

ACS DIVISION OF GEOCHEMISTRY

SPRING 2005 NEWSLETTER



225th NATIONAL ACS MEETING
March 13rd - March 17th
San Diego, California

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Message from the Program Chair

229th National Meeting and Exposition
San Diego, CA March 13-17 2005



Welcome to San Diego! I hope that you will be able to enjoy the Gas Lamp District, Zoo, beach, and great restaurants in addition to the exciting symposia while you are here. This year's spring meeting has a nice variety of topics included in the programming with significant overlapping interests among many topics. If this means you stay longer in San Diego and take in all five days of programming the Geochemistry Division (<http://membership.acs.org/g/geoc/>) and ACS will be pleased. Everyone is extremely busy these days, and we try to keep the number of days attending meetings to a minimum, so the Geochemistry Division attempts to concentrate our programming as much as possible so you get the most information and networking out of your limited travel time. In addition, we find increased two-way interactions with other divisions of ACS, so you can feel that you are attending more than one meeting at a time.

The 229th meeting of ACS will feature Geochemistry symposia related to:

Division of Geochemistry

GEOC

J. D. Kubicki, Program Chair

Hyatt Regency, Convention Center	S	M	Tu	W	Th
Bridging Concepts and Techniques in Molecular Biogeochemistry, Medical Mineralogy, and Nanomaterials Synthesis	D	A			
Organic Geochemistry		A			
Geochemistry Medal Symposium		P			
Sci-Mix		E			
Biogeochemistry at the Limits of Habitability**			A		
Novel Approaches to the Analysis of Modern and Ancient Sediments and Sedimentary Rocks**			P		
Trace Element Biogeochemistry			E	D	
History of Organic Geochemistry**				D	
From Atoms to Mountains: Scaling up in Geochemical Kinetics					D
Co-sponsored Symposia: Selecting a co-sponsored symposia will take you outside of the current Committee, Secretariat or Division					
Applications of Physical Chemistry to Environmental and Biogeochemical Research* (PHYS)	D	D		D	D
Analytical Chemistry in the Marine Sciences: Instrumentation and Sensors for Measurements in the Field* (ANYL)				D	

[See complete list of sessions](#)

Legend

A = AM; **P** = PM; **D** = AM/PM;

E = EVE; **DE** = AM/PM/EVE; **PE** = PM/EVE;

* Cosponsored symposium, primary organizer(s) shown in parentheses.

** Primary organizer.

In addition, Geochemistry is co-sponsoring symposia with the Physical Chemistry (Applications of Physical Chemistry to Environmental and Biogeochemical Research) and Analytical Chemistry (Analytical Chemistry in the Marine Sciences: Instrumentation and Sensors for Measurements in the Field). The chance to interact with other chemical disciplines is a great advantage ACS meetings enjoy as this interaction serves to bring new techniques and perspectives into our research.

Besides the obvious overlap of sessions on Organic Geochemistry and the History of Organic Geochemistry, connections between extremophiles & analysis of sediments, trace metal biogeochemistry & medical mineralogy, and geochemical kinetics and physical chemistry methods also exist.

The opportunity to help organize programming for ACS Geochemistry meetings has been great. This past year has been a chance to learn more about geochemistry outside my sub-discipline and meet a lot of excellent researchers and students. Symposia organizers for the Philadelphia (see description below) and San Diego meetings have been fantastic. I thank Susan Carroll and all the other division officers for their efforts over the past year.



SYMPOSIA
SAN DIEGO MEETING
(REGISTRATION CLOSED)

Applications of Physical Chemistry to Environmental and Biogeochemical Research

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Peggy O'Day, UCMerced, poday@ucmerced.edu, 209-724-4338

Recent advances in experimental and theoretical physical chemistry are leading to more sophisticated studies of environmental and biogeochemical processes at the molecular level. Such studies include developments in molecular modeling and applications of new spectroscopic and microscopic techniques to probe interfacial processes. The goal of this symposium is to showcase the evolution of physical chemistry techniques for environmental studies, and to highlight new research in environmental chemistry and geochemistry engendered by advances in physical chemistry. Through the inclusion of a range of interdisciplinary studies, this symposium will also highlight new opportunities and problems in environmental chemistry and geochemistry for the physical chemistry community.

Lead Division: Physical Chemistry

Co-Sponsoring Divisions: Geochemistry and Environmental Chemistry

Novel Approaches to the Analysis of Modern and Ancient Sediments and Sedimentary Rocks

Sponsored by the Division of Geochemistry (GEOC)

at the 229th ACS National Meeting
San Diego, CA

March 13 – 17, 2005

The chemistry of sediment is fundamentally important to a range of fields in the geosciences. Sediments are a primary archive of past global climate, at time scales ranging from the seasonal to the multi-millions of years. The seafloor records fundamental changes in the terrestrial system, such as the role of weathering through time, the history of tectonic uplift, and the evolution of the biosphere. Also, continental margin and deep-sea sedimentary sequences can be considered as “biogeochemical membranes”, through which pass chemical species on their diffusive journey between the effectively infinite reservoirs of seawater and the underlying crust, and within which occur a complex milieu of biogeochemical reactions that involve multiple dissolution and reprecipitation reactions (“diagenesis”).

This session will explore the development, applications, and implications of new techniques in the analysis of sediments and sedimentary rocks. The presentations will be linked through their reliance on new instrumentation and methodologies or the innovative use of methods already well established within the marine and terrestrial geochemical communities. Topics include, but are not limited to:

- Mass-independent stable isotope behavior and related measurements of rare isotopes
- Elemental and isotopic distributions in multi-component sedimentary matrices
- Molecular and stable isotope reconstructions of microbial ecosystems
- MC-ICP-MS techniques and novel stable isotope systems
- Compound-specific organic isotope approaches – ^{14}C , δD , $\delta^{13}\text{C}$, etc.
- Elemental and radioisotopic measurements of marine particles
- Processes in the aqueous phase (porewater, seawater) recorded by sedimentary materials
- Innovations in tracking the $\delta^{34}\text{S}$ and $\delta^{18}\text{O}$ of seawater sulfate, and phosphate- $\delta^{18}\text{O}$ relationships
- Novel methodologies in the reconstruction of terrestrial ecosystems

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**Symposium on the History of Organic Geochemistry to
be cosponsored by
Divisions of Geochemistry and History of Chemistry**

**at the 229th ACS National Meeting
San Diego, CA**

March 13 – March 17, 2005

The pioneering work of Alfred Triebs in the 1920s and 1930s marked the birth of organic geochemistry at the molecular level. Since that time development of sophisticated analytical tools such as gas chromatography (GC); mass spectrometry (MS); isotope ratio mass spectrometry (IRMS) and various hyphenated combinations of these techniques have lead to an explosion in the characterization of geological samples of all ages and forms. The molecular data obtained from rocks, oils, coals, shales, sediments, water, organisms, gases and many other types of materials has greatly improved our knowledge of the origin of these materials and their fate during and after deposition. Origin concepts have developed into areas such as the origin of life; lunar studies; petroleum geochemistry; environmental geochemistry; paleoclimate studies; archaeological studies; forensic chemistry and many other related areas.

It is the purpose of this symposium to be held jointly between GEOC and HIST to review developments that have occurred within the past 100 years in these areas. It is planned to invite a number of national and international speakers that have made a significant input in the field over the past 5 or 6 decades. Such speakers will probably include Professor Geoff Eglinton, England; Prof. Fu Jiamo, China; Prof. Lopatin, Russia; Prof. Ian Kaplan, USA to provide an historical and international perspective. In addition we will invite geochemists that are still active in research today to submit contributions describing how they see their research being related to historical developments within the field of organic geochemistry.

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In-situ Methods in Environmental Sciences

Division of Geochemistry

229th Meeting of the American Chemical Society

San Diego, CA, March 13-17, 2005

It is known that chemical and biogeochemical reaction rates and processes studied under controlled conditions in clean laboratory systems cannot necessarily be transferred to the field. However, it is not easy to study reactions directly in the field because the reactant of interest, for example a mineral phase, is dispersed at low concentration in a matrix of other compounds. What we need are methods to follow reactions of these phases or of reactions *in-situ* in heterogeneous environments such as soils, sediments or groundwaters. This symposium will address recent improvements in chemical, geological and microbial methods that allow to investigate chemical, biogeochemical and microbial processes with as little disturbance as possible directly in soil, groundwater or other systems. We invite contributions that cover

- dissolution of mineral phases
- phase transformations
- weathering (e.g. of silicates)
- solubilization of pollutants
- bioavailability of pollutants
- microbial activity
- pollutant degradation

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Biogeochemistry at the Limits of Habitability

**Sponsored by the Division of Geochemistry (GEOC)
and Biotechnology Secretariat (BTEC)**

**at the 229th ACS National Meeting
San Diego, CA
March 13 – March 17, 2005**

Some organisms thrive under environmental conditions considered extreme by human standards. On the other hand, some environments appear to be so “extreme” as to be inhospitable to life. This symposium will focus on the biogeochemistry of environments at the edge of habitability, in which energy and/or nutrients are at the lower limits, or where physical harshness (radiation, desiccation, turbulence, turbidity, pressure, shearing, toxins, etc.) are maximum. These environments are of interest as repositories of biochemical diversity and as analogs for biogeochemical systems on other planets or at other times in Earth’s history. Relevant questions include but are not limited to:

1. What are the limits of habitability on earth and on other planetary bodies? Can environments be characterized chemically and physically in such a way that the limits to habitability can be predicted? Given the universal nature of biochemistry, are there predictable rates of geochemical change or geochemical conditions which will lead to the exclusion of life?
2. Are biogeochemical systems at the limits of habitability simpler? If geochemical conditions limit the diversity and/or type of life forms present, what are the mechanisms?
3. Are there geochemical hallmarks of biogeochemical systems at the edge of habitability? Are they less efficient or more vulnerable to perturbation with respect to the flow of matter and energy? Do they have unique isotopic and/or chemical signatures?
4. What is the influence of “extreme” conditions on rates of biological evolution and adaptation?
5. What mechanisms allow organisms to meet the challenges posed by environments at the edge of habitability? To what extent can abundant chemical energy subsidize mechanisms to counteract extremely challenging conditions?
6. What is the influence of biogeochemistry taking place at limits of habitability on global elemental cycles?

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Transport Behavior of Actinides and Fission Products in the Subsurface

at the 229th ACS National Meeting, San Diego, CA
March 13-17, 2005

Understanding the conditions under which actinides and fission products migrate in the subsurface is critical for addressing international problems ranging from safe storage of high-level nuclear waste, to the fate and transport of radioactive contaminants in the subsurface at cold-war legacy sites, the understanding the bioavailability of contaminants at nuclear accident sites, and international security/non-proliferation topics. To add to the difficulty of this task, predictive models often must evaluate the fate and transport of actinides and fission products over the time scale of thousands of years. We need better knowledge of the processes that control radionuclide transport and immobilization before quantitative predictive models are reliable.

Papers are encouraged on a wide range of research topics that may include but are not limited to the following:

- Chemical structure and reactions with actinides and/or fission products,
- Experimental studies on radionuclide transport,
- Transport models of radionuclides, and
- Field studies of radionuclide transport.

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From Atoms to Mountains: Scaling up in Geochemical Kinetics

Sponsored by the Division of Geochemistry (GEOC)

**at the 229th ACS National Meeting
San Diego, CA**

March 13 – March 17, 2005

This symposium will focus on the rates, mechanisms, and chemical feedbacks of geochemical reactions across a range of length scales: from the molecular to micro- to meso- to field scale. Scaling of kinetics from small to large scale often incorporates a transition from simple well-defined chemistries to more complex heterogeneous chemistries. To understand and predict environmental kinetics in laboratory or field systems it is essential to conduct studies at more than one scale and to use a combination of analytical techniques. Papers that investigate geochemical kinetics at more than one scale and that combine modeling with experimental, spectroscopic, or microscopic techniques are especially encouraged. Relevant topics include but are not limited to:

1. Measurement and analysis of reactive surface area and surface scaling factors for scaling heterogeneous reaction kinetics
2. Mechanisms and rates of intra- and extracellular microbe-mineral bioreactions
3. The use of metal as well as traditional stable isotopes to identify molecular mechanisms in geochemical processes
4. The kinetics of mineral dissolution, cation exchange, and phase transformation reactions of environmental relevance
5. Mechanisms and controls on sorption, surface polymerization, and formation of surface precipitates on minerals
6. Spectroscopic and molecular modeling approaches to characterize environmental reactions at the molecular scale
7. The development of chemical micro-environments at mineral surfaces, within mineral pores, or within biofilms
- 8.

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Organic - Inorganic Interactions at Surfaces: Bridging Experimental and Computational Approaches in Biogeochemistry, Geomedicine and Nanomaterials Synthesis

Sponsored by the Division of Geochemistry (GEOC)*
at the 229th ACS National Meeting

San Diego, CA
March 13 – March 17, 2005

Organic molecules and mineral surfaces, by their complex chemical behavior and ubiquitous nature, control the partitioning of elements between the dissolved, sorbed, and solid phases. Relevant processes include bioremediation of environmental contaminants, biomineralization in prokaryotic and eukaryotic organisms, and industrial materials synthesis. An integrated approach that combines analytical chemistry, spectroscopic, microscopic, and computational techniques is key to unraveling the complex reaction pathways in such systems. This symposium aims to bridge the experimental and computational approaches in understanding a range of processes, from the molecular to the macroscopic scale. The emphasis is on recognizing the common physical and chemical interactions underlying these apparently diverse areas of application. Relevant topics include but are not restricted to

1. controlled and induced biomineralization by eukaryotes and prokaryotes in extracellular and intracellular milieu, relating to global elemental cycling, microbially induced ore-formation, and mineral weathering
2. normal and pathological biomineralization within the human body including formation of bones, teeth, and kidney stones
3. properties of bioceramics in determining biocompatibility of oxides used in prosthetic medical devices
4. effect of inhaled mineral dusts on lung tissue
5. self-assembly of organic macromolecules, monolayers, and biofilms at mineral surfaces relating to pre-biotic synthesis of long-chain organics, cellular organization of early life, bacterial adhesion to mineral substrates, and materials synthesis
6. biomimetic nanomaterials synthesis for use as catalysts, molecular sieves, semiconductor devices, etc.
7. synthesis and characterization of organoclays and intercalated nanocomposites
8. bioremediation of contaminants in waste-water and in the environment

We invite submissions that use any experimental, spectroscopic, microscopic techniques alone or in conjunction with computational methods. Among the computational approaches we include classical thermodynamic modeling, *ab initio* and hybrid theory applied to clusters and periodic systems, and molecular simulation methods such as Monte Carlo, Molecular Mechanics, and Molecular Dynamics.

*Co-sponsored by the Division of Environmental Chemistry (ENVR), and the Materials Chemistry Secretariat (MTLS), and Colloids (COLL)

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Trace Metal Biogeochemistry

Division of Geochemistry

229th Meeting of the American Chemical Society

San Diego, CA, March 13-17, 2005

The concentrations and chemical forms of trace metals in natural waters and terrestrial systems determine their availability and toxicity to organisms. Conversely, microorganisms influence the chemistry of trace metals in aquatic and terrestrial systems by mediating oxidation-reduction reactions, precipitating or dissolving minerals, releasing complexing agents, and absorbing or taking up chemical species. Recent advances in both the analytical measurement and characterization of trace metal species as well as the use of genomics to identify the role of metals in biological systems have created new opportunities for interdisciplinary research in the study of trace metals and their biogeochemical cycles. This session will focus on interactions between trace metals and microorganisms, and the ecological consequences of these interactions at the local or global scale. Emphasis will be placed on the elucidation of microbial processes that extend their influence to global or regional trace element biogeochemical cycling. We invite contributions that cover:

- metal speciation and bioavailability
- biogenic metal chelating agents
- metals as limiting micronutrients
- chemical or biological transformations of trace metal species
- genomics studies of cellular metal homeostasis
- metalloenzyme structure and function

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Congratulations Professor Hatcher!



As the icing on the cake, a Geochemistry Medal Symposium is also being held in honor of this year's recipient - Pat Hatcher (The Ohio State University). This well-deserved honor for Prof. Hatcher reflects his contributions to coal and organic geochemistry over the years, and we are happy that he has been active in ACS meetings over his career. It is a happy coincidence that he is receiving the award at a meeting featuring a session on the past, present and future of Organic Geochemistry.

Future Meetings

We hope that you have ideas for future symposia you would like to see. If so, please contact the new Program Chair, Yoko Furukawa (Naval Research Laboratory - yfurukawa@nrlssc.navy.mil) with your ideas for the Washington DC (Aug. 28 to Sept. 1, 2005) and Atlanta GA (March 26 to 30, 2006). Organizing a symposium is relatively easy as it can be done via e-mail and ACS meetings website (oasys.acs.org). The Petroleum Research Fund also has travel grants (Type SE grants) to subsidize bringing in foreign speakers to enhance the quality of your symposium. See below for Washington DC Calls-For-Papers.

228th National Meeting - Philadelphia PA - August, 2004

The Division of Geochemistry meeting in Philadelphia was successful in attracting a broad array of people working in geochemistry and related fields. Symposia were held on Molecular Modeling in Environmental Science, Astrobiology & the Origin of Life, Mass-Independent Isotope Fractionation, and Surface Spectroscopy. The molecular modeling group (organized by Rebecca Perlow, Steve Cabaniss, and Brian Teppen) receives the award for dedication - earned by showing up at 8 o'clock on Sunday morning to begin their session. The Geochemistry Division symposium was complemented by a session on the same topic sponsored by the Environmental Division.



From left to right: Rebecca Perlow (Merck), Steve Cabaniss (UNM), James Rabinowitz (EPA, keynote speaker), James Farrell (UAz, organizer of the ENVR division symposium, and Jack Tossell (UMd, keynote speaker in the ENVR division symposium).

A 2-day session was organized by Henry Teng and Aravind Asthagiri on Astrobiology & Origin of Life. This symposium featured keynote talks by Steve Benner on organic chemistry in the solar system and Robert Shapiro on small molecules and the origin of life. A complementary symposium on Mass-Independent Isotope Fractionation related to early Earth's history was held on Wednesday. Organized by Boswell Wing and Jim Lyons, this symposium focused on mechanisms that might explain the observed mass-independent isotope fractionation of sulfur and oxygen. Highlighted by talks from Doug Rumble, Mark Thiemens, and James Farquhar, the dependence of geochemical interpretations on understanding atmospheric chemistry was emphasized. To reinforce this point, the Geochemistry division co-sponsored a symposium on Chemical Physics in Atmospheric Science put together by the Physical Chemistry Division.



Will Castleman (PSU), Steve Mojzsis (Colorado), Alex Pavlov (Colorado), Boswell Wing (UMd), Greg Michalski (UCSD), Becky Alexander (Harvard), Mark Thiemens (UCSD), Doug Rumble (Geophysical Lab), James Lyons UCLA), Bruce Runnegar (Nasa/UCLA), James Farquhar (UMd), Huiming Bao (LSU), Ken Knappenberger (PSU)

Dan Strongin and Eugene Ilton organized the final day of talks on Spectroscopy of Surfaces. I was impressed by the crowd that stayed through the last talk on this important topic. Don Sparks gave a keynote address on synchrotron-based spectroscopic techniques to analyze metal surface complexes, and P.S. Bagus spoke on XPS of complexes with open shell metals in the afternoon. Several talks featured the Sum Frequency Generation techniques which is an important advance in environmental geochemistry.

Overall, I was very pleased with the Philadelphia meeting. Excellent location next to the Environmental Chemistry Division talks allowed us to network with these colleagues, and even the weather collaborated and was very pleasant for the entire week. Although these Fall meetings are generally smaller than the Spring meetings, this gives one the advantage of more time for discussion with colleagues during and after sessions. Consider this if you are organizing a symposium and want to induce prolonged discussions in your area.

From The Secretary



2005 Election Results:

In what was for the Division a record "turnout", we will have a new Program Chair-Elect and Treasurer heading into 2005. Martin Schoonen (SUNY Stony Brook) was elected Program Chair-Elect over Tim Filley in a very close election! Don Macalady (Colorado School of Mines) was elected Treasurer for a 3-year term. Thanks to all the members who have participated and all of the candidates. Also, in the past year, Louise J. Criscenti (Sandia National Labs) has joined us as Membership Chair.

For 2005, Jim Kubicki moves from Program Chair to Division Chair and Yoko Furukawa moves from Program Chair-Elect to Program Chair. This succession is designed to make it easier for new officers to become acquainted with how the Division, and ACS as a whole, operates. It also gives the eventual Division Chair three years to make their mark and influence the future direction of the Division.

For 2006 (elections in late 2005), we will be soliciting nominees for Secretary and Program Chair-Elect. Getting involved with the Division as an officer is really only a modest time commitment and gives you the opportunity to interact on a more diverse scale with ACS as well as your colleagues. If you are interested or have questions, please feel free to contact any current or past Division officer. Finally we should take the opportunity to thank Jay Brandes for his service as Treasurer for the past three years and Susan Carroll who moves on from Chair to Past Chair/Awards Chair. This is Susan's second stint as a Division Officer!

John C. Schaumloffel, Secretary.

From The Councilor

Change is in the air.....

The ACS is a very large organization, and change tends to come slowly, but thanks to the efforts a number of councilors (including me) and other officers, changes within the ACS are slowly beginning to take hold.

The most visible change that members will see soon will be changes in the manner in which ACS conducts elections and other forms of balloting. Last year, the Council voted to approve changes in the Society's bylaws to (finally!) allow electronic balloting. These changes also involved changes in the Society's constitution, and hence required ratification by the membership. I am happy to report that the ballots that were sent out with ACS Presidential election last year resulted in approval of these changes, and hence, we can at last move to a more modern system of electronic balloting, more akin to those used in many other scientific societies for at least the last several years.

Further behind the scenes, and invisible to most members but important to the Division, changes in the way ACS allocates financial support to the Divisions and Local Sections have also been approved. It took several years of wrangling to move these proposals forward, but they are now in place. These changes will increase the financial support that the Division receives from the Society which will allow us to enhance some of our programs without needing to increase dues.

For the longer term, discussions have been taking place about the role of the Divisions in the ACS and the future directions of the organization in general. The nature and even the meaning of chemistry have been changing for some time now and it is important that the Society stay in touch with the needs and values of chemists in order to stay relevant and vital. I do not expect any major changes to come out of these discussions quickly, (see my opening sentence above!), but I think that these conversations are a healthy sign, and I have been actively participating. As specific proposals crystallize, I will keep you all posted.

Closer to home, the Division is also revisiting our own bylaws. A number of changes are needed to allow us to move to electronic balloting for our own elections, to allow us to establish sub-divisions if we choose to do so, and to generally modernize our bylaws. A draft of the revisions has been discussed by the Exec and has been sent to the Council Committee on Constitution and Bylaws (which makes sure that what we are proposing will not conflict with anything in the Society's bylaws). If we receive their approval, the proposed changes will be sent to all members for review and sometime next year the proposal will probably come up for a vote of the membership. There will be ample opportunity for discussion of the proposals before then so keep an eye on the Division's web site and future newsletters for more information.

Ken B. Anderson
Councilor.

Best Student Papers



Anaheim, California
David McNear

McNear, Peltier, Everhart, Sparks, Chaney, Sutton, Newville

Use of novel synchrotron-based techniques to explore the connection between metal speciation in soils and plants.

Geochemical Transactions



As you are all aware, a couple of years ago the Division of Geochemistry in conjunction with the Royal Society of Chemistry, launched a new electronic journal, Geochemical Transactions. Last year in the fallout from the collapse of a subscription agency, the RSC decided to reduce the number of electronic journals it publishes. The Division entered into discussions with several other publishers about moving GT to a new “home” while retaining its mission and identity. Although GT is still in its infancy in some ways, several publishers recognized the potential of the journal and expressed interest in taking over the publication. A lot of work was done behind the scenes and we are very happy to announce that as of March 15th, 2004, GT has moved to AIP.

The new web address is:
GT.aip.org

The move to AIP has several major advantages. First and foremost it allows us to continue to publish GT in conjunction with a major not for profit scientific publisher. This will help us to keep subscription costs down to a minimum. It also allows us to continue the original vision of GT, which was to establish a journal in our discipline designed from the outset to be an electronic journal, to maximize the advantages that publication in electronic media can offer, including rapid publication and use of full color and multimedia. It also brings the management of the journal closer to “home territory” for the Division.

The division remains committed to GT. At the editorial level we are taking steps to attract new papers and to facilitate publication of papers presented at Division symposia as special collections in GT. We are also committed to making sure that Division members have access to GT at the prices that can be achieved by publishing in electronic form with a not-for-profit publisher. With your help, by subscribing and submitting papers, we are looking forward to building GT into a leading journal in the Chemical Earth Sciences.



CALL-FOR-PAPERS- Washington DC: ACS Fall 2005 National Meeting, Washington, DC, Aug 28 - Sep 1, 2005

There are currently five symposia planned for the next meeting in Washington DC (August 28 - September 1, 2005):

Advanced Characterization of Natural Organic Matter - organized by William T. Cooper (Florida State University, cooper@chem.fsu.edu), and Phillippe Schmitt-Kopplin (GSF, schmitt-kopplin@gsf.de)

In-situ Methods and Investigations in Environmental Science - organized by Bernd Nowack (ETH, nowack@env.ethz.ch), Anthony Hay (Cornell University, agh5@cornell.edu), and Phil Bennett (UT Austin, pbennett@mail.utexas.edu)

Microbial and Geochemical Aspects of Electrochemical Power Generation in Marine Sediments - organized by Leonard M. Tender (NRL, lmt@cbmse.nrl.navy.mil)

Research, Education and Outreach in the NSF Environmental Molecular Science Institutes - organized by James Kubicki (Penn State, kubicki@geosc.psu.edu), Christopher M. Hadad (Ohio State University, hadad@chemistry.ohio-state.edu), and Richard J. Reeder (SUNY at Stony Brook, rjreeder@stonybrook.edu)

Tungsten: Occurrence, Environmental Fate, Potential Ecological and Health Effects - organized by Washington Braidia (Stevens Institute of Technology, wbraidia@stevens.edu), Christos Christodoulatos (Stevens Institute of Technology, christod@stevens.edu), Dimitris Dermatas (Stevens Institute of Technology, ddermata@stevens-tech.edu), and Agamemnon Koutsospyros (University of New Haven, akoutsospyros@newhaven.edu).



CALL-FOR SYMPOSIA - Atlanta: ACS Spring 2006 National Meeting, Atlanta, GA, March 23-30.

ACS Division of Geochemistry is soliciting ideas for GEOC Division Symposia for the 2006 spring meeting. If you are interested in organizing a session, or know of someone who is interested, please contact Yoko Furukawa, GEOC Program Chair.

We welcome symposia on any topic that involves geochemistry. You may want to consult the Division's web site:

<http://membership.acs.org/g/geoc/history/hrframes2.html>

Click on the HISTORICAL INFORMATION button to find out what kinds of symposia the Geochemistry Division has sponsored during its 25 year history.

CALL FOR PAPERS

ACS Fall National Meeting, Washington DC
August 28 - September 1, 2005



"Microbial and geochemical aspects of electrochemical power generation in marine sediments"

Organizer:

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Call for Papers

Research, Education and Outreach in the NSF Environmental Molecular Science Institutes

Sponsored by the Division of Geochemistry (GEOC)

at the 230th ACS National Meeting
Washington, DC

August 28 – September 1, 2005

This symposium will focus on the achievements of currently funded NSF Environmental Molecular Science Institutes. All aspects of the EMSI's efforts will be discussed including technique development, research breakthroughs, educational innovations, and outreach success stories. We encourage a variety of EMSI participants (i.e., directors, PIs, postdocs, students, and staff) to submit abstracts to provide a multi-level view of EMSI activities. One goal of this symposium will be to highlight the benefits of multi-disciplinary research in complex environmental problems. Another will be for the EMSIs to share strategies for implementing team-based research, multi-disciplinary education, and outreach on environmental issues. Topics could include (but are not limited to):

1. Research discoveries that impact environmental research with emphasis on areas of overlapping interest among EMSIs,
2. Development of new instrumentation, methods, and models,
3. Experiences with problems and opportunities for cross-training graduate students,
4. Incorporation of undergraduates into research, and
5. Techniques for outreach to K-12 students and the public.
6. Techniques for success in industrial and state outreach.

Abstracts may be submitted to <http://oasys.acs.org> this spring.
Check the Geochemistry Division web site (<http://membership.acs.org/g/geoc/>)
for updates

For additional information please contact the organizers:

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CALL FOR PAPERS

In-situ Methods and Investigations in Environmental Science

Division of Geochemistry

230th Meeting of the American Chemical Society

Washington, DC, August 28 – September 1, 2005

Chemical and biogeochemical reaction rates and processes studied under controlled conditions in laboratory systems can rarely be directly transferred to the field. Reasons for this include the inherent heterogeneity of natural systems, uncontrolled boundary conditions (e.g. water flow, temperature, microbial interactions), and competition reactions.

This symposium will address recent advances in characterizing chemical, geological and microbial processes *in situ*, including new field techniques for sampling, experiments, and analysis. This could also involve characterizing element or pollutant cycling and bioavailability in water, sediments, soils, or macro-scale laboratory experiments. We invite contributions that investigate the *in situ* aspects of:

- organic and inorganic reactions
- dissolution, weathering and phase transformation of mineral phases
- sampling techniques (e.g. DGT or passive samplers)
- analytical techniques (e.g. XAFS methods, X-ray CT, or magnetic resonance imaging)
- speciation of metals
- use of stable isotopes
- bioavailability of pollutants and bioassays
- pollutant biodegradation and microbial activity
- rhizosphere processes

For details, please contact the symposium co-chairs:

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GEOC Division Symposium

2005 Fall National Meeting

Washington DC, August 28-September 1st, 2005

Title: Tungsten: occurrence, environmental fate, potential ecological and health effects

**Organizers: Washington Braidia, Christos Christodoulatos, and Dimitris Dermatas (Center for Environmental Systems/Keck Geoenvironmental lab, Stevens Institute of Technology)
Agamemnon Koutsospyros (University of New Haven)**

Theme:

Tungsten is a metallic transition element with a wide variety of stereochemistries and oxidation states which make its chemistry among the most complex of the transition elements. Tungsten also has a wide range of industrial uses. However, information about occurrence, fate and transport of tungsten in the environment and its impact on plants, soil microorganisms, and fauna is still very scarce. Similarly, limited information exists on human health effects. This symposium aims to address some of these issues, identify knowledge gaps and define future research needs.

Symposium needs:

- Considering the preliminary list of potential speakers, we require at least two sections (morning and afternoon) to accommodate 12-14 speakers (including two keynote speakers). A multimedia room (overhead projector, computer/projector, slide projector) for 50-75 people should accommodate the expected audience. A poster section may be necessary depending on the responses to the call for abstracts.
- A second issue which we would like to explore is if there are any funds allocated to invite/sponsor keynote speakers. We have two people in mind, Eric Lassner from Germany (author of a book titled Tungsten...) and a mining engineer residing in Nevada with a wide experience in natural occurrence and fate of tungsten in natural environments.

Advanced Characterization of Natural Organic Matter

During the past decade the application of powerful new analytical techniques has dramatically changed our perspectives of natural organic matter (NOM). Molecular-level resolution and characterization of complex NOM mixtures, once thought to be impossible, has become a reality as geochemists learned to use and gained access to high-resolution, large-molecule analytical instruments. We are now poised to develop a geochemical analogue to ***Omics*** (*metabolomics*, *proteomics*), in that we can now contemplate an understanding of the “structure” and the “functional expression” of natural organic matter (e.g. bioavailability, metal-binding, pollutant-sequestration) in terms of its discrete molecular composition.

The goal of this symposium is to bring together researchers who are applying these exciting new measurement techniques to NOM, as well as those who are at the forefront of synthesizing newly-available analytical data into more refined models of NOM structure, function and reactivity. We hope to provide both a comprehensive summary of state-of-the-art NOM characterization, as well as a lively discussion about opportunities are for future growth in this field. We are seeking papers that address the following topics:

- Sampling, concentration and high-resolution separation techniques (e.g. capillary electrophoresis);
- NMR spectroscopy, including 2-D and solid-state techniques;
- Mass Spectrometry, including high- and ultra-high mass analysis combine with soft ionization techniques (e.g. electrospray);
- Data synthesis, including new models of NOM structure;
- Applications of new structural information in areas such as environmental chemistry, soil chemistry and biochemistry, marine chemistry and global carbon cycling, and water purification.

For more information or to make suggestions for additional topics, please contact the organizers.

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