Newsletter for the Kalamazoo Local Section of the American Chemical Society

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Issue Highlights…

Message from Out-Going Chair

With 2018 winding down, so is my term as KACS Chair. I want to take this opportunity to say thanks to all, for the support that I've received in this position. I very much appreciated meeting and interacting with members of the Kalamazoo chemistry community, many of whom I otherwise would likely never have met. And I really enjoyed being involved in KACS events like Kalamazoo Earth Day in Bronson Park, our Speed Networking Event for local chemistry students, our Voyage to Mars webinar event at Boatyard Brewing, and our KACS water station at the Kalamazoo Marathon. Kalamazoo is truly fortunate to have such a strong chemistry community.

Moving into 2019, the International Year of the Periodic Table, Luke Chadwick rotates into the Chair position, so I leave the position knowing it is in good hands. And in 2019, I'll be rotating into the Immediate Past Chair role. My main job as Immediate Past Chair will be getting us ready for our 2019 Kalamazoo National Historic Chemical Landmark (NHCL) dedication event on 16-17 May. I've spoken in past newsletters about the ACS NHCL program, our nomination recognizing the 1950-1990 steroid chemistry work of Kalamazoo chemists, and its approval. Some details of that work can be read in our recent news release shown here: https://p2.kvcc.edu/ perf/images/uploads/ 1802281504dkem/kvm_pr05_ Kalamazoo_ACS_NHCL_news_ release.pdf.

Now comes the fun part, getting ready for a party to celebrate the Kalamazoo work being granted NHCL status. A two-day event is planned for 16 May (dinner/reception) and 17 May (chemistry symposium and dedication ceremony). More information is provided in the event flier included on the next page of this newsletter, and on the event webpage on the KACS website. Tickets for the dinner/reception can be purchased using the PayPal link on the event webpage, and I recommend getting your dinner tickets soon, as seating is limited. This event is shaping up to be the local chemistry social event of the year. We'll continue communicating event planning updates as we move closer to May.

So, I want to close by saying thanks again for the opportunity to serve as KACS Chair (I recommend everyone take a turn doing this), and see you at future KACS events, including the 16-17 May 2019 Kalamazoo NHCL dedication event.

Best regards,
Steve Secreast

Kalamazoo National Historic Chemical Landmark Dedication Event, May 16-17, 2019

Join our local chemistry community of colleagues, friends and families to celebrate the 1950-1990 steroid chemistry work of Kalamazoo scientists achieving National Historic Chemical Landmark status.

Banquet/Reception/Reunion: May 16, 2019
6-10 pm, Arcadia Ballroom, Kalamazoo Radisson Hotel

- Dinner, cash bar, recognition of the steroid work and scientists
- Speakers include Dr. Eric Matteson (Mayo Clinic), Ms. Bonnie Charpentier (ACS President), Mr. Don Parfet (Upjohn Company)
- Tickets $20 via PayPal link (includes dinner, cash bar separate) available here:

https://www.kalamazooacs.org/event-2918506/Chemistry-landmark-dedication.html

Dedication Ceremony/Chemistry Symposium: May 17, 2019
8 am - 5 pm, Kalamazoo Valley Museum

- Symposium: Chemistry in Kalamazoo - Past, Present and Future, with local industry and academia presenters, and Prof. Scott Denmark (Univ. of Illinois)
- Presentation of historic landmark bronze plaque
- Free and open to the public

ACS Chemistry for Life®

American Chemical Society

Report
Voyage to Mars

On Mole Day (Oct 23) the Kalamazoo local section presented two opportunities for members and the general public to participate in ACS's Program in a Box: Voyage to Mars webinar/social media event. The program content was aligned with **this year's National Chemistry Week** theme of space exploration: "Chemistry is Out of This World."

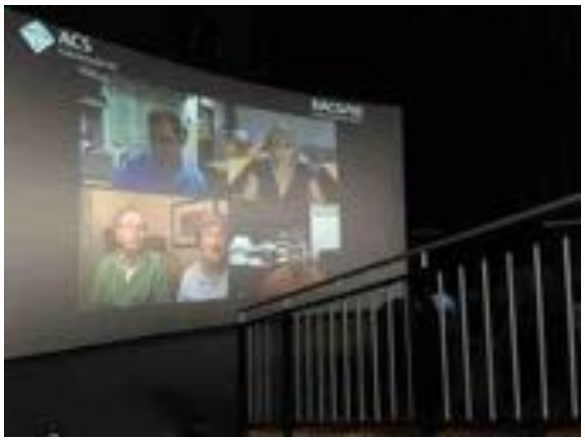
Sessions were held at **Boatyard Brewing** (432 E. Paterson St., Kalamazoo) **and the Air Zoo** Aerospace & Science Museum (6151 Portage Rd, Portage). Attendees heard dynamic presentations by experts from NASA, Rice, Clemson, Emory and the National Radio Astronomy Observatory on topics such as

- the geologic history of Mars and future missions to advance our knowledge,
- the unique challenges of long term human space travel,
- waste recycling schemes that would support travel and habitation on Mars.

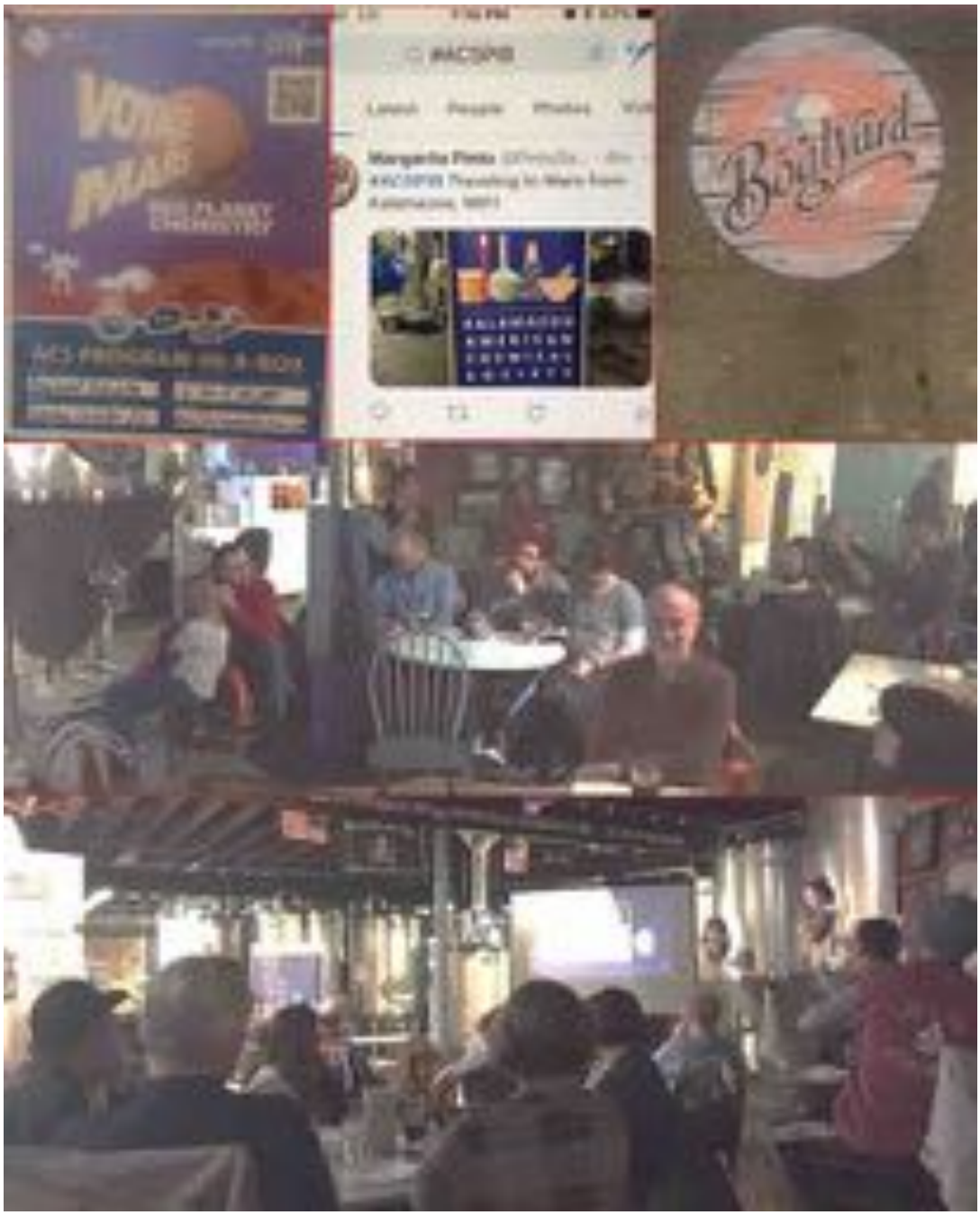
Experts joined participants in live Q&A dialogue at the end of the presentation.

We also enjoyed interacting with the ACS presenters and other groups attending the event in multiple countries. The real-time chat room on the ACS event webpage, and the social media #ACSPIB connection really added to the event.

The Kalamazoo local section is grateful to the Air Zoo and Boatyard Brewing for their assistance to bring this program to our area. The Air Zoo attracted 12 participants, who enjoyed comfortable theater seating in a first-class facility with large screen viewing and high-quality audio. The "back room" at Boatyard Brewing drew about 30 participants, who enjoyed the intimate, neighborhood pub-style setting.



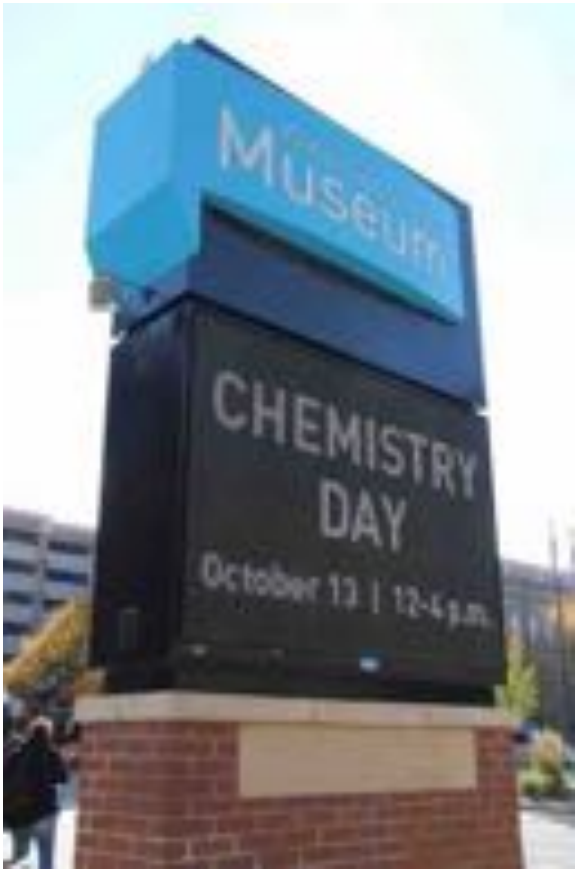
Attendees happily settled in for a trip to Mars from the Air Zoo theater.



KACS “Voyage” at the Boatyard

Report
Chemistry Week Events

Event #1: KACS' 32nd Chemistry Day at the Museum, 13 October, 2018:



Though wintry temperatures came rolling in to Kalamazoo, MI, on Saturday, October 13, 2018, **60 volunteers*** (15 of them KACS members) - many for 4 hours and others in 2-hour shifts – gathered at the Kalamazoo Valley Museum (KVM) from noon to 4 pm to present **20 activities** on two floors and the large theater to **600 patrons**. Visitors included extended families, scout leaders, practicing teachers, with many repeat visitors and several who had come as children themselves to one or more of our previous 31 events. An **additional attraction** during the four-hour afternoon offerings this year was the inclusion by our generous host, the KVM, of **3 free planetarium shows** at regular intervals. Volunteers, who were solicited widely from area companies, colleges/university, high schools and other area science-teaching centers, were informed of our **emphasis on safety** both in terms of our own participation and our interactions with the attendees as they did the activities. Many education-related materials from ACS and other sources were gladly received by our visitors who expressed **enthusiasm** about the variety

of available stations through the afternoon, as well as about learning of the availability of ACS' large assortment of age-appropriate resoures; there seemed to be greater-than-average interest expressed in subsequent use of these resources to continue science learning after the program.

* Volunteers were employees from Pfizer, Perrigo and Kalsec; WMU - faculty, retired staff and students; faculty and students from KVCC; and K College students; some HS chem students (Loy Norrix, Mattawan, Portage Northern) and others from the community (e.g., Air Zoo, KVM volunteers). An **e-mail of appreciation was sent** to the Museum leadership, and to each volunteer whose e-address was available.

Chromatography Butterflies

Erupting Volcano

Event #2: More hands-on offerings on 25 October, 2018
Among the large number of offerings presented to children and their families at the Lake Center Elementary (Portage) STEAM night **for the third successive year,** favorites were hands-on activities by our KACS Western Michigan University Chem club students and several of our members. There was an attendance of ~600 engaged children during the 3-hour event.

Event #3: Materials Distribution to other Local Section venues
Copies of Celebrating Chemistry were distributed to organizations in our Local Section area which provide science outreach to our communities: copies in Spanish were donated to our **Kalamazoo Public Library** for their Hispanic Heritage Month celebration; copies in both English and Spanish were given to the **Air Zoo** (which also was a host site for one of our **Voyage to Mars Program-In-A-Box** presentations) for use in their many student programs through the year; and were distributed to patrons at a very successful STEAM night hands-on Science event at **Lake Center Elementary** in Portage, MI, on October 25, 2018, where some of our members also engaged the children and families in hands-on activities.

Report
Speed Networking Event

On the evening of 26 September at the K College Hicks Student Center, the Kalamazoo College Chemistry Department and Career Planning Office cohosted with KACS, our second annual speed networking event for area chemistry college students. The purpose of the event continues to be connecting local chemistry college students with local working chemists (KACS members serving as mentors) for information sharing.

The event set up was like that for speed dating, with participating students rotating through 3-minute face-to-face time with participating mentors. The students asked questions related to establishing and building chem-related careers and the mentors provided answers and information based on personal experience. The evening ended with refreshments and time for free-style follow-up interaction between the students and mentors. KACS provided prizes for the participants.

Feedback for this event, which this year had 27 mentors and 31 students, continues to be very positive, with the desire to continue annually. This year's event had a first, with Kelley Current, a WMU Chem student participant from last year, returning this year as a mentor working for Pfizer, Inc., a position she achieved in part, as a direct outcome of participating in last year's event.

Many thanks to our co-hosts, Jackie Srodes (K College Career Planning Office) and Jeff Bartz (K College Chemistry Department). And many thanks to the KACS members that served as mentors: Mara Birndorf, Luke Chadwick, Jana Deering, Bridget Lorenz Lemberg, Julie Lorenz, John Manski, Beth Negash, Ashok Patel, Christine Pruis, Bill Schinzer, Susan Sheehan, Derek Sheehan, Rachel Wilson, Charissa Oliphant, Kim Lewis, David Erdman, Andrew Hepburn, Tomasz Respondek, Lauren Torres, David Bolliet, Mathew Jones, Katie Whalen, Kelley Current, Vishaka Choudary, EeLeng Choong, Mary Wiswell and Peter Manninen.


TOUR
6-9PM

Report
Careers in Chemistry Seminar

The KACS hosted Career consultant Dr. Lisa Balbes on the campus of Kalamazoo College for a talk on “Careers in Chemistry”, on October 4, 2018. Having received a grant from the LSAC (Local Section Activities Committee) for “co-hosting a meeting with a neighboring local section”, this was a meeting co-hosted with the Huron Valley Section; several other local sections in MI, IN, IL were also invited to participate virtually using the ZOOM platform. Though the number of attendees in any of the locations was small, Dr. Balbes presented a very informative overview of the opportunities available to those who choose to pursue a degree in chemistry and show initiative in assessing their personal strengths while also seeking to evaluate new avenues of personal growth. Many career resources were shared that evening. For ACS members the Career Navigator is an amazing resource:

https://www.acs.org/content/acs/en/careers/career-navigator.html

Report
WMU Ice Cream Social

On September 11, 2018 the Chemistry Graduate Student Association (CGSA) hosted an ice cream social for the undergraduate and graduate students, faculty, and staff of the WMU Department of Chemistry. KACS helps financially to support this young-chemist networking event. The aim of the Ice Cream Social was to introduce the new students to the faculty and existing student body. The turnout was great, about 30 people attended, and students were able to make new connections, get to know the student organizations as well as catch up with old friends.

Project SEED 50th Anniversary: Meet Andrey Malyutin

Article Two of a Three-Article Mini Series "The Faces of Project Seed"

This year marks the 50th anniversary of the ACS program Project SEED. Project SEED was established in 1968 to provide opportunities for high school students who historically lack exposure to scientific careers.

For 8 to 10 weeks over the summers of their junior and senior years, SEED students are given the unique opportunity to work with scientists in academic, industry, and government research laboratories, who help them develop laboratory, written and oral skills. More information on Project SEED is available on the ACS website at: https://www.acs.org/content/acs/en/education/students/highschool/seed/about.html.

To celebrate the 50th anniversary of the program, C&E News is running a series of articles this year highlighting the experiences of Project SEED alumni. For example, see: https://cen.acs.org/articles/96/i5/Happy-50th-birthday-Project-SEED.html.

This article is a similar celebration on the local level, where we caught up with Kalamazoo Project SEED alumnus, Dr. Andrey Malyutin, currently Co-Director of Caltech's Cryo-EM Facility. Dr. Malyutin kindly shared with us his memories of his Kalamazoo Project SEED experience, and its effect on his career.

Dr. Andrey Malyutin
Cryo-EM Facility Co-Director, California Institute of Technology
Kalamazoo Project SEED Alumnus 2004-2005
photo from https://jensenlab.caltech.edu/people/

And what a career it has been already. After graduating from Kalamazoo Central High School, Andrey earned a chemistry undergraduate degree at Kalamazoo College. While at K College he did a study abroad rotation in Japan. After K College, Andrey went on to earn a PhD in chemistry at Indiana University, followed by a post-doc at the Columbia Medical Center in New York. And now in 2018 he has taken on the Co-Director role at Caltech's Cryo-EM Facility.

Here are some of the questions and responses from our catch-up time with Dr. Malyutin.

KACS: Can you please tell us a little about how you originally learned about Project SEED in Kalamazoo, and what were your 2004 and 2005 Project SEED projects? Also, what would you say were the best and worst parts of your Project SEED experience?

Andrey Malyutin, Kalamazoo Project SEED poster presentation 2004
photo from KACS Newsletter, Sep-Oct 2004

Andrey Malyutin with colleagues from Dr. Muralidharan's group,
Kalamazoo Project SEED poster presentation 2005
photo from KACS Newsletter, Oct-Nov 2005

Dr. Malyutin: "My high school chemistry teacher (Kalamazoo Central High), Mark Branch, introduced me to Project SEED and helped me apply. Since reading Michael Crichton's novel "Prey" early in high school I was fascinated with nanotechnology. While we are quite far away from intelligent self-replicating nano swarms of Michael's world, nanomaterials hold a great potential in benefiting society.

Both of my projects with Dr. Subra Muralidharan focused on developing efficient synthesis procedures for silica coated gold nanoparticles and zinc sulfide quantum dots.

The best part of the project SEED experience for me was the introduction to a "real life" chemistry lab and learning how to deal with projects over a long period of time, in contrast to short term experiments of the high school curriculum. The worst part, looking back on it, was that I probably could have taken my projects more seriously. I certainly was not as dedicated nor efficient with my time in the lab as the undergraduate and graduate students that I was working along with."

KACS: Would you say that participation in Project SEED influenced your decision to obtain a chemistry degree at Kalamazoo College? While at K College you did a 6-month study abroad rotation in Japan. How was that experience? Would you recommend study abroad to today's chemistry students?

Dr. Malyutin: "I believe participation in Project SEED and support from Mark were major factors that helped me in being selected for the Heyl scholarship at Kalamazoo College. Part of the scholarship is the requirement to major in "the natural sciences, mathematics or computer science" and I was more than happy to fulfill this requirement by focusing on chemistry. It felt like a natural choice to continue with chemistry at a graduate level.

Andrey Malyutin with Kalamazoo College Chemistry Department 2009,
photo from OrangeZest 2009, Kalamazoo College

While at K College, the 6-month study abroad program was at JCMU (Japan Center for Michigan Universities). Part of the program was a self-selected one month project, which I did in the lab of Dr. Akira Kojima at the University of Shiga Prefecture. I would highly recommend study abroad to anyone. It is one of the best ways to understand our colleagues and develop lasting networks. Travelling abroad helps us to expand our worlds, and maybe even pick up some novel ideas on how to design an experiment."

KACS: Can you please tell us a little about your PhD program at Indiana, and your Columbia post-doc work?

Dr. Malyutin: "At Indiana University I continued to work on nanomaterials. I worked on the encapsulation of gold, iron oxide, and iron platinum nanoparticles, inside protein shells derived from viral capsids. Utilizing light scattering and electron microscopy we then can use these systems to study viral self-assembly.

Andrey Malyutin at Indiana University – Bloomington 2013.

Additionally, iron oxide nanoparticles have a range of very useful properties, one of which is that they are superparamagnetic at this scale. Viral capsids have evolved over thousands of years to protect their genetic cargo and void hosts defenses. By combining the two, we were also exploring biomedical applications.

Andrey Malyutin at Indiana University – Bloomington 2013.

During this work, I became greatly interested in cryo-electron microscopy. This interest led me to the lab of Joachim Frank at Columbia University. During this time, I've learned and practiced cryo-electron microscopy by looking at the structures of the late biogenesis complex of the large ribosomal subunit."

Thermo Scientific Titan Krios, 300eV cryo-electron microscope in the CalTech Cryo-EM Facility

KACS: And how is it now, being Co-Director of Caltech's Cryo EM facility?

Dr. Malyutin: "Co-directing the cryo-EM center at Caltech has been challenging and exciting. It is particularly enjoyable to train students to use the microscopes and see the structures that they are able to solve."

KACS: Finally, looking back in 2018 to your 2004-2005 Project SEED experiences, would you recommend participation in Project SEED to today's high school chemistry students? And any recommendations or words of advice to today's and future students for getting the most out of their Project SEED experience?

Dr. Malyutin: "I would certainly recommend participation in Project SEED to today's high school chemistry students. I can't imagine a better way to spend a summer. It is an incredible way to learn more science, develop meaningful and long-lasting connections, and improve critical thinking. The one main suggestion I would give for participating students is to not be afraid to ask questions."

Our brief discussion with Dr. Malyutin provided an excellent validation of the value of KACS' and area high school students' participation in Project SEED. Thanks Andrey, for helping us with this 50th anniversary celebration project.

And looking into the future, the on-going work by current KACS Project SEED Director, Dr. Doug Williams, to revitalize KACS involvement in the project, is positioning us for many more success stories to come. We would like to grow our program for next year. Please watch our upcoming communications for invitations to participate as mentors and sponsors for Summer 2019 Project SEED students in our section. Members who would like to learn more are welcome to contact our local Project SEED coordinator Doug Williams at dwilliams@kalsec.com.

Do you have questions, comments, or would like to contribute to this newsletter? Send an email to Christine Pruis, Communication Chair at **ACSkzoo@gmail.com**

Visit our website www.kalamazooacs.org