American Chemical Society
Division of Environmental Chemistry

Call for Papers

ACS Spring 2023: Crossroads of Chemistry
Indianapolis, Indiana – March 26-30, 2023

Dear Colleagues,

On behalf of the ACS Division of Environmental Chemistry, it is my pleasure to invite you to share your recent research in the Division of Environmental Chemistry at the ACS Spring 2023 Meeting in Indianapolis and online. This meeting will include in-person and virtual technical programming and social events.

Abstract Submission Deadline: **October 17, 2022**. 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,

ENVR Spring Program Chair
Slawo Lomnicki
Slomni1@lsu.edu

ACS National Meeting Thematic Symposia: Crossroads of Chemistry

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Crossroads in Atmospheric Aerosol Chemistry
Organizers: Marcelo Guzman,marcelo.guzman@uky.edu
Atmospheric aerosols influence public health and the Earth's climate, yet many uncertainties persist in the fundamental chemical and physical processes that occur in atmospheric particles and on their surfaces. The variable composition of particles and atmospheric conditions provide multiple interfaces with unique reactivities for the processing of atmospheric pollutants. This symposium will bring together environmental scientists, chemists, physicists, and engineers to present the current progress in our understanding of aerosol multiphase processes from field measurements, laboratory studies, and computational modeling.

Crossroads to Water Sustainability
Organizers: Satinder Ahuja, sutahuja@atmc.net
A variety of water pollutants contaminate our water supply. Ultratrace analysis is necessary to quantify some of the hazardous contaminants. The symposium will cover point and non-point sources of water pollution, analytical methods to evaluate them, and potential remediation methods.

Methane at the Crossroads: Greenhouse Gas & What We Are Doing About It
Organizers: Joseph Sabol, jsabol@chem-consult.com; William Collins, wdcollins@lbnl.gov
Global atmospheric methane concentration was 720 ppb in pre-industrial times and is 1,900 ppb in 2022. For the past ten years, annual global emission of methane averaged 576 Tg CH_4 with global CH4 sink average 556 Tg CH_4; this mismatch reflects the observed imbalance in the atmosphere, i.e., the CH_4 growth rate, and can be attributed to human activity. Atmospheric methane is dwarfed by carbon dioxide, which is responsible for the majority of global radiative heat trapping, but methane is a much more intense (infrared active) greenhouse gas. Further, the mean half-life of methane is about ten years, substantially less than carbon dioxide. Thus, if methane emission can be reduced (and/or sinks increased) we have a near-term opportunity to reduce the rate of global warming, per the objectives of the Intergovernmental Panel on Climate Change. Speakers will address methane in the atmosphere and scale-able efforts to address methane emission. This symposium is consistent with U.N. Sustainability Goals: 7) Affordable and Clean Energy; 9) Industry, Innovation and Infrastructure; 13) Climate Action.

Environmental Justice: Achieving Global Equity through Green and Sustainable Chemistry
Organizers: Edward J. Brush, ebrush@bridgew.edu
Cosponsors: CHED, CEI, Green Chemistry Institute
As a follow-up to our successful symposium at the ACS fall 2022 meeting, the goal of this symposium is to bring together all sectors of the chemistry enterprise to continue our exploration to understand and achieve global equity through chemistry. The issues related to environmental justice are connected to key sustainability challenges, as well as many of the UN Sustainable Development Goals. We will define Environmental Justice, identify legacy and emerging issues, and hear how chemists and chemical engineers can contribute solutions through green and sustainable chemistry in education, academic and industrial research, and policy, including interdisciplinary and international collaboration. This symposium will serve as a path forward for the chemistry enterprise and inspire participants to advocate and take action.

Interdisciplinary Approaches to Environmental Challenges

AIChE/ACS Frontiers of Chemistry, Materials Science & Chemical Engineering for Circular Economy
Organizers: Alexander Orlov,alexander.orlov@stonybrook.edu; Shweta Singh, singh294@purdue.edu;Jason Trembly, trembly@ohio.edu
Financial Sponsor: AIChE
This symposium will highlight the latest developments in environmental/green chemistry, materials science and chemical engineering that lay foundations for developing circular economy of the future. It will offer sustainable solutions for numerous environmental problems by focusing primarily on waste prevention as a primary strategy with secondary strategy focused on waste recycling. For example, specifically it will include such important topics as waste plastics, reuse of construction and other materials, critical materials (such as rare earth metals) that can be of interest to both ACS and AIChE communities. The submissions can include both experimental results and modeling to demonstrate a clear link of the research to circular economy and sustainability.

Perspectives on Climate Change Literacy & Education: Local to International
Organizers: Gregory Foy,gfoy@ycp.edu; Keith Peterman, peterman@ycp.edu
Climate change literacy and education is one of the recommended actions highlighted in the ACS Public Policy Statement on climate change. This symposium is designed for individuals to share perspectives on enhancing climate science literacy in the classroom or public forums. We invite papers that focus on efforts towards education, mitigation, adaptation, or other scientific issues surrounding this global crisis.

Occurrence, Transport, & Fate of Contaminants of Emerging Concern (CECs) in Agroecosystems
Organizers: Huan Chen,huanc@clemson.edu; Alex Chow, achow@clemson.edu;Clinton Williams, clinton.williams@usda.gov; Jun-Jian Wang, wangjj@sustech.edu.cn; Wei-Ling Sun, wlsun@pku.edu.cn
The global demand for food is increasing due to the increasing global population. Fertilizers and pesticides in production agriculture and pharmaceutical compounds (e.g., antibiotics, hormones, and steroids) in animal agriculture are employed to promote the agricultural production of food. Moreover, non-conventional water resources such as reclaimed water are used to replace freshwater as irrigation water, especially in arid and semi-arid regions (e.g., the Mediterranean, the Middle East Region, and Africa). Livestock manure (includes liquid and solid forms of animal wastes) and biosolids (referring to stabilized sewage sludge) are applied in production agriculture as soil amendments due to their high concentrations of nutrients. Besides boosting food production, these practices will introduce contaminants of emerging concern (CECs) into the agroecosystems, such as microplastics and per- and polyfluoroalkyl substance (PFAS). These introduced CECs will be accumulated in the compartments of agroecosystems (e.g., soils, waters, crops, and manure) and mobilized to surrounding environments. It will pose threats to food safety and adversely affect human health and natural environments. Therefore, understanding the CECs in agroecosystems is essential for developing appropriate management practices and strategies to ensure food safety. Here, we propose a symposium focusing on the occurrence, transport, and fate of CECs in agroecosystems under management practices and climate change to advance global food safety. This symposium will present the research in the field and laboratory studies to explore the CECs source, occurrence, transport, fate, and risk in agroecosystems from molecular to regional scales.

Environmental Chemistry Analysis

Advances in the Non-Targeted Analysis of Complex Samples
Organizers: Zhenyu Tian,z.tian@northeastern.edu; Saer Samanipour, s.samanipour@uva.nl;Sarit Kaserzon, k.sarit@uq.edu.au; Jake O'Brien, j.obrien2@uq.edu.au; Kevin Thomas, kevin.thomas@uq.edu.au
Recent advances in analytical instrumentation (i.e. GC/LC-HRMS) and data processing approaches have paved the path to the discovery of a growing number of chemicals of interest (e.g. of biological relevance) in complex samples. However, the non-targeted analysis (NTA) experiments are extremely challenging to set up and may require specifically developed tools/approaches, depending on the initial hypothesis. In this session we aim at discussing the existing tools from the experimental setup to data processing approaches for the NTA experiments when dealing with complex samples. The experimental strategies will include novel HRMS, ion mobilty spectrometry (IMS), nuclear magnetic resonance (NMR), and chromatographic approaches (e.g. LCxLC). Discussion on the data processing tools will cover the latest developments related to the steps taken during the NTA experiments from the feature

detection to the identification of unknown unknowns, as well as quantitative NTA. This session will provide a forum for discussing the state of the arts in NTA and the needed future developments from the experimental setup to the digital approaches. This symposium will give the developers (i.e. both experimental and digital) the means to present their research while the application oriented researchers will be able to discuss their future needs and desires.

Environmental Science at the Nanoscale

Application of Nanotechnology in Water & Wastewater Treatment
Organizers: Sushil Kanel,Sushil.kanel@wright.edu; Sudip Chakraborty, sudip.chakraborty@unical.i;Tanapon Phenrat, pomphenrat@gmail.com; Umapada Pal, pal@ifuap.buap.mx; Ichiro Imae, imae@hiroshima-u.ac.jp
Population growth, rising water demand, depletion of freshwater supplies, changing weather patterns, emerging contaminants, and stringent water quality standards have burdened existing water and wastewater treatment technologies and infrastructure. Recent advances in nanotechnology offer opportunities to develop sustainable, highly efficient, and affordable next-generation water and wastewater treatment processes (e.g., membrane separation, adsorption, and photocatalysis). Besides conventional water treatment techniques, nanotechnology-enabled water and wastewater treatment promises include disinfection and microbial control, along with their monitoring. The aim of this symposium is to highlight how nanotechnology can offer solutions in potable and wastewater treatment, the separation of residues and contaminants, including remediation of pathogens in a sustainable manner, without impacting human health and the ecosystem. This symposium invites contributions from researchers across academia, national laboratories, and industrial sectors for facilitating a well-rounded discussion of the field. Both fundamental and practical studies from experiments, simulations, and theories investigating these topics are encouraged. Research at any stage of development, including bench or lab scale to pilot scale are welcome.

Micro- & Nano-Plastics as Transport Carriers for Organic Pollutants in the Environment
Organizers: Roland Kallenborn,roland.kallenborn@nmbu.no; Antonio Marcomini, marcomini@unive.it;Ioannis Katsogiannis, katsogia@chem.auth.gr
Micro- and nano-size polymer materials (plastics) are confirmed as ubiquitous contaminants in virtually all environmental compartments. Whereas the toxicological consequences of chronic exposure to microplastic (MP) is still vividly debated in the scientific community, the role of MPs as pollutants' carrier has recently raised concerns among environmental scientists. Evidence shows that this effect may contribute to an increased toxicity of pollutants due to MPs ingestion enhancing uptake in organisms. Recent studies confirm that, while MPs are highly abundant in oceans, the atmosphere is also an important medium for the global distribution of these pollutants. Hence, MPs actions as pollutant carrier are also expected to significantly enhance the exchange of pollutants across the sea-air interface. Therefore, it is fundamental to thoroughly investigate the role of MPs as pollutant carriers in connection with environmental mobility and distribution, as well as their influence on bioaccumulation. Current research on MPs-mediated environmental processes also includes the effective scavenging of persistent organic pollutants such as poly- and per-fluoroalkyl substances (PFAS), polychlorinated biphenyls (PCBs) and organochlorine pesticides (OCPs) within both air and water compartments. For these reasons, the role of MP particles as mobility enhancers in the air and the water compartments, as well as their contribution to the uptake and bioaccumulation of the associated pollutants will be the main focus of this symposium.

Aquatic Photochemistry
Organizers: Garret McKay,gmckay@tamu.edu; Jennifer Apell, japell@nyu.edu;Kristopher McNeill, kristopher.mcneill@env.ethz.ch; William Arnold, arnol032@umn.edu
Aquatic photochemical transformations are important in geochemistry and environmental chemistry in diverse contexts, such as natural systems where sunlight is acting on surface waters to engineered systems using UV irradiation. Light may act directly upon target compounds or indirectly through interactions with redox-active species including minerals, dissolved organic matter, and small molecule sensitizers. Understanding the roles of photochemistry in these complex systems will provide important insight into the fate of chemical and biological species in the environment. In this symposium, we invite submissions that explore the direct and indirect roles of light in the photochemical transformation of natural and anthropogenic compounds, as well as interactions of light with organic matter, biomolecules, redox-active minerals, and microorganisms.

Electrified Water Treatment Processes
Organizers: William Tarpeh,wtarpeh@stanford.edu; Hang Dong, lucasdhg@gmail.com;Xing Xie, xing.xie@gatech.edu; Clement Cid, ccid@caltech.edu
Most existing water treatment processes rely on the periodic use of chemicals, such as coagulants, oxidants, and disinfectants. The transportation and storage of these chemicals can jeopardize the resilience of centralized water treatment and create intrinsic challenges for distributed water treatment. Recent attention has been drawn to process electrification to minimize chemical consumption. These electrified processes use electricity to drive separation processes (e.g., electrodialysis), provide direct redox power (e.g., electrochemical redox processes), or generate chemicals in situ (e.g., electrocoagulation, electrochemical acid/base production). Compared to chemical inputs, electricity is easier to deliver, can be generated locally, and can be produced using sustainable energy for remote applications. As energy cost decreases and treatment needs evolve (e.g., more stringent standards, zero-liquid discharge, resource recovery), previously cost-prohibitive electrified processes may become economically favorable. In the meantime, new high-performance and energy-efficient electrified treatment processes are emerging. Therefore, we invite abstract submissions on electrified water treatment processes. The relevant technical areas include, but are not limited to, electrocoagulation, electrochemical redox processes, electrodialysis, electrosorption and capacitive deionization, electrochemical or electrophysical water disinfection, electric-field assisted processes, and electrochemical resource recovery. Abstracts on techno-economic analysis (TEA) and life cycle assessment (LCA) of electrified water treatment processes are also welcome.

Catalytic, Electrocatalytic, and Heterogeneous Advanced Catalytic Technologies for Treatment of Contaminants of Emerging Concern
Organizers: Dionysios D. Dionysiou,dionysdd@ucmail.uc.edu; Virender Sharma, vsharma@tamu.edu;Yang Deng, dengy@montclair.edu; Tingting Wu, Tingting.Wu@uah.edu
The presence of organic, inorganic, and microbiological contaminants in various sources of waters calls for more effective treatment depending on the intended water use or discharge quality requirements. The focus of this symposium is emerging topics on the treatment of legacy contaminants and contaminants of emerging concern from various sources of waters using Catalytic, Electrocatalytic, and Heterogeneous Advanced Catalytic Technologies. Specific contaminants of interest include, but not limited to, per- and polyfluoroalkyl substances (PFAS); pharmaceuticals and personal care products; pesticides, fungicides, and insecticides;

cyanotoxins; newly reported disinfection byproducts; various types of industrial solvents; toxic metals and oxyanions; and pathogenic microorganisms).

Atmospheric Chemistry

Approaching Atmospheric Chemistry from an Single Particle Perspective
Organizers: Andrew Ault,aulta@umich.edu; Alex Laskin, alaskin@purdue.edu
Aerosols are pivotal players in the chemistry of our changing environment, particularly the atmosphere where they impact both climate and health. Many of the most important effects that aerosols have on climate and health, including heterogeneous reactions, light scattering, water uptake, and health impacts can be traced to aerosol properties at the individual particle level. The challenge is that the atmospheric aerosol at any given time contains particles with different chemical compositions, morphologies, and ability to nucleate cloud droplets or ice crystals. Despite the importance of interactions at the single particle level with gaseous molecules and light, measurements have historically focused on properties of the entire aerosol population averaged together. In this symposium, we invite abstracts on any research using analysis or modeling single particles to gain unique insights based on consideration of the role of single particles. Example approaches encouraged include laboratory studies (e.g. chamber or flowtube), field measurements of single particles, computation chemistry probing chemistry of particles, and atmospheric modeling that incorporates different aerosol chemical composition (i.e. aerosol mixing state). Abstracts may include research on topics climate to air quality to human health and beyond that involve atmospheric aerosols.

Bridging the Interfaces of Atmospheric Chemistry
Organizers: Rachel Hems,rhems@oberlin.edu; Hannah Horowitz, hmhorow@illinois.edu;Rachel O'Brien, reobrien@umich.edu
Atmospheric chemistry sits at the interface of many fields and methodological approaches and encompasses processes at multiple scales and across different phases. This symposium will highlight research that bridges the interfaces of atmospheric chemistry and aims to bring together the perspectives of chemists, engineers, and environmental scientists. We welcome abstracts with (1) multidisciplinary approaches including atmospheric chemistry at the nexus of marine science, health, policy, other planetary atmospheres, indoor air chemistry, environmental justice, education, or community engagement; (2) complementary experimental methods including atmospheric or chemical modelling, laboratory studies, and field measurements; or (3) atmospheric chemical analysis bridging multiple scales. For a more focused discussion on aerosol chemistry and multiphase atmospheric processes, see the Crossroads in Atmospheric Aerosol Chemistry symposium.

Addressing Sustainability Challenges

Advances on PFAS Treatment Technologies: Search for Innovative Separation & Destruction Technologies, & Advancement in Analytical Methods
Organizers: Endalkachew Sahle-Demessie,sahle-demessie.endalkachew@epa.gov; Mallikarjuna Nadagouda, nadagouda.mallikarjuna@epa.gov;Bineyam (Ben) Mezgebe, mezgebe.bineyam@epa.gov
Per- and poly fluoroalkyl substances (PFAS) are linked to many adverse health effects in humans and other mammals. PFAS have been detected in drinking water supplies, wastewater, household dust, and soil, and most of them are persistent in the environment and are not amenable or

conventional chemical treatment, limiting their remediation options. EPA's recent drinking water health advisory lowers the safe drinking levels to 0.004, and 0.02 ppt for PFOA and PFOS, respectively, is intended to respond to widespread drinking water contamination, ubiquitous population-level exposure, and toxicological and epidemiological evidence of adverse health effects. These low drinking water regulatory standards raised the difficulties of treatment technologies to achieve these set goals and the accurate detection of current analytical techniques pf PFAS. This symposium will bring together research, and technology perspectives to address PFAS contamination and opportunities to share lessons learned about PFAS, and we invite papers on: Studies on the effectiveness of conventional adsorbent and filtration technologies such as reverse osmosis or nanofiltration on surface and groundwater, which have various degrees of geochemical and co-contaminant competition; the role of a treatment train, combining conventional sorbents and engineered filtration with more innovative and emerging remediation solutions for PFAS; developing new and novel technologies for the destruction of PFAS, including thermal, chemical, mechanicochemical, and supercritical water oxidation approaches; focus is also given to the advancement of analytical measurement techniques; and the fate and transport of PFAS in the environment.

PFAS Degradation, Destruction, Isolation, Removal, & Sensing Research

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

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

Chemical, Physical and Biological Processes in the Environment

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Aquatic Redox Chemistry

Organizers: Christopher Gorski,gorski@psu.edu; Paul Tratnyek, tratnyek@ohsu.edu;Kevin Rosso, kevin.rosso@pnnl.gov; Daniel Giammar, giammar@wustl.edu

Redox reactions play critical roles in determining the quality, chemistry, and biology of natural and engineered aquatic systems. In this broad and inclusive session, we invite contributions on recent developments that explore all aspects of aquatic redox chemistry.

Honorary and Invited Symposia

ACS Award for Creative Advances in Environmental Science & Technology *[invited only]*
Organizers: Virender Sharma,vsharma@tamu.edu; Dionysios D. Dionysiou, dionysios.d.dionysiou@uc.edu Christi Sayes; christie_sayes@baylor.edu
Financial Sponsor: Aerodyne
This symposium will be in honor of the award.

2023 James J. Morgan Early Career Award *[invited only]*
Organizers: Margaret Mills,mmills@acs-i.org; Bryan Brooks, brooks@estlett.acs.org
Cosponsors: ES&T Journals, ES&T Letters
This awards session is a special session by invitation only. No call for papers required. This symposium celebrates the winners of the 2023 James J. Morgan Early Career Award. The award recognizes early career researchers who are pursuing new ideas, persisting despite adversity and pushing the environmental science and technology community in exciting directions. The symposium features oral presentations by the winners of the award alongside other invited speakers

2023 Outstanding Achievements in Environmental Science & Technology Award *[invited only]*
Organizers: Margaret Mills,mmills@acs-i.org; Bryan Brooks, brooks@estlett.acs.org
Cosponsors: ES&T Journals, ES&T Letters
This symposium celebrates the winners of the 2023 Outstanding Achievements in Environmental Science & Technology Award. The award recognizes individuals who have contributed to fields of environmental research that have substantially contributed to improvements in human health and/or the environment, and whose work may have been adopted into new public policies, new devices or treatment systems, or widely adopted by industry and/or researchers. The symposium features oral presentations by the winners of the award alongside other invited speakers.

CEI Award For Incorporating Sustainability into the Chemistry Curriculum *[invited only]*
Organizers: Jane Wissinger, jwiss@umn.edu; Katharine Albrecht, katherine.aubrecht@stonybrook.edu; Sherine Obare, soobare@uncg.edu
Cosponsor: CEI

Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals *[invited only]*
Organizers: Emma Eley,eleye@rsc.org; Neil Scriven, scrivenn@rsc.org;Kris McNeill, kristopher.mcneill@env.ethz.ch; Peter Vikesland, pvikes@vt.edu; Paige Novak, novak010@umn.edu
Cosponsors: Royal Society of Chemistry (RSC) Environmental Science Journals
This invitation-only symposium will highlight high-quality, cutting-edge research carried out by rising stars in the environmental sciences, alongside presentations from the Editors of the Royal Society of Chemistry's Environmental Science journals - Environmental Science: Processes & Impacts; Environmental Science: Nano; Environmental Science: Water Research & Technology; Environmental Science: Atmospheres; and Environmental Science: Advances.

Transformative Power of Film in Environmental Chemistry [*invited only*]
Organizers: Sherine Obare, soobare@uncg.edu; James Cobb, jacobb3@asu.edu; Amir Ross-Obare, acrossobare@aggies.ncat.edu
Cosponsor: CEI
The ACS Committee on Environmental Improvement (CEI) and Division of Environmental Chemistry (ENVR) will host an Environmental Film Showcase championing talented filmmakers who are aware of the full power of their work to transform public knowledge of environmental challenges. We encourage filmmakers to collaborate with the chemistry community and with other experts involved in environmental science, engineering, and society to produce films that offer a captivating story, are entertaining, meaningful, create awareness, and connect viewers to emotions, while presenting issues containing balanced perspectives and credible sources. The symposium will showcase the top 5 film winners recommended by a CEI-ENVR selection committee.

General Environmental Chemistry

Virtual Graduate Students Symposium in Asia-Pacific Region on Current Environmental Issues
Organizers: Chunxiao Zheng,czheng@acs-i.org; Chun Zhao, pureson@163.com
This virtual symposium is initiated and co-organized by Southwestern China Chapter. The graduate students in Asia-Pacific region are welcome to showcase their most recent research on Environmental Chemistry and gain experience as oral speakers at an international setting. We will try to arrange all the presentations during day time in the region. The symposium will cover all aspects of Environmental Chemistry and in particular will focus on Water and Wastewater Treatment, Advanced Oxidation Processes, Emerging Contaminants and Environmental Nanotechnology.

General Session - Advances in Environmental Chemistry
Organizers: Slawo Lomnicki,slomni1@lsu.edu; Hanoz Santoki, hsantoke@csub.edu
This symposium is open to all papers on environmental chemistry or environmental engineering that may be beyond the focus of the specific topics addressed in other ENVR symposia. Both oral and poster presentations are welcomed.