



The Minnesota Chemist

Official Publication of the Minnesota Section of the American Chemical Society

Issue 5, September-October 2018



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Greetings from the Chair

Greetings,

Hopefully everyone has had a great summer and is looking forward to an exciting 2018-2019 academic year! The Minnesota State Fair signals summer's last hurrah. Go enjoy something on a stick before settling in for the rest of our 2018 meetings and events.

We have been busy organizing a number of events in September to start the year off strong.

Kicking off our fall line-up:

Saturday, September 8th

Fall Family Day/Chemistry with Kids

What: Chemistry activities, demos and ice cream for the whole family from 1:00-3:00pm

Location: Mendakota picnic shelter, 2171 Dodd Rd., Mendota Heights, MN 55120

See "Activities" tab at mnacs.sites.org for more details

Please RSVP by September 6th to me at amkooyman@gmail.com

Monday, September 10th

Title: ***Inexpensive, Efficient Approaches for Energy Production and Storage***

Speaker: Dr. Amy L. Prieto, Professor, Department of Chemistry, Colorado State University

Location: Bethel University, 3900 Bethel Dr., St. Paul, MN 55112, Brushaber Commons

See "Meetings" tab at mnacs.sites.org for more details

Monday, October 15th

Topic on the chemistry of chocolate or coffee (Send me an email if you have a strong preference!)

Speaker: Dr. Joe Vinson, Professor, Department of Chemistry, The University of Scranton

Location: TBA

November 29th

7th Annual Chemistry Job & Recruiting Fair

Location: Saint Catherine University

Thursday, November 29th

MN ACS Winter Social

What: Indoor artist-designed mini golf, retro arcade games, food, drinks and other activities!

Location: Can Can Wonderland, 755 Prior Ave N #004, St. Paul, MN 55104

You may have noticed that my picture is a little different this month. It was from an event that my coworkers and I put on at H.B. Fuller called *Labs 'in the Lab'*. Second Hand Hounds brought 10 adorable puppies for employees to play with while they also learned about H.B. Fuller's pet related adhesives. We used our company's available resources to easily coordinate a great event. Similarly, the ACS at both the national and local level has a lot of resources, but we need more members to take an active role. Consider running in November for an elected position. If you have ever wanted to bring in a specific speaker, host a meeting at a certain location, organize a workshop, start a community outreach event or more, send me an email. And as always, our executive committee meetings are open to anyone who is interested.

Warm Regards,
Arianna Ahl
amkooyman@gmail.com



September 8 - Fall Family Day: Chemistry with Kids

The Minnesota Local Section of the American Chemical Society and the Mommy Chemists are pleased to announce our upcoming event: **Chemistry with Kids!** An event specially put on for adults who are also chemists to share their love of chemistry with their children while networking with other moms, dads, and professionals in chemistry!

Enjoy a fun filled afternoon with your children, grandchildren, nieces and nephews, or any other children in your life. The event will give both children and adults the chance to experience chemistry on both the micro and macro scale. The afternoon will have many fun and safe demos and activities your children can do on their own or with some help. There will be [kids as atoms](#), **SLIME**, magic sand, [chemistry art projects](#), a pool of **obleck**, [snow in September](#), and **much more!** For a break, liquid nitrogen ice cream will be made and used to test the kids' knowledge of what they have learned. The event will close with a raffle for science related prizes so that the fun can continue at home!

When: Saturday, September 8th, 2018
1:00 – 1:10 pm: Arrival/sign In
1:10 – 1:40 pm: Kids activities and demos
1:40 – 2:00 pm: Liquid nitrogen ice cream
2:00 – 2:30 pm: Kids activities and demos
2:30 – 3:00 pm: Closing demo, future events announcement, and raffle

Where: Mendakota Park Picnic Shelter
2171 Dodd Road
Mendota Heights, MN 55120

Ages: Target age: around 2-12 years old

Cost: **Free Will Donation for Project SEED**
<https://www.acs.org/content/acs/en/education/students/highschool/seed.html>

RSVP: Please email Arianna Ahl at amkooyman@gmail.com with the number of adults and children attending or with any questions by **September 4th**. Volunteers are needed and welcome!

[Map](#)



September 10 Meeting: Inexpensive, Efficient Approaches for Energy Production and Storage *Note: Previous Date Changed to Monday Sept. 10*

Presenter: **Dr. Amy L. Prieto**, Professor, Department of Chemistry, Colorado State University

We are interested in developing new synthetic methods for nanoscale materials with applications in energy conversion and storage. We work in three general areas: photovoltaics, hydrogen storage, and Li-ion rechargeable batteries. For this talk, I will focus on our work developing new architectures for rechargeable Li-ion batteries, with an eye toward the commercialization of this technology.

There are two main limitations to the rate of charging Li-ion batteries: slow diffusion of Li^+ into the electrodes and slow diffusion *between* them. The synthesis of high surface area electrodes has been shown to dramatically enhance performance because reducing the particle size of the electrode material reduces the distance the Li^+ ions have to diffuse. *The problem of decreasing the Li^+ diffusion length between electrodes has not yet been solved.* We are working to incorporate high surface area structures of a novel anode material into a new battery architecture wherein the current collector is conformally coated with an electrolyte made by electrochemical deposition, then surrounded by the cathode electrode. The significant advantage is that the diffusion length for Li^+ between the cathode and anode will be dramatically reduced, which should lead to much faster charging rates.

When: Monday, September 10th, 2018

No Executive Meeting

6:00-7:00pm - Social & Italian Dinner

6:50-7:00pm - Dr. Sijia S. Dong: Spectrum of the visual chromophore by multiconfiguration pair-density

functional theory: Design of a strategy for automatic active space selection

7:00pm-8:00pm - Dr. Amy L. Prieto Talk

Where: Bethel University

3900 Bethel Drive, St. Paul, MN 55112

Brushaber Commons

Park in the West Lot

Cost: \$20 Meal Ticket/\$5 Student Meal Ticket

Talk- Free. Please RSVP online

To purchase a meal ticket, go to the Web Store at <http://mnacs.sites.acs.org/>. To RSVP to only the talk, go to the RSVP tab. Send any questions or comments to Arianna Ahl at amkooyman@gmail.com. **Deadline to register is September 6th.**

[Bethel Campus Map](#)



Project SEED Celebrates “50 Forward” at ACS National Meeting in Boston

Chemists attending the ACS National Meeting in Boston were treated to several opportunities that showcased the 50th Anniversary of Project SEED. Since 1968, over 11,000 high school students have participated, 63% completed a bachelor's degree in science major and 7% earned a PhD! At the Boston meeting, over 70 SEED students presented their research at the Sci-Mix poster session, covering a wide range of topics, from the impact of ocean acidification on starfish to study of organo-borate complexes in enzyme inhibition.

A Presidential Symposium, “Growing with Project SEED: 50 years and 10,000+ Alumni”, hosted Project SEED Alumni who shared wisdom from their experiences. Dr. Teri Quinn Gray,

ACS Board of Directors District III, had an early itch for chemistry, but no scientist role models until SEED. She spoke of mentors “collaborating for my success.” Dr. David Chavez, Los Alamos National Laboratory, experienced SEED as a “group of mentors who are working together to pull you along to become the best version of the person you can be.” Dr. Richa Sharma told how when her family emigrated to the US, the family stressors and limiting environment turned her into a bored and careless teen. But her high school teacher saw her capabilities and used SEED as the incentive to push herself to do well in school. Dr. Sharma now hosts SEED students in her research labs at St Jude’s Hospital.

Confidence in the capabilities of talent waiting for a growth opportunity extends even to the Project SEED “50 Forward” Champion, Sir Fraser Stoddart. At several receptions and symposia, he shared his own story of finding his footing in research. Good partners go a long way and help you through the rough times. Early in his career, Stoddart heard a knock on his lab door. It was Alfred Bader (founder of Aldrich Chemicals) asking who in the department would benefit from donations of chemicals. Before you are “proven”, the small supports can make a huge difference. Alfred and Isabel Bader went the next step and have been long time financial sponsors of Project SEED.

The “50 Forward” campaign is a project of the ACS National Project SEED Committee. This plan for the sustained success and growth of Project SEED highlights the success stories of Project SEED alumni, shared through C&En News, and ACS social media sites. The fundraising campaign seeks to raise \$2 Million to increase the Project SEED Endowment and provide stable, ongoing source of funds for the program. Funding goes entirely to student stipends. When we achieve this fundraising goal, it enables a 25% increase in student participation (from 400+ to 500+ students each summer)!

Please consider making a donation to Project SEED via the 50 Forward campaign!

www.acs.org/forward

The Minnesota Local Section will be highlighting the 50 Forward campaign and the stories from our local Project SEED Alumni at our regular meetings and events. We have set a goal of raising \$10000 in contributions from Minnesotans. Thank you to members who have made previous donations to Project SEED! If you would like to help us tell the story of Project SEED or share why you decided to donate, please contact Sarah Mullins at projectseedmn@gmail.com or on Twitter @projectseedmn @MinnesotaACS.





Annual ACS-MN Elections

Get involved with your American Chemical Society! The nomination committee for the Minnesota ACS local section is calling for 2019 candidates. This is a great way to give back to the ACS after all this professional organization has done for you. We especially would like to encourage self-nominations. Positions that must be filled this year include chair elect, treasurer and councilor. Enclosed is a description of the offices. The commitments are one to three years in duration and we encourage young professionals such as post-docs to get involved. There are many other opportunities within ACS-MN that could use your help. **To get the ballot together we need your commitment by September 15.** If you want to make a difference, know of someone who could be a leader or have any questions or concerns, please email Rita Majerle at rmajerle01@hamline.edu.

Sincerely,

Rita Majerle
Chair, Nominations Committee ACS-MN

Treasurer: As keeper of the section's books, duties include writing checks for expenses, keeping track of deposits, collecting payments for local section meetings, etc. Each year the budget is set at the budget meeting (Dec or Jan) run by the treasurer. The treasurer is also responsible for an annual report and tax filing. Filing can be done using an accountant (treasurer arranges this). Average time commitment 5-8 hours per month. (Two-year term)

Secretary: The secretary takes minutes at all executive committee meetings and sends them out to the webmaster and exec list serve. The secretary is also in charge of sending election results in to the national office and various paperwork. Average time commitment 3-5 hours per month. (Two-year term)

Councilor: Councilors represent the section at national meetings, are expected to volunteer for local section committee and sub committee assignments, and serve on a national committee as assigned starting during their second year of service. The councilors report back legislation discussed at the national meeting, election slates, etc. Requires travel to the national ACS meetings and attendance at council. Average time commitment 4-6 hours every six months and travel. (Three-year term)

Chair: The chair is the face of the section and is in charge of planning and running monthly section meetings (Jan 2019 to Dec 2019) with the direction and assistance of the executive committee. The section will pay to send the chair-elect to the national ACS leadership training in January after their election. This training will highlight the structure of the ACS, the role of local sections, and how the national office supports the programming and outreach of local sections. The chair submits an annual report and writes a bimonthly update for the MN Chemist. (Three-year term; chair elect/chair/past chair). Average time commitment 8-12 hours per month.

Nominations Committee: Locate and nominate sections members for offices. Compiles bios of candidates and sends them for publication in the MN-Chemist. (Two-year term). Time commitment 1-2 hours per month.

Awards Committee: Solicit nominations and select recipients for the awards given by the MN-ACS (the Minnesota Award, the Lyle Hall Senior Chemist Award, and the Janet Torino Volunteer Award). Time commitment is 1-2 hours per year in addition to giving an update to the executive committee once in three months.

Minnesota ACS Recognized with Awards

2018 ChemLuminary Award: Best Ongoing Senior Activity in a Local Section that Benefits the Community, Local Schools, or Legislative Government





Minnesota Local Section

The Minnesota Local Section Senior Chemists group had a successful year. Bi-monthly lunch meetings were held at a local restaurant, and included a short talk or a discussion. One discussion focused on "The Education of Chemists." At a special Holiday Lunch held in December 2017, there were two book reviews of science-related books, as well as books for prizes. Tours included the Public Television Studios in St. Paul, the 3M Innovation Center in Maplewood, and the undergraduate research labs at the University of St. Thomas.

2018 Local Section Outreach Volunteer of the Year – Minnesota Section

Sarah M. Mullins

Sarah M. Mullins has been coordinator and responsible for running the local section's Project Seed outreach and the National Organization of Black Chemists and Chemical Engineers outreach programs. In addition, Sarah is one of the local section national councilors and is on a number of ACS national committees (Minority Affairs, CCPA Liaison to the Public Relations and Communications, and Government Affairs Committee.) Sarah has provided vital service to the local science community, and the local section looks forward to her continuing this work in the future.



November 29 - Chemistry Job & Recruiting Fair

The Chemistry Job and Recruiting Fair will be held from 4 – 6 P.M. on **Thursday, November 29th, 2018** at **Saint Catherine University** in Saint Paul, MN, in the 3rd floor Ballroom of the Coeur de Catherine Building.

This event is an opportunity to meet with technical recruiters from the Twin Cities area and is open to professionals and students from chemistry and related fields. Sophomore and junior chemistry majors are also encouraged to attend to inquire about internships. Please **RSVP to James Wollack (jwwollack@stkate.edu)** by November 20th so there will be an accurate head count for food. Include how many people will be coming from your group.

4-6 Meet with Recruiters

5:00 Pizza, beverages, and snacks will be served

Past companies and organizations that have attended the career fair include*:

Aerotek, Aspen Research, Experis, H.B. Fuller, Kelly Scientific, Medtronic, Medtox Laboratories, On Assignment/Lab Support, Pace Analytical, Land O'Lakes, Tru Vue, Verum Scientific, WuXi AppTec, Minnesota High Tech Forum, Nuclear Propulsion Officer Candidate Program, University of MN Department of Chemistry, University of MN Department of Medicinal Chemistry, University of MN Environmental Health Sciences, Volt Technical Services and 3M.

*** A list of confirmed companies will be available in late October. Check the MN ACS web page at this time. <http://mnacs.sites.acs.org/>**



Senior Chemists September and October events

September 12: Lunch and short talk

Please mark your calendars for the Minnesota Senior Chemists' lunch meeting on Wednesday September 12th at 11:30am at The Green Mill Restaurant on Hamline and Grand Avenue. Dick Hartshorn (3M Retired) will give a short talk "Adhesives that Cure by Chemical Reactions". We will order from the menu. All senior chemists are welcome, including new members of the group, and guests. Parking is available on the street, and in the Green Mill lot about 50 yds west of the restaurant on the north side of Grand Avenue. Reservations should be made with Ken Latham, email: Klatham1@mnmicro.net.

October 17: Brewery Visit

At the request of several members of our group, we will visit the Surly Brewery on Wednesday

October 17th, beginning with a tour at 11am, (Paid by the MN ACS Seniors Group) and followed by lunch (self-paying) in the restaurant at the brewery. More details including carpooling, directions, etc will be discussed at the September 12th lunch.

Have a great summer!

Lynn Hartshorn, Senior Group Coordinator



Minnesota ACS section to host 2021 Great Lakes Regional Meeting

The Minnesota section will be hosting the great lakes regional meeting here in the Twin Cities in 2021. As we are just starting this process we are looking for ideas and volunteers to help facilitate this meeting. We are looking for planning committee members: program chair, undergraduate activities chair, social events chair, fundraising chair. We will also be looking for members that would be interested in organizing seminar sections around topics of interest. If you have any ideas, input or would like to volunteer or help organize a part of this meeting contact James Wollack (jwollack@stkate.edu) or Ramesh Kumar.



UMN Chemistry Leads in Addressing Stress and Mental Health in Graduate School

An article entitled "*Stress and Mental Health in Graduate School: How Student Empowerment Creates Lasting Change*" has just been published in the ACS's *Journal of Chemical Education*. It describes work ongoing at the University of Minnesota (UMN) in the Department of Chemistry to address stress and mental health in graduate school and provide graduate students with important life and leadership skills. This article is unique because it is the first peer-reviewed publication on this topic coming jointly from, on one hand, students and faculty of a chemistry department and, on the other hand, professionals from university mental health services.

The article describes an initiative that the Department of Chemistry started in 2012 to support the mental health of graduate students and eliminate unnecessary causes of stress while improving productivity. This initiative is a continuing collaboration of graduate students, the director of graduate studies (DGS), and professionals from the UMN mental health service that relies heavily on student empowerment and involvement of graduate students. The article describes events held on an ongoing basis in the chemistry department, raising awareness and creating an atmosphere in which stress and mental health are talked about openly. The students, DGS, and mental health representatives have developed and administered already three department-specific surveys to assess what mental health and stress factors affect students in the department most. The article also describes changes that the department has made to its policies to eliminate unnecessary stress, considering the outcomes of the surveys, as well as events organized by students to meet the needs of the graduate students.

By sharing details of their stress and mental initiative, the authors wish to share experiences and findings with others across the US and beyond, hoping to inspire others, and also to receive feedback for further improvements.

Please find the article at <http://dx.doi.org/10.1021/acs.jchemed.8b00188> . If you have problems accessing the article or would like to know more, please contact the Department of Chemistry's DGS, Prof. Phil Buhlmann (buhlmann@umn.edu).



Two new faculty join UMN chemistry department



Ambika Bhagi-Damodaran has joined the Department of Chemistry as an assistant professor. At Minnesota, Ambika's research focus is at the interface of chemical biology and inorganic chemistry. She is currently a Schlumberger Foundation Faculty for the Future post-doctoral fellow in the laboratory of Professor Michelle Arkin at the University of California, San Francisco (UCSF). At the University of Minnesota, Ambika hopes to investigate redox-active metalloenzymes as drug targets.

A native of India, Ambika was born and raised in country's most densely populated state, Uttar Pradesh. She received her bachelor's in chemistry from St. Stephen's College, University of Delhi. While at St. Stephen's, Ambika became interested in chemical biology as she studied bioorganic, bioinorganic, and medicinal chemistry. After completing a Master of Science from the Indian Institute of Technology, Delhi, she came to the United States to pursue her graduate education in chemical biology.

During her doctorate studies at University of Illinois at Urbana-Champaign (UIUC), Ambika worked in the laboratory of Professor Yi Lu, focusing on metalloprotein engineering and spectroscopy. Under Professor Lu's supervision, she designed a model set of protein cofactors that could controllably tune redox potential of heme protei, which is now being used by researchers worldwide to investigate other metalloenzymes. Based on this work, Ambika received the Young Investigator Award from the American Chemical Society (ACS) Division of Inorganic Chemistry.

To bridge the gap between medicinal and inorganic chemistry practices, Ambika joined the group of Professor Michelle Arkin, director of a small-molecule discovery center at the University of California, San Francisco, as a post-doctoral fellow.

Nicholas Race has joined the Department of Chemistry as an assistant professor. His research interests lie broadly in the area of asymmetric catalysis and reaction mechanism. The overall goal of his research projects will be to develop new methodologies for the synthesis of medicinally-relevant '3D' scaffolds.

Nick was born in London, but grew up in the city of Leicester in the East Midlands. He attended Leicester Grammar School where his interest in chemistry, was inspired by an engaging chemistry teacher. In 2006, Nick began his undergraduate studies in chemistry at St. Edmund Hall, Oxford. As part of his degree, he undertook a final year research project with Professor Timothy Donohoe exploring olefin cross metathesis as a method for the synthesis of substituted pyrroles, for which he was awarded the Brian Bannister Prize for "best final year project thesis." In 2010, Nick received a First Class MChem degree.

He earned his doctorate in organic chemistry in 2015 from the University of Bristol, United

Kingdom. Under the tutelage of Professor John Bower, Nick worked on the development of aza-Heck cyclizations for the synthesis of chiral nitrogen heterocycles. He was also a member of the Bristol Chemical Synthesis Centre for Doctoral Training and received a Faculty of Science Commendation for his graduate work. During graduate school, Nick was awarded a prestigious national SCI Messel-Grey scholarship as well as first prize at the 25th SCI postgraduate symposium on novel organic chemistry. Nick was a post-doctoral research associate at the University of Utah, working with Professor Matthew Sigman on the enantioselective, intermolecular coupling of oxygen nucleophiles and alkenes. This work has resulted in the first highly enantioselective 'Wacker-type' oxidation of allylic alcohols.

If you have content for The Minnesota Chemist, please send it to Matthew Hammers, Editor (mhammers@umn.edu)

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