



# DIVISION NEWSLETTER



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**LETTER FROM THE CHAIR**

Dear Division Members,

August was an excitingly busy month for the Division of Geochemistry (GEOC) and its members who traveled near and far to Boston where the 2018 Fall ACS National Meeting took place from August 19<sup>th</sup> to the 23<sup>rd</sup>. It was my pleasure to serve as Program-Chair and want to thank you all for your many contributions that made the GEOC programing successful. Symposia covered a variety of topics from interfacial chemistry under nano-scale confinement and molecular understanding of the structure and reactivity of mineral-water interfaces to visualizing heavy element contamination in the environment at the nanoscale, mechanistic understanding of mineral growth and dissolution, and microbial, chemical processes and advanced nanotechnology for contaminated site remediation. From the 70+ abstracts received, the Division was pleased to award one student travel award to Mr. Jim Entwistle. The award covered the full cost of his registration. Congrats!



Bostonian charm seeped into the traditional Tuesday-night GEOC Division social which took place at Capo Restaurant in the heart of south Boston. Guest feasted on upscale hors-d'oeuvres, enjoyed free drinks, and mingled for two full hours ;) These division-sponsored social events provide fun and effective ways to build community and strengthen our collaborative



networks. I highly encourage you to attend and please feel free to bring collaborators, friends and significant others along. We look forward to further developing our Division and hope to see you all in the future at these events.

The Division is currently ramping up its activities in preparation for the highly anticipated 2019 Spring ACS Meeting taking place in Orlando, Fl March 31<sup>st</sup> to April 4<sup>th</sup>. The GEOC abstracts are due on Nov 5<sup>th</sup>. The meeting theme is “Chemistry for New Frontiers” and the GEOC Division has curated 12 interesting symposia guaranteed to fit all your exciting work. Plus, the Division will be awarding its biannual Geochemistry Medal to Prof. Everett Shock, so expect two additional symposia to celebrate Prof. Shock’s many achievements. The call for Abstracts has gone out and I will be following up with few additional reminders as the deadline approaches. If you haven’t done so already, I urge you all to submit abstracts and to encourage all your eligible students to apply to the student travel award. The GEOC will be giving out up to 5 awards.

The GEOC Division is ran by a small but highly motivated groups of folks! I would like to personally thank them all for their exemplary service and help over the summer in pulling off the Fall Meeting. It does take a village, and this village is pretty awesome. If you are interested in joining the executive committee by running for a leadership position in the GEOC or just looking for volunteering opportunities, let one of us know. We are all featured on the GEOC website (<https://geochemistrydivision.sites.acs.org/>). Follow GEOC on social media and do not be strangers. We look forward to seeing you all very soon.



Cheers,

Nadine Kabengi

## ACS SPRING 2019 SESSIONS

The Spring 2019 ACS National Meeting will be held in the wonderful city of Orlando, FL March 31 – April 4, 2019, and as usual for Spring meetings we are expecting a very well-attended conference.

The meeting theme is “Chemistry for New Frontiers” and the Geochemistry Division (GEOC) has curated 10 interesting symposia (list below) guaranteed to fit all your exciting work. Plus, GEOC will be awarding its biannual Geochemistry Medal to Dr. Everett Shock, so expect two additional symposia to celebrate Prof. Shock’s many achievements.



- 2019 Geochemistry Division Medal Symposium: Medal Presentation & Invited Lectures
- Symposium in Honor of Dr. Everett Shock, 2019 Geochemistry Medal Recipient
- Planetary and Meteoritic Chemistry
- Environmental Interfaces Under Nano-scale Confinement
- Nanoparticles in Nature: Detection, Characterization, Origin and Formation Mechanisms
- Hydrocarbon/Water/Mineral Interactions in the Subsurface
- Understanding Shale-Gas-Fluid Interactions for Water and Energy
- Microbial Interactions in Natural, Geological Processes and Their Application in Remediation of Contaminants
- Molecular Processes at Mineral-Water Interfaces: Predictions via Linking Theory and Experiments
- Mineral Crystallization, Aggregation, and Dissolution
- Chemical Transport and Remediation in Mining Legacy Sites
- General Geochemistry

We look forward to your many submissions and as always please feel free to contact me ([Kabengi@gsu.edu](mailto:Kabengi@gsu.edu)) should you have any questions/comments.

## ACS FALL 2019 CALL FOR SESSIONS

The Fall 2019 ACS National Meeting will be held from August 25–29 in San Diego, CA. The meeting's theme is “*Chemistry & Water*”, with three subthemes: 1) *People and Water*, 2) *Land and Water*, 3) *Water's Effect on Chemistry*. This exciting theme is extremely pertinent to Geochemistry and the role of our field in society.

You are invited to submit ideas for symposia in areas of broad interest to the ACS GEOC community, as well as topics aligned with the meeting theme. Thematic programming highlighting the intersection of geochemistry with society, land use, and chemistry in water are encouraged. Symposia within the meeting theme that address applications of geochemistry, geochemistry of the urban environment, and geochemistry education are also welcome.



If you are interested in organizing a symposium for the Fall 2019 ACS Meeting in San Diego, please send an email to Ashaki Rouff ([ashaki.rouff@rutgers.edu](mailto:ashaki.rouff@rutgers.edu)) expressing your interest, and including:

Proposed symposium title

Organizer(s) name, affiliation and e-mail contact

Concise description of the proposed symposium and if relevant, relation to meeting theme.

Symposia proposals are due by **November 30<sup>th</sup>, 2018**.



## STUDENT TRAVEL AWARDS

Hello again ! As you prepare your abstracts submissions, remember the GEOC division has \$\$ to award five student travel awards to the ACS Spring 19 meetings in March.

Please help me spread the word and encourage all your eligible students to apply. Find below the details on the what, how, and who for these awards.

### AWARDS:

§ The Geochemistry Division will pay for the awardees' registration at the student ACS member rate.

§ Awardees will be given an extended time allocation for the oral presentation (30 minutes instead of regular 20 minutes for contributed talks).

§ Up to five awards will be made based on the quality of the applications.

§ Abstracts will be judged based on the impact on the field of geochemistry, technical approach, quality and clarity of writing, and the relevance of the abstract to both session and national meeting themes.

§ Award winners will be announced by Dec 15<sup>th</sup>, 2018.

### HOW TO APPLY:

§ After submitting your regular abstract to the ACS's Meeting Abstract Programming System (MAPS <http://maps.acs.org>) by the Nov 5<sup>th</sup> deadline, submit a separate, extended abstract to the GEOC Program Chair at [kabengi@gsu.edu](mailto:kabengi@gsu.edu) and include your submitted abstract number in your email.

§ Extended abstracts should not exceed one page (use at least 11-pt font, single-line spacing, and 1-inch margins) and may contain tables and figures.

§ Extended abstracts should be received no later than Nov 18<sup>th</sup>, 2018.

### WHO CAN APPLY:

§ The award is limited to undergraduate and graduate students presenting in GEOC sessions

§ Applicants must have already submitted a regular abstract to MAPS for the meeting.

§ The applicant must be the presenting author.

§ Only one application per presenting author will be considered.

### QUESTIONS:

Questions about the awards should be directed to Nadine Kabengi [kabengi@gsu.edu](mailto:kabengi@gsu.edu)

## ELECTION INFORMATION

Dear ACS Geochemistry Division Members,

With November upon us, it is time to “Rock the Vote” for the ACS Geochemistry 2018 Election!

This year’s election includes candidates for two positions, Program-Chair Elect and Councilor. Two candidates have been nominated for each position.

The polls will open on Nov 1st until Nov. 30th (Friday) 2018 at midnight (Pacific Time).

A brief description of the position and its role is provided below as well as short bios of the candidates (listed in alphabetical order).

**Program-Chair Elect** (4 year term): This officer will serve as Program-Chair Elect the first year and shadow the Program Chair. The following year, the candidate will serve as Program Chair and organize the symposium at the fall and spring national meetings. The third year, the candidate will serve as Division Chair, and finally as Immediate Past Division Chair in the fourth year.

Dr. Yandi Hu, Assistant Professor of Civil & Environmental Engineering, University of Houston

Dr. Hu obtained her Ph.D. in 2013 from Washington University in St. Louis, prior to joining University of Houston in the same year. Her main research area is interfacial nanogeochemistry. Some specific interests include: (1) nucleation and growth of iron hydroxide, carbonate, sulfate, and phosphate minerals; and (2) surface and subsurface geochemical reactions related to safe and efficient operations of geologic CO<sub>2</sub> sequestration, radioactive waste immobilization, and oil production. Research in her group has also been supported by various funding agencies at U.S., including National Science Foundation, Department of Energy, and Texas Hazardous Waste Research Center. Her group also received support from international funding agencies such as Qatar National Research Fund. Dr. Hu is also a recipient of the Teaching Excellence Award from Cullen College of Engineering at University of Houston. She has organized/presided 7 symposiums at ACS national conferences in the past 5 years, and she has been serving as a newsletter editor For ACS Geochemistry Division since 2018.



Yuanzhi Tang, Assistant Professor of Geochemistry at the School of Earth and Atmospheric Sciences and School of Civil and Environmental Engineering at Georgia Tech

Prof. Tang is a graduate of SUNY-Stony Brook in 2008, and worked as a postdoc at Harvard University before joining Georgia Tech at the end of 2012. Dr. Tang has been a member of ACS and the Geochemistry Division since she was a graduate student. She has organized several symposia for the Division over the past few years. Her highly interdisciplinary research focuses on the molecular scale mechanisms and kinetics of chemical reactions at microbe-metal-mineral interfaces, and has broad implications for a range of fields such as environmental engineering, oceanography, planetary science, and materials sciences. As the Program Chair Elect, Yuanzhi is eager to promote geochemistry in the broader chemistry community, and to ensure the close cooperation with other divisions of the American Chemical Society.



## ELECTION INFORMATION

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**Councilor** (3 year term): The Councilor will serve as a vital bridge between ACS national policy and our division concerns, speaking for the members of the division at the national level. The Councilor helps to set national policies for ACS that directly or indirectly affect the constituency. At the same time, he/she must integrate the views of the constituency with an open and objective evaluation of the broader needs of the ACS on the national level.

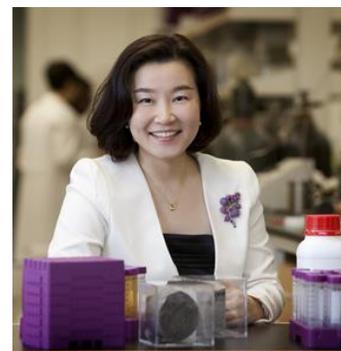
Dr. Anastasia G. Ilgen, Principal Member of Technical Staff in the Geochemistry Department at Sandia National Laboratories

Dr. Ilgen is an experimental geochemist, specializing in molecular-level processes at mineral-water interfaces, with an emphasis on chemical controls on surface-mediated redox reactions, ion adsorption-desorption rates and mechanisms, and chemical effects on fracture. She joined Sandia in 2012, and established her research program on interfacial chemical processes which are relevant to metal cycling in the environment, geologic CO<sub>2</sub> storage, metal corrosion, and chemical effects on fracture. She has a B.S./M.S. in Water Quality and Engineering from Kamchatka State Technical University, Petropavlovsk-Kamchatsky, Russia, and a Ph.D. in Environmental Chemistry from the University of Alaska Fairbanks, USA. Anastasia has been a reviewer for five international scientific journals, for the National Science Foundation, and for the Basic Energy Sciences Program at DOE. Anastasia has been a member of ACS since 2008, started volunteering for the Geochemistry Division as a Membership Committee Chair (2014), and was elected as a Program-Chair Elect in 2015, serving as a Program-Chair (2016), Division Chair (2017), and Past Chair (2018).



Dr. Young-Shin Jun, Professor and the Director of Graduate Studies in the Department of Energy, Environmental & Chemical Engineering at Washington University in St. Louis

Dr. Jun holds a Ph.D. in Environmental Chemistry from Harvard University, received in 2005. She conducted postdoctoral research at the University of California at Berkeley/Lawrence Berkeley National Laboratory. Her research interests cover such important geochemistry topics as water–mineral interactions; the dissolution and nucleation of minerals; the fate and transport of environmental nanoparticles; redox geochemistry; and energy-related subsurface science. She received a 2008 Ralph E. Powe Junior Faculty Enhancement Award and a 2011 U.S. National Science Foundation CAREER Award. She was named a 2015 Kavli Fellow by the U.S. National Academy of Sciences, a 2016 Frontier of Engineering Fellow by the U.S. National Academy of Engineering, and a 2018 Fellow of the Royal Society of Chemistry. She serves on the American Chemical Society (ACS)'s organizational level Committee on Science and served the Geochemistry Division as the Past Division Chair (2017), Division Chair (2016), Program Chair (2015), Program Chair-Elect (2014), and a member of the Geochemistry Division Medal Selection Committee (2016-2020).



**CALL-FOR-PAPERS-SPECIAL ISSUE OF ACS EARTH AND SPACE CHEMISTRY**

Dear Friends and Colleagues,

**ACS Earth and Space Chemistry** is launching a special issue devoted to “*Iron Redox Chemistry and its Environmental Impacts*”. The journal is now seeking papers within the scope described below to help advance the Special Issue for its broad readership.

Iron is the most abundant redox-active element at the Earth’s surface. It occurs in diverse host rock lithologies, sediments, and soils as accessory oxide and oxyhydroxide minerals and nanoparticles that can dominate the reactive mineral/water interfacial area. Furthermore, iron oxide nanoparticles intended to exploit the catalytic properties of these mineral surfaces for diverse purposes, including environmental remediation, continue to undergo rapid development. The structure, charge, and chemical dynamics at these interfaces with aqueous solutions strongly impacts their interaction with coupled elements and contaminants. The influence of important environmental factors, especially oxygen concentration, natural organic matter, microbes, etc. remain poorly understood. Key interfacial processes can be driven by both biotic and abiotic mechanisms. From the field scale down to the nanoscale, this special issue seeks to promote conceptual advances in understanding the interfacial redox chemistry of iron and closely related metal oxide surfaces (e.g., Mn), so that reaction rates and the strength of chemical associations over time can be more accurately predicted.

Example topics of interest include, but are not limited to:

- (a) Formation and phase transformations of iron oxides;
- (b) Sorption and redox processes occurring at iron oxide-water interfaces;
- (c) Colloidal stability and transport of iron oxides in natural and engineered environmental systems;
- (d) Abiotic and biotic redox mechanisms at iron oxide-water interfaces.

Submission of both original research and review-type papers are encouraged. Interested researchers should plan to commit to a submission timeline on or **before 12/01/18**, so that ACS ESC can ensure timely publication of this special issue by early next year. The Guest Editors welcome any pre-inquiries on manuscript concepts should questions arise about relevance against scope.

We look forward to hearing from you.

Guest Editors: Fangbai Li, Yandi Hu, Zhenqing Shi, Kevin M. Rosso

*This is just an advertisement, not a normal activity of ACS Geochemistry Division.*

**JOB OPPORTUNITIES****Assistant Professor in Soil Chemistry at Auburn University**

The Department of Crop, Soil, and Environmental Sciences in the College of Agriculture at Auburn University is seeking applications an Assistant Professor in Soil Chemistry. This faculty position will be a nine-month, tenure-track position with a 30% teaching and 70% research appointment. The projected start date is August 16, 2019. The successful candidate will develop a nationally recognized program which advances current understanding of soil chemical processes. Research areas which complement existing expertise include thermodynamics and kinetics of soil processes, soil contaminant speciation and reactivity, organo-mineral interactions in soils, redox processes, and principles of soil acidity. Teaching responsibilities for the position include 7-8 hours of course credit per academic year including an upper level undergraduate/graduate soil chemistry course and a graduate level environmental soil chemistry course. Those interested in applying for the position can do so at the following link: <http://aufacultypositions.peopleadmin.com/postings/3094>

**Postdoc Fellow Position in Chemical Sciences and Engineering Division, Argonne National Lab**

We invite you to apply for a Postdoctoral Appointee position in the Chemical Sciences and Engineering Division, Argonne National Laboratory. In this role, you will perform innovative research to understand molecular-scale processes at the interface of rock forming minerals, especially sparingly soluble minerals such as barite and calcite, in contact with aqueous solutions. You will investigate the interfacial structure and associated processes (including ion adsorption thermodynamics and kinetics, and mineral nucleation and growth) using synchrotron x-ray techniques and other complementary approaches, interpret the data, and present the results at scientific conferences and in peer-reviewed literature. Details can be found in the Argonne Career website (shown below) using the Requisition number: 404758. <http://www.anl.gov/careers/apply-job/postdoctoral-applicants> Please contact Sang Soo Lee ([sslee@anl.gov](mailto:sslee@anl.gov)) or Paul Fenter ([fenter@anl.gov](mailto:fenter@anl.gov)) for further information.

**Graduate Student Position in Environmental Soil Chemistry, University of Delaware**

A position is available for a graduate student, at the doctoral level, in the Environmental Soil Chemistry group of Donald L. Sparks, at the University of Delaware. The student could pursue research in several areas including climate change impacts on C cycling in soils, water salinization effects on biogeochemistry of nutrients in coastal ecosystems, and sea level rise effects on toxic metal transformations. The student should preferably have a M.S. degree in soil chemistry, geochemistry, or environmental chemistry with experience in materials (i.e., soils, minerals, carbon) characterization techniques, kinetic measurements, and molecular scale tools, particularly synchrotron-based and infrared spectroscopy. The student would join a vibrant graduate program with excellent doctoral students, postdoctoral researchers, and visiting scholars. Our group is located in an interdisciplinary science and engineering building with modern laboratories, world class materials characterization, microscopy, and surface chemistry core facilities and is also home to allied disciplinary research groups in geochemistry, hydrogeology, environmental chemistry and engineering, materials science, and chemical engineering. Interested students should send a cover letter including research interests along with a CV to: Donald L. Sparks, Unidel S. Hallock du Pont Chair and Director of the Delaware Environmental Institute, Harker Interdisciplinary Science and Engineering Laboratory, 221 Academy St., Suite 250A, University of Delaware, Newark, DE 19716. [dlsparks@udel.edu](mailto:dlsparks@udel.edu).

**DIVISION OFFICERS & COMMITTEES****Division Chair**

William (Bill) Burgos is a professor of environmental engineering in the Department of Civil and Environmental Engineering at the Pennsylvania State University. His research focuses on the biogeochemistry of metals and radionuclides, the bioremediation of organic contaminants, and water management associated with shale gas development.

**Past Division Chair**

Anastasia Ilgen is a staff scientist at Sandia National Laboratories. She is an experimental geochemist, specializing in molecular-level processes at mineral-water interfaces, with emphasis on ion adsorption-desorption rate and mechanisms, chemical controls on mineral growth and dissolution, and surface-mediated redox reactions. She volunteered with the Division since 2013, and became a Chair-Elect in 2015.

**Program Chair**

Nadine Kabengi is an associate professor of Geochemistry at Georgia State University where she holds joint appointments at the Geosciences and Chemistry departments. Her research involves measuring the energetics and thermodynamic properties of surface reactions, focusing on mineral-water interfaces and surface reactivity. She was elected as Program-Chair elect in 2017 and will assume her role in 2018. In her free time, she enjoys binge-watching TV and internet series.

**Program Chair Elect**

Dr. Ashaki Rouff is an Associate Professor of Geochemistry at Rutgers University, Newark NJ. Her research uses laboratory-based model systems, field work, and advanced molecular-scale techniques; as applied to the areas of contaminant geochemistry, urban geochemistry and sustainable geochemistry. Dr. Rouff has been a member of the Geochemistry Division and an American Chemical Society member since 2002.



**DIVISION OFFICERS & COMMITTEES****Treasurer and Awards Committee Chair**

Sebastien Kerisit received his PhD in computational chemistry from the University of Bath and is now a Senior Research Scientist at the Pacific Northwest National Lab. His research interests cover a wide range of topics relevant to the geochemistry community including the chemistry of mineral-water interfaces, carbon capture and sequestration, the aqueous corrosion of glasses, the mechanisms of mineral nucleation and growth, and the redox properties of natural systems. He has been a member of Geochemistry Division since 2006, and served a four-year rotation as Program Chair-Elect (2013), Program Chair (2014), Division Chair (2015), and Past Division Chair (2016) of Division. Most recently, Sebastien served as Chair of the Geochemistry Division Medal Committee.

**Secretary**

Sang Soo Lee is a staff scientist at Argonne National Laboratory. His research focuses on in situ and real-time observations of molecular-scale processes at mineral-water interfaces in geochemical systems primarily using synchrotron-based X-ray scattering and spectroscopic techniques. He has been an ACS member since 2010, and has served as the Membership Chair (2015-2017) for the ACS GEOC division. He is now the Secretary (2018-2020) for the division.

**Councilor**

James Kubicki is a professor and chair in Geological Sciences at the University of Texas at El Paso working on computational chemistry of environmentally relevant reactions. He served as the Councilor for the division in 2016. James Kubicki was the Program Chair-Elect/Program Chair/Chair in the division in 2004-2006. His current research involves modeling mineral-water interfaces, cellulose and plant cell wall components, and nanoparticle surface reactivity. His favorite geomaterial is soot or black carbon because it is so disorganized.

**Alternate Councilor**

Louise Criscenti is a scientist at Sandia National Laboratories using molecular modeling techniques to address geochemical and chemo-mechanical questions relevant to shale gas extraction, carbon dioxide sequestration, nuclear waste glass dissolution, metal adsorption to oxides, and ion disposition in nanopores. She has served in the volunteer position of Membership Chair (2005-2006; 2011-2012), and in the elected position of Secretary (2006-2008; 2012-2014) for the Geochemistry Division. She is now the Alternate Councilor (2017-2019).



### Webmaster

Dr. Juliane Weber is a postdoctoral researcher at Oak Ridge National Laboratory studying the fate of impurities at mineral-water interfaces using a variety of high-resolution chemical imaging techniques e.g. atom probe tomography or transmission electron microscopy. Recently, she started to study the evolution of porosity during recrystallization using small angle neutron/X-ray scattering. She has been the webmaster since September 2018.



### Newsletter Editors

Dr. Yandi Hu is an Assistant Professor at University of Houston. Her research utilized advanced nanoscale interfacial characterization techniques to probe reactions at solid-liquid interfaces, as applied to better understand mineral nucleation and growth which are related to the fate and transport of aqueous contaminants and scale formation in many natural and engineered systems.

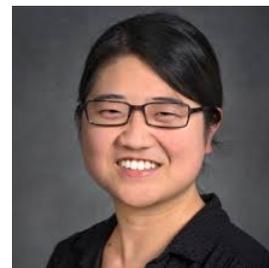


Omanjana Goswami is a graduate student at Rutgers University-Newark, majoring in environmental sciences. She works with Dr. Ashaki Rouff and studies the metal-mineral interaction in natural and engineered wastewater environments.



### Membership Chair

Hang Deng is a research scientist at Lawrence Berkeley National Lab. She received her PhD degree from Princeton University. Her research utilizes a suite of experimental tools and reactive transport models to investigate mineral-fluid interactions, addressing scientific questions at the center of pressing energy and environmental challenges.



### Social Media Coordinator

Jessica Rimsza is a postdoctoral researcher at Sandia National Laboratory investigating the chemical-mechanical mechanisms which control fracture of silicates using atomistic simulations.

## DIVISION CONTACT INFORMATION

Visit us online at: <http://geochemistrydivision.sites.acs.org/>