

The Chemical Bulletin

<http://chicagoacs.org>

JUNE • 2019

CHICAGO SECTION AMERICAN CHEMICAL SOCIETY MONTHLY MEETING THURSDAY, JUNE 20, 2019

St. Xavier University
Warde Academic Center, Butler Reception Room
3700 W. 103rd St.
Chicago, IL 60655

Parking: Free in adjacent lots

https://chicagoacs.starchapter.com/images/downloads/Maps_of_venues/stxavier_mapdir.pdf

Also Being Streamed to Satellite Locations:

Purdue University Northwest
Gyte Building Room 240
2200 169th St.
Hammond, IN 46323

<https://www.pnw.edu/visitors-guide/maps/hammond-campus>

Parking: Free

http://chicagoacs.org/images/downloads/Maps_of_venues/purduenw_map.pdf

Loyola University
Flanner Hall, Room #105
1068 W. Sheridan Rd
Chicago, IL 60660

https://chicagoacs.starchapter.com/images/downloads/Maps_of_venues/loyola_mapdir_flanner.pdf

Parking: \$7.00

<https://www.luc.edu/campus/transportation/generalinformation/visitorsandguests/>

REGISTRATION AND
SOCIAL HOUR 5:30 PM – 6:15 PM

PRE-DINNER PRESENTATION BY
CLAUDIA TEJEDA 6:15 PM – 6:30 PM

DINNER 6:30 PM – 7:00 PM

INTRODUCTORY REMARKS
AND SAFETY-FIRST
MINUTE 7:00 PM – 7:10 PM

DISTINGUISHED SERVICE
AWARD TO
DR. JOSH KURUTZ 7:10 PM – 7:15 PM

PRESENTATION OF THE
50- 60- AND 70- YEAR MEMBER
AWARDS 7:15 PM – 7:30 PM

PANEL PRESENTATION AND
DISCUSSION 7:30 PM – 8:30 PM

Panel: Drs. Bindhu Alappat, Sharada Buddha, and Julia Wiester
"Student-Faculty Collaborative Research at Saint Xavier University"

Dinner reservations are required and can be obtained at our website (www.chicagoacs.org) or call the Chicago Section office at 847-391-9091.

ABSTRACT

High-impact teaching practices like undergraduate research is a key feature of our curriculum at SXU. The research experience helps students learn to read the chemical literature, design and perform experiments, gain hands-on experience with instruments, analyze data, and interpret results. Several SXU faculty have robust research programs with students. Prof. Alappat researches the isolation

(continued on page 2)

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and identification of chemicals from natural products and the biological activity of these extracts. Prof. Buddha studies the molecular basis for ethnomedicine, particularly from plants and herbs. Prof. Wiester investigates the incorporation of nanoparticles and dyes into solar cells as well as the metal content in everyday items (with Ms. Tejeda).

BIOGRAPHIES

Pre-Dinner Speaker: Claudia Tejeda
(Sherwin Williams)



“Heavy Metals in Cosmetics: Counterfeit vs Brand Name Lipstick”

Claudia Tejeda earned her B.S. in Chemistry from Saint Xavier University and is currently a chemist at Sherwin-Williams at their Chicago Emulsion Plant in the south side of Chicago. She was recently nominated as an “Emerging Leader” within Sherwin-Williams and will be participating in leadership seminars in the upcoming months. Ms. Tejeda is also part of Mujeres Latinas en Acción Young Professionals Advisory Council, serving as the Member Engagement chair and volunteering for career panels geared at low-income or minority girls interested in STEM careers.

MENU (Main Site Only):

Buffet Selection of Mini Sandwiches

- Turkey, Ham, and Vegetarian
- Potato Chips
- Fried Ravioli
- Fruit tray
- Vegetable tray with dip
- Cookie, Cheesecake, Brownies

No Dinners will be served at the Remote Locations.

Dinner Registration Deadline: 12:00 noon on Tuesday, June 18

Lecture-only Registration Deadline: 12:00 noon on Wednesday, June 19

Dinner reservations are required and should be received in the Section Office via phone (847-391-9091), email (chicagoacs@ameritech.net) or website (<https://chicagoacs.org/meetinginfo.php?id=146&ts=1559328186>). PLEASE HONOR YOUR RESERVATIONS. The Section must pay for all dinner orders. No-shows will be billed.

Bindhu Alappat



Dr. Alappat received her Ph.D. in chemistry from The Indian Institute of Technology, Madras, India and was a postdoctoral research associate at University of Notre Dame, IN. She also worked as a research Scientist at University of Maryland, College Park before joining Saint Xavier University. Currently Dr. Alappat serves as the Chair and Associate Professor at the Department of Chemistry, Saint Xavier University. She has published more than 20 papers in reputed peer reviewed journals and is the PI of a 1.46 million dollar NSF grant awarded for improving the STEM retention and graduation rates.

Sharada Buddha



Sharada Buddha Ph.D. is an Associate Professor of Chemistry at Saint Xavier University. She earned her doctorate from Loyola University of Chicago, IL (Chemistry/Biochemistry) in 2006. Prior to which she had earned the Proficiency certificate in Biotechnology from the Indian Institute of Science, Bangalore, Master of Science in Analytical Chemistry from Bangalore University. Her baccalaureate degree is also from Bangalore University with majors in Physics, Chemistry and Mathematics. Recently in 2018 she also earned a master's degree in applied computer science from Saint Xavier University. Dr. Buddha has worked with over 40 students in Natural Products Chemistry/ Medicinal Chemistry and Environmental Toxicology projects.

Julia Wiester



Julia Wiester is an Assistant Professor of Chemistry and Honors Program Director at Saint Xavier University. She earned her B.S. in Chemistry and B. Phil. in linguistics from The Pennsylvania State University and her Ph.D. in Chemistry from Northwestern University. Dr. Wiester is interested in the physical and analytical applications of plasmonic nanoparticles and chromophores. She is also interested in incorporating more research-based projects into traditional chemistry lab courses so that all students can have a research experience. Dr. Wiester is currently leading an EXPLORE STEM Careers course (NSF grant) to help students better identify careers in STEM and build relationships with local industrial partners.

The mission of the Chicago Section of the ACS is to advance the chemical sciences and their practitioners for the benefit of Earth and its people

DISTINGUISHED SERVICE AWARDEES

The Chicago Section American Chemical Society's Distinguished Service Award was established in 1974 at the suggestion of Louis L. Lerner, then the Editor of the Chemical Bulletin. These Awards recognize members who have provided exceptional service to the Section over, above and separate from any other achievements of the recipient, either in the profession or by the National ACS.

1974	Victor Conquest	1990	Thomas J. Kucera
	Roy C. Newton	1991	James P. Shoffner
	Otto Eisenschiml	1992	Margaret Lally Huston
1975	Hoylande Young Failey	1993	Herbert S. Golinkin
	Byron Riegel	1994	Stephen Sichak, Sr.
	Ward Evans	1995	Marie Ann Liskha
	Carl S. Miner		Adele Rozek
1976	David Klein	1996	Gayle E. O'Neill
	E.H. Volwiler	1997	Fran Karen Kravitz
	M.H. Arveson	1998	Marilyn Kouba
	P.N. Leech	1999	Charles E. Cannon
1977	William A. Converse		Jay S. Curtice
	Benjamin B. Freud	2000	Ellis K. Fields
	Robert J. Reinarts	2001	Stanley W. Drigot
	Helen Selin	2002	Cherlynlavaughn Bradley
1978	Walter S. Guthmann	2003	Lawrence E. Thielen
	Charles DeWitt Hurd	2004	Lawrence U. Berman
1979	Richard Mattoon	2005	Seymour Patinkin
	Herbert E. Robinson	2006	L. Jewel Nichols
1980	Herman S. Bloch	2007	Barbara Moriarty
	Julius D. Stieglitz		Louis Lerner
1981	Vivian B. Biske	2008	Margaret Stowell Levenberg
	Edward G. Rietz	2009	Susan M. Shih
1982	Bernard S. Friedman	2010	Russell Johnson
	Paul Van Cleef	2011	David Crumrine
1983	Clifford W. Crosby	2012	Sanford Angelos
	J. Fred Wilkes	2013	Milt Levenberg
1984	James J. Doheny	2014	Frank Jarzembowski
1985	Roy H. Bible	2015	Richard Cornell
1986	Carl E. Moore	2016	Ken Fivizzani
1987	Elaine R. Anderson	2017	Avrom Litin
1988	Nellie M. Payne	2018	Amber Arzadon
1989	Louis J. Sacco	2019	Josh Kurutz

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DISTINGUISHED SERVICE AWARD TO DR. JOSH KURUTZ

The Chicago Section American Chemical Society's Distinguished Service Awards were established in 1974 at the suggestion of Louis L. Lerner, then the Editor of The Chemical Bulletin. This Award recognizes members who have provided exceptional service to the Section over, above, and separate from any other achievements of the recipient, either in the profession or for the National ACS. This year the Distinguished Service Award goes to **Josh Kurutz** for his service to the Chicago section.



Before serving as chair in 2014, Josh served as Secretary in 2010 and Director from 2009-10 and 2016-2018 and is currently the Vice Chair. He has been the Communications & Technology Committee Co-Chair since 2014 and is the Historian Committee Chair. He has also occupied a number of other roles: Stieglitz Lecture Committee Chair 2014-2019; Membership Affairs Committee Chair 2015-present; Policy Committee Chair 2015-2016; Development Committee Chair 2015-2016; Nominating Committee Chair 2013-2015; National Affairs Chair 2015; Annual Report Committee Chair 2014; College Education Committee Chair 2011-2013; Webmaster Committee Co-Chair 2011-2013; and Program Co-Chair, Great Lakes Regional Meeting 2015-2018. He has also been a member of a number of other committees.

Please join the Section in congratulating Josh for his many contributions and excellent service to the Chicago Section!



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CONGRATULATIONS TO OUR 50-, 60-, AND 70-YEAR ACS MEMBERS!

As part of our June 20 meeting program, we will honor an elite group of our Section members who have been ACS members for 50, 60, or 70 years! A membership card entitling them to free attendance at all ACS meetings is sent to each of them from the ACS National office in grateful appreciation of their many years of service to the Society. At our meeting, each of them will be presented a handsome membership certificate to mark the occasion.

50 Year Members for 2019

Ronald Anderson
William Arendt
Richard Bodner
John De Bernardis
Bruce Firth
Eugene Frank
Eric Gislason
Anton Hopfinger
W Richard Hoster
Jose Jacob
Frank Jarke II
William Largent
John Meyers
James Napoli
James Patterson
Andrew Plaszc
Walter Porembski
James Quick
Vacys Saulys
Arthur Schultz
Rose Snopko
Bruce Solka
Edward Winkler
Edgar Yee

60 Year Members for 2019

Robert Covalt
Alan Eachus
Arnold Hirsch
Earl Horwitz
Saul Kadin
Robert Klingender
John Klooster
Dieter Kutscha
Milton Levenberg
Irving Miller
Charles Snyder
Stephen Stefely
Roger Weichman

70 Year Members for 2019

Max Adams
Ralph Bertolacini
Harry Flaxman
Louis Glunz
Seymour Patinkin

SAFETY MINUTE

Did you know that May is Electrical Safety Month? This month's "Safety First" Minute is inspired by an environmental aspect of electrical safety, namely, what to do with dead batteries or batteries that are no longer needed. It will come to no surprise to us as chemists that the answer depends on the type of battery.



Most single-use household batteries, such as AAA, AA, C- or D-cell, and 9-V batteries, are alkaline batteries containing zinc, manganese and other non-hazardous metals. All states except California permit non-commercial entities to dispose of these batteries along with their regular or normal household trash. A few caveats or exceptions to this general rule:

- For 9-V batteries it's recommended that you cover the terminals with tape to avoid incidental contact with commingled metals in the trash, which could lead to short-circuiting and a potential fire.
- Consumer single-use batteries that contain lithium should NOT be disposed of in the trash. They must be recycled, along with ALL rechargeable batteries.
- Small "button-type" batteries such as those used in watches, hearing aids, and some calculators, usually contain silver and thus are also NOT suitable for disposal in the regular trash. They must be recycled as well.

And before we go any further, recycling here does NOT refer to the single-stream recycling bins we use for (hopefully all of our) glass, paper, plastic and metal. You should NEVER dispose of rechargeable batteries in the general recycling. Significant fires have resulted from this practice!

There are two major categories of rechargeable batteries – nickel (including nickel-cadmium and nickel metal hydride varieties) and lithium-ion batteries. ALL must be recycled through special recycling centers or operations. Nickel battery packs are commonly found in cordless

power tools, while lithium batteries predominate in consumer electronic devices. Nickel and, in particular, Ni-cad batteries contain hazardous metals that pose an environmental hazard if they leach into soil and water. Also, as noted above, improper disposal or recycling of lithium batteries is a significant cause of fires and injuries.

The easiest course of action to avoid potential risk due to improper battery disposal is to take ALL batteries to dedicated recycling centers, such as those found in home-improvement stores. If in doubt about what you should do, search online for battery recycling locations near you.

Want to suggest a topic for a "Safety First" Minute that will help support and promote our commitment to safety as a core value of the American Chemical Society? We welcome your comments, ideas, and suggestions! Please call or email me, our section chair, or the editor of the Chemical Bulletin.

Irene Cesa



"Many of the select few who receive that call from Stockholm are, by that time in our lives, little more than spokesmen and women. We start off on our life's journey as research scientists striving to catch hold of the coattails of the great and good, only to come to the realization, before too long, that we have reached our sell-by-date. In this Sidney Harris cartoon, the likes of me finds oneself at the podium, acting as the mouthpiece for a long line of accomplished young whippersnappers who have sustained and promoted my reputation—to the point where I am left holding a hot potato, thanks to all of them."

— Fraser Stoddart, Northwestern University
[Shared the 2016 Nobel Prize in Chemistry with Jean-Pierre Sauvage and Bernard L. Feringa]



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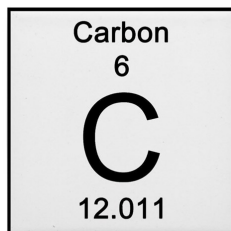
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- Polymer
- Professional development
- Regulatory/environmental

Courses are coming to Chicago on June 24-27, 2019. Register today!

www.acs.org/proedchicago

MY FAVORITE ELEMENT - CARBON

Everybody has heard of the element carbon, in fact it is one of the few elements that has been known since ancient times. Carbon is such an interesting element. While one form of carbon, graphite, is very soft and can be used as a lubricant and as the “lead” in our pencils, another form of carbon, diamond, is one of the hardest materials known. Who would think that graphite and diamond are made of the same element?



As a materials chemist, carbon is fascinating to me because it possesses wonderful properties for applications in energy storage and energy conversion.

Diamond can be used as a photoelectron emitter. As a semiconductor, the conduction band of diamond lies very high on the energy level, even higher than the vacuum level. This enables the excited electrons from the valence band to emit off of the surface of diamond. And this could happen even in ambient conditions! If the diamond is in water, solvated electrons (electrons stabilized by water molecules) will form once the diamond is excited by UV light. The solvated electrons are very energetic, and are able to initiate very hard reactions. As examples, they are able to convert nitrogen to ammonia at ambient pressure and temperature, and convert carbon dioxide to a highly selective product of carbon monoxide (with minimal reaction from the competing water reduction). The nitrogen-to-ammonia reaction has very high industrial significance, while the carbon dioxide reduction has both environmental and industrial significance.

Diamond can be an excellent electrode material. While the crystal clear diamond is very insulating, scientists can dope (replace some of the carbon atoms in the structure with other atoms) diamond to make it conductive. In fact, one of the biggest diamonds in the world, the blue-colored Hope Diamond, is also a doped diamond. It is naturally doped with the element Boron. When diamond is heavily doped, it can be very conductive and can be used as an electrode for electrochemical reactions. Compared to other electrode materials, diamond allows a much larger electrochemical voltage window due to its ultra-stability, enabling electrochemists to study reactions that are otherwise impossible.

The element carbon also plays a huge role in lithium-ion batteries that we use every day to power cell phones, laptops

and electric vehicles. The negative electrode of lithium-ion batteries contains graphite as the active material, allowing lithium to stay and leave (intercalate and de-intercalate) during charge and discharge. It was discovered by Sony in the early 1990s and has remained the major active material in almost all of the commercial lithium-ion batteries. Scientists have put a lot of effort into developing the next-generation higher-energy-density negative electrode materials, but so far nothing has topped graphite when cycle life is also being considered. Graphite is just too perfect!

Graphene is the new member of the carbon family. It is a 2-dimensional material containing only one layer of carbon arranged in a hexagonal lattice. It was discovered in 2004 by Andre Geim and Konstantin Novoselov at the University of Manchester. The two won the Nobel Prize in Physics in 2010 for this groundbreaking discovery. Graphene also has many great properties which give it the potential for applications in flexible/wearable electronics, supercapacitors as well as batteries.

Which form of carbon is your favorite?

Linghong Zhang

REPORT OF COUNCIL MEETING HELD IN THE SPRING OF 2019

The 257th National Meeting of the ACS was held in Orlando, FL, March 31 – April 4, 2019. The theme of this meeting was “Chemistry for New Frontiers.” The Chicago Section was represented at Council by the following nine councilors: Charles Cannon (Local Section Activities), Ken Fivizzani (Community Activities), Russell Johnson (Chemistry and Public Affairs), Michael Kohler (Chemical Safety), Fran Kravitz (Ethics), Josh Kurutz (Alternate Councilor), Margy Levenberg (Meetings and Expositions), Milt Levenberg (Senior Chemists), and Inessa Miller.

Finances: In 2018, ACS generated a net from operations of \$41.1 million, which was \$13.3 million higher than 2017. Total revenues were \$571.6 million, increasing 6.4% (\$34.2 million) over 2017. Expenses ended the year at \$530.5 million, which was \$20.8 million (4.1%) higher than the prior year. These results were attributable to strong performance from the Society’s Information Service units (CAS and ACS Publications) and a continued emphasis on expense management across the ACS. The Council voted to set the member dues for 2020 at the 2019 rate of \$175.

Governance: The Council selected H. N. Cheng and Carol A. Duane as candidates for 2020 President Elect. These two candidates, along with any petition candidates, will stand for election in the 2019 Fall National Election.

Meetings and Expositions: As of Tuesday, April 2, 2019, the 257th ACS National Meeting had attracted 15,605 registrants, including 7887 regular attendees and 6019 student attendees. In addition, it was reported that there were 12,830 scientific contributions at this meeting. There were 369 booths in the Exposition.

Membership Affairs: The ACS ended 2018 with 151,012 members, a net membership growth of 0.001%. This is the first membership growth ACS has recorded in the better part of a decade. Of the 25,000 new members who joined in 2018, about 20% were incentivized by market testing initiatives. Without these new members, ACS would have seen continued declines. Council voted to extend the provision of the international dues discount test based on World Bank country income levels for an additional three years (August 2019 – August 2022).

Councilor Divisor: The Council Policy Committee has set the divisors for allocation of Councilor seats among Local Sections and Divisions for 2020 to 2023. Official notification of the Councilor divisors and the number of Councilors permitted for each Local Section and Division were sent to the respective Local Sections and Divisions. (Post-meeting note: as a result of new divisors, the Chicago Section has lost one seat in Council. We will have nine Councilors going forward.)

Council Special Discussion: This meeting’s special discussion topic was ACS Relevance to Current and Future Members: Challenges and Opportunities. Councilors provided many recommendations and suggestions including increased support for local sections and industry members, helping student members transition into their professional careers, and implementing a monthly payment tool for ACS dues. All submitted ideas and input will be shared with the Committee on Membership Affairs and the ACS Membership Division for further research or implementation.

If you have any questions or comments about the above information, please contact me or one of your other councilors. You may contact me at kfivizzani@wow-way.com.

Ken Fivizzani

CHEMISTRY OLYMPIAD RESULTS

The Chicago American Chemical Society section will again be represented by a student attending the Study Camp in College Park, MD in preparation for the International Chemistry Olympiad this summer to be held in Paris, France in July. Allen Ding of Stevenson High School, for the second year in a row, qualified for the study camp. Congratulations to him, his parents, his teacher (Kevin Crowe), and his school!

Allen Ding and Richard Yin of Stevenson HS received high honors for their performance on the national exam. Soren Dunn and Kristen Si of Walter Payton College Prep HS, Jonathan Li of Neuqua Valley HS, Ricky Wang of Stevenson HS, and Andrew Zhang of Naperville Central HS received Honors for their performance. Again, congratulations to these students! For more information, see <https://www.acs.org/content/acs/en/education/students/highschool/olympiad.html>

Russ Kohnken

CALENDAR

June 11-13: 23rd Annual Green Chemistry & Engineering Conference and 9th International Conference on Green and Sustainable Chemistry in Reston, VA. <https://www.gcande.org/>

June 17: You Be The Chemist National Challenge

June 20: Chicago Section Dinner Meeting honoring our 2018 Distinguished Service Awardee and our 50-, 60-, and 70-year members. **See details in this issue.**

July 21-25: ChemEd 2019, the largest North American biennial conference for primarily K-12 teachers of science and chemistry, will be hosted by North Central College in Naperville. <https://www.chemed2019.com/>

August 8-18: The Illinois State Fair in Springfield. Come volunteer at the ACS booth. <https://www2.illinois.gov/state-fair/Pages/default.aspx>

August 25-29: 256th American Chemical Society National Meeting and Exposition "Chemistry & Water," San Diego, CA. <https://www.acs.org/content/acs/en/meetings/national-meeting.html>

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