2015. Also, the Steam Electric Power Generating Effluent Guidelines and Standards, finalized in November 2015, were the first update to power plant wastewater regulations in more than thirty years.

Energy extraction and utilization activities are water-intensive, using large volumes of water and producing large volumes of wastewater. These wastewaters often contain high concentrations of constituents of interest for drinking water (e.g., TDS, chloride, sulfate, bromide). Energy associated wastewaters include conventional and unconventional oil and gas produced water, coal-fired power plant wet flue gas desulfurization wastewater, and coal mining and processing wastewater. The goal of this symposium is to discuss research progress and future directions in energy system effects on drinking water quality.

The topics that would be covered in this session are, but are not limited to:

- Constituents of energy wastewaters
- Treatment options for energy wastewaters
- Bromide in fossil fuel wastewater
- Effects of bromide on DBP formation
- TDS, sulfate, chloride and taste and odor issues
- Monitoring
- Modeling
- Proximity analysis

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Jeanne M. VanBriesen, Ph.D., P.E. Carnegie Mellon University 5000 Forbes Avenue, Porter Hall Pittsburgh, PA 15213-3890 Phone: 412-268-4603 Email: jeanne@cmu.edu Kelly D. Good Carnegie Mellon University 5000 Forbes Avenue, Porter Hall Pittsburgh, PA 15213-3890 Email: kdg@cmu.edu



## CALL FOR PAPERS Water Purification Systems

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"* Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

More than one billion people in the world drink unclean water from various sources. These sources are exposed to multiple contaminants including metals, herbicides, pesticides, pharmaceuticals, etc. It is necessary to diligently monitor source and non-source pollution, using sophisticated methods. Our pursuit of better food production leads to pollution by herbicides and pesticides. The contamination by pharmaceuticals can occur from our sanitation systems that carry human waste, because the drugs are not effectively removed from wastewater. Arsenic contamination of groundwater can occur from mother Earth. This is a major problem worldwide, including the United States. Arsenicosis, resulting from drinking arsenic-contaminated water, affects around 200 million people worldwide; it can lead to an excruciating death. Lectures that cover the following topic would be welcome; monitoring ultratrace contaminants, wastewater monitoring, elimination of contaminants of concern from wastewater, family, or community-based water purification systems. Solutions that offer major improvements in water purification technologies, at reasonable costs, will be of great significance.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at <u>http://maps.acs.org</u> by March 21, 2016. Any other inquiries should be directed to the symposium organizer:

Satinder (Sut) Ahuja PhD President, Ahuja Consulting 1061 Rutledge Court Calabash, NC 28467 Sutahuja@atmc.net Tel: 910 287 7565 Email: <u>sutahuja@atmc.net</u>



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### **CALL FOR PAPERS**

# Advances in Understanding Antibiotics, Antibiotic Resistance Genes, and Antibiotic-Resistant Bacteria in Engineered and Natural Environments

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"*  **Philadelphia, Pennsylvania** August 21-25, 2016

Antimicrobial resistance is a serious threat to global public health. This symposium will focus on current advances in understanding of occurrence, fate and transport, and treatment for antibiotics, antibiotic resistance genes, and antibiotic-resistant microorganisms in engineered systems and the natural environment.

The topics that would be covered in this session are, but are not limited to:

- Occurrence of antibiotics, antibiotic resistance genes (ARGs), and antibioticresistant bacteria (ARB) in water, wastewater, and soils, and reclaimed water, biofilm, membrane bioreactors, and natural environment
- Novel methods /sensors for detection and quantification of antibiotics, ARGs, ARB.
- Determination the fate of antibiotics and their transformation products during treatment processes (biological, chemical and physical)

- Determination fate and transport of ARGs and ARB in the environment
- Accounting for the natural soil resistome to improve understanding of the impacts of trace chemicals in the environment.
- Novel strategies, treatment methods, or materials for removing antibiotics, controlling ARGs and ARB from water and wastewater.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Organizers: Kung-Hui Chu, Associated Professor Civil Engineering, Texas A&M University kchu@civil.tamu.edu. Co-organizers: Ching-Hua Huang, Professor School of Civil and Environmental Engineering, Georgia Institute of Technology ching-hua.huang@ce.gatech.edu

Jean E. McLain, Associate Director Water Resources Research Center Associate Research Scientist, Soil, Water and Environmental Science, University of Arizona, mclainj@email.arizona.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# Advancing Teaching and Learning in **Environmental Chemistry Courses: Innovative Tools and Techniques**

252<sup>nd</sup> American Chemical Society National Meeting & Exposition "Chemistry of the People, by the People, and for the People" Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

What does effective teaching and learning look like in environmental chemistry courses? What newly-developed (or tried-and-true) pedagogical tools are proving useful in promoting deeper understanding of environmental chemistry for millennial undergraduate and graduate students? How can we improve our ability to train these students in the dynamic sub-disciplines of environmental chemistry? How can this knowledge be integrated into a laboratory or field setting? We invite papers that address these and related questions central to the art and science of teaching environmental chemistry.

The topics that would be covered in this session are, but are not limited to:

- Novel pedagogical methods, materials, and curricula for Instructional materials and methods for environmental chemistry courses at the undergraduate and graduate courses spanning a range of sublevels, including: disciplines, including: Problem-based learning and flipped classrooms o Aquatic chemistry 0 Incorporation of technology o Marine chemistry 0 Teaching and learning in online courses o Atmospheric chemistry 0 Universal design for learning 0 0 • Novel design of hands-on training inorganic, and analytical chemistry o Biogeochemistry Strategies for overcoming pedagogical challenges, including: • o Actinide chemistry • Balancing quantitative and qualitative reasoning Laboratory and field courses in Teaching classes with students whose interests span multiple 0 environmental chemistry scientific and engineering disciplines
  - Teaching students with minimal (or long-forgotten) prior 0 preparation in chemistry and mathematics
- Environmental applications of organic,
- 0 Undergraduate courses for non-STEM majors

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

#### **Prof. John Sivev**

Department of Chemistry **Towson University** Phone: (410) 704-6087 E-mail: jsivey@towson.edu

#### Prof. Ning Dai

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Prof. Amisha Shah Lyles School of Civil Engineering Purdue University Phone: (765) 496-2470 E-mail: adshah@purdue.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Crystal Defects on Surface Reactivity and Heterogeneous Photocatalysis

252<sup>nd</sup> American Chemical Society National Meeting & Exposition "Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

#### Abstract Deadline: March 21, 2016

Chemical reactions always take place at phase discontinuities. Of importance are the principles and applications of interfacial reactions toward natural and build water environment. It is well agreed, but not thoroughly understood, that interfacial reactions play an important role on controlling the chemical composition of natural systems, specifically, the mode and the kinetics of hydro-geochemical processes. Furthermore, the applications of interfacial reactions for the benefits of water renovations remain topics of current interests. How interfacial reactions affect the fate and transport of chemical contaminants in natural water system? How interfacial reactions determine the rate and the efficiency of the removal of chemical contaminants from water? How to define, manipulate, crate, tailor, and characterize surface properties that control surface reactions? These are but some of the important questions remain to be answered.

The proposed symposium will have focus on crystal defects and their relationship to surface reactivity and heterogeneous photocatalysis of importance to both natural and build water systems. The primary objective of the proposed symposium is to define crystal or surface defects of natural and synthetic minerals of common environmental significance. The processes, advanced theory and methodology for the creation of surface defects in minerals as well as the applications of defect-based design of surfaces for environmental processes will be presented. The topics that would be covered in this symposium, but not limited to, are:

- Thermodynamics and kinetic aspects of crystal and mineral defects.
- Recent advances in the characterization and quantification of surface defects for nonphotocatalytic applications.
- Recent advances in the characterization and quantification of surface defects for photocatalytic applications.
- Defect design of high selectivity adsorbents.

- Defect design of supercapacitors for environmental applications.
- Defect design of catalysts for specific reduction and oxidation reactions in electrode less systems.
- Defect design of catalysts for specific reduction and oxidation reactions in electrode systems.
- Defect design of visible-light sensitivity photocatalysts.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at <u>https://maps.acs.org</u>. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Prof. C. P. Huang, University of Delaware, Newark, USA, E-mail: <u>huang@udel.edu</u>
Prof. Ruey-an Doong, National Chiao Tung University, Hsinchu, Taiwan. E-mail: <u>radoong@nctu.edu.tw</u>.
Prof. Ong Hui-lin, Universiti Malaysia Perlis (UniMAP), Perlis, Malaysia, E-mail: <u>ong.huilin@gmail.com</u>.
Prof. Dion D. Dionysiou, University of Cincinnati, Cincinnati, Ohio, USA, E-mail: <u>dionysios.d.dionysiou@uc.edu</u>



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Elements Old and New: Discoveries, Developments, Challenges, and Environmental Implications

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *Chemistry of the People, by the People, and for the People*.

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 2016

This symposium will examine the continuing, growing understanding of the periodic table of the elements and how they have been isolated. The table is hardly a static, finished document, waiting only to be read. It has been evolving since antiquity, since the first simple lists of elements, through the work of Mendeleev, his contemporaries, and more recent discoverers, with all the successes, false starts, hiccups, and predictions of any of humankind's great works. As well, it continues to evolve as researchers predict heavy elements that may prove to be stable.

The symposium organizers invite submissions that discuss and examine the research and stories of elemental isolation, discovery, refinement, or prediction, and the environmental impacts that have accompanied them. They also encourage potential symposium presenters to consider their seminars as chapters for an ACS Symposium Volume work from this subject, the details of which the symposium organizers are finalizing.

The topics that would be covered in this session are, but are not limited to:

- elements
- periodic table
- environmental chemistry
- nomenclature

- history of the elements
- (aligns with the theme of the meeting)

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Tracy Williamson, Environmental Protection Agency, Williamson.Tracy@epa.gov Mark A. Benvenuto, University of Detroit Mercy, benvenma@udmercy.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# Nanoceria and the Environment: Assessment Throughout the Entire Life Cycle

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"*  **Philadelphia, Pennsylvania** August 21-25, 2016

#### Abstract Deadline: March 21, 2016

Of the many engineered nanomaterials being incorporated into our society, cerium oxide nanoparticles (nanoceria) are receiving increased attention due to their unique chemical properties and vast number of current and potential applications, spanning from automotive catalysts and UV filters to agricultural treatment agents and antioxidant therapeutics. As the overall fate and impact of nanoceria exposure to the environment is still not fully known, it is imperative to develop a comprehensive understanding of their properties and effects throughout their entire life cycle. The goal of this symposium is to highlight advances in nanoceria analysis and assessment throughout the material's entire life cycle, from manufacture to disposal, keeping researchers informed of the current research progress in our field.

The topics that would be covered in this session include, but are not limited to:

- Advances in the preparation of nanoceria with tailored physicochemical properties
- Method development for accurate characterization of nanoceria in environmentally relevant media
- Emerging uses of nanoceria for environmental and biological applications
- Monitoring nanoceria transformation within environmental and biological media
- Evaluating the impact of nanoceria interaction with environmental and biological systems
- Recommendations for better assessments of nanoceria in the environment

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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Bryant C. Nelson Biosystems and Biomaterials Division National Institute of Standards and Technology bryant.nelson@nist.gov



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Next Generation Techniques for Prevention and Precise Growth of Biofilms at the Interface of Nanomaterials and Electrochemistry

252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

Biofilms are the predominant form of microbial life on wet surfaces. They play a pivotal role in both natural and engineered environments. Biofilm formation is often times an expensive operational problem for marine industry, desalination plants, cooling towers and water treatment plants. Select biofilms are notorious for their ability to induce metallic corrosion. On the other hand, biofilms are found beneficial in the engineering applications including bioremediation, biofuel production, microbial bioelectrochemical systems, and wastewater treatment. However, the sessile mode of bacterial existence has been a topic of intense research only in the past three decades, and thus biofilms present an underexplored research arena, especially at the intersection of environmental engineering and science, and nanotechnology. The advances in nano-scale coatings and nanomaterials have enabled the development of new tools with an ability to precisely control and manipulate biofilm growth and its properties – for the growth of beneficial biofilms and detachment of undesirable biofilm assemblages. The R&D efforts are also underway to mimic the natural surfaces (e.g. lotus leaf) and develop novel anti-biofouling surfaces with self-cleaning properties. In this symposium, we invite submissions to uncover the influence of physicochemical factors (e.g., solution chemistry), electrical parameters (e.g. voltage gradient in electrically conducting surface), emerging contaminants, nanomaterials, quorum-sensing molecules on the biofilm evolution. We welcome the emerging topics on instrumentation and advanced techniques for the measurement of biofilm properties (e.g. antibiotic properties; roughness, and thickness; cell-cell communication, extracellular polymeric substances, and mechanical properties such as tensile strength).

The topics that would be covered in this session are, but are not limited to:

- Biofilms in distribution systems
- Microbial corrosion
- Electrochemically active biofilms
- Membrane biofouling
- Biofilm Reactors

- Beneficial biofilms
- Surface modifications to prevent biofouling
- Mechanical properties of biofilms
- Biofilm-nanoparticle interactions
- Microbial bioelectrochemical systems

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

Venkata R. Gadhamshetty, Ph.D South Dakota School of Mines & Technology, Rapid City, SD 57701 Venkata.Gadhamshetty@sdsmt.edu **Appala Raju Badireddy, Ph.D**. University of Vermont, Burlington, VT 05405 abadired@uvm.edu **Srijan Aggarwal, Ph.D.** University of Alaska Fairbanks, Fairbanks, AK 99701 saggarwal@alaska.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



**CALL FOR PAPERS** 

# Understanding Nanomaterial Behavior – Breakthroughs and Challenges

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, and for the People"* 

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

This symposium will highlight groundbreaking and/or potentially transformative developments in understanding nanomaterial behavior in biological and ecological media. The major goal will be to establish a roadmap for the development of robust risk assessment and management strategies for nanomaterials. It will also provide perspectives from leading researchers, program managers and industrial representatives on current challenges in accelerating the development of innovative and useful nanomaterials, devices and systems. This symposium will also feature an extended questions and answers session, where attendees and panel members will engage in dialogue to develop future vision of this exciting field.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any general inquiries should be directed to Dr. Alexander Orlov.

Prof. Alexander Orlov Materials Science and Engineering Dept. SUNY Stony Brook Email: <u>alexander.orlov@stonybrook.edu</u> Dr. Nora Savage Nano-Bio Phenomena and Processes in the Environment (NPPE) Program National Science Foundation



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### CALL FOR PAPERS

# Applied Catalysis for Environmental Applications

252<sup>nd</sup> American Chemical Society National Meeting & Exposition "Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

#### Abstract Deadline: March 21, 2016

This symposium will highlight new developments in heterogeneous catalysis geared towards protecting the environment and human health. It will focus on application of catalysts to environmental remediation, ranging from vehicle emissions to reducing indoor air pollution to reducing water pollution. The topics that would be covered in this session are, but are not limited to:

- Heterogeneous catalysis for air and water treatment (indoor and outdoor).
- Heterogeneous catalysis for greenhouse gas reduction and usage.
- Heterogeneous catalysis for fuel processing and fuel cells.
- Automotive and combustion exhaust treatment.
- Heterogeneous catalysis for hydrogen production.
- Photocatalysis and electrocatalysis for environmental protection.
- Catalytic membrane materials for separation and reaction.
- Catalytic hydrodechlorination.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any general inquiries should be directed to Dr. Alexander Orlov.

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Dr. Aditya (Ashi) Savara Oak Ridge National Laboratory Email: <u>savaraa@ornl.gov</u>

Dr. Shen Zhao Postdoctoral research associate: University of Illinois at Urbana-Champaign; Visiting scientist: Brookhaven National Laboratory

Email: <u>szhao@bnl.gov</u>



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# Disinfection By-Products: What have we learned about Dissolved Organic Matter Precursors?

252<sup>nd</sup> American Chemical Society National Meeting & Exposition "Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

Dissolved organic matter (DOM) affects drinking water treatment processes around the world, but specific regions face unique treatment challenges due to differences in source water quality and regulatory framework. Knowledge transfer between biogeochemists and environmental engineers is crucial to advance our understanding of DOM and its complexity as precursors of disinfection by-product (DBP) formation. For example, unique species distributions of DBPs have been shown to be formed in desalinated water compared to freshwater, water impacted by wildfires, and algal impacted waterbodies. DBP formation from diverse DOM sources is an emerging drinking water treatment challenge and a timely topic in light of changing water source quality due to climate change. Hence, a more detailed understanding of emerging DBP precursors will be discussed in this session.

Possible topics include, but are not limited to:

- DBP precursors from wildfire impacted watersheds
- Algal-derived DBPs
- Micropollutants as DBP precursors (pharmaceuticals, personal care products, etc.)
- DOM chemodiversity and its link to DBP formation
- DBP formation during wastewater disinfection
- Emerging DBPs in water reuse and desalination
- Analytical advances in DBP identification
- DBP formation from alternative disinfectants

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

#### **Michael Gonsior**

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#### Lee Blaney

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#### Olya Keen

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#### Haizhou Liu

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### **CALL FOR PAPERS**

#### Innovative Materials and Technologies for Environmental Sustainability

252<sup>nd</sup> American Chemical Society National Meeting & Exposition "Chemistry of the People, by the People, and for the People" Philadelphia, Pennsylvania August 21-25, 2016 Abstract Deadline: March 21, 2016

Development of advanced materials plays a pivotal role in addressing the grand challenges we face in global water, energy, food, and environmental protection. For example, emerging contaminants such as oxyanions, endocrine disrupting compounds, pharmaceutical and personal care products, disinfection byproducts, and persistent waterborne pathogens pose significant threat on natural water resources and human health. Conventional water and wastewater treatment processes may not effectively remove all of them in cost efficient manner. On the other hand, wastewater or solid waste may contain valuable substances (noble metals and nutrients) or energy sources that can be extracted to offset the cost of waste treatment. Other renewable energy resources such as solar, thermal, and salinity gradient power generation are also worth exploring to be tapped into the water/wastewater treatment processes. This symposium aims to exhibit existing or potential opportunities with the development of novel materials and technologies that we possible tackle the challenges in pollution removal or mitigation, resource recovery, and integration of renewable sources in water/wastewater treatment processes. Both fundamental and applied research with focuses on the interfaces of innovative materials and technologies are particularly welcome.

#### Suggested topics are, but are not limited to:

• New materials for degradation or conversion of recalcitrant contaminants (e.g., advanced oxidation or reduction processes, photocatalytic and electrochemical processes, microbial electrolytic processes)

• Separation via novel reactive membrane processes (e.g., electrochemically or biologically reactive), ion-exchange, adsorption, and capacitive deionization

• Emerging energy sources to drive water and wastewater treatment processes (e.g., solar, thermal, and salinity gradient)

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at <u>https://maps.acs.org</u>. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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John C. Crittenden, Ph.D., P.E., N.A.E. United States Member of the National Academy of Engineering China's Member of the National Academy of Engineering Director of the Brook Byers Institute for Sustainable Systems Hightower Chair and GRA Eminent Scholar in Sustainable Systems School of Civil and Environmental Engineering, Georgia Institute of Technology Phone: (404) 894-5676 Email: john.crittenden@ce.gatech.edu



**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



#### CALL FOR PAPERS

# LABORATORY ENVIRONMENTAL SAFETY

252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, for the People and by the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 2016

This symposium will cover some aspects of responsibilities and practices of laboratory safety. The importance of better understanding the health and safety issues in the laboratories cannot be overemphasized. In order to develop culture of safety in the laboratories, there is a need for a continuing dialogue.

The topics that would be covered in this session are, but are not limited to:

- Culture of Environmental Safety in the Laboratory
- Best Practices to Improve Laboratory Safety
- Advances in Biosafety
- Chemistry of Air and Water Pollution
- Prevention and Mitigation of Environmental Impact in the Laboratory
- Policy and Regulations Guiding Environmental Safety in the Laboratory
- Solvent/Chemical Alternatives

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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#### CALL FOR PAPERS

# Nanotechnology for environmental solutions and remediation

At 252nd ACS National Meeting & Exposition

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

Nanomaterials and nanotechnology are promising fields for industrial development of innovative products that achieve higher efficiency due to the tailorable properties of the particles. Among such features, companies working in energy are interested in their increased conductivity, optimization of energy consumption, reduction of weight, and more, while food and medical industries focus on their increased opacity, antibacterial activity and coating of hydrophobic compounds among others. Moreover, the maximized surface charge of these particles can be also used to capture pollutants from indoor air and vehicles exhausts, while nano-membranes are used to reduce agrochemicals in drinking water and desalinization of marine water in desert areas. Even more, in the last decade, novel nanocomposites were developed as nano silk, chitosan and nano cellulose and many cases of production of nano metals by microorganisms were described. This findings can be integrated with inorganic nanoparticles and chemicals covering all areas of current technological research.

In this frame, this symposium aims to bring together novel research on application of nanomaterials, green production of nanomaterials, methods for environmental remediation, nano-coatings that reduce the use of toxic chemical agents, nanotrojan effects, and research on methods for recycling and recover of used nanomaterials are also of great interest for this meeting. In summary, we aim to gather researchers working for the sustainable development of environmental friendly nanotechnology that can provide solutions to reduce the carbon footprint of the global economy with developments with industrial applicability in any field.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at http://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# **Occurrence, Behavior and Remediation of Mixed Organic Pollution in Soil and Sediment**

252<sup>nd</sup> American Chemical Society National Meeting & Exposition

"Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

August 21-25, 2016

Abstract Deadline: March 21, 2016

Soil, as a complex system containing solid, liquid, gas, and organisms, is an important natural source which human depends on for living. Nowadays, soil/sediment organic pollution has become a global environmental problem. The purpose of this symposium is to discuss the current knowledge and future research directions concerning the occurrence and behavior of combined organic pollutants in soil and sediment, and the advance in mitigation and remediation of organic pollution.

The topics that would be covered in this session are, but are not limited to:

- 1. Characteristics, source-sink relationship and fate of organic pollutants in soil/sediment;
- 2. In situ characterization methods for organic pollutants in soil/sediment;
- 3. Molecular mechanisms of organic pollutant transformation and degradation in soil/sediment;
- 4. Chemical forms and bioavailability of soil organic pollutants in soil/sediment;
- 5. Transfer and uptake of organic pollutants in the soil-plant system;
- 6. Novel technologies for the mitigation or remediation of soil/sediment organic pollution.

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Symposium Organizers:

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DIVISION OF ENVIRONMENTAL CHEMISTRY

#### **CALL FOR PAPERS**

# Poly- and Perfluoroalkyl Substances: Environmental Behavior and Pollution Control

At 252th ACS National Meeting & Exposition

## Philadelphia, PA

August 21 – 25, 2016 Abstract Deadline: March 21, 2016

Poly- and perfluoroalkyl substances (PFASs) are alkyl based chemicals having multiple or all hydrogens replaced by fluorine atoms, and thus exhibit high thermal and chemical stability and other unusual characteristics. PFASs have been widely used in a variety of industrial and consumer products, and tend to be environmentally persistent. Studies have indicated their ubiquitous presence in the environment and possible toxicity. Treatment or remediation of PFASs still remains a tremendous challenge. It is likely necessary to involve multiple physical, chemical and/or biological processes simultaneously or in sequence to achieve effective treatment and remediation of PFASs. PFAS transport and transformation in both the engineered and natural environment are highly dependent on environmental variables including pH, ionic composition, co-contaminants, and soil/aquifer-specific properties. The impact of these parameters on PFAS behavior is not readily predictable from our current knowledge platform due to the unusual properties of PFASs. This symposium is intended to bring together researchers and practitioners from diverse backgrounds to exchange the latest findings and stimulate interdisciplinary discussions on PFASs in the context of their environmental risk assessment and pollution control. Listed below are some exemplary topics that would be of interest to this symposium.

- Environmental occurrence of PFASs, and chemical analysis and characterization of PFAS contamination in various environmental media
- Environmental transport, transformation and fate of PFASs, and the influence of environmental quality on these behaviors
- Sorption of PFASs on various natural and manmade materials, and the use of filtration and membrane processes for PFAS treatment
- Redox reactions and microbial degradation of PFASs that are of environmental significance or may be used for treatment and remediation
- Electrochemical, photolytic and sonochemical degradation of PFASs
- Environmental exposure and toxicity of PFASs in relation to environmental conditions
- Regulatory considerations and status of PFASs, and green chemistry strategies in substitution of PFASs

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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**DIVISION OF ENVIRONMENTAL CHEMISTRY** 



CALL FOR PAPERS

# Recent Advances in Remediation Strategies and Technologies for the Cleanup of Hazardous Waste Sites

252<sup>nd</sup> American Chemical Society National Meeting & Exposition Philadelphia, Pennsylvania

> "Chemistry of the People, by the People, and for the People" August 21-25, 2016

#### Abstract Deadline: March 21, 2016

Spills and improper disposals of chemical substances have created hazardous waste sites where high-level contamination of soil and groundwater pose threats to environmental and human health. While billions of dollars have been invested toward site cleanup, contaminated soils and aquifers will continue to pose a serious problem as more sites continue to be identified (e.g., expansion of the National Priority List via proposed sites). In addition to the tremendous financial costs, efforts to rehabilitate and prevent soil and groundwater contaminants are further complicated by the discovery of previously unidentified contaminants and the creation of new sites. For example, poly- and perfluoroalkyl substances have been increasingly detected in groundwater and are now considered as contaminant of concern at many Superfund sites. Another example is the potential contamination of subsurface with oil-field produced water due to the recent boom in unconventional gas and oil production.

This session will focus on recent advances in remediation technologies for the cleanup of contaminated soil and groundwater. The topics that will be covered in this session include, but are not limited to:

- Remediation of organic and inorganic contaminants, remediation of contaminant in low-k subsurface environments
- Ex situ and in situ remediation technologies, including pump-and-treat, cosolvent/surfactant extraction, soil excavation and washing, in situ chemical oxidation and reduction (ISCO and ISCR), and in situ bioremediation.
- Fate and transport of contaminants in subsurface, including contaminant rebound after conclusion of site remediation

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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DIVISION OF ENVIRONMENTAL CHEMISTRY



#### CALL FOR PAPERS

# Aquatic Chemistry: Interfaces of Organic, Inorganic and Surface Chemistry in Natural and Engineered Systems A Symposium in Honor of Professor Alan T. Stone

252<sup>nd</sup> American Chemical Society National Meeting & Exposition "Chemistry of the People, by the People, and for the People"

## Philadelphia, Pennsylvania

#### August 21-25, 2016

Abstract Deadline: March 21, 2016

Aquatic chemistry has provided the foundational chemical principles for environmental engineering and science. The range and complexity of systems where aquatic chemistry encompasses has continued to develop and expand over time - from natural waters, to soil and sediments, to wastewater and water treatment, and to agricultural, food and energy systems. Scientific advancement addressing emerging issues in aquatic chemistry is critical for the development of solutions to the growing environmental challenges.

This ACS symposium will honor Professor Alan T. Stone of the Johns Hopkins University, Department of Geography and Environmental Engineering (DoGEE). Prof. Stone has made outstanding contributions to research and education in the field of aquatic chemistry. His research areas include abiotic transformation of inorganic and organic pollutants, coordination chemistry and speciation of metal ions, chelating agents and extracellular biochemicals, nanoscale heterogeneous reactions at mineral surfaces, and biogeochemical reactions. His pioneering work in interfacing organic, inorganic and surface chemistry in aquatic chemistry has significantly improved the fundamental knowledge of environmental chemical kinetics and mechanisms.

This symposium is interested in contributions in the general area of aquatic chemistry, with topics related but not limited to Prof. Stone's active research areas. A number of speakers invited to this symposium will be announced later.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at <u>https://maps.acs.org</u>. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

**Ching-Hua Huang**, Professor, Georgia Institute of Technology, School of Civil and Environmental Engineering, Atlanta, GA. Email: <u>ching-hua.huang@ce.gatech.edu</u>

**Baolin Deng**, Professor, University of Missouri, Department of Civil and Environmental Engineering, Columbia, MO. Email: <u>DengB@missouri.edu</u>

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AMERICAN CHEMICAL SOCIETY DIVISION OF ENVIRONMENTAL CHEMISTRY

#### **CALL FOR PAPERS**

## Chemistry of Environmental Sorptive and Oxidative Processes: A symposium in honor of Joseph J. Pignatello

At 252th ACS National Meeting & Exposition

Philadelphia, PA

August 21-25, 2016 Abstract Deadline: March 1, 2016

This symposium is being held in honor of **Dr. Joseph J. Pignatello**, Chief Scientist of The Connecticut Agricultural Experiment Station, New Haven and Professor Adjunct at Yale University, for his life-long and outstanding achievements in the fields of adsorption and advanced oxidation. **Dr. Pignatello** has conducted unique and innovative work for teasing apart the contributions of individual forces and identifying novel interfacial interactions during adsorption. He has been also one of the important figures in Fenton and other free radical-based oxidation reactions in Advanced Oxidation Processes (AOPs), as well as the environment.

Sorption plays a fundamental role in the environmental fate of chemical compounds and in water purification and soil remediation. A branch of science in its own right, sorption has been studied for its influence on transport, bioavailability, and abiotic reactions in natural and engineered systems. Relevant sorbents include natural organic matter, plant detritus, minerals, black carbon, engineered carbonaceous sorbents, engineered nano-structured materials, polymeric resins, among others. The surface may influence abiotic transformations, electron transport, redox reactions and photo-reactivity or sorbed molecules. Sorption retards solute transport and is usually a ratelimiting factor in biological uptake. **This symposium invites** both oral and poster presentations related to fundamental and applied aspects of sorption and desorption processes, including thermodynamics, rate laws, structure-property relationships, reversibility, desorption-resistance ("sequestration"), and competitive effects. Of particular interest are contributions that address: a) sorbate molecular properties such as hydrophobicity, charge, dipolarity, quadrupolarity, hydrogen bonding ability, steric size and shape, tendency to self-associate, and ligand strength toward surface metal ions; and b) sorbent properties of growing interest such as surface charge density, matrix penetrability, hard/soft (flexible/rigid) character, porosity and pore size distribution, pore connectivity, pore expandability, hydrophilicity, hydrogen bond site density, and ligand-exchange site density.

Another area of focus for this symposium will be oxidation of chemical compounds by reactive oxygen species (ROS). This has been a key tool in water and to a lesser extent soil and sediment purification. In nature, ROS, such as ozone, singlet oxygen, superoxide, and hydroxyl radical, are produced mainly by the action of sunlight on surfaces and within natural waters, the latter aided by dissolved organic matter, metal ions, and certain colloids. Advanced oxidation processes (AOP) in water treatment include both homogeneous and heterogeneous techniques, and utilize the activities of ozone, singlet oxygen, hydroxyl, sulfate radical or other species. They encompass photolysis or thermolysis of bulk oxidants, Fenton and related reactions, and photocatalysis by polyoxometallates or semiconductors. Papers on issues related to ROS, AOP, identification of byproducts, effects of solution chemistry, novel catalysts, effective absorption spectrum of catalysts into the solar region, role of sorption, and the underlying chemistry at the water-catalyst interface are invited. The symposium will address topics mentioned above in the context of both remediation and fate of contaminants in natural and engineered systems. Please submit your abstracts using the ACS Meeting Abstract Programming System (MAPS) (http://maps.acs.org). Any other inquiries should be directed to the organizers:

Dr. Feng Xiao, University of North Dakota. Email: <a href="mailto:Feng.Xiao@UND.edu">Feng.Xiao@UND.edu</a>
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Dr. Dongye (Don) Zhao, Auburn University. Email: <a href="mailto:zhaodon@auburn.edu">zhaodon@auburn.edu</a>
Dr. Michael Sander, ETH Zürich. Email: <a href="mailto:michael.sander@env.ethz.ch">michael.sander@env.ethz.ch</a>
Dr. Baoshan Xing (chief organizer), University of Masschusetts—Amherst. Email: <a href="mailto:bx@umass.edu">bx@umass.edu</a>





**CALL FOR PAPERS** 

#### Formation and Transformation of Atmospheric Aerosols: From Air Pollution to Climate Change

#### A Symposium in Honor of Professor Renyi Zhang

252nd American Chemical Society National Meeting & Exposition August 21-25, 2016 Philadelphia, Pennsylvania

Abstract Deadline: March 21, 2016

The symposium will honor Professor Renyi Zhang, Departments of Atmospheric Sciences and Chemistry, Texas A&M University, whose research has made seminal contributions to the area of atmospheric chemistry. The 2016 ACS Renyi Zhang Symposium will contain an integrated theme related to atmospheric chemistry, human health, and climate. The Symposium will include invited and contributed oral and poster sessions; contributions are sought for these aspects.

The organization Committee of the 2016 ACS Renyi Zhang Symposium is Prof. Alexei Khalizov (chair) of New Jersey Institute of Technology, Prof. Min Hu (co-chair) of Peking University, Dr. Yuan Wang (co-chair) of Jet Propulsion Laboratory/California Institute of Technology, Dr. Jiwen Fan of Pacific Northwest National Laboratory, Prof. Chong Qiu of University of Northern Alabama, Prof. Virender Sharma of Texas A&M University, Prof. Gehui Wang of Institute Earth Environment/Chinese Academy of Science, Prof. Lin Wang of Fudan University, Prof. Weigang Wang of Institute of Chemistry/Chinese Academy of Science, Dr. Misti L. Zamora of Texas A&M University, Prof. Jun Zhao of Sun Yat-sen University, and Prof. Jun Zheng of Nanjing University of Information Science & Technology.

Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at <u>https://maps.acs.org</u>. General information about the conference is at <u>www.acs.org/meetings</u>. Any other inquiries should be directed to the symposium chairs: <u>alexei.khalizov@njit.edu</u>, <u>minhu@pku.edu.cn</u>, and <u>Yuan.Wang@jpl.nasa.gov</u>.





ACS Division of Energy & Fuels

CALL FOR PAPERS

## Water-Energy Nexus

252<sup>nd</sup> American Chemical Society National Meeting & Exposition *"Chemistry of the People, by the People, for the People"* 

## Philadelphia, Pennsylvania August 21-25, 2016

Abstract Deadline: March 25, 2016

Water and energy are fundamental resources that our society needs to survive and thrive. The water-energy nexus describes the interrelationship between the water and energy in their consumption and production. Water and energy are coherently interconnected such that water is withdrawn and consumed in energy production, and energy is required to extract, treat, and distribute water. These interdependencies are complicated by changes in regional characteristics such as population, climate, socioeconomics, and technologies. Meanwhile, energy and water systems are traditionally developed, managed, and regulated independently. Thus, a holistic understanding of water-energy interactions, synergies, and tradeoffs is direly needed to effectively manage and devise sustainable water-energy policies or technologies. For example, the development of advanced materials, processes, and technologies plays a pivotal role in addressing the grand challenges that we face in global water, energy, food, and environmental protection. Many conventional water and wastewater treatment processes are not only inadequate with respect to energy efficiency but also in the removal of persistent or emerging contaminants (e.g., oxyanions, endocrine disrupting compounds, pharmaceutical and personal care products, toxic industrial chemicals or materials). On the other hand, wastewater or solid waste may contain valuable substances (noble metals and nutrients) or energy sources that can be extracted. Other renewable energy resources such as solar, thermal, and salinity gradient power generation are also worth exploring to be tapped into the water/wastewater treatment processes. Moreover, water is important and valuable for energy production, including the application in cooling systems, H<sub>2</sub> production, and growing algae for biofuel production.

This session intends to bring together scientists, engineers, and practitioners working in government, academia, industries, and business stakeholders to focus on how and why the nexus approach could be employed to tackle the water and energy challenges. Data, trends, impacts and opportunities of the water-energy related technologies are to be discussed. We welcome interdisciplinary studies, including: a) water use for energy production; b) energy consumption for water use or clean water production; c) broad impacts of water use for energy (e.g., drought, wastewater and thermal pollution); d) consequences of energy consumption for water use (e.g., greenhouse gas emissions, limiting economic growth); e) potential opportunities for sustainable use (e.g., renewable energy, advanced water and energy efficiency); and f) related policies, management and legislation.

Please submit your abstracts and pre-prints using the ACS Meeting Abstracts Programming System (MAPS) at https://maps.acs.org. General information about the conference can be found at www.acs.org/meetings. Any other inquiries should be directed to the symposium organizers:

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