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

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Geochemistry Division

Call for Abstract Submission

Abstract submission: March 15, 2021 – April 12, 2021

Meeting time: August 22 – 26, 2021

Meeting format: Both in-person and virtual sessions

General information about the conference can be found at:
https://www.acs.org/content/acs/en/meetings/national-meeting.html

You are invited to submit abstracts for the following GEOC symposia*:

- Symposium in Honor of Prof. Michael Hochella, 2021 Geochemistry Medal Recipient
- Interfaces for Society: The Next Frontier
- Experimental and computational approaches to molecular-scale understanding of mineral-fluid interactions (Session in memory of R. James Kirkpatrick)
- The Evolution of Macromolecular Carbon through Space and Time
- Advances in Ultrahigh Resolution Mass Spectrometry for Tracking Natural Organic Matter in Global Systems
- Experimental and Modelling Approaches for Nucleation in Porous Media
- Molecular scale processes of phosphorus cycling in natural and engineered systems
- Undergraduate Research in Geochemistry
- General Geochemistry

*organizer contact information and symposium descriptions are attached.

Abstract submission: Please submit your abstracts using the ACS Meeting Abstracts Programming System (MAPS) at http://maps.acs.org. The abstract submission window is March 15, 2021 – April 12, 2021.

Questions?

- For questions about specific symposia, please contact the organizers directly.
- For general questions about the Geochemistry Division symposia and activities, please contact Adam Wallace (afw@udel.edu).

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Symposium in Honor of Prof. Michael Hochella
2021 Geochemistry Medal Recipient

Inquiries should be directed to the symposium organizers:

Gordon Brown
Stanford University
Email: gebjr@stanford.edu

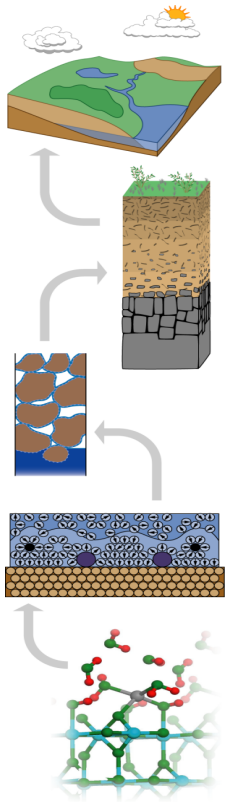
Nadine Kabengi
Georgia State University
Email: kabengi@gsu.edu

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Interfaces for Society: The Next Frontier

Co-sponsored by COLL, ENVR, PHYS

Chemical reactions at interfaces play a pivotal role in all aspects of human life. From food production, clean air and water, and drug delivery to energy storage and synthesis of materials, understanding the chemical and physical properties of solid-fluid interfaces had underpinned many breakthroughs and innovative solutions to obstacles in all these fields. Yet, the decades to come bring significant societal challenges that require us to push knowledge boundaries and join arsenals in both physical and social disciplines like never before to create sustainable solutions for society.



We invite contributions from interfacial studies that push the boundaries with an eye toward addressing practical societal problems. The topics to be covered in this session include, but are not limited to:

- **Capturing increased complexity in time and scales, in both natural and engineered systems**
- **Fundamental understanding and scaling-up prediction of contaminants fate and transport**
- **Novel experimental and computational methods for studying realistic interfaces**
- **Solving social barriers to the implementation of novel solutions based on chemical, biological, and physical observations at interfaces**

Inquiries should be directed to the symposium organizers:

Nadine Kabengi
Georgia State University
Email: kabengi@gsu.edu

James Kubicki
University of Texas at El Paso
Email: jdkubicki@utep.edu

Yuanzhi Tang
Georgia Institute of Technology
Email: yuanzhi.tang@eas.gatech.edu

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Experimental and Computational Approaches to Molecular-Scale Understanding of Mineral-Fluid Interactions (Session in memory of R. James Kirkpatrick)

Co-sponsored by ENVR, PHYS

Most geochemical reactions occur at mineral-fluid interfaces or in the confined spaces of mineral interlayers and nano-pores. These reactions affect many important natural and engineered processes, such as mineral weathering, adsorption or release of environmental contaminants in soil and ground water, flotation and other mineral processing technologies, cement and concrete corrosion and degradation, geological disposal of radioactive waste, geological carbon sequestration, exploration of nonconventional hydrocarbon resources by hydraulic fracturing of host rocks, etc. Molecular-scale view of these systems is critical for their understanding and practical application.

Over several decades, Jim Kirkpatrick was on the forefront of these studies and his research group has contributed a lot to our present-day molecular scale understating of the physical and chemical phenomena controlling the properties of such interfacial and nano-confined systems. This session is dedicated to his memory and invites contributions highlighting the most recent advances in the studies of mineral-fluid interfaces using NMR, X-ray, neutron scattering, and other experimental techniques, especially in their close coupling with atomistic computational modeling approaches.

Inquiries should be directed to the symposium organizers:

Andrey G. Kalinichev
MT Atlantique,
Université de Nantes
Email: kalinich@subatech.in2p3.fr

Ozgur Yazaydin
University College London
Email: ozgur.yazaydin@ucl.ac.uk

Geoffrey Bowers
St. Mary's College of Maryland
Email: gmbowers1@smcm.edu

Narasimhan Loganathan
Michigan State University
Email: naresh20@msu.edu

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

The Evolution of Macromolecular Carbon through Space and Time

Co-sponsored by ORGN, PHYS

Macromolecular carbon (MMC) is ubiquitous in our solar system and has been identified and characterized in a wide variety of materials including carbonaceous chondrites (CC's), cometary dust particles, and ancient terrestrial rocks. These materials have been subject to considerable study, yet MMC formation pathways, metamorphic and alteration trends, and the means to clearly discern the origins of MMC types remain unclear. This symposium will explore how macromolecular carbon (MMC) evolves as a result of thermal, aqueous, radiolytic, and oxidative processing over time. We will highlight current state of the art technologies and the latest modeling efforts to characterize and study MMC, to constrain how organic molecules evolve into MMC, and to determine what signatures of their origins remain in matured materials.

Inquiries should be directed to the symposium organizers:

Dina M. Bower
University of Maryland
NASA Goddard Space Flight Center
Email: dina.m.bower@nasa.gov

Marc D. Fries
NASA Johnson Space Center
Email: marc.d.fries@nasa.gov

Andrew Steele
Carnegie Institution for Science
Email: asteele@carnegiescience.edu

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Advances in Ultrahigh Resolution Mass Spectrometry for Tracking Natural Organic Matter in Global Systems

Co-sponsored by ENVR, ANYL

The same challenges that plagued the petroleum industry for mass spectral characterization of crude oil (e.g., aggregation, polyfunctionality) also occur in degrading biomass across all biospheres on Earth. Arguably as polydisperse as crude oil, natural organic material found in terrestrial environments and aquatic systems is comprised of decaying biomass and degradation byproducts from plants, animals and microbes. This symposium will bring together scientists from a variety of fields, ranging from petroleomics to research on particulate and dissolved organic matter that drive Earth's carbon/nitrogen/phosphorus cycles in soils, to biofuel research that highlights where mass spectrometry plays a major role in expanding the global knowledge base. We particularly encourage studies assessing biotic and abiotic drivers changing the natural organic matter composition in land to aquatic gradients at the molecular level and the linkage to nutrient cycling and microbial remineralization processes. Discussions will focus on current status and trends in mass spectrometric characterization of different mixtures, with specific emphasis on qualitative and quantitative analysis, current analytical challenges, data processing advancements and structural techniques.

Inquiries should be directed to the symposium organizers:

Amy M. McKenna
National High Magnetic Field Laboratory
Florida State University
Email: mckenna@magnet.fsu.edu

Malak Tfaily
University of Arizona
Email: tfaily@email.arizona.edu

Patricia M. Medeiros
University of Georgia
Email: medeiros@uga.edu

Advances in Ultrahigh Resolution Mass Spectrometry for Tracking Natural Organic Matter in Global Systems

Nucleation of minerals in porous media occurs widely in natural and engineered systems and is of importance for a variety of geochemical processes, e.g., mineral weathering, soil and groundwater remediation, and subsurface applications including nuclear waste disposal, oil and gas production, carbon sequestration, and geothermal energy production. Just like mineral dissolution/growth and redox reactions, nucleation too is intimately coupled with fluid flow, speciation and heat transfer, and may even be the controlling step for fate and transport of key species.

Our knowledge on nucleation has largely benefited from synergy of experimental and modeling approaches: While experimental approaches have provided us fundamental understandings of nucleation mechanisms, reactive transport models serve as a powerful tool to complement experimental data and to understand the contribution of individual factors and their compound effects. The development of mechanistic understanding of nucleation and its role in overall systems rely on continued refinement of the experimental data and reactive transport models, as well as active communications between the experimental and modeling communities.

We invite contributions from both experimental and modeling studies on homogeneous nucleation, nucleation on surfaces and precipitation in porous media, including but not limited to:

- **Improvement of thermodynamic and kinetic data regarding nucleation for reactive transport models**
- **Incorporation of nano- and molecular scale processes in numerical models**
- **Mechanistic observations and interpretations of nucleation**
- **Classical and non-classical description of nucleation**
- **Effects of nucleation on fate and transport of contaminants and nutrients**
- **Integration of nucleation in multidisciplinary research (e.g., electro-chemistry, materials science, engineering)**

Inquiries should be directed to the symposium organizers:

Hang Deng
Lawrence Berkeley National Laboratory
Email: hangdeng@lbl.gov

Qingyun Li
SLAC National Accelerator Laboratory
Email: qyli@stanford.edu

Fengchang Yang
Oak Ridge National Laboratory
Email: yangf@ornl.gov

Juliane Weber
Oak Ridge National Laboratory
Email: weberj@ornl.gov

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Molecular-scale processes of phosphorus cycling in natural and engineered systems

Co-sponsored by ENVR

Phosphorus is an esstiential nutrient for life and plays central roles in connecting numerous biogeochemical cycles across the biosphere, geosphere, hydrosphere and atomosphere. It is also a critical element due to the currently limited resource of minable geological reserves. To better predict phosphorus transport, fate, and bioavailability in both natural and engineered systems across multiple spatial and temporal scales, an in-depth molecular-scale understanding of its interactions with environmental media is highly desired. Recent advancements in high-resolution analytical techniques such as tandem mass spectrometry, stable and radioactive isotopes, vibrational spectroscopy, and synchrotron-based spectroscopy, microscopy, and scattering techniques have provided unprecedented understanding of molecular-scale processes and insights into meso- and macro-scale processes in the environment.

This session aims to enhance our current understanding of how molecular-scale biogeochemical reactions involving phosphorus ultimately control macroscale processes in natural and engineered systems. This session welcomes contributions from both laboratory and field-based observations, as well as computational and theoretical studies aimed to measure, quantify, correlate, and predict phosphorus sources and cycling across multiple scales.

Inquiries should be directed to the symposium organizers:

Deb Jaisi
University of Delaware
Email: jaisi@udel.edu

Yuanzhi Tang
Georgia Institute of Technology
Email: yuanzhi.tang@eas.gatech.edu

Mengqiang Zhu
University of Wyoming
Email: mzhu6@uwyo.edu

https://communities.acs.org/t5/Geochemistry-Division/gh-p/geoc-division

Undergraduate Research in Geochemistry

This session will highlight research projects in geochemistry from undergraduate students, including those who have recently graduated. It is intended to encourage networking, identify opportunities for graduate research, and to help develop the careers of future chemists. A keynote lecture in geochemistry and a discussion of graduate school opportunities will be included. Students are also encouraged to attend the divisional mixer for additional networking opportunities.

Inquiries should be directed to the symposium organizer:

Jacquelyn Bracco
Queens College,
City University of New York
Email: jbracco@qc.cuny.edu