

Alice Liu to represent STL and USA at IChO

first published 22 June 2023

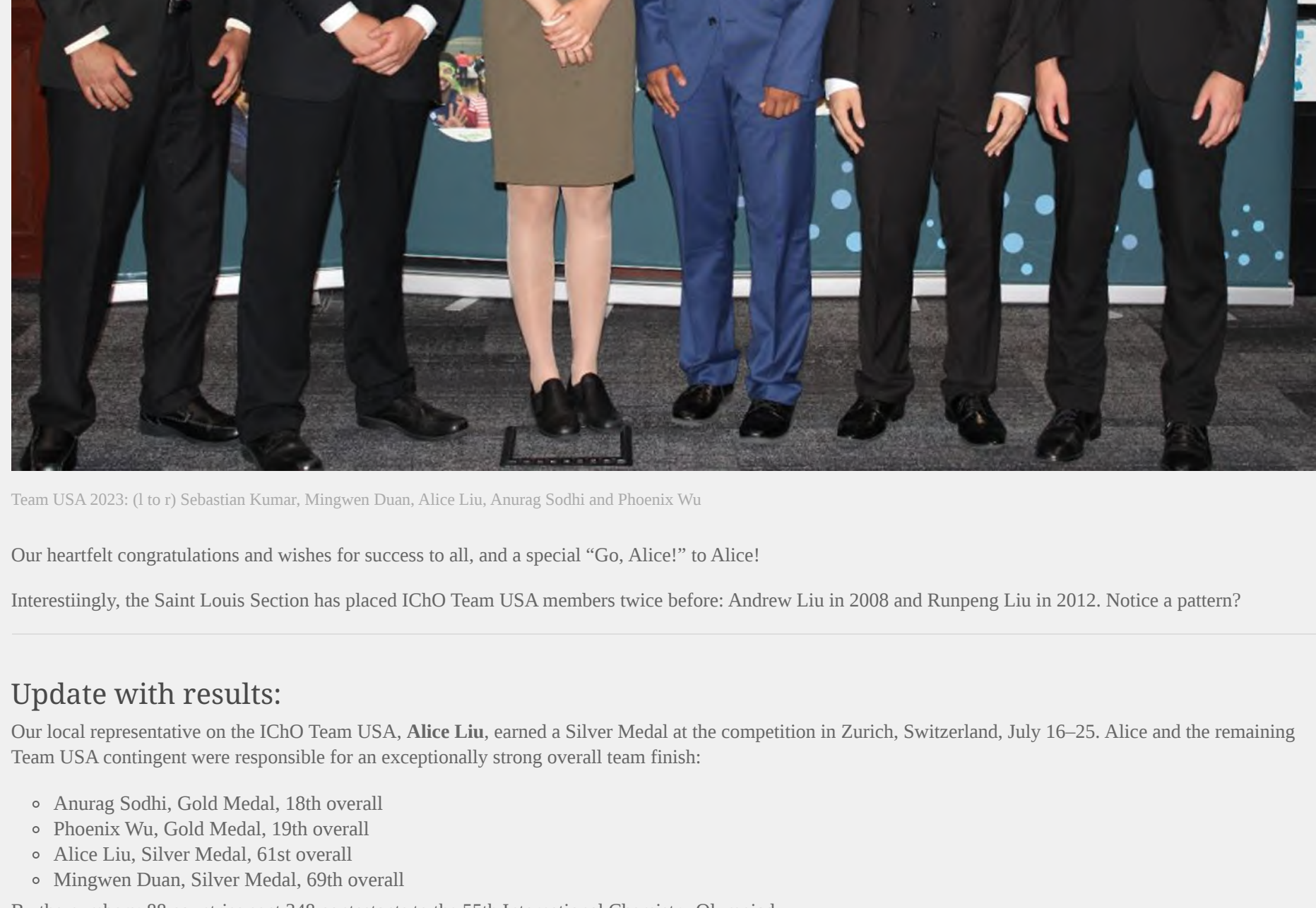
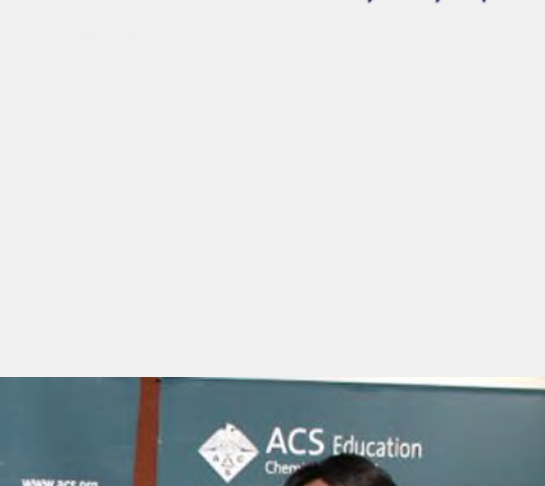
Alice Liu of Marquette High School has earned a place on Team USA at the 55th International Chemistry Olympiad (IChO), to be held at Eidgenössische Technische Hochschule (ETH), Zürich, Switzerland, July 16 to 25, 2023.

The path to a spot on the team is arduous and ultra-selective. First, students compete in the local High School Chemistry Contest. Top finishers, no more than two from each school, are eligible to take the Olympiad qualifying exam. The top 20 qualifiers nationwide are invited to an intensive study camp at the University of Maryland-College Park, where they receive college-level chemistry training via a series of lectures, problem-solving exercises, lab experiments and tests.

The four highest-scoring students during the study camp make up the A-Team USA. The next two highest-scoring students are the alternates.

The members of 2023 Team USA are:

- Mingwen Duan, East Lyme High School, CT
- Alice Liu, Marquette High School, MO
- Anurag Sodhi, Centennial High School, MD
- Phoenix Wu, Seven Lakes High School, TX
- Sebastian Kumar (1st alternate), Tesla STEM High School, WA
- Brian Li (2nd alternate), Acton-Boxboro, MA



Team USA 2023: (l to r) Sebastian Kumar, Mingwen Duan, Alice Liu, Anurag Sodhi and Phoenix Wu

Our heartfelt congratulations and wishes for success to all, and a special "Go, Alice!" to Alice!

Interestingly, the Saint Louis Section has placed IChO Team USA members twice before: Andrew Liu in 2008 and Rungpeng Liu in 2012. Notice a pattern?

Update with results:

Our local representative on the IChO Team USA, **Alice Liu**, earned a Silver Medal at the competition in Zurich, Switzerland, July 16–25. Alice and the remaining Team USA contingent were responsible for an exceptionally strong overall team finish:

- Anurag Sodhi, Gold Medal, 18th overall
- Phoenix Wu, Gold Medal, 19th overall
- Alice Liu, Silver Medal, 61st overall
- Mingwen Duan, Silver Medal, 69th overall

By the numbers: 88 countries sent 348 contestants to the 55th International Chemistry Olympiad.

Gary Patti is 2023 Midwest Awardee

first published 3 August 2023

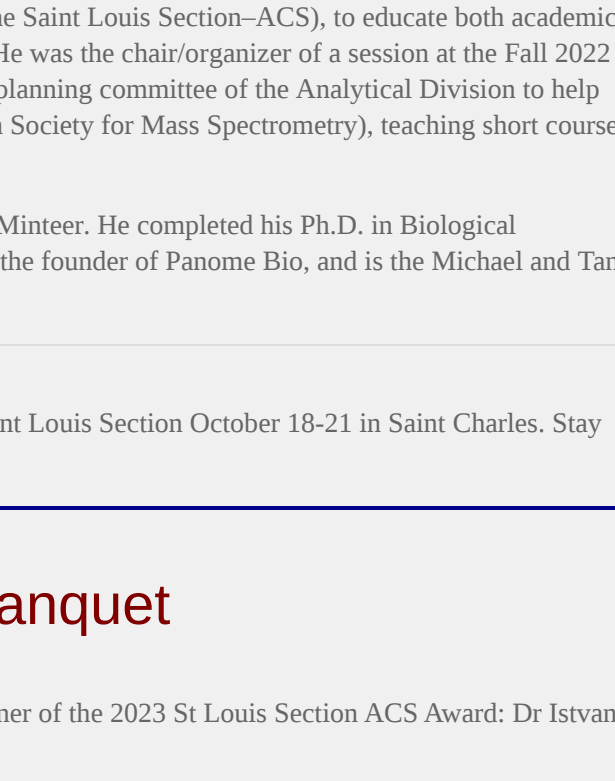
Gary Patti, the Michael and Tana Powell Professor at Washington University, is the recipient of the 2023 Midwest Award. Gary is known for remarkable research achievements in the fields of metabolism and metabolomics. He is also internationally recognized for his efforts to teach metabolomics to researchers from around the world through short courses and many scientific collaborations.

Metabolomics is the newest of the "omic" sciences. It is analogous to genomics but instead of profiling all of an organism's genes, the goal is to profile all of an organism's metabolites (glucose, cholesterol, vitamins, and so on). Gary is widely recognized as one of the pioneers of metabolomics and has made numerous invaluable contributions to advance the field, including efforts to establish a roadmap for interpreting metabolomics results. Gary's technique has been described as the "sword that cuts the Gordian knot" in metabolomics. He also created gold-standard software to process metabolomics data that is used by tens of thousands of researchers around the world.

Some of his most impactful achievements come from his work on cancer. Gary demonstrated — defying convention — not only that lactate can be used as a major fuel source by cancer cells, but also that it is the preferred nutrient of tumors. His work has altered the perception of lactate in cancer and revealed that the so-called Warburg effect is a result of mitochondrial overload, not mitochondrial suppression. Gary has collaborated intimately with several instrumentation companies, including ThermoFisher and Agilent Technologies, to create the first mass spectrometers specifically designed to perform metabolomics, now being used by researchers around the world.

Gary is an active participant and host for the Midwest Mass Spectrometry Discussion Group (sponsored by the Saint Louis Section—ACS), to educate both academic and industrial attendees on emerging techniques in mass spectrometry and inspire use of these technologies. He was the chair/organizer of a session at the Fall 2022 ACS Meeting on "Systems Biology and Mass Spectrometry" and was nominated for a committee of the Analytical Division to help bring more mass spectrometry to national ACS meetings. Gary has been an active leader in ASMS (American Society for Mass Spectrometry), teaching short courses on metabolomics.

Gary received his B.A. in Chemistry and Philosophy while undertaking research in the laboratory of Shelley Minter. He completed his Ph.D. in Biological Chemistry with Jacob Schaefer and was an NIH Postdoctoral Fellow at The Scripps Research Institute. He is the founder of Panome Bio, and is the Michael and Tana Powell Professor at Washington University, where he began his independent career.



Gary Patti, 2023 Midwest Awardee

The award will be conferred during the 2023 ACS Midwest/Great Lakes Regional Meeting, hosted by the Saint Louis Section October 18-21 in Saint Charles. Stay tuned for details of the award symposium and banquet.

Saint Louis Award 2023: Winner, Symposium, Banquet

first published 31 August 2023

Cynthia Chapple, past chair of the St Louis Section—ACS and chair of the award jury, has announced the winner of the 2023 St Louis Section ACS Award: Dr Istvan Z Kiss, Professor of Chemistry at Saint Louis University.

The Winner

Dr Kiss earned his MS (1995) and PhD (2000) degrees in Chemistry at the University of Debrecen (Debrecen, Hungary), working for Prof. Vilmos Gáspár. From 2000 to 2007, he served as a Research Scientist at the University of Virginia—Charlottesville Department of Chemical Engineering, working for John L. Hudson. He joined the Chemistry Department at Saint Louis University in 2007 as an Assistant Professor and was promoted to Associate Professor in 2013 and to Professor in 2018.

Professor Kiss is known for his seminal work on complex chemical reaction networks and the use of multielectrode arrays to study nonlinear dynamics of coupled charge-transfer reactions under far-from-equilibrium conditions. He has used oscillatory reaction networks as analogues for biological rhythms to show that synchronization emerges through a new form of second-order phase transition.

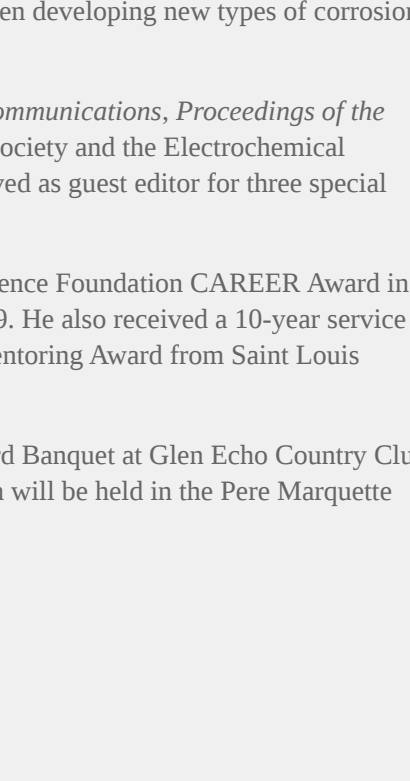
More recently, he has shown that diversity can promote synchrony. Using network reconstruction, data science, and machine learning, Prof Kiss showed that a fundamentally new type of mathematical description, experiment-based phase models, can correctly predict synchronization structures with chemical oscillators. His techniques have been used to differentiate excitatory and inhibitory, and direct and indirect coupling in networks. His work has ultimately led to a new field of synchronization engineering that uses a generic mathematical framework for tuning the synchronization structures with designed signals. Prof Kiss showed that a new generation of pacemakers can be designed using nonlinear waveforms instead of the commonly used pulse sequences. He envisions that applications of engineered feedback hold promise for low-power deep brain stimulators and novel dynamic light therapies for sleep disorders.

Kiss has also made essential breakthroughs in identifying the principles that govern self-organized structures in electrochemical reactions in lab-on-a-chip cells. In a parallel study, he has been able to build valves without moving parts that can direct analytes through different paths on a chip. He has also found applications of his work to corrosion science and has been developing new types of corrosion resistant metals that leverage electrochemical gradients.

Prof Kiss is an author of over 130 peer-reviewed publications that have appeared in such journals as *Science*, *Nature*, *Nature Communications*, *Proceedings of the National Academy of Sciences*, *Angewandte Chemie*, and *Physical Review Letters*. He is a member of the American Chemical Society and the Electrochemical Society, and editor of the journal *Chaos* (2019–) and associate editor of *Frontiers in Complex Systems* (2023–). He has also served as guest editor for three special issues of *Chaos* and is a co-editor for the series *World Scientific Lecture Notes in Complex Systems*.

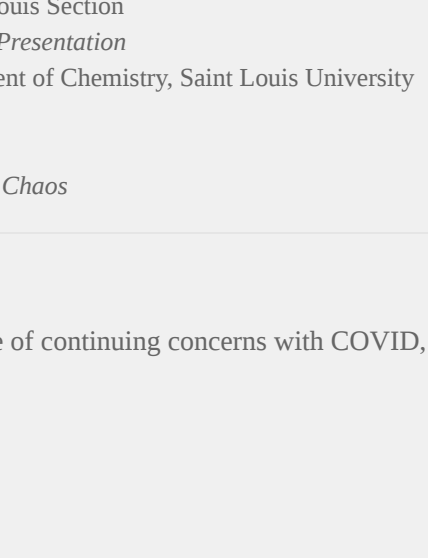
He received a Cottrell College Science Award from the Research Corporation for Science Advancement in 2008, a National Science Foundation CAREER Award in 2010 and was elected chair for the Gordon Conference on Oscillations and Dynamical Instabilities in Chemical Systems in 2019. He also received a 10-year service award for "Students and Teachers as Research Scientists" (STARS), a Senior Faculty Scholarly Works Award and a Graduate Mentoring Award from Saint Louis University, and was made a Research Institute Fellow of Saint Louis University in 2022.

The Saint Louis Section ACS Award, consisting of a \$1,500 honorarium and a plaque, will be presented at the Saint Louis Award Banquet at Glen Echo Country Club (reservations required) at 6 pm on Friday October 27, 2023. The Banquet will immediately follow the Award Symposium which will be held in the Pere Marquette Gallery in DuBourg Hall at Saint Louis University from 1-4:45 pm. See below for details on the symposium and the banquet.



Istvan Kiss, winner of the 2023 Saint Louis Section ACS Award

The Symposium



Honoring Istvan Z Kiss

Professor of Chemistry
Department of Chemistry
Saint Louis University

Modeling and Controlling Complex Self-Organized Structures

Friday, Oct 27, 2023
Pere Marquette Gallery, DuBourg Hall
Saint Louis University

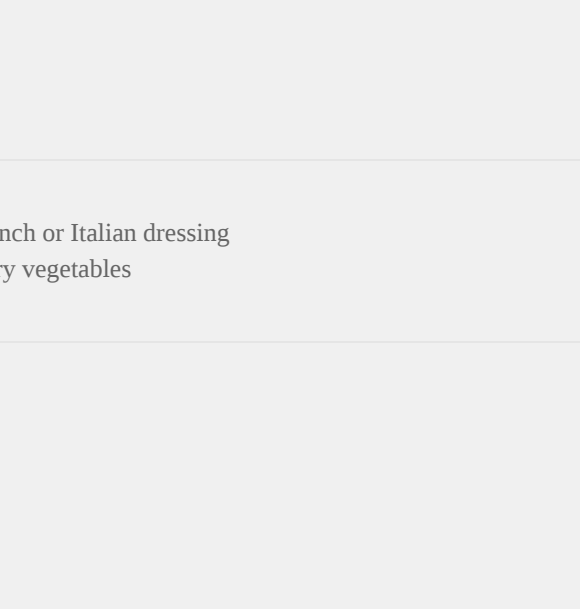
1:00	Dr Tabbetha Bohac , Chair of the St Louis Section, American Chemical Society <i>Welcome and general introduction</i>
1:05	Dr Adilson E. Motter , Charles E and Emma H Morrison Professor of Physics and Astronomy, Northwestern University <i>Emergent Microfluidic Dynamics</i>
1:45	Dr Oliver Steinbock , Cottrell Family Professor, Florida State University <i>Far from Equilibrium Materials</i>
2:25	Dr Michael Sebek , Postdoctoral Research Associate, Northeastern University <i>Connecting the Dark Matter of Nutrition and Disease Using Network Medicine</i>
2:50	Coffee Break
3:10	Dr Jr-Shin Li , Newton R and Sarah Louisa Glasgow Wilson Professor of Engineering, Washington University in St Louis <i>Engineering Chemical Complexity with Ensemble Control</i>
3:50	Dr K L Nikhil , McDonnell Postdoctoral Fellow, Washington University in St Louis <i>Tuning In: Synchronization and Its Impact on Body Clocks</i>
4:15	Dr Alexei Demchenko , Professor of Chemistry, St. Louis University, Symposium Chair <i>Introduction and Salute to Dr Kiss</i>
4:20	Dr Istvan Z Kiss , Professor of Chemistry, Saint Louis University, Awardee <i>Network Electrochemistry</i>
5:00	Dr Alexei Demchenko <i>Concluding remarks</i>
6:00	St. Louis Award Banquet , Glen Echo Country Club, 3401 Lucas and Hunt Rd, Normandy, MO. <i>Reservations required</i> (see below for details and a link to make a reservation)

[This map](#) shows the location of DuBourg Hall and the options for parking.

The 2023 Saint Louis Award Symposium is sponsored by the St. Louis Section of the American Chemical Society and hosted by Saint Louis University.

The Banquet

Friday, Oct 27, 2023, immediately following the Award Symposium (nominally 6:00 pm)
Glen Echo Country Club*
3401 Lucas and Hunt Road
Saint Louis, MO 63121



6:00 pm	Reception —hors d'oeuvres (candied bacon, caprese, chicken skewers) —open bar (beer, wine, soda) until 8:00 pm
7:00 pm	Dinner —First Course: mixed green salad with tomato, cucumber, mozzarella, sunflower seeds, ranch or Italian dressing —Entrée: Japanese cut striploin and Asian glazed salmon, seasoned sesame rice, and stir-fry vegetables —Dessert: tiramisu
8:00 pm	Program <ul style="list-style-type: none"> ◦ Tabbetha Bohac, Chair, St. Louis Section <i>Opening Remarks and Award Presentation</i> ◦ Alexei Demchenko, Department of Chemistry, Saint Louis University <i>Introduction of the Awardee</i> ◦ Istvan Kiss, Awardee <i>Adventures Through Sync and Chaos</i>

Reservations

Reservations are required by midnight, October 23rd. Because of continuing concerns with COVID, we ask that all attendees be fully vaccinated, and asymptomatic when they attend the banquet.

Please provide the following information for your party:

- Name(s) of attendee(s)
- Dietary limitations, if any
- Number attending
- Remittance amount: \$40 each regular ACS member and spouse, \$20 each graduate and undergraduate ACS member, \$60 each non-member

For information on obtaining ACS Membership see www.acs.org/membership.html

Please send reservations and the requested information with a check payable to "St Louis Section—ACS" by postal mail to:

Jeffrey Cornelius
Department of Chemistry
1 Maybeck Place
Principia College
Elsah, IL 62028
phone: 618.374.5296
email: jeff.cornelius@principia.edu

Deadline for receipt of reservations is end of day, Monday, October 23.

or pay [via PayPal](#) (enter info in the Notes window).

For both methods of payment, it would be best to send a confirming email with the information to Dr Cornelius.

*Glen Echo Country Club is in Normandy, in the southwest sector of the intersection of Natural Bridge Road and Lucas & Hunt Road. A link to a map with directions is available [here](#). 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 Mary's Lane, just east of the post office. Continue through the gate, veer right, and park in front of the clubhouse.

Meeting & Seminars

Board of Directors

St Louis Section—ACS Board of Directors meets the second Thursday of each month. We hope to move back to in-person meetings in 2023, please check the meeting announcements.

Date: September 14th, TBD

Join internet meeting at 6:00 pm for social/chit-chat

Business meeting begins at 6:30 pm

Future meetings: October 12th, November 9th

Maryville University

Seminars are approximately once a month on Thursdays, 4-5 pm. Details are available on the university's [seminar page](#). All seminars are free and open to the public. Contact [Jason Telford](#) for more information.

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 [home page](#) and follow the link to the Seminar Schedule.

University of Health Sciences & Pharmacy in St. Louis

The Center for Clinical Pharmacology hosts a monthly seminar series in ARB 212 unless otherwise noted. For the most up to date information refer to the center's [seminar page](#) or contact [Jodi Maslin](#).

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.

UMSL Department of Chemistry and Biochemistry

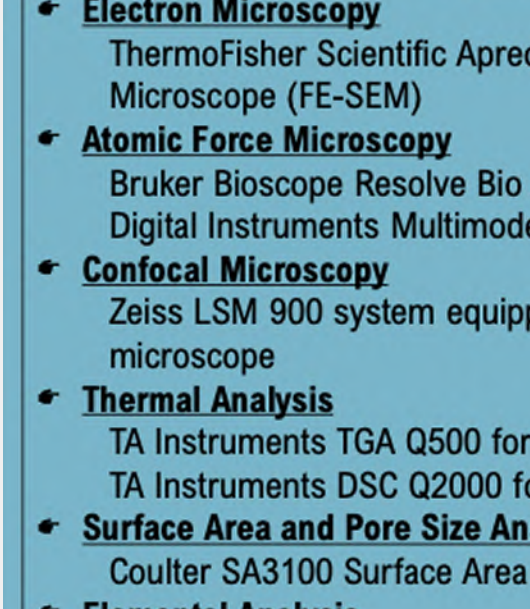
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Contact
Prof. Keith J. Stine
Chair, Department of Chemistry and Biochemistry
Email: kstine@umsl.edu

Dr. Bishal Nepal
Lab Manager, MIST Lab
Email: bnff8@mail.umsl.edu

Facilities Available

- **Electron Microscopy**
ThermoFisher Scientific Apreo 2 Field Emission Scanning Electron Microscope (FE-SEM)
- **Atomic Force Microscopy**
Bruker Bioscope Resolve Bio AFM with Nanoscope V controller
Digital Instruments Multimode AFM with Nanoscope III controller
- **Confocal Microscopy**
Zeiss LSM 900 system equipped with Axio Observer 7 inverted microscope
- **Thermal Analysis**
TA Instruments TGA Q500 for Thermogravimetric Analysis
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Coulter SA3100 Surface Area and Pore Size Analyzer
- **Elemental Analysis**
ICP-AES, Vista Inductively Coupled Plasma Atomic Emission Spectrometer
EDS, Energy-Dispersive X-ray Spectroscopy using 30mm² detector in Apreo 2 SEM
- **Liquid Chromatography-Mass Spectrometry**
ThermoFisher Scientific TSQ Altis Triple Quad Mass Spectrometer equipped with Vanquish binary pump and Triplus autosampler

About the Chemical Bond

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