Chemical Bond, September 2017

Chemical Bond

Vol. 69, No. 6, September, 2017

Your 2017 Academy of Science – St. Louis Science Fair Winners!

first published 5 May 2017

On Wednesday, April 26th, the 2017 Academy of Science – Saint Louis Science Fair was held at Queeny Park, Greensfelder Recreation Complex in Saint Louis. Many of our local members helped judge the Chemistry presentations. The winners are listed below.

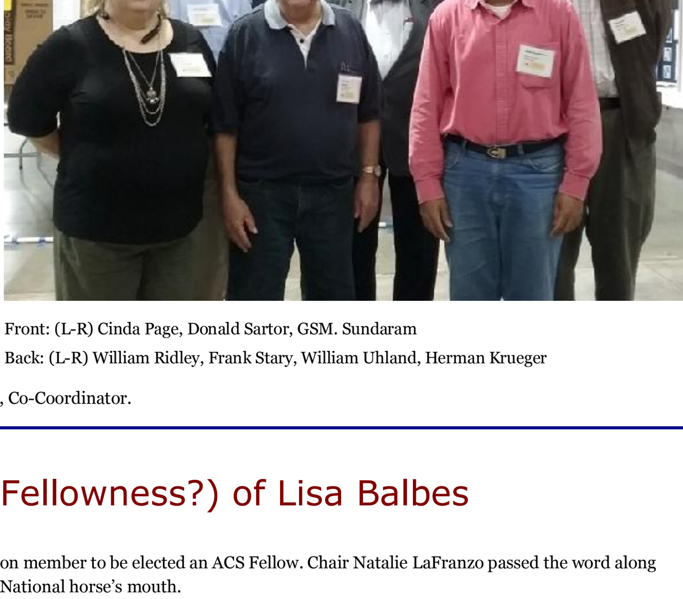
Honors grades 9-12 Division:
First Place: Rana Karatas, "Amount of Iron in Different Kind of Resins," Grade 10, *Gateway Science Academy Middle and High School*, Saint Louis, MO.

Grades 9-12 Division:
First Place: Deeljore Charumati, "ATP detection using a Microfluidic Device based on the Reactions between Luciferase and ATP," Grade 11, *Gateway Science Academy Middle and High School*, St. Louis, MO.
Second Place: Ayush Ray, "Polyhydroxy-Sugar alcohols with natural polymers as seed coat changes plant growth with water stress" Grade 10, *Lafayette Sr. High*, Saint Louis, MO

Grades 6-8 Division:
First Place: Sonali Sharma, "Lead Crisis," Grade 6, *Mckinley Classical Leadership Ac.*, St Louis, MO.
Second Place: Sarah Campbell, "Candy Chromatography," Grade 7, *Gateway Science Academy Middle and High School*, St. Louis, MO.

Grades kindergarten–5th Division:
A congratulatory letter + a purple participation ribbon were each given to 350 chemistry-related entrants this year.

Many thanks to all who participated, and to our members for volunteering!



Front: (L-R) Cinda Page, Donald Sartor, GSM. Sundaram
Back: (L-R) William Ridley, Frank Stary, William Uhland, Herman Krueger

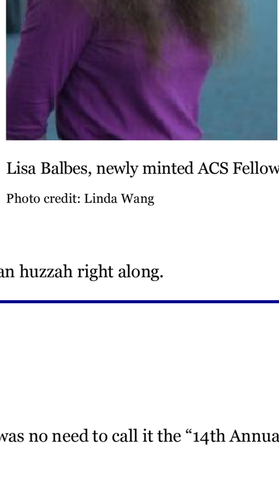
Report submitted by GSM Sundaram, Co-Coordinator.

The Fellowship (Fellowness?) of Lisa Balbes

first published 30 June 2017

Lisa Balbes is the latest STLACS section member to be elected an ACS Fellow. Chair Natalie LaFranzo passed the word along last week when she heard it from the National horse's mouth.

Lisa is principal in Balbes Consultants, under which she offers career, editorial, grantsmanship, and training services. Yes, that is a broad brush: more of a roller, actually. In the local section, Lisa has been Career Services coordinator since forever, and much, much more. Let's not burden you with the whole story here; instead, you can see it in her Board of Directors profile there.



Lisa Balbes, newly minted ACS Fellow
Photo credit: Linda Wang

The ACS Fellows program is intended, according to program guidelines, to "recognize and honor members of the American Chemical Society for their outstanding achievements in and contributions to the science and the profession **and** for their equally exemplary service to the Society." (Emphasis in the original.)

Lisa's citation as Fellow on the national ACS website reads as follows:

> ***Contribution to the science/profession:*** *Honored for her instrumental role in producing millions of dollars in successful grant applications. Brings transformative leadership to the STEM program of the Boy Scouts of America, including the 2017 National Jamboree STEM Quest program.*
>
> ***Contribution to the ACS community:*** *As Chair of the Committee on Economic and Professional Affairs, she transformed ACS career efforts into a vital asset for members during the difficult employment situation of 2007, including a vibrant workshop program and additional career tools.*

Lisa's election as ACS Fellow was greeted with widespread huzzahs from other members of the Board. Now you, gentle readers, can huzzah right along.

Hope you didn't miss the picnic

first published 21 July 2017

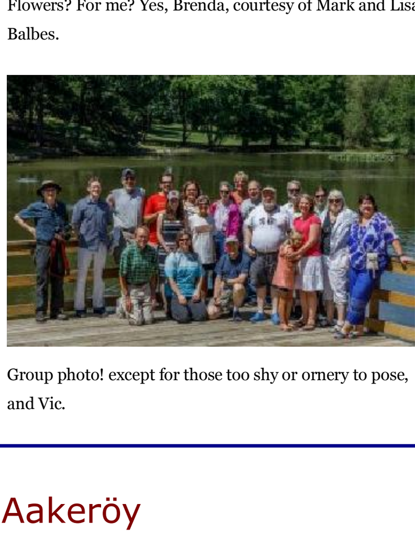
We are the least superstitious group anywhere, believe me! (with apologies to POTUS for stealing his inimitable syntax) so there was no need to call it the "14th Annual STLACS Picnic". Because it was the 13th. All the other adjectives pertain.

Also mild, convivial, delicious, and ducky. And, for the record, it was on July 8th.

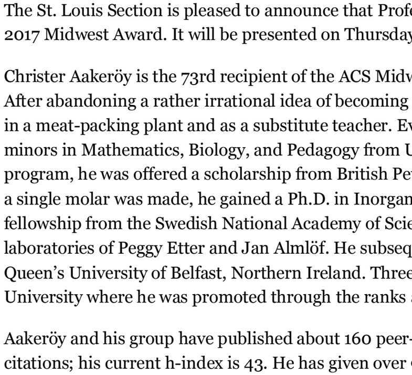
Hosts Joe and Brenda Ackerman managed to pick a not-too-hot day for the big event that fell between two too-hot days. Never mind how, they did. Good on ya, Ackermans (Ackermen?)! And though 30-odd chemists, SOs, SO-chemists, and kids turned out, there was way too much food. And — do I hear myself saying this? — too much beer. Highlights:

- Two long lost members, who had been very active in the section years ago but drifted away, drifted back and were heartily welcomed: Sue Dudek and Tom Layloff.
- Vic Lewchenko, who had relinquished the Treasurer's mantle, forgot not to come, and brought his camera. So once again, we benefit from his photo-journalistic expertise. Some of his work is below, and the rest is visible on his photostream.
- There were some serious washers players.
- And ducks: brazen, hungry ducks. Which is to be expected, I suppose, when picnicking by the lake in Tilles Park.

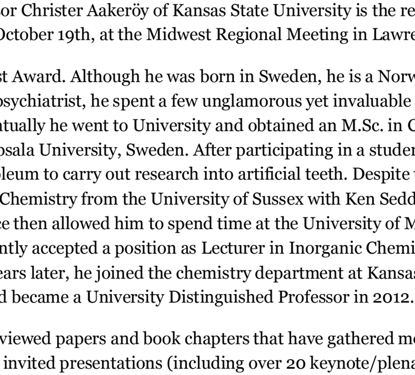
Joe Ackerman, grillmaster. The FDNY cap was just in case.



Flowers? For me? Yes, Brenda, courtesy of Mark and Lisa Balbes.



Washers finals

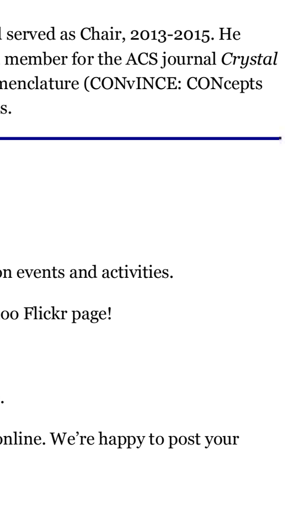


Group photo! except for those too shy or ornery to pose, and Vic.

Midwest Award to KSU's Aakeröy

first published 22 July 2017

The St. Louis Section is pleased to announce that Professor Christer Aakeröy of Kansas State University is the recipient of the 2017 Midwest Award. It will be presented on Thursday, October 19th, at the Midwest Regional Meeting in Lawrence, KS.



Christer Aakeröy, 2017 ACS Midwest Awardee

Christer Aakeröy is the 73rd recipient of the ACS Midwest Award. Although he was born in Sweden, he is a Norwegian citizen. After abandoning a rather irrational idea of becoming a psychiatrist, he spent a few unglamorous yet invaluable years working in a meat-packing plant and as a substitute teacher. Eventually he went to University and obtained an M.Sc. in Chemistry with minors in Mathematics, Biology, and Pedagogy from Uppsala University, Sweden. After participating in a student exchange program, he was offered a scholarship from British Petroleum to carry out research into artificial teeth. Despite the fact that not a single molar was made, he gained a Ph.D. in Inorganic Chemistry from the University of Sussex with Ken Seddon. A fellowship from the Swedish National Academy of Science then allowed him to spend time at the University of Minnesota in the laboratories of Peggy Etter and Jan Almlöf. He subsequently accepted a position as Lecturer in Inorganic Chemistry at the Queen's University of Belfast, Northern Ireland. Three years later, he joined the chemistry department at Kansas State University where he was promoted through the ranks and became a University Distinguished Professor in 2012.

Aakeröy and his group have published about 160 peer-reviewed papers and book chapters that have gathered more than 8,000 citations; his current h-index is 43. He has given over 90 invited presentations (including over 20 keynote/plenary lectures), and in 2016 he delivered the BCA Prize Lecture awarded by the British Crystallographic Association, the first time the award was given to a scientist outside the UK. He is a Fellow of the Royal Society of Chemistry and he has been a visiting professor at Université Louis Pasteur, Strasbourg, France, and at the Indian Institute of Science, Bangalore, India. In 2016, he received a Higuchi Award (the Olin Petefish Award in Basic Sciences), which is the most prestigious recognition for scholarly excellence in the state of Kansas. His research interests swirl around the orbits of supramolecular chemistry and crystal engineering.

Aakeröy received the 2011 Presidential Award for Outstanding Undergraduate Teaching; a Making a Difference Award from the "Women in Engineering and Science Program" at KSU in 2006; and the Segebrecht Distinguished Faculty Achievement Award in 2003. He has mentored three National Goldwater Scholars, over twenty graduate students, and numerous undergraduates.

From 2009 to 2017, he was on the Board of Trustees for the Cambridge Crystallographic Data Centre (CCDC), Cambridge, UK, and served as Chair, 2013-2015. He became an Associate Editor for the RSC journal *CrystEngComm* in 2010, and has been a topics editor and advisory editorial board member for the ACS journal *Crystal Growth & Design* since 2002. Aakeröy is currently part of an international committee charged with developing definitions and nomenclature (CONvINCE: CONcepts and termINology in Crystal Engineering, an ICSU Project), an effort supported by IUPAC and the US National Academy of Sciences.

Say Cheese!

first published 9 August 2017

We have some very talented chemist-photographers in the St. Louis Section. These folks generously capture moments at our Section events and activities.

We're often asked where these photos are made available, and we now have an answer: The St. Louis Section ACS has our own Yahoo Flickr page!

https://www.flickr.com/photos/149474589@N04/albums

You're welcome to download and print these photos for personal use, but please contact us for any professional or published usage.

Are you hosting an event and plan to take photos? Please review our Photo Release Policy before sending any photos to be shared online. We're happy to post your photos to share with our members!

Do you have historic photos that you'd like to share? Contact chair@stlacs.org to share the files, and we'll get them posted.

We hope you enjoy sharing these memories with us!

Another Successful WUCT

first published 15 August 2017

Earlier this year, the Washington University in St. Louis Chemistry Tournament (WUCT) held its second annual competition for high school students from across the country. On April 8th, a total of about 250 students and coaches arrived on WashU's campus. Some participants arrived from nearby locales like Missouri and Illinois, while others journeyed from farther states such as California, Indiana, Tennessee, and Utah. The goals of WUCT are to promote and provide real-world, STEM-related experiences for high schoolers, as well as to foster an appreciation for teamwork and problem solving.

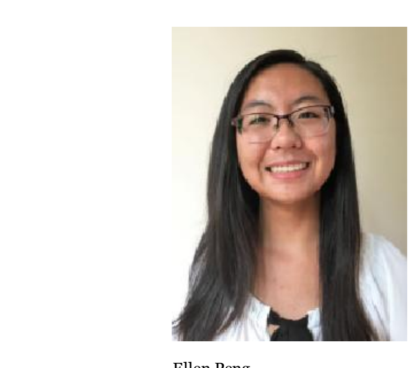
The competition this year consisted of several new events in addition to the original individual and team rounds. WUCT incorporated topics rounds, designed to place chemistry in various real-world contexts for students to see chemistry's different applications, where students worked in pairs to solve real-world problems in life sciences, industry, and coffee.

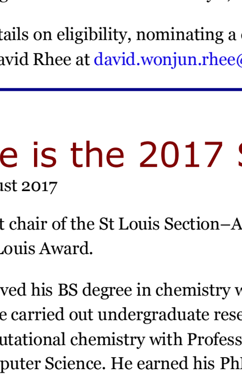
Breaking Bonds was a new and exciting round in this year's WUCT. Working in teams of six, students solved packets of problems in a time-pressured environment. The questions students received were split into packets of varying difficulty. Teams chose from three different difficulties—easy, medium, and hard—and were then given a packet with that particular difficulty. Points were awarded for both correct answers and difficulty level of the packet, with harder problems earning more points per correct answer.

For coaches, most of whom were teachers, there were also activities designed for them. Of particular interest was a teacher panel hosted by Dr. Jia Luo, a lecturer in the WashU Chemistry Department, and college students involved in collaborative learning platforms at WashU. The purpose of the panel was to expose the teachers to principles of collaborative learning, problem solving, and student-centered teaching based on educational research conducted by WashU. Dr. Luo demonstrated how iClickers, remotes for interactive classroom learning, engage students in large classrooms. She also presented the Process Oriented Guided Inquiry Learning (POGIL) strategy by having teachers work together to solve chemistry problems. The college students involved in collaborative learning presented their platforms and hosted a Q&A for the teachers.

At the end of the day, Carmel High School (Carmel) 1 from Carmel, IN, placed first overall in the Sweepstakes ranking. They were followed by Carmel 2 in second, Park Tudor School (Park Tudor) 1 from Indianapolis, IN, in third, and Clayton High School (Clayton) 1 and 2 from Clayton, MO, in fourth and fifth respectively. To see the rest of the results, please feel free to visit our website: wuct.wustl.edu.

WUCT is excited to host its next competition on April 7, 2018. Registration will open on Oct. 30, 2017. For more information about the competition in general, past exam questions, and more, visit wuct.wustl.edu. Questions can be directed to WUCT co-directors Harshath Gupta and Abhishek Sethi at wuct@su.wustl.edu.





Ellen Peng

Guest author: Ellen Peng
Ellen Peng is a Sophomore at Washington University in St. Louis, and the Public Relations Chair for the Washington University in St. Louis Chemistry Tournament

Saint Louis Chemical Science & Technology Award – 2017 call for nominations

first published 30 August 2017

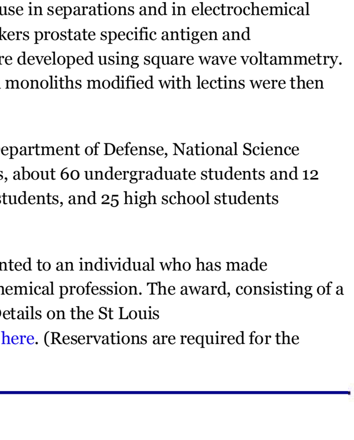
Nominate a member of your team for the Saint Louis Chemical Science & Technology Award. This award is presented to a chemist in the St. Louis area who has demonstrated a high degree of professionalism and scientific contribution. Criteria used to judge the award include technical proficiency, presentations, coaching/teamwork, and additional professional activities. The award will consist of a plaque, a $500 honorarium, and dinner for the awardee and a guest at the annual Recognition Night. The Due date is January 1, 2018.

You can find all the details on eligibility, nominating a candidate, and recent winners right here. To submit a nomination, email the Chemical Science and Technology Award Coordinator, David Rhee at david.wonjun.rhee@monsanto.com or call at 314-694-4874.

Keith Stine is the 2017 Saint Louis Award winner

first published 31 August 2017

Joseph Ackerman, past chair of the St Louis Section–ACS and chair of the St Louis Award jury, has announced the winner of the 2017 St Louis Award.



Keith Stine, 2017 Saint Louis Award Winner

Dr. Keith J. Stine received his BS degree in chemistry with honors from Fairleigh Dickinson University in Madison, New Jersey in 1984. He carried out undergraduate research in physical organic chemistry with Professor Raymond Baylouny and in computational chemistry with Professor Ronald Strange. He also received a BA degree in Mathematics and Computer Science. He earned his PhD from MIT in 1988, working with Professor Carl W. Garland on studies of phase transitions in liquid crystals. After a postdoctoral position at University of California – Los Angeles studying phase transitions and two-dimensional aggregation behavior in monolayers of surfactants, he joined the Department of Chemistry at University of Missouri – Saint Louis in 1990. He was promoted to Associate Professor in 1996 and to full Professor in 2008. He received the Chancellor's Award for Service at University of Missouri – Saint Louis in 2009, the Distinguished Service Award of the Saint Louis Section in 2010, and was selected as a Fellow of the American Chemical Society in 2014. He is also a co-author of the most recent edition of the classical text Experiments in Physical Chemistry by Nibler and Garland published in 2014. He recently edited the volume Carbohydrate Nanotechnology published in 2016. He served as Chair of the Saint Louis Section in 2008 and was Secretary of the Local Section from 2002 – 2006. He was the Program Chair for the Midwest Regional Meetings in Saint Louis in 2000 and again in 2011.

His earlier independent work at the University of Missouri-St. Louis was on chiral recognition in monolayers at the water/air interface. This work concerned the supramolecular behavior of long-chain amino acid derivatives at the water/air interface and was the first detailed investigation of chiral separation in racemic mixed monolayers. The work also confirmed the key role of amide-amide hydrogen bonding in chiral recognition in these systems, partly by external reflection infrared spectroscopy in collaboration with Professor Heinrich Hühnerfuss of University of Hamburg, Germany. His group performed some of the earliest studies of surface modification of gold by self-assembled monolayers of cyclodextrin derivatives in the mid-late 1990s in collaboration with Professor Valerian D'Souza. His more recent work is in collaboration with colleague Professor Alexei Demchenko to introduce nanoporous gold as a potential new nanomaterial on which to develop platforms for supported synthesis of carbohydrates. His lab is also studying independently the fundamental properties of this newly important nanomaterial, and its application as a support for protein assays and separations, with papers appearing in Chemistry of Materials, Nanoscale, Analyst, and New Journal of Chemistry, amongst others. The material, both in thin film and in monolithic form, was found to be suitable for the hosting of enzymes and other biomolecules, for use in separations and in electrochemical biosensor development. By immobilizing antibody-enzyme conjugates, electrochemical immunosensors for cancer related biomarkers prostate specific antigen and carcinoembryonic antigen were developed. Using lectin-enzyme conjugates, electrochemical sensors for glycoproteins were developed using square wave voltammetry. Nanoporous gold was created in the form of free-standing monoliths and fully surface modified using flow methods. Such monoliths modified with lectins were then shown to be promising for the capture and release of specific glycoproteins from solution.

His research has been funded by the American Chemical Society – Petroleum Research Fund, Office of Naval Research, Department of Defense, National Science Foundation and the National Institutes of Health. He has directed the research of 15 PhD students, 13 MS degree students, about 60 undergraduate students and 12 postdoctoral fellows, some of the latter being jointly with colleagues. He has also directed the research of several visiting students, and 25 high school students including students with NSF and ACS Project SEED support.

The Saint Louis Award, sponsored by the Monsanto Company and administered by the Saint Louis Section–ACS, is presented to an individual who has made outstanding contributions to the profession of chemistry and demonstrated potential to further the advancement of the chemical profession. The award, consisting of a $1,500 honorarium and a plaque, is presented at the Saint Louis Award Banquet that will be held Friday Sept. 29, 2017. Details on the St Louis Award symposium which will also be held that Friday afternoon at the University of Missouri – Saint Louis, can be found here. (Reservations are required for the banquet; see link for RSVP instructions.)

Saint Louis Award Symposium 2017 program

first published 31 August 2017

The Saint Louis Award Symposium—Friday Afternoon, September 29th—is sponsored by the St. Louis Section of the American Chemical Society and University of Missouri – St. Louis.

Nanoscale Materials: Synthesis and Analysis

Stadler Hall 104, University of Missouri, St. Louis
(see venue information below)

Symposium Honoring
Dr. Keith Stine
Department of Chemistry, University of Missouri-St. Louis
2017 Saint Louis Award winner

1:30 pm	**Dr. Natalie Lafranzo**, Director of Scientific Projects and Market Development, Cofactor Genomics (Chair, Saint Louis Section–ACS) *Welcome and General Introductions:*
1:35 pm	**Dr. Cynthia Dupureur**, Professor and Chair, Department of Chemistry, University of Missouri, St. Louis (Symposium Chair) *Introduction and Salute to Dr. Stine:*
1:40 pm	**Dr. Keith Stine**, Department of Chemistry, University of Missouri, St. Louis (Saint Louis Awardee) *Development of Nanoporous Gold for Analytical and Synthetic Applications*
2:15 pm	**Dr. Yinfa Ma**, Department of Chemistry, Missouri Science and Technology, Rolla *Single Cell pH Monitoring to Investigate the Cytotoxicity of Nanomaterials*
2:50 pm	**Refreshment Break**
3:10 pm	**Dr. Alexei Demchenko**, Department of Chemistry, University of Missouri, St. Louis *From Stereocontrolled Glycosylation to the Automated Oligosaccharide Synthesis*
3:45 pm	**Dr. Julio D'Arcy**, Department of Chemistry, Washington University in St. Louis *Droplet-Assisted Vapor Phase Polymerization (DA-VPP) for Controlling Low Dimensionality Nanostructures and Microstructures of Conducting Polymers*
4:20 pm	**Dr. Cynthia Dupureur** *Concluding Remarks*
5:00 – 6:00 pm	Reception at the Bellerive Acres Chancellor's residence.
6:30 pm	**Saint Louis Award Banquet**, Glen Echo Country Club 3401 Lucas and Hunt Rd, Normandy, MO Reservations required (See link for more information and reservations)

Venue information: See map for location of Stadler Hall, the Chancellor's residence and parking lots on the North Campus. Parking will be available in Lot Q, and additional parking will be available in Lot P or the West parking Garage (52 on the map). Parking permits will be available at the Symposium.

Get your reservations in for the 2017 Saint Louis Award Banquet

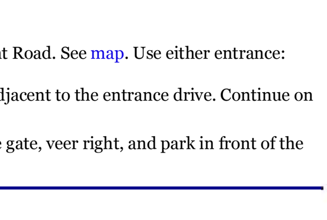
first published 31 August 2017

Friday, September 29th, directly after the Saint Louis Award Symposium
Glen Echo Country Club*, 3401 Lucas & Hunt Road, Saint Louis, MO 63121

6:30 pm cocktails (open bar), hors d'oeuvres
7:00 pm banquet
8:00 pm program

- **Dr. Natalie Lafranzo**, Director of Scientific Projects and Market Development, Cofactor Genomics, and Chair, St. Louis Section–ACS
  Opening Remarks and Award Presentation
- **Dr. Lawrence Barton**, Professor Emeritus, Department of Chemistry, University of Missouri, Saint Louis
  Introduction of the Awardee
- **Dr. Keith Stine**, 2017 ACS St. Louis Section St. Louis Awardee
  Award Address: *Life in Two-Dimensions: Adventures in Surface Chemistry*

Please send reservations, including check, by September 26th to:



Lawrence Barton, Professor Emeritus
Department of Chemistry and Biochemistry
315 Benton Hall (MC 27)
University of Missouri–St Louis
Saint Louis, MO 63121
email lbarton@umsl.edu
office phone 314.516.5334; cell 314-698-9748; fax 314.516.5342

Make checks payable to Saint Louis Section–ACS and note any special dietary limitations. Please send an email confirmation to Dr Barton, with the following information:

Name(s) ____

Number attending _____ × $60.00 each = amount remitted $______________

Special dietary limitations, if any ____________________________________

*Venue directions:
Glen Echo Country Club is in Normandy, in the southwest sector of the intersection of Natural Bridge Road and Lucas & Hunt Road. See map. Use either entrance:

1. Main entrance drive: turn west off Lucas & Hunt Road; Edison Avenue will be on the opposite side of the road almost adjacent to the entrance drive. Continue on the winding drive, and the parking lot will be on your right adjacent to the clubhouse.
2. back entrance: turn south off Natural Bridge Road onto St Marys Lane, just east of the post office. Continue through the gate, veer right, and park in front of the clubhouse.

Meetings & Seminars

Board of Directors

St Louis Section–ACS Board of Directors meets the second Thursday of each month, usually at the Glen Echo Country Club (map and driving directions). Meetings are open to all members, and all are encouraged to attend. Elected officers and chairs of major committees vote on questions put to the Board; others in attendance have voice but no vote.

If you want to attend for dinner, please contact the section Chair at least a week in advance. Usual cost of the dinner is $22 ($11 for post-docs and unemployed members). Bar service and dessert are optional extras. Members wishing to become active in section activities are welcomed for their first dinner as guests of the section.

Date: Sept 14
Social hour, cash bar: 6:00 pm
Call to order: 6:30 pm (Board Meeting suspended during dinner service)
Future meetings: Oct 12, Nov 9

Saint Louis University

Seminars are generally on Fridays at 12 noon in Carlo Auditorium, Tegeler Hall, unless noted otherwise. Refreshments follow. For the most up-to-date information, refer to the department's seminar page or contact Brent Znosko, znoskob@slu.edu.

University of Missouri–St Louis

Mondays at 4 pm in 451 Benton Hall, unless otherwise specified. Refreshments 15 minutes prior to seminar time. For timely information on visiting seminar speakers, contact the Chemistry Department, 314.516.5311, or visit the seminar schedule. The department has additional seminar series which are also accessible from this page.

Washington University

Seminars are in McMillen 311 at 4 pm unless otherwise noted. For information, consult the departmental events page. Related seminars, including endowed seminar series and the WU med school biochemistry series, are linked here as well.

About the Chemical Bond

The *Chemical Bond* is published at www.stlacs.org January through May and September through December by the St Louis Section–American Chemical Society. If you would like to receive email notification when each issue is posted, you can subscribe to our email list and join the "Chemical Bond reminders" group.

Correspondence, letters to the editor, etc., should be emailed to editor@stlacs.org or mailed ℅ St Louis Section–ACS, PO Box 410192, Saint Louis, MO 63141-0192