

# Newsletter for the Kalamazoo Local Section of the American Chemical Society

February 23, 2018

Vol. 8 – Issue 1

## 2018 KACS Executive Officers

### Chairperson

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### Past-Chairperson

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### Councilor

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### Alternate Councilor

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# PLAN AHEAD

## CHEMISTS CELEBRATE EARTH WEEK



<https://www.acs.org/content/acs/en/education/outreach/ccew.html>

An **early announcement** about our section's participation in Chemists Celebrate Earth Day; we once again hope to have outreach events at the Celery Flats in Portage and at the Kalamazoo Nature Center, and at any other venues where we can have interested volunteers. **Note** that this outreach **event is in its 15<sup>th</sup> year** and has been re-labeled **Chemists Celebrate Earth Week (CCEW)**; it will be celebrated **April 22-28, 2018**, the topic is **"Oceans"** and the theme of the publication from the ACS Outreach office will be **"Dive into Marine Chemistry"**, which will discuss the chemistry of water from the ocean. The common goal for CCEW, as well as any other activity of our ACS, is to communicate the positive role that chemistry plays in the world.

Are you passionate about educating your community about the environment?  
If so, then we have the perfect opportunity for you!

**KACS is looking for a CCEW Coordinator.**

If this is something that interests you, then please contact  
Lydia Hines ([lemhwgh@gmail.com](mailto:lemhwgh@gmail.com)) for more information!

# ARE YOU INTERESTED? CHEMISTRY & ART

KACS is considering hosting an evening of Chemistry & Art – specifically *chemists painting!*



The proposed three hour event would be held at the local family-owned business, Happy Our Art (<https://happyourart.com/>), where one of their trained artists would guide our group in painting the same chemistry-themed image on a 16” x 20” canvas. No art training is required! Only the desire to have fun and learn something new!

This establishment can hold up to 50 people with a minimum of 15 attendees. ACS would provide light refreshments, but the venue is BYOB so participants are also able to bring their preferred food and beverage. Typical cost of \$35 per person, but the cost may vary depending upon the number of individuals who attend. We are thinking to do this a weeknight in late March or early April. Depending on the interest, we may also have a short speaker.

**Are you interested in participating in an evening of Chemistry & Art?**

If so, then please contact Christine Pruis ([ACSkzoo@gmail.com](mailto:ACSkzoo@gmail.com)) with the number of people in your party!

# K COLLEGE ACS CHAPTER BATTLE of the CHEM CLUB VICTORS!

The Kalamazoo College ACS chapter is happy to report that they won the “Battle of the Chem Clubs 2018!” As the winners, they took home the Separatory Funnel Trophy (image shown of entire team). They also earned the much-coveted “Grenade Award” for the best performance during the speed titration semi-final (image of award winning titration team also shown). The Battle of the Chem Clubs started in 2007 and is hosted at Michigan State University. There were approximately 80 ACS student participants from 12 Michigan colleges and universities. Exciting events include periodic table darts, a spectroscopy interpretation challenge, dry ice curling, and jeopardy-style questions with buzzers. This is an exciting day and a great networking opportunity for young chemists.

## Way to go Kalamazoo College on your victory!



Chris Vennard, Sabrina Leddy, Audrey Thomas, Elizabeth Knox, Adam Decker, Maria Fujii, Jake Sypniewski.



# REPORT

## ACS LEADERSHIP INSTITUTE

By Lydia E. M. Hines

The ACS Leadership Institute (LI) gathering is held annually for newly-elected leaders of ACS Local Sections and Divisions to gather for ~48 hours over the third weekend of January to interact with ACS staff and leadership. There are “tracks” for Division leaders, Region Leaders, and Local Section Leaders for the most beneficial interaction of leaders in each of these “tracks”. The well-designed Leadership Courses developed by ACS since 1965 are also offered to participants. There were many opportunities to share “best programs” and “practices” with the large group so all could benefit from others’ processes and successes, as well as to learn about pitfalls to avoid.

At LI, we were regularly reminded about writing reports of our activities as they occur through the year and placing them in FORMS in preparation for the Annual Report submission. Another recurrent theme was that members are more likely to read “Social Media” such as Facebook, Twitter, Pinterest etc., than e-mails, or the website, though sections were encouraged to maintain a website (note that our KACS Section does have a facebook pages and website, [www.kalamazooacs.org](http://www.kalamazooacs.org))

Another topic of conversation at the LI was that it is disappointing that many members are not aware of our Society’s member-friendly programs and amazing services. There is the ACS website ([www.acs.org](http://www.acs.org)) but it has MANY layers of information through which to navigate to get to what one needs. In the next Newsletter I will present some information about ACS’ career offerings; below I will talk about the often-misunderstood difference between Districts and Regions:

The ACS has many opportunities for service to its members and to the public – the Local Section (LS) is one of them. Members are **assigned** to a LS based on their mailing address of record – any who report an address with zip codes in **Kalamazoo, Allegan or Van Buren counties** are assigned to the Kalamazoo Local Section. Members may request re-assignment to a local section of their choice. Members of a Section are **encouraged to inform the section’s leadership of programs which would interest them, and to participate in section activities** which are announced through use of our Facebook page, our newsletter, e-blasts, and on our website, which has a list of **current officers – we would love to hear from you!**

Local Sections are assigned to **Voting Districts**, of which there are **6**, each with an elected voting representative on the Board of Directors (BoD). Per our National ACS Bylaws, Districts must have approximately equal numbers of members, so occasionally individual local sections may be moved to a new district – Kalamazoo moved from District II to District V about 4 years ago – There are also six Directors-at-Large on the ACS BoD.



**Another, non-bylaw-mandated, grouping of Local Sections is the Region**, a geographical area of local sections initiated around the time of WWII, which gave ACS members opportunity to meet in a smaller, more accessible and affordable professional meeting format than at the two national meetings, to present scientific papers and form networks for professional enhancement. **There are 10 Regions**. Our **Kalamazoo Section is part of the Great Lakes Region (GLR)**. As a result of comments and concerns expressed at the LI we should see a current, better delineated Region map in the foreseeable future 😊

Some of you may remember that in 2015 our KACS co-hosted a Regional Meeting with the Western Michigan Section, which belongs to the Central Region, in Grand Rapids (the JGLCRM2015); many of you attended, organized symposia, and presented your research orally or on posters. The Huron Valley Section, in the Central Region, has invited our Section to **co-host** a joint meeting with them again in **2027!** Who is willing to work at that??

In the next Newsletter I would like to highlight a very useful ACS **career service** which was brought up at the LI as a result of a “collaborative project” idea presented by the Huron Valley section representative and the Kalamazoo section rep (me).

Visit our website [www.kalamazooacs.org](http://www.kalamazooacs.org)

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](mailto:ACSkzoo@gmail.com)

At the end of this newsletter is a **BONUS FEATURE:**  
A brief literature review by our local section chair, Steve  
Seacrest on

**Quantum Mechanics and Photosynthesis**

**Introduction**

So what we'll cover, starting that evening, but I hope that you'll find some interesting things, and I think that you'll find it interesting. There is really my understanding of how the discovery has come about and the current state of research on this, and I'll be looking at the future of this research and I'll be looking at the future of this research, and I'll be looking at the future of this research.

**By the end of your lecture (2000)**

Each of the photosynthetic and structural reaction pathways of photosynthesis have evolved out. The energy transfer systems use chlorophyll molecules and sunlight to convert water and carbon dioxide to sugar and molecular oxygen, via a series of light dependent light harvesting and transport (Photosynthesis). The light dependent light harvesting part of the deal, which is what makes plants and photosynthetic bacteria and algae special, is what we're interested in here.



A large high amount of magnification of the plant primary structure is light harvesting protein complexes like this:

- 1. photosynthetic are made of protein
- 2. the photosynthetic involved in light harvesting, water, and CO2 conversion
- 3. photosynthetic are some autonomous organelles containing series of protein membranes are called thylakoids
- 4. thylakoid membranes contain the light harvesting complexes and other proteins involved in electron transport and proton pumping and ATP synthesis

This is an extremely efficient energy converting system, with the photons energy being converted to electrons and protons, the accepted currency for cellular chemical reactions.





To get to the quantum-mechanical part of the story, we need to discuss the photosystems in the thylakoid membrane (I omit in the diagram) at the molecular level. At the end of the last reference the thylakoid membrane photosystems were shown to be protein complexes that contained embedded pigments (chlorophyll and carotenoids), attached to the thylakoid membrane at a reaction center, surrounded by an antenna complex. Here are two different examples of photosystem diagrams.



And the light-generating mechanism was explained as a vibrational molecule (where photons hit first, exciting one of its electrons). The excited electron is passed from chlorophyll molecule to molecule (and sometimes to carotenoids) until it reaches the reaction's embedded system of 2 primary electron acceptors (after where it is stabilized and passed on to the photosynthesis as part of the electron transport chain). The antenna system allows multiple chlorophyll molecules to be wrapped around a reaction center, leading to steady stream of excited electrons to the Reaction System for processing. A very elegant design.



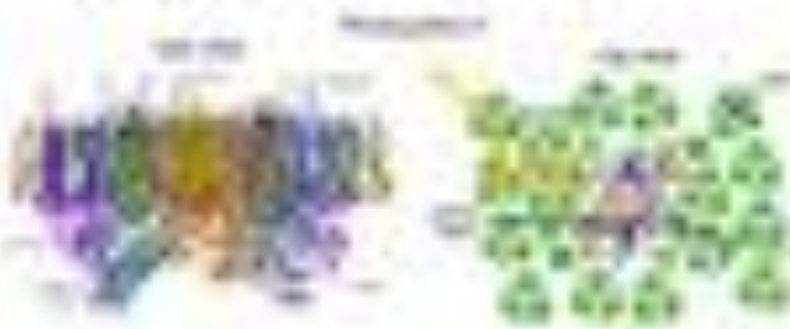
**By the end 2018's you can do this:**

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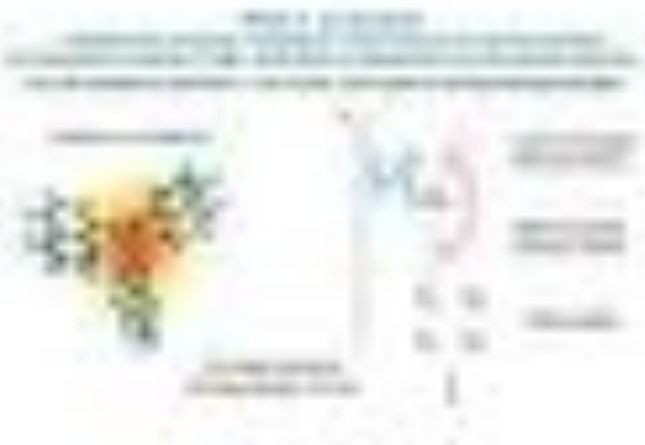
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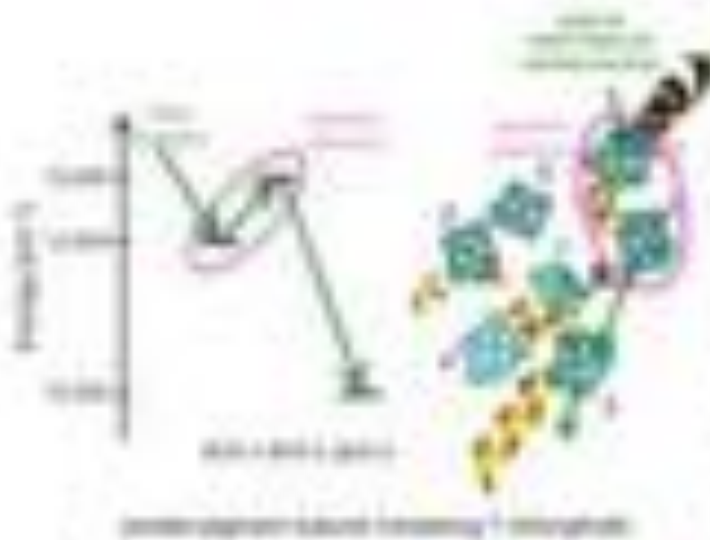
Photocatalytic materials: photocatalytic activity of photocatalytic materials. Photocatalytic materials: photocatalytic activity of photocatalytic materials. Photocatalytic materials: photocatalytic activity of photocatalytic materials.



Then toward the end of the 2000s decade, some landmark experimental work was done by researchers using the 2D electronic spectroscopy techniques developed to study the photosynthetic systems. They studied the excitation dynamics of individual protein-pigment subunits (not with fully assembled photosynthetic centers). The data from these studies showed (among other things):

- evidence of oscillatory activity distant from the site of laser light excitation leading to the efficiency of excitation
- evidence of excited electrons having apparently been passed energetically uphill rather than following the assumed path of least resistance

These data led to the remarkable conclusion that the photon-induced excitation energy was being passed through the protein-pigment subunit via a quantum coherent mechanism. A conclusion supported by theoretical calculations indicating the energy electronics and spatial orientation of the chlorophyll molecules were suitable for supporting quantum coherence.



The proposal that quantum coherence is used within the Photosynthetic to transfer excited electrons to the Reaction Center almost instantaneously with almost no energy loss, is consistent with the available data (and just left right).

However there was the very nagging question of how could the femtosecond scale quantum coherence observed in isolated protein-pigment subunits translate to picosecond scale coherence in the much larger, very environmentally noisy Photosynthetic Complex?

**Next we will look at the 2016's:**

Additional experiments with protein synthesis complexes produced large fluctuations in the quantum coherence observed during light harvesting. This is trying to understand these quantum coherence in the photosynthetic reaction center in a highly integrated system at 77 K (247-248 K). Research has become focused on the photosynthetic reaction center.

The main purpose of this (transport) protein appears to be, in addition to providing a scaffold for the chromophore and cofactor arrangement, to provide the pigment molecules with their own vibrational energy. The vibrational energy of the protein that they contain environmental information to the pigment molecules. And researchers have found that the protein vibrational energy is on the same order as the pigment molecules' quantum energy. (they study 2016)

Research has also shown that the vibrational energy of the water proteins, which is effectively environmental temperature, are a source of energy support. Similar to a local excited pigment quantum coherence and transfer of energy of the photosynthesis. The vibrational energy of the protein provides beneficial quantum coherence. This quantum coherence energy may be the main energy, and resulting in environmental non-radiative superposition wave function.

**This is where we have to say they cannot find them:**

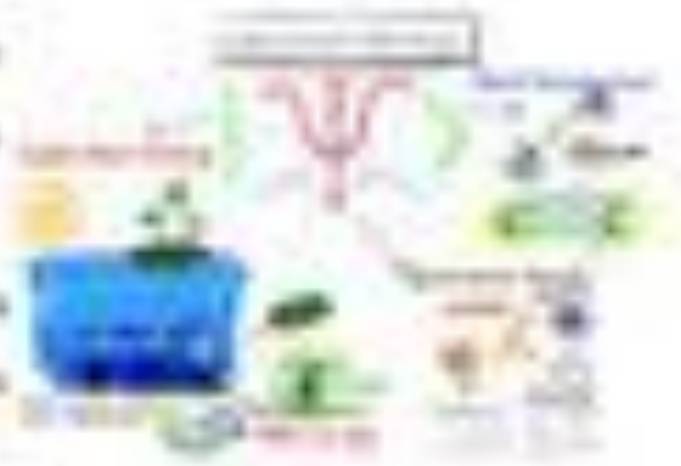
Not only have these photosynthetic integrated systems received the quantum coherence they've learned from nature, the mechanisms cause coherent wave coherent quantum systems. This quantum approach applied to photosynthetic energy harvesting for photosynthesis has been found to be a viable coherent quantum energy transfer, and systems that efficiently harvest can be excited by photons that transport and captured in a few picoseconds, while losing 90% of their energy.



**Energy analysis and energy flows :**

Quantitative energy analysis must take into account the energy efficiency of various photosynthesis harvesting techniques. As the world's population grows, the need for energy will increase. The use of solar energy is a promising alternative to fossil fuels. The use of solar energy is a promising alternative to fossil fuels. The use of solar energy is a promising alternative to fossil fuels.

And in a class, you'll see something like that. The use of solar energy is a promising alternative to fossil fuels. The use of solar energy is a promising alternative to fossil fuels. The use of solar energy is a promising alternative to fossil fuels.



**References**

1. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

2. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

3. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

4. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

5. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

6. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

7. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

8. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

9. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

10. *Energy analysis and energy flows*. *Journal of Energy Conversion* (2018) 39: 1-10.

# Newsletter for the Kalamazoo Local Section of the American Chemical Society

April 30, 2018

Vol. 8 – Issue 2

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Chemistry and Art for Fall 2018?



# Meet Lucas Chadwick

## KACS Chair-Elect!



Lucas Chadwick received a B.A. in chemistry from Kalamazoo College in Kalamazoo, MI. He went on to earn his Ph.D. from the University of Illinois at Chicago (UIC), where his work at the UIC/NIH Center for Botanical Dietary Supplements Research focused on the pharmacognosy of hops (*Humulus lupulus* L.). After a post-doctoral appointment in the Botanical Center, he began employment at Kalsec, Inc., where he worked on natural antioxidants and process development. In 2006, Luke co-founded Wrightwood Technologies and was subsequently awarded a Small Business Innovative Research Grant to automate a preparative chromatographic technique known as countercurrent chromatography. After a one-year stint working to develop methodologies for metabolomic analysis of human plasma at the University of Michigan Center for Translational Pathology, Luke joined Bell's Brewery, Inc. in 2010 as quality/lab manager and has served as senior scientist at Bell's since 2015.

# KACS Annual Awards Gathering

**Western Michigan University's Chemistry Building's Atrium  
Monday May 7, 2018  
6:30 – 8:00 pm**



The KACS Annual Awards Gathering is scheduled for Monday, May 7, from 6:30 to ~ 8 pm at the Atrium of the Chemistry Building at WMU – this is an annual event where we give awards to our Section's students, teachers, members and others who have been instrumental in promoting our science in our community – the event starts with an hors d'oeuvre reception and moves on to the presentation of awards. It is a wonderful opportunity to honor many, so join us – it would be great to see you there!

Among the over 50 awards to be given that evening will be:

- Outstanding College Chemistry Student from WMU
- Outstanding College Chemistry Student from Kalamazoo College
- Outstanding High School Chemistry Teacher
- Outstanding High School Chemistry Students
- Competitive Exam Scholarship Awards



# CGSA Potluck Picnic

**Friday May 10<sup>th</sup>  
5:00 pm**

**Oshtemo Township Park  
7275 West Main Street  
Kalamazoo MI 49009**



KACS is again sponsoring the annual WMU Chemistry Graduate Student Association (CGSA) spring picnic. The purpose of this event is to introduce chemistry graduate and undergraduate students to the KACS community outside of the university. In previous years, this event has been a successful opportunity to gather professors, students, and local ACS members. This is a family-friendly event with many activities and yummy food!

**Bring a food dish to share and  
the Entire Family to this fun event!**

# REPORT

## ACS Member Services

*By Lydia E. M. Hines*

In the last issue of the Newsletter I presented information regarding the distinction between ACS Districts and Regions; in this issue I want to turn our attention to the rich resource called the **ACS.org** website. There you will find a vast amount of services which our Society makes available to us as members, as well as some [education] materials which our Society generously makes accessible to non-members as well. Many have mentioned that it is “difficult to navigate” the website, but on a recent check it seems to have been revised to be more “user-friendly”.

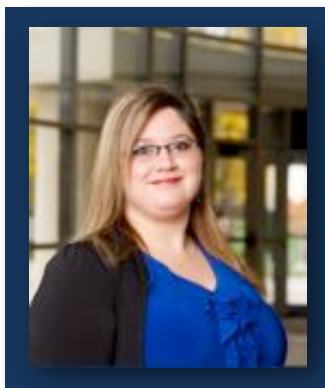
In this issue of the newsletter I want to highlight the **Careers** section, which is replete with opportunities for **members**, from students to more seasoned chemists; there one can find advice concerning the interview process, a presentation of career alternatives, ways to assess one’s strengths and weaknesses, instruction on how to connect with personal mentors, and much more. Also, in each first monthly issue of C&E News there is an article on some aspect of employment – from how to seek it, to how to reflect on your changing aspirations, to how to respond to challenging situations in the workplace, etc. For a list of the many services offered go to **acs.org/careers**. If your interest is in having someone mentor you, you may select “personal career consulting” and supply the information requested there.

Another option available is to select one of the many ACS e-publications on careers in chemistry – traditional or non-traditional – these may be found at <http://connect.acspubs.org/acsebooksnow>

# REPORT

## Sci-Mix Poster Session at Bell's Eccentric Café

*By Elke Schoffers (KACS Publicity)  
Photos by Denis Billen (DB Family Photography)*



Monique Wilhelm, Lab  
Supervisor, Chemical Hygiene  
Officer, and Radiation Safety  
Liaison at UM Flint

On Nov. 7, 2017 KACS hosted its annual poster session titled "Sustainable Science - Recycle a Poster" at Bell's Eccentric Café in downtown Kalamazoo. For the 7<sup>th</sup> year in a row, KACS organized this public event, which was made possible through a generous grant from Zoetis. There was a record turnout of 153 people. This keynote speaker was Monique Wilhelm from the University of Michigan-Flint. In her roles as Laboratory Manager and Adjunct Lecturer, she witnessed the water crisis first hand when it first unfolded in 2014. Her presentation "The Real Crisis with Flint's Water - It Was Preventable and Can Happen to You!" included a demo with hands-on activities for the audience. It involved three pennies, a salt pack, vinegar and plastic containers to learn about the influence of the water's pH on metal. In addition to the keynote speech, there was a poster session with over 30 presentations, including 21 student presenters. At least 50% of those in attendance were ACS members. Participants enjoyed hot appetizers and beer from 5 to 9 PM while listening to the keynote speech, mingling and reviewing the displays. Posters highlighted work from Zoetis, Kalamazoo College and Western Michigan University (WMU), among others. Some work

was done in collaboration with other institutions.

Students who submitted a poster abstract for this event ahead of time had the opportunity to win a \$50 cash prize, which was handed out by KACS Treasurer Bill Schinzer. The lucky winners were Daniel Corey, Jashaun Bottoms and Gabriel Aleida Alves. The prizewinners (***italicized***) presented the following posters.

- **Chemistry, the Flint Water Crisis, and You** by Catherine Wilhelm, **Daniel Corey**, Anthony Maxwell, Noor Alawwa, Mohammad Alsarraj, Wendy Yahr, Tomas Sanson, Lina Eltahir, Maryam James, Hannah Nettleton, Monique Wilhelm\*, Jessica Tischler, Samantha Grathoff; Department of Chemistry and Biochemistry, University of Michigan – Flint, MI
- **Organic-inorganic hybrid metal halide perovskites for water-resistant solar cells: Tetraphenylphosphonium metal halide crystal structures** by Saja Althobaiti, **Jashaun Bottoms**, Ekkehard Sinn\* Department of Chemistry, Western Michigan University, Kalamazoo, MI
- **The Effects of Calcitonin Gene-Related Peptide on the Expression of Nerve Growth Factor and Glial Cell Line-Derived Neurotrophic Factor in Cardiac Cells** by **Gabriel Almeida Alves**, \*John Spitsbergen, John-Mary Vianney, Department of Biological Sciences, Western Michigan University, Kalamazoo, MI

This year's event also included the celebration of the "Partners for Progress and Prosperity (P3) Award" that was given to the Kalamazoo ACS Local Section, Zoetis, and Bell's Eccentric Café for offering this annual poster event in a 3-way collaboration. The award was given for incorporating 3 important categories, specifically for 1) organizing a public event to help improve the public image and perception of science in general and of chemistry in particular; 2) helping improve career development through networking opportunities in an informal setting; and 3) supporting the importance of STEM education and research via its keynote speaker and poster session.

KACS Chair Dr. Steve Secreast also showed a brief video he filmed at the Kalamazoo pedestrian mall that showed public volunteers reciting the elements of the periodic table. Last but not least, the KACS Board is grateful for the financial support that Zoetis has provided to help defer the expenses associated with this event.



KACS rented “The Back Room” at Bell’s Eccentric Café for this event. It was a full house where 153 people showed up, scientists and non-scientists, situated downstairs and upstairs to hear a presentation about the Flint water crisis by Monique Wilhelm from UM Flint.



Dr. Steve Seceast (left) and Dr. Elke Schoffers (right) presented the ACS P3 award to Dr. Jim Freeman, Vice President, Laboratory Sciences, Veterinary Medicine Research & Development at Zoetis (left) and to Liz Glaab at Bell’s Eccentric Café.



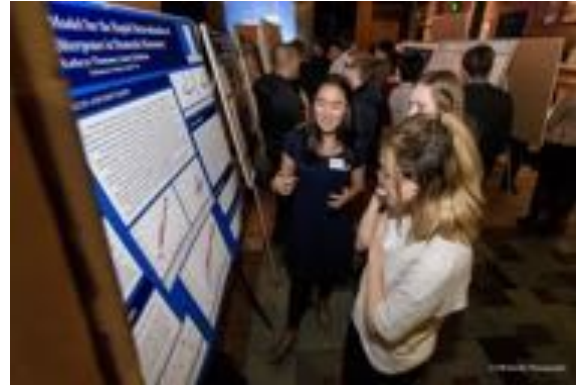
Posters highlighted research done at or in collaboration with scientists at K-College, Loyola University – Chicago, WMU, UM Flint, GVSU, as well as in industry.



The event was a great opportunity to network and catch up with fellow scientists (Dr. Brian Eklov, Luke Chadwick, Jake Kirkendall, Dr. David Pinkston, and Dr. Lydia Hines (left to right)).



There was great interest to learn about the Flint water crisis at this public KACS event.



Poster presenters from industry and academia participated.



Young and old attendees enjoyed the hands-on demo with pennies, salt and vinegar.



Many student presenters from K-College (some shown here) and from WMU participated.



The lucky cash prizewinners were Daniel Corey, Jashaun Bottoms and Gabriel Aleida Alves, shown in the picture next to KACS chair Dr. Steve Secest (left) and event co-organizer Dr. Elke Schoffers

# Any interest???

## CHEMISTRY & ART

For the fall of 2018, KACS is considering hosting an evening of *chemists painting!*



The proposed three hour event would be held at the local family-owned business, Happy Our Art (<https://happyourart.com/>), where one of their trained artists would guide our group in painting the same chemistry-themed image on a 16" x 20" canvas. No art training is required! Only the desire to have fun and learn something new! This establishment can hold up to 50 people with a minimum of 15 attendees. ACS would provide light refreshments, but the venue is BYOB so participants are also able to bring their preferred food and beverage. Typical cost of \$35 per person, but the cost may vary depending upon the number of individuals who attend. **If you are interested in participating in an evening of Chemistry & Art during the Fall of 2018**, then please contact Christine Pruis ([ACSkzoo@gmail.com](mailto:ACSkzoo@gmail.com)) with the number of people in your party!

Visit our website [www.kalamazooacs.org](http://www.kalamazooacs.org)



# Newsletter for the Kalamazoo Local Section of the American Chemical Society

July 20, 2018

Vol. 8 – Issue 3

## 2018 KACS Executive Officers

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### Issue Highlights...

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Mark Your Calendar

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Report of Spring Events



Visit our website

[www.kalamazooacs.org](http://www.kalamazooacs.org)



Find us on  
**Facebook**



# Mark Your Calendar!

## **August 2018... 25th Biennial Conference on Chemical Education**

The conference will be held on the beautiful campus of the University of Notre Dame in South Bend, IN from July 29 through August 2, 2018. This is open to non-ACS members. Register onsite at McKenna Hall Conference Center. For more information, visit [www.bcce2018.org/](http://www.bcce2018.org/)

## **September 2018... Speed-Networking**

September 26, Wednesday, will be our 2nd Speed- Networking event to be held again this year at the Kalamazoo College Hicks Center.

## **October 2018... Joint Virtual Broadcast with Huron Valley Section**

Thursday, October 4, a presentation on Careers in Chemistry by Dr. Lisa Balbes of Balbes Consultants who will give a live presentation at Kalamazoo College starting at 7 pm (say tuned about specifics); this event is a collaboration between our section and the Huron Valley Section, and the event will be broadcast virtually to about 5 other sections in MI and Illinois.

## **October 2018... Chemistry Day at the Kalamazoo Valley Museum**

October 13, Saturday, from noon to 4 pm we will need a lot of helping hands from our members for our annually-anticipated and well-attended (~1000 children and adults) Chemistry Day at the Kalamazoo Valley Museum in conjunction with National Chemistry Week, whose theme this year is "Chemistry is out of this world". We would love to hear that you are interested in volunteering; please contact Lydia Hines at 269-375-7349 or [lemhwgh@gmail.com](mailto:lemhwgh@gmail.com) - advanced planning makes the event more pleasurable.

## **November 2018... Recycle-a-Poster at Bells Eccentric Cafe**

Elke Schoffers is planning our popular annual Recycle-a-Poster event at Bells Eccentric Cafe Back room; it is scheduled for Tuesday, November 13, from 5 to 9 pm. So dust off an old poster or prepare a new presentation and join colleagues for a good evening of networking. More information will be sent closer to the event.

## **May 2019... Great Lakes Regional Meeting**

Make your plans now to attend and participate in the 2019 Great Lakes Regional Meeting, the region's 43rd, to be held May 1 - 4 at the Sheraton Hotel on Warrenville Road in Lisle, IL. Information about the Region can be found at [greatlakesregionacs.sites.acs.org](http://greatlakesregionacs.sites.acs.org) and about the meeting at [www.2019acsgrlm.org/](http://www.2019acsgrlm.org/)

# KACS at El Sol Elementary

In April KACS visited El Sol Elementary School in Kalamazoo to do some hands-on chem experiments with the El Sol 5<sup>th</sup> graders. We had the students do a chem separation on silica solid-phase extraction cartridges, a chem oxidation using nine volt batteries, and a chem reduction using glucose. The 5<sup>th</sup> graders were amazing and very, very smart. The experiments were well-received, and we recommend these for school and event demos (for details contact Steve at [chair@kalamazooacs.org](mailto:chair@kalamazooacs.org)). The 5<sup>th</sup> graders were very happy having members of WMU's Chem Club present, with autographs being requested.

Many thanks to the WMU Chem Club - Greg, Emily, Megan, Renae and Emily, Margarita Pinto, and Steve Seceast.



# KACS at Kalamazoo Earth Day Festival

Once again this spring, KACS was a sponsor and worked a display table for the 2<sup>nd</sup> annual Kalamazoo Earth Day Festival in Bronson Park. We showed Kalamazoo how glucose can sometimes be used as a green chem reagent for doing reduction reactions. And had a lot of fun working with indigo carmine as a very visual, reversible pH and redox indicator.

Many thanks to the KACS members who worked our table: Luke Chadwick, Greg Johnson, Tom Runge, Steve Secrest and Doug Williams.



# KACS at the Kalamazoo Marathon

On May 6, 2018 KACS worked the Kalamazoo Marathon 15 mile-marker water stop. A fun time was had by all, passing high-quality H<sub>2</sub>O to the runners from our chemistry-themed water stop.

We were happy to cheer on Evan Williams, son of KACS Alternate Councilor Doug Williams, as Evan sped past our water stop on his way to winning the marathon for the second year in a row. According to the race website, 424 runners finished the marathon.

Many thanks to the intrepid KACS water stop crew: Jeff Bartz, Cathy Ervin, Anthony Ervin, Kim Lewis, Tom Mulhern, Margarita Pinto, Elke Schoffers, Steve Secreast, Susan Sheehan, Denis Sobieray, John Stodola, Kristi Tullis, Mike Walsh, and Jenny (Kristi's friend).



# KACS Salutes KPL

If you are a pre-school or elementary school aged person (or have kids or grandkids that age), and you've spent time at the Kalamazoo Public Library (KPL), chances are you've heard of Little Scientists, Super Science, Slime Works, Chemical Kim and/or Science Flix. These science-based programs are part of what makes KPL such an asset to Kalamazoo.

To recognize these programs and the additional outstanding STEM-related work of the KPL staff, KACS awarded KPL an ACS *Salutes to Excellence* Award. *Salutes to Excellence* is an ACS recognition award given to underscore outstanding accomplishments, achievements or service for individuals and groups who have made a positive impact on everyday life. Honorees may be practitioners of chemistry, products of chemistry or places of importance in chemistry within our community. And KPL most definitely is a place of community importance.

The *Salutes to Excellence* Award was presented to Susan Warner, Head of the KPL Youth Services Department, at the 7 May Annual KACS Award Night.



# KACS at the CGSA Picnic

On May 10, 2018 the Chemistry Graduate Student Association (CGSA) hosted a spring picnic for the undergraduate and graduate students, faculty and staff of the Department of Chemistry, and KACS members. The aim of this event was to encourage socializing and networking within the WMU Chemistry Department and community members. With about 40 people attending, students were able to make new connections, as well as catch up with old friends. Thank you KACS for joining us for this event.

We hope to see you next year!



# KACS at the Annual Awards Gathering

The young people were present in fine attire on a lovely May Monday afternoon in the foyer of the Chemistry Building on the WMU campus, along with teachers, friends and/or parents, to receive awards based on achievements in their chemistry studies.

It was our section's 45th annual Awards Gathering where we recognize high school students and teachers, as well as college students, section members who have served the American Chemical Society for many years, and others in the community and of our membership whose contributions have been noteworthy. This year for the first time we also recognized our Project SEED student, Victor Plascencia (Comstock HS), and Kalamazoo College's Dr. Dwight Williams, his mentor over the 10-week summer research program,

Though none of our six long-time members (1-50 years, 2-60 years, 1-70 years, and 2-76 years) was able to be with us, our councilor, Lydia E. M. Hines, did present a recognition certificate to Dr. Donald Iffland at his home that afternoon; a retiree from the WMU Chemistry Department he served as Section chairman in 1967 and 1968. Our member volunteer for his able and willing service for many years was Dr. James Kiddle. This year we also gave awards to two of our Section's HS teachers for their many years of instilling enthusiasm for chemistry in their students – Mr. Brad Portis at Gull Lake HS and Mrs. Doreen Odziana at Paw Paw HS. A separate short description is given in a separate article regarding the Salute-to-Excellence award given to the Kalamazoo Public Library's representative Susan Warner.

*Since "pictures are worth 1000 words" below you see some of the students and the teachers who were recognized:*



*Teacher Awardees  
Mr. Brad Portis at Gull Lake HS and  
Mrs. Doreen Odziana at Paw Paw HS*



2018 Teacher-nominated Outstanding HS Chemistry Students



2018 Competitive Exam Top 12 Awardees and Competitive Exam Top Honorable Mention Awardees



Dr. Iffland (76-year ACS member) receiving certificate

**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](mailto:ACSkzoo@gmail.com)**



# Newsletter for the Kalamazoo Local Section of the American Chemical Society

October 3, 2018

Vol. 8 – Issue 4

## 2018 KACS Executive Officers

### Chairperson

Steve Seceast

[chair@kalamazooacs.org](mailto:chair@kalamazooacs.org)

### Past-Chairperson

Dr. Brian Eklov

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### Chairperson-Elect

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### Councilor

Dr. Lydia E. M. Hines

[lemhwgh@gmail.com](mailto:lemhwgh@gmail.com)

### Alternate Councilor

Dr. Doug Williams, Kalsec, Inc.

[dwilliams@kalsec.com](mailto:dwilliams@kalsec.com)

## Issue Highlights...

Page 2:

Mark Your Calendar

Page 3 - 4:

Detail of October Events

Page 5:

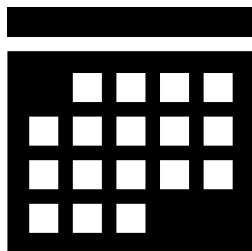
Faces of Project SEED Mini-Series  
(article 1)

Page 6:

Call of GLRM Symposia



# Mark Your Calendar!



## **October 13, 2018... Chemistry Day at the Kalamazoo Valley Museum**

We still will need helping hands for the annual Chemistry Day at the Kalamazoo Valley Museum. Please contact Lydia Hines at 269-375-7349 or [lemhwgh@gmail.com](mailto:lemhwgh@gmail.com). Read page 3 for more details.

## **October 23, 2018... Voyage to Mars: REd Planet Chemistry at Boatyard Brewing**

A panel of experts from NASA, Rice, Clemson, Emory and the National Radio Astronomy Observatory will join us in a live webinar and social media event to explain what we know about the Red Planet and the steps necessary to safely send men and women to walk on its surface. RSVP to Doug Williams at [dwilliams@kalsec.com](mailto:dwilliams@kalsec.com) to reserve your place. More information located on page 4.

## **November 13, 2018... Recycle-a-Poster at Bells Eccentric Cafe**

Dust off an old poster or prepare a new presentation and join colleagues for a good evening of networking. More information will be sent closer to the event.

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Make your plans now to attend and participate in the 2019 Great Lakes Regional Meeting, the region's 43rd, to be held May 1 - 4 in Lisle, IL. Information about the Region can be found at [greatlakesregionacs.sites.acs.org](http://greatlakesregionacs.sites.acs.org) and about the meeting at [www.2019acsqirm.org/](http://www.2019acsqirm.org/). A call for Symposia is also posted on page 6 of this newsletter.

# Chemistry Day at the Musuem

## Chemistry Day @ the Museum Saturday October 13, 2018 12 noon – 4 pm Kalamazoo Valley Museum

Chemistry Day at the Kalamazoo Valley Museum is right around the corner! As in the past this well attended annual event (~ 1000 children and adults) is held in conjunction with [National Chemistry Week](#) (NCW). The 2018 theme is "Chemistry is out of this world". The Fall 2018 Kalamazoo Valley Museum publication, [museON](#), page 14, had an enthusiastic [article](#) about the impact which KACS members have had on our community over many years, with positive mention of this outreach event which has continued for the past 31 years.



**We still need a lot of helping hands from our members for this much anticipated event!** We would love to hear that you are interested in **volunteering**; if you are not sure what you might want to present we have a list of activity suggestions from prior years, or you may want to work alongside someone else as a "helper" at a table. Please join the few who have responded to date and contact our NCW coordinator Lydia Hines at 269-375-7349 or [lemhwgh@gmail.com](mailto:lemhwgh@gmail.com) - advanced planning makes the event more pleasurable.

# National Chemistry Week Event



## **Voyage to Mars: Red Planet Chemistry**

**Tuesday, Oct 23, 6:45 – 8:00 pm  
(Mole Day)**



The Kalamazoo Section of the American Chemical Society is hosting this free public event at two locations (see registration info below).

Help us celebrate National Chemistry Week by gathering for a group mission to explore the chemistry of Mars! A panel of experts from NASA, Rice, Clemson, Emory and the National Radio Astronomy Observatory will join us in a live webinar and social media event to explain what we know about the Red Planet and the steps necessary to safely send men and women to walk on its surface. Discover the challenges of long-term space travel and the materials, biochemistry, and astrochemistry that will help make this mission possible.

We have come a long way since early astronomers gazed through simple telescopes and theorized about massive canals on the Red Planet. Orbital satellites have begun to map its surface in detail and robotic rovers are working to unlock the chemical and geologic secrets.

Come and learn:

- How the Curiosity Rover has revealed the geologic history of Mars.
- About the environments that existed on the surface of Earth and Mars during the time when life evolved.
- The unique challenges of long term space travel and an update on current efforts to ensure that humans can survive the voyage.
- How biopharmaceutical production can recycle waste into valuable materials.

Location 1 – **Kalamazoo Air Zoo** ([www.airzoo.org](http://www.airzoo.org)) 6151 Portage Road, Portage, MI.

Location 2 – **Boatyard Brewing** ([boatyardbrewing.com](http://boatyardbrewing.com)) 432 E. Paterson St., Kzoo, MI.

Please RSVP to Doug Williams at [dwilliams@kalsec.com](mailto:dwilliams@kalsec.com) to reserve your place.

# Project SEED: Meet Daniel Calco

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

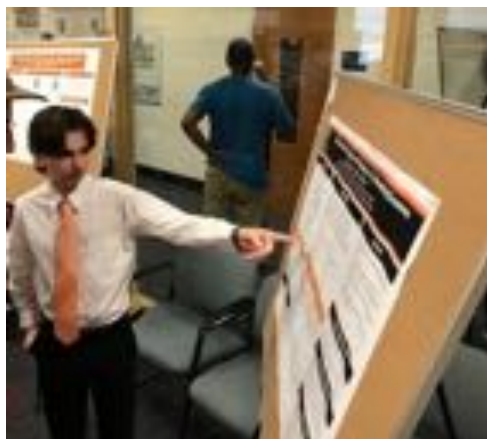
As you have heard here, ACS is celebrating the 50<sup>th</sup> anniversary of Project SEED, which was established to provide lab experience opportunities for high school students who historically lack exposure to scientific careers. More information on [Project SEED](#) is available on the ACS website.

This summer, we had one Project SEED student, Daniel Calco. Daniel is between his sophomore and junior years at Portage Northern High School and the Kalamazoo Area Math & Science Center, where he has studied chemistry with Ms. Chika Hampton.

Daniel's Summer 2018 research project was to synthesize and purify novel non-nitrogenous serotonin-receptor ligands to combat neurodegenerative diseases under the direction of Prof. Dwight Williams in the Chemistry Department at Kalamazoo College. Daniel especially appreciated the opportunity to apply his knowledge of chemistry in a practical way and to learn to use new tools such as NMR spectroscopy. He also has a strong interest in computer science and is excited to explore ways to combine this interest with further study in chemistry.

Daniel presented his work in departmental symposium at Kalamazoo College on August 22 in the Dow Science Center and will be sending a summary report to the ACS soon. He expresses special thanks to Prof. Williams for the experience.

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](mailto:dwilliams@kalsec.com).



# Call for GLRM Symposia



The GLRM Programming Committee needs your help! We want to know what symposia YOU want to see at the upcoming Great Lakes Regional Meeting in Lisle, IL. We have outlined some broadly defined program tracks for the meeting, but need to hear your ideas so we can fill those tracks with symposia. Please submit your ideas for symposia online at: <https://www.2019acsqirm.org/callforsymposia>

The GLRM Programming Committee will review all symposia submissions ahead of the call for abstracts. If you have any questions please contact the Program Chairs Dan Kissel ([kisselda@lewisu.edu](mailto:kisselda@lewisu.edu)) and/or Josh Kurutz ([jkurutz@alumni.caltech.edu](mailto:jkurutz@alumni.caltech.edu)). We look forward to hearing your ideas! -The GLRM Programming Committee

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](mailto:ACSkzoo@gmail.com)

Visit our website [www.kalamazooacs.org](http://www.kalamazooacs.org)



# Kalamazoo Section of the American Chemical Society



(<http://www.acs.org/>)



(/)

## November 2018 KalChemist News

### Highlights

- Message from the chair (</newsletter/2018/11/11/november-newsletter.html#chair-message>)
- Historic landmark dedication (</newsletter/2018/11/11/november-newsletter.html#landmark-dedication>)
- Report from *Voyage to Mars* (</newsletter/2018/11/11/november-newsletter.html#voyage-to-mars>)
- Report from *Chemistry Week* events (</newsletter/2018/11/11/november-newsletter.html#chemistry-week>)
- Report from Speed Networking event (</newsletter/2018/11/11/november-newsletter.html#speed-networking>)
- Report from *Careers in Chemistry* seminar (</newsletter/2018/11/11/november-newsletter.html#careers-in-chemistry>)
- Report from WMU Ice-cream Social (</newsletter/2018/11/11/november-newsletter.html#WMU-social>)
- Faces of Project SEED Mini-Series (</newsletter/2018/11/11/november-newsletter.html#project-seed>)

### 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 ([https://p2.kvcc.edu/perf/images/uploads/1802281504dkem/kvm\\_pr05\\_Kalamazoo\\_ACS\\_NHCL\\_news\\_release.pdf](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 Secrest



## Kalamazoo National Historic Chemical Landmark Dedication Event

May 16-18 2019

Buy Tickets

Buy Now



Donate to the Landmark

Donate



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.

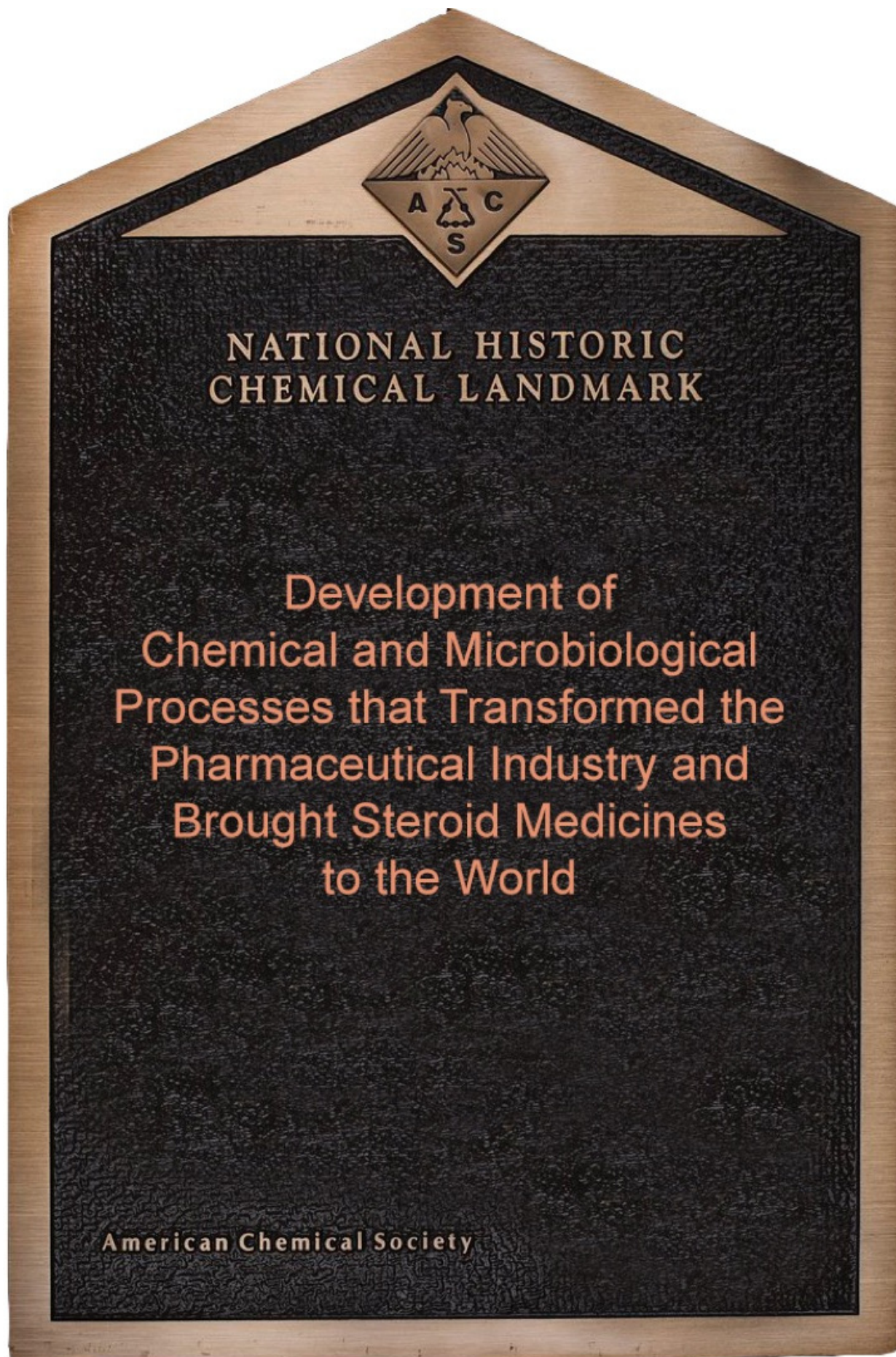




## Banquet/Reception/Reunion

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)



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



## 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.

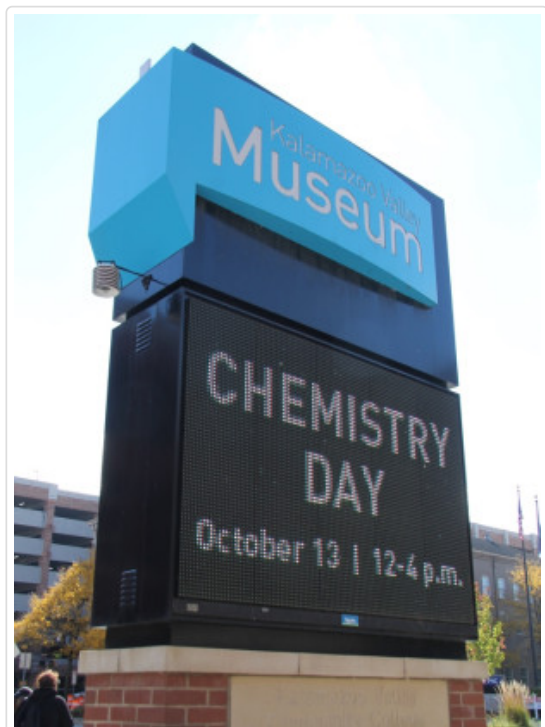


KACS "Voyage" at the Boatyard

## Report: Chemistry Week Events

# KACS 32<sup>nd</sup> 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 resources; 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

## More Hands-On Offerings

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.

## 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.





## 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 (<https://www.acs.org/content/acs/en/careers/career-navigator.html>) is an amazing resource.

## 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 (<https://www.acs.org/content/acs/en/education/students/highschool/seed/about.html>).

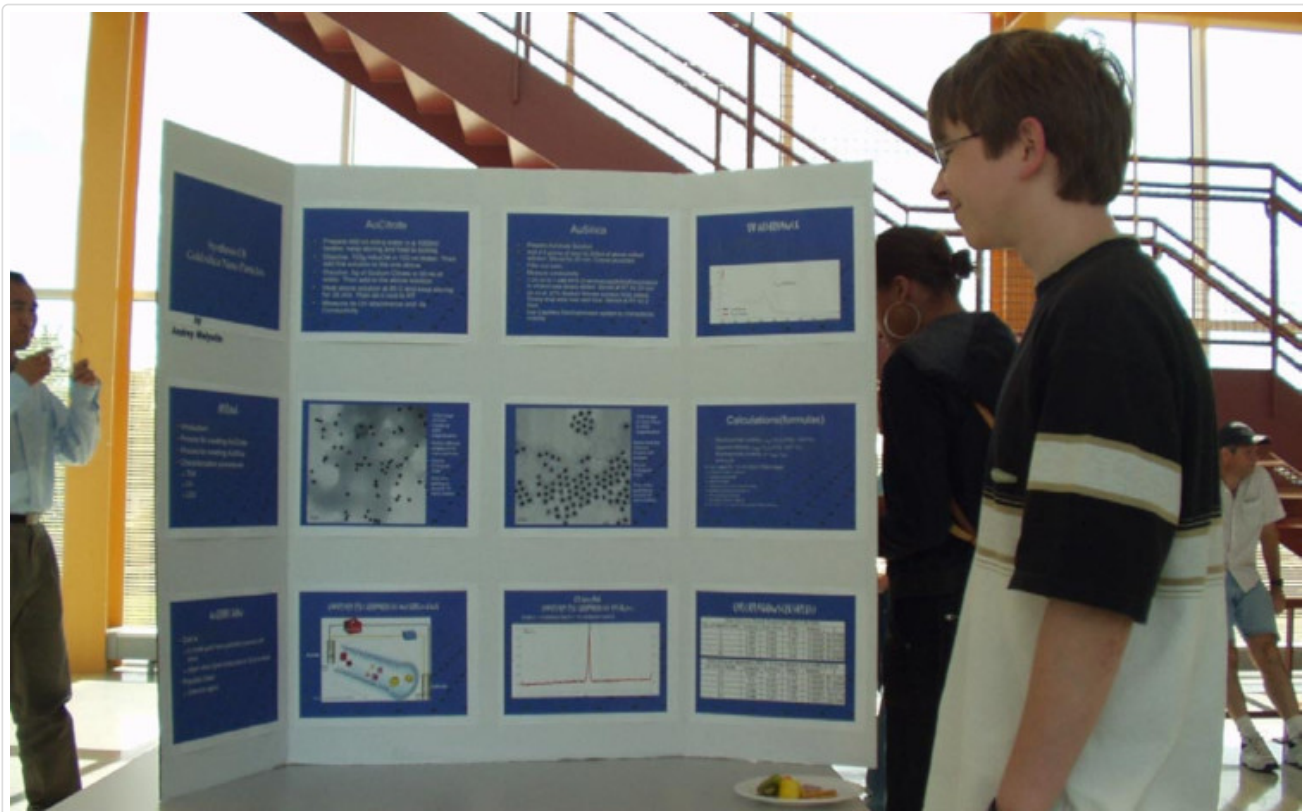
To celebrate the 50th anniversary of the program, C&E News is running a series of articles this year highlighting the experiences of Project SEED alumni. An example can be found here (<https://cen.acs.org/articles/96/i5/Happy-50th-birthday-Project-SEED.html>).

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.

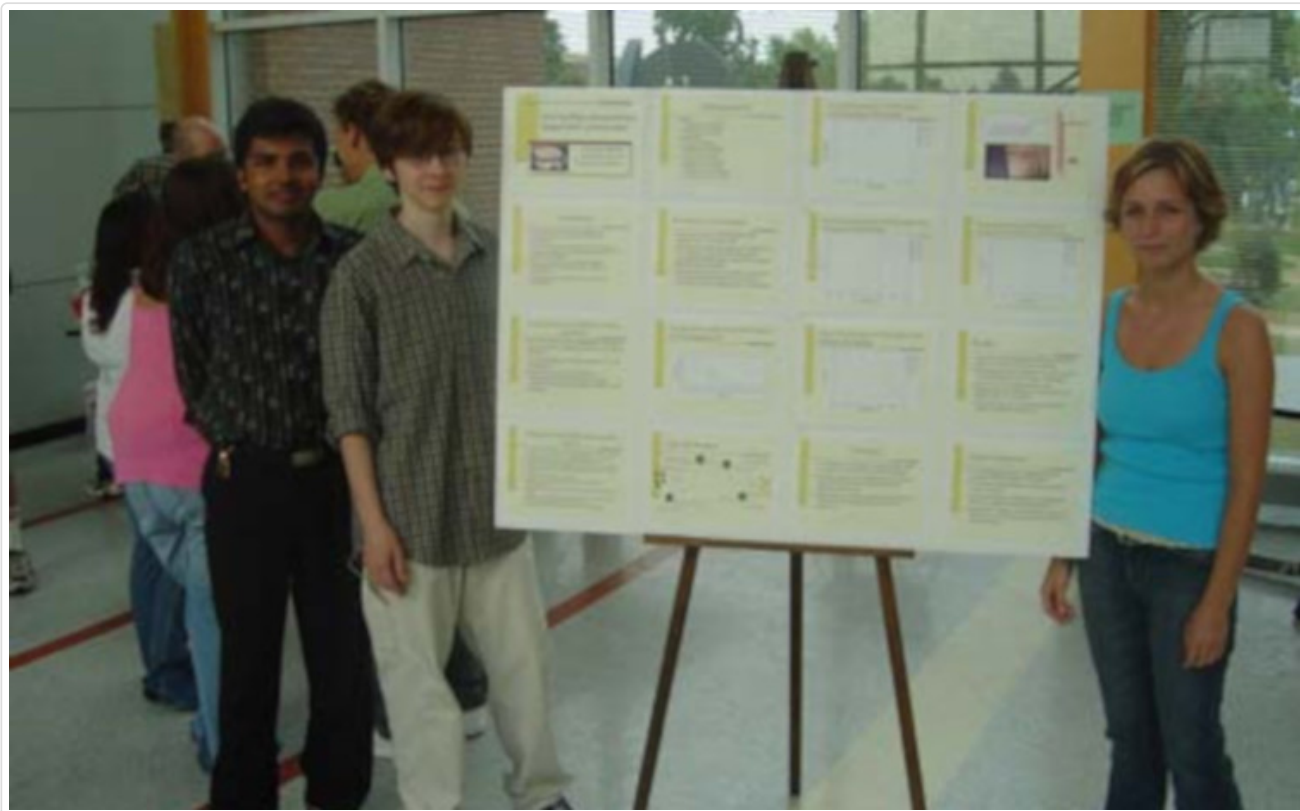
And what a career it has been already. After graduating from Kalamazoo Central High School, Andrey earned a chemistry undergraduate degree at Kalamazoo College. While at K College he did a study abroad rotation in Japan. After K College, Andrey went on to earn a PhD in chemistry at Indiana University, 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.



Dr. Andrey Malyutin, Cryo-EM Facility Co-Director, California Institute of Technology, Kalamazoo Project SEED Alumnus 2004-2005. Photo from Jensen lab (<https://jensenlab.caltech.edu/people/>).



Andrey Malyutin, Kalamazoo Project SEED poster presentation 2004. Photo from KACS Newsletter, Sep-Oct 2004 ([/newsletters/kacs-newsletter-2004-09-01.pdf](#))



Andrey Malyutin with colleagues from Dr. Maralidharan's group, Kalamazoo Project SEED poster presentation 2005. Photo from KACS Newsletter, Oct-Nov 2005 ([/newsletters/kacs-newsletter-2005-10-01.pdf](#))

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?

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.

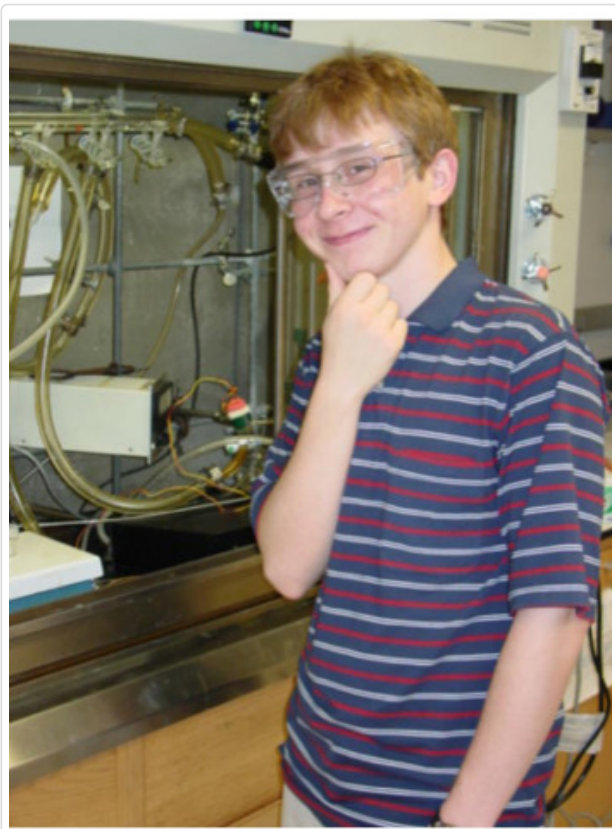
KACS: Would you say that participation in Project SEED influenced your decision to obtain a chemistry degree at Kalamazoo College? While at K College you did a 6-month study abroad rotation in Japan. How was that experience? Would you recommend study abroad to today's chemistry students?

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.

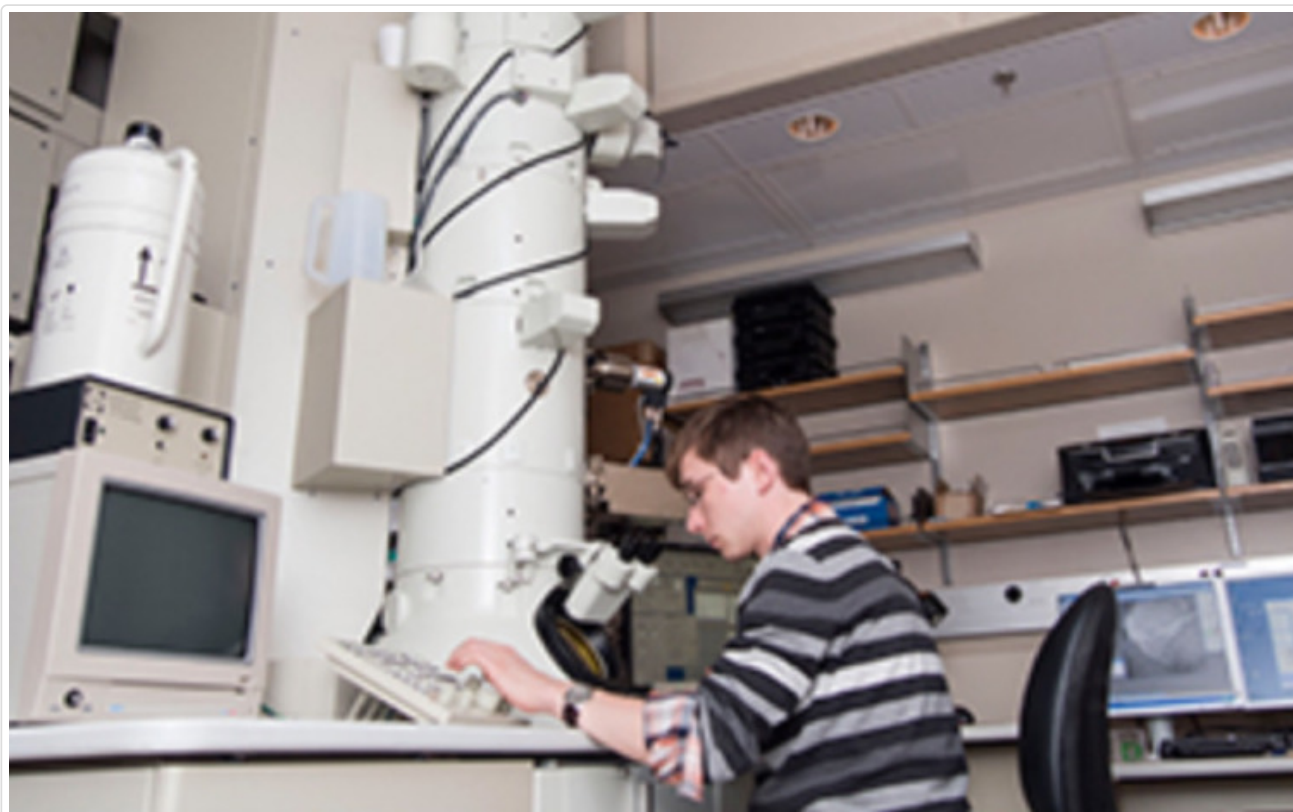
While at K College, the 6-month study abroad program was at JCMU (Japan Center for Michigan Universities). Part of the program was a self-selected one month project, which I did in the lab of Dr. Akira Kojima at the University of Shiga Prefecture. I would highly recommend study abroad to anyone. It is 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.



Andrey Malyutin with Kalamazoo College Chemistry Department 2009. Photo from: OrangeZest 2009, Kalamazoo College (<http://www.kzoo.edu/alumni/yearbooks/>)



Andrey Malyutin at Indiana University - Bloomington 2013. Source. (<http://www.indiana.edu/~lbrongrp/index.php?page=alumni&pf=1>)



Andrey Malyutin at Indiana University - Bloomington 2013. Photo from Inside IU news (<http://archive.inside.iu.edu/editors-picks/research/2013-11-06-rsch-microscopy.shtml>).

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.

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.

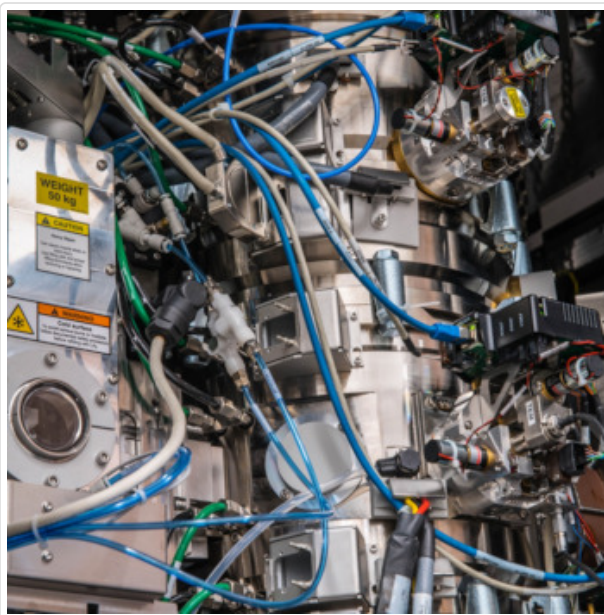
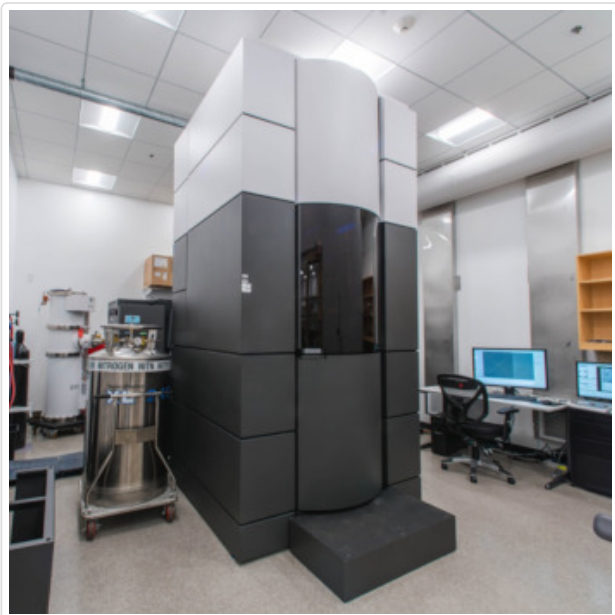
During this work, I became greatly interested in cryo-electron microscopy. This interest led me to the lab of Joachim Frank at Columbia University. During this time, I've learned and practiced cryo-electron microscopy by looking at the structures of the late biogenesis complex of the large ribosomal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

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.



Thermo Scientific Titan Krios, 300eV cryo-electron microscope in the CalTech Cryo-EM Facility. Photo from Jensen lab facilities (<https://jensenlab.caltech.edu/facilities/>).

Our brief discussion with Dr. Malyutin provided an excellent validation of the value of KACS's 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 (</people/williams.html>).



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Do you have **questions, comments, or a desire to contribute** to the newsletter? Send an e-mail to [chair@kalamazooacs.org](mailto:chair@kalamazooacs.org) (<mailto:chair@kalamazooacs.org?subject=Newsletter>).

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