CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Fluid-solid interfacial phenomena at the nexus of energy and geochemistry research: A symposium in honor of David J. Wesolowski

This symposium will honor the numerous contributions and leadership of Dr. David J. Wesolowski in advancing our understanding of fluid-solid interfaces, particularly at the nexus of geochemical and energy-related research. Dave has spent his entire professional career at Oak Ridge National Laboratory, where he is currently a Corporate Research Fellow, Director of the FIRST Energy Frontier Research Center, and, until this year, Leader of the Geochemistry and Interfacial Sciences Group. Among his many scientific contributions are pioneering studies of aqueous equilibria, mineral dissolution/precipitation and adsorption phenomena into the hydrothermal regime, and interfacial water structure and dynamics as probed with neutron and X-ray scattering, and advanced computational techniques. Dave has also been an effective leader of multi-institutional scientific initiatives such as the FIRST Center where his scientific and leadership skills are focused on developing fundamental understanding and validated, predictive models of the unique nanoscale environment at fluid-solid interfaces that will enable transformative advances in electrical energy storage and electrocatalysis. Contributions from anyone who has worked with and/or benefited from Dave's expertise and leadership over the years are welcome.

Organizers:
Nadine Kabengi, Michael Machesky, Alex Navrotsky, Sheng Dai

Invited Speakers:
Prof. David Cole, Ohio Research Scholar, The Ohio State University
Prof. Sue Brantley, Distinguished Professor, Penn State University
Prof. Peter Cummings, Associate Dean for Research and John R. Hall Professor, Vanderbilt University
Prof. Yury Gogotsi, Distinguished University Professor and Trustee Chair of Materials Science and Engineering, Drexel University.

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018

Abstract submission deadline: October 16th, 2017

Mineral-water interface geochemistry and modeling at the laboratory- and field-scales: session in honor of James A Davis

Throughout an illustrious career spanning four decades, Jim Davis has applied conceptual and quantitative models of processes controlling chemical reactions at mineral-water interfaces. Using information at the molecular and laboratory scale, he has developed methods to crack conundrums presented by field-scale observations of spatial and temporal patterns in distributions of inorganic contaminants. His body of work has demonstrated how coupling of aqueous speciation, oxidation-reduction, mineral dissolution-precipitation, and ion exchange and surface complexation reactions control contaminant fate and transport at the field scale. We welcome one and all to engage in discussions across the range of topics in aqueous geochemistry he has explored during his career. We welcome contributions on:

- mechanisms and models of sorption on natural materials and synthetic analogues;
- sorption of natural organic matter and its impact on sorption reactions at the mineral-water interface;
- understanding aqueous speciation and its impact on chemical reactions at mineral-water interfaces;
- physical and chemical processes controlling rates of mass transfer in natural systems;
- coupling biogeochemical processes to mineral-water interface reactions in order to describe contaminant fate and transport in natural systems; and applying reactive transport models across scales from the laboratory to the field.

Organizers:
Douglas Kent, Kate Campbell, Michael Hay

Invited Speakers:
Ruth Tinnacher – LBNL, California
Janet Hering – EAWAG, Switzerland
Don Sparks – University of Delaware
Bruce Honeyman – Colorado School of Mines, Emeritus

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018

Abstract submission deadline: October 16th, 2017

Theoretical and Experimental Studies of Supercritical Fluids in the Subsurface

The interactions of supercritical methane and carbon dioxide with pore water and mineral surfaces are critical to understanding non-conventional gas resources and CO_2 sequestration reservoirs and to linking together technologies for increased gas production and carbon sequestration, among other applications. Recent developments in computational molecular modeling and experimental spectroscopic and diffraction methods have generated many new fundamental insights into the physical and chemical behavior at the interfaces between solids and hydrophobic supercritical fluids and the role that H_2O plays in these behaviors. The aims of this session are to highlight recent developments in molecular modeling and spectroscopy of supercritical fluids in geological systems and to facilitate dialogue/collaboration between the experts in these fields.

Organizers:
Geoffrey M. Bowers, Narasimhan Loganathan, R. James Kirkpatrick

Invited Speakers:

- John Loring, Pacific Northwest National Laboratory
- David Cole, The Ohio State University
- Jeff Greathouse, Sandia National Laboratory
- Lawrence Anovitz, Oak Ridge National Laboratory
- Benjamin Rotenberg, French National Center for Scientific Research
- Evgeniy Myshakin, National Energy Technology Laboratory
- Ian Bourg, Princeton University

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Molecular Processes at Mineral-Water Interfaces: Linking Theory and Experiments

Fundamental insights into atomic-level processes are necessary to understand the kinetics and thermodynamics of processes at the mineral-water interface. Despite significant advances in experimental techniques that increased the range of processes which can be directly observed experimentally, many processes are still only able to be studied using theoretical approaches. In this respect, molecular modeling and experimental methods provide powerful complements to each other. Experimentalist and theorist benefit from the synergy of experimental and theoretical methods in different ways. Experimentalists are able to interpret, design, and analyze experiments based on simulations whereas by applying experimental data theorists verify their models as well as expand their research into new areas.
This session will highlight the diverse range of combined experimental and computational studies probing the mineral-fluid interface. We welcome molecular level fundamental studies on interfacial chemistry, particularly those which highlight recent advances in computational and experimental design development.
Topics of interest include, but are not limited to:

1) ion adsorption/desorption rates and mechanisms
2) surface mediated redox reactions
3) mineral growth/dissolution
4) the structure and reactivity of mineral surfaces
5) the effect of confinement on mineral-water interfaces

Organizers: Jacquelyn Bracco, Juliane Weber, Sara Mason

Invited Speakers:

1. Jim Kubicki, University of Texas, El Paso
2. Andrew Stack, Oak Ridge National Laboratory
3. Marie-Pierre Gaigeot, U. Evry, France
4. Sebastien Kerisit, Pacific Northwest National Laboratory
5. Sang Soo Lee, Argonne National Laboratory
6. Eric Borguet, Temple
7. Anne Chaka, Pacific Northwest National Laboratory
8. Frank Heberling, KIT, Germany

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Multiscale Biogeochemical Processes in Soil Ecosystems: Critical Reactions and Resilience to Climate Changes

Biogeochemical processes in soil environments play an important role in regulating the emission of greenhouse gases (CO_2, CH_4, and N_2O) and availability of major nutritional elements (e.g., N and P). Recent progresses have spanned from the atomic to global scale. Systematic integration of knowledge about the soil biogeochemical processes is critical for sustainable agricultural development and mitigation of harmful effects derived from temperature increases and more frequent extreme precipitation/drought. The overall goal of this symposium is to provide scientific and professional communities with the critical evaluation by internationally-recognized leading scientists on the biogeochemical processes of C/N/P in soil ecosystems spanning multiple scales. Specific topics include: 1) microscale characterizations of critical soil biogeochemical reactions of C/N/P; 2) ecosystem-level observations of soil biogeochemical processes; 3) modeling of large-scale cycles; and 4) resilience of important processes to climate change and potential management strategy.
This symposium is based on a proposed book with the same name to be published by International Union of Pure and Applied Chemistry (IUPAC)-Wiley as volume V of book series of "Biophysico-Chemical Processes in Environmental Systems". We will welcome contributions from global community to give presentations for their research progress.
The topics that would be covered in this session are, but are not limited to: Kinetics and thermodynamics for soil organic matter decomposition; Soil organic matter and its coupling to N and P cycles; Plant/microbe-derived macromolecules in soil; Redox reactions and impact on carbon stability; Microorganism-organic matter-mineral interfacial reactions; ecosystem-level cycles; Upscaling: from molecular to ecosystem to global scales.

Organizers: Yu Yang, Marco Keiluweit, Baoshan Xing, Nicola Senesi
Invited Speakers:

1. Markus Kleber, Oregon State University, USA, Soil organic matter stabilization
2. Jennifer Pett-Ridge, Lawrence Livermore National Lab, USA, Rhizosphere processes
3. William R. Horwath, University of California, Davis, USA, C/N/P cycles in Agricultural soil ecosystems
4. Whendee Silver, University of California, Berkeley, USA, C/N/P cycles in Tropical soil ecosystems
5. Deb Jaisi, University of Delaware, USA, C/N/P cycles in Floodplains soils and other terrestrial-aquatic interfaces
6. Alain Plante, University of Pennsylvania, USA, Critical zone observatory (CZO) research
7. William J. Riley, Lawrence Berkeley National Lab, USA, Uncertainty evaluation for large-scale modeling
8. Asmeret Asefaw Berhe, University of California, Merced, USA, Erosion control

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Contaminated site remediation through microbial, geological and chemical processes

Microbial, geological and chemical reactions play an important role in regulating mineral distribution, contaminant fate and subsurface water chemistry. For decades, geochemists have tempted to establish the links between microbial processes, redox reactions, water-rock interactions and their role in contaminant fate. The contaminants in the environment are affected by complex microbial, geological and chemical processes. The basic understanding of these complex interactions can provide us the knowledge to design and optimize the remediation strategies and therefore, improve science-based decision making for site management, priority-setting, and remedy selection. The aim of this session is to collect the experimental, modeling and remedial contributions to understand microbial metabolism, chemical and mineral interactions, redox chemistry, and pollutant transport in the natural systems, although we do not put a limit only to natural environment. We invite contributions addressing the knowledge of microbially and chemically driven geochemical interactions and advanced remedial approaches for contaminated ecosystems.
Topics of interest include, but are not limited to (a) Understanding microbial and chemically influenced geochemical reactions with natural compounds and inorganic/organic contaminants in environment; (b) Microbial interactions occurring at the solid-water interface; (c) Remedial approaches for decontamination of metals and organic contaminants at the contaminated sites; (d) Advanced remedial approaches such as utilization of biochar in contaminant management in the environment, and their mechanisms of interactions.

Organizers:
Byong Hun Jeon, Yong Sik Ok, Daniel Tsang, Sang-Hun Lee, Enhyea Chung, Mayur Kurade

Invited Speakers:

- Prof. Bin Gao, University of Florida, USA.
- Prof. Ki-Jung Paeng, Yonsei University, Wonju, South Korea.
- Prof. Jayanta Bhattacharya, Indian Institute of Technology, Kharagpur, India.
- Prof. Chi-Hwa Wang, National University of Singapore, Singapore.
- Prof. Filip Tack, Ghent University, Belgium.
- Dr. Jeff Novak, USDA-ARS, USA.
- Prof. Jorg Rinklebe, University of Wuppertal, Germany.
- Prof. William Mitch, Standford University, USA.
- Prof. Daniel Alessi, University of Alberta, Canada.

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Impacts of Mining and Hydraulic Fracturing on Crop and Livestock Production

The mining of mineral resources and hydraulic fracturing for hydrocarbons can influence crop and livestock production, through impacts to factors including water resources, air quality, land use changes, soil and water quality. While there is considerable extant research that links mining and hydraulic fracturing activities to environmental degradation and pollution, fewer investigations connect those changes to agricultural production. In this session, we will aim to attract abstracts from geochemists, soil scientists, animal scientists, air quality specialists, and agronomists who focus their research at the intersection of resource extraction and agriculture. We envision research presentations covering topics such as plant uptake of contaminants, toxicological and chemical characterization of water, plant, and soil quality, new methods for determining the fate and transport of contaminants, treatment of produced water, restoration of mine sites, biogeochemical metal cycling within the rhizosphere, impact of spills on agricultural productivity, irrigation with produced water, and bioaccumulation of contaminants in livestock and wildlife. The session will not only be of interest to physical scientists working in these fields, but also to researchers investigating social policy, social license to operate, water rights and jurisdiction, and regulation.

Organizers: Thomas Borch, Daniel Alessi, Nathaniel Warner

Invited Speakers:
Fracturing
Avner Vengosh, Professor, Duke
Rob Jackson, Professor, Stanford
Desiree Plata, Assistant Professor, Yale
Sean Crowe, Assistant Professor, British Columbia
Tom Darrah, Associate Professor, Ohio State
Karl Linden, Professor, CU Boulder
Tzahi Cath, Professor, Colorado School of Mines
Martin Elsner, Professor, Munchen
Mining
David Blowes, Professor, Waterloo
Jose M. Cerrato, Assistant Professor, University of New Mexico
Jim Stone, Professor, SDSMT
Jim Ippolito, Associate Professor, CSU
Mark Paschke, Professor, CSU

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Manganese oxides: their formation, structure, reactivity, and applications

Manganese (oxyhydr)oxides are ubiquitous and abundant nanoparticles in the environment. They play essential roles in fate and transport of various contaminants and nutrients in many natural and engineered environmental systems through co-precipitation, adsorption, and redox processes. These complex processes have been studied in the fields of geochemistry, environmental chemistry, and contamination remediation for many decades. This symposium seeks contributions that advance the current understanding of the biogeochemical behavior of Mn (oxyhydr)oxide in natural environments as well as their environmental engineering applications. We welcome both experimental and modeling contributions across multiple spatial and temporal scales. Topics of interest include, but are not limited to (a) Biological oxidation of Mn(II) to form Mn(III/IV) oxides; (b) Abiotic oxidation, nucleation, growth, and aggregation of Mn(III/IV) oxides; (c) Adsorption and oxidation of organic and inorganic contaminants by Mn(III/IV) oxides; and (d) Applications of Mn (oxyhydr)oxides for pollution control in natural and engineered environmental systems.

Organizers: Matt Ginder-Vogel, Mike Zhu, Bill Burgos

Invited speakers:
George Luther, University of Delaware
Brad Tebo, Oregon Health & Science University
Chris Gorski, Penn State University
Jeff Post, Smithsonian Institution
John Bargar, SLAC National Accelerator Laboratory
Nico Boon, Ghent University
Alan Stone, Johns Hopkins University
Jeff Catalano, Washington University in St. Louis
Owen Duckworth, North Carolina State University
Evert Elzinga, Rutgers University
Colleen Hansel, Woods Hole Oceanographic Institution
Huifang Xu, University of Wisconsin – Madison
Samantha Ying, University of California Riverside
Matt Polizzotto, North Carolina State University
Christy Remucal, University of Wisconsin – Madison
Mario Villalobos, Universidad Nacional Autonoma de Mexico
Cara Santelli, University of Minnesota
Paul Tratnyek, Oregon Health & Science University
Jasquelin Peña, University of Lausanne

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018

Abstract submission deadline: October 16th, 2017

Microbially-Driven Geochemical Reactions: Kinetics and Communities

Microbes catalyze crucial reactions involved in global elemental cycles and ecosystem health, and promote processes that facilitate the bioremediation of contaminated soil and water. In this session, we will explore the diversity of ways that microorganisms control the rates, pathways, and products of chemical transformations in the environment. We invite submissions that promote discoveries at the intersection of microbial community ecology and biogeochemistry. We seek submissions that focus on both natural and engineered systems, in freshwater, marine, and terrestrial settings. Topics of interest will be broadly organized around key elemental cycles, especially those that focus on the geomicrobiology of carbon, nitrogen, silica, phosphorus, sulfur, and metals including manganese, and iron.

Organizers: Bill Burgos, Clara Chan, Sean Crowe, Greg Druschel

Invited speakers:
Andreas Kappler, University of Tuebingen
Arpita Bose, Washington University in St. Louis
Wil Leavitt, Dartmouth College
Colleen Hansel, Woods Hole Oceanographic Institution
Dan Jones, University of Minnesota
Javier Sanchez Espana, Instituto Geologico y Minero de Espana
Brad Tebo, Oregon Health & Science University
Irene Sánchez-Andrea, Wageningen University
Jan Amend, University of Southern California
Judith Klatt, University of Michigan
Scott Wankel, Woods Hole Oceanographic Institution
Julie Cosmidis, Penn State University
Frank Loeffler, University of Tennessee
Betsy Swanner, University of Colorado, Boulder
Denise Akob, US Geological Survey
Casey Bryce, University of Tuebingen
Pauline Henri, University of Delaware
Eric Roden, University of Wisconsin – Madison
Jeremy Fein, University of Notre Dame
Phil Schmitt-Kopplin, German Research Center for Environmental Health
Ben Bostick, Columbia University
Alison Olcott Marshall, University of Kansas
Sebastian Kopf, University of Colorado, Boulder

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018
Abstract submission deadline: October 16th, 2017

Biomineralization and Bio-compatible Minerals

Biomineralization processes play important roles in biology, geology and geochemical cycling, biotechnology and medicine, and provide inspiration for chemistry, materials science, and nanotechnology. Biomineralizing organisms possess a unique capacity to form minerals or mineral-organic composite structures with complexities far beyond what has been achieved in laboratory synthesis, including hierarchical materials spanning the nano- and micro-scales. B This symposium will cover molecular details of interaction between organics and inorganics, nucleation and growth, self-assembly, and interfacial engineering during biomineralization processes.

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

- Fundamental mechanisms of biomineralization
- Geochemical impact of biomineralizing organisms
- Nucleation and growth
- Organic-inorganic interfaces and composites
- Bio-compatible minerals
- Self-assembly
- Interfacial chemistry and physics

Organizers:
Jennifer Soltis, Guomin Zhu, Jeff Rimer

Invited Speakers:
Elena Sturm, University of Konstanz
Pupa Gilbert, University of Wisconsin Madison
Lia Addadi, Weizmann Institute of Science (Israel)
Assaf Gal, Weizmann Institute of Science (Israel)
Arash Komeili, University of California, Berkeley
Emilie Campbell, Northwestern University
Jinhui Tao, Pacific Northwest National Lab
John Harding, University of Sheffield

CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018

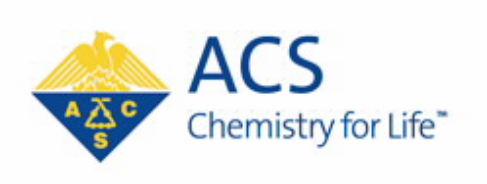
Abstract submission deadline: October 16th, 2017

Forensic Geochemistry

Many well-known and widely used geochemical techniques are now providing forensic evidence across the world. This session will highlight new applications of standard geochemical techniques to forensic based problems and expose other chemists to the capabilities of geochemical analytical techniques. The session will be of interest to geochemists, environmental chemists, forensic chemists, forensic scientists and general chemists.

Organizers:
Steven Singletary, Drew Coleman

Invited Speakers:
Robert A. Hayes, CPG is President and Principal Forensic Geologist at GeoForensics, Inc.



CALL FOR ABSTRACTS

255th American Chemical Society National Meeting & Exposition
New Orleans, Louisiana, March 18-22, 2018

Abstract submission deadline: October 16th, 2017

General Geochemistry

The aim of this symposium is to provide an opportunity for presentations on any geochemistry-related research that is not well aligned with the other technical sessions sponsored by the Division.

Organizers:
Bill Burgos, Nadine Kabengi