

THE MIDLAND CHEMIST

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2022 Turner J. Alfrey Visiting Professorship Lecture Series, June 7

Clare Light, Project/Event Coordinator, MSU St. Andrews

Date: Tuesday, June 7, 2022 Time: 9:00 AM to 5:00 PM

Location: MSU St. Andrews, 1910 West St. Andrews, Midland, MI 48640

Guest Lecturer: **Dr. Christopher K. Ober** (photo at right)

Join us at MSU St. Andrews for a full day of lectures with Dr. Christopher K. Ober of [Cornell University](#). Dr. Ober and his associate will discuss topics in controlling polymer structure at nanometer-length scales.

[Christopher Ober](#) is the Francis Bard Professor of Materials Engineering at Cornell University. He has pioneered new materials for photolithography and studies the biology-materials interface. Ober received his B.Sc. in Honours Chemistry (Co-op) from the [University of Waterloo](#), Ontario, Canada, in 1978, and his M.S. and Ph.D. in [Polymer Science & Engineering](#) from the [University of Massachusetts \(Amherst\)](#) in 1982.

From 1982 until 1986, Ober was a senior member of the research staff at [Xerox Research Centre of Canada](#) where he worked on marking materials. Ober joined Cornell University in the Department of Materials Science and Engineering in 1986. He recently served as Interim Dean of the College of Engineering. He is presently Director of the [Cornell Nanoscale Facility](#).



He is a Fellow of the ACS (2009), APS (2014), and AAAS (2014). He is a SPIE Senior Member (2018). He received the [ACS Award in Applied Polymer Science](#) in 2006, the Gutenberg Research Award in 2009, the Society of Polymer Science Japan (SPSJ) International Prize in 2013, and the Japan Photopolymer Science and Technology Outstanding Achievement Award in 2015. Ober was President of the IUPAC Polymer Division (2008 – 2011), Chair of the Interdivisional Subcommittee on Materials Chemistry (2011 – 2017), and is an elected member of the IUPAC Executive Committee (2014 –2021).

To attend the 2022 Turner J. Alfrey Visiting Professorship Lecture Series, please register by no later than Friday, June 3, 2022. For further event information, please contact Clare Light at lightcla@msu.edu.

AGENDA AND LECTURE SUMMARIES

9:15 AM *Extreme UV Patterning for Fast Electronics: Making Materials Vanish with Nanometer-Scale Precision*

Today with the advent of extreme ultraviolet (EUV, 13 nm wavelength) lithography, we will be able to make structures on the order of 10 nm and smaller. But we still have a considerable amount of research to do to achieve this, given EUVs atom-based absorbance characteristics and the importance of inorganic elements in the periodic table. This presentation will provide a basic background in advanced lithography and will discuss recent work in molecular glasses and metal-organic clusters to make advanced photoresists. Also described will be work in progress involving scissioning polymers and polymers with controlled sequences to address the issue of stochastic control in achieving sub-10 nm resolution.

10:15 AM *Three-Dimensional Microfabrication Using Two-Photon Chemistry: Materials Systems for Two-Photon Lithography*

Three-dimensional lithography is an important tool in additive manufacturing. However, most of these methods operate at rather large mm length scales and use polymer melts or traditional stereolithography. By using near IR wavelengths and 2-photon absorbing processes, it is possible to directly shape 3D materials at length scales of a few hundred nanometers. This presentation will describe work from our group and from the science community on topics ranging from photonics to life science applications. This presentation will survey photo-crosslinked rigid materials including recent commercial systems. In addition, this presentation will describe recent work on soft systems including hydrogel materials and elastomers.

11:30 AM *Controlled Surfaces for Anti-Fouling Behavior: Toxicant Free Anti-Fouling Coatings for Marine Applications*

Marine fouling is a major contributor to energy costs and production of CO₂ due to the large volume of international shipping every year. Every surface that sits in the ocean is a potential home for fouling flora and fauna. To deal with this, copper loaded paint is used to prevent fouling, but this leads to the accumulation of copper in harbors around the world. In this talk, we discuss the use of amphiphilic (combined hydrophilic and hydrophobic) surfaces combined with active components to inhibit fouling without toxicants. These active components interfere with chemical processes used by marine plants and animals to adhere to surfaces. The effect of the chemical and surface structure of specifically tailored surface-active block copolymers on anti-fouling and fouling resistant behavior will be described.

12:30 PM Lunch Break

2:00 PM Polymer Brushes: Valuable Tools for Interface Engineering

Polymer brushes are a common feature in many biological surfaces. “Grown from” polymer brushes only a few tens of nanometers thick are remarkable materials for modifying the chemistry and mechanical properties of surfaces. Polymer brushes, because of their surface confinement, are typically stretched from the surface when compared to identical unattached polymer segments and confinement provides them with useful barrier properties. With the development of living radical polymerization, it has become possible to create a wide variety of brushes tailored for numerous applications in a range of surface environments. In this presentation we discuss brush growth, brush stabilization, brush patterning, and the effect of brush stiffness in a range of applications depending on the nature of the local environment.

3:00 PM Mixed Ionic-Electronic Conductors: A Computational / Experimental Study

Organic conducting materials with dual ion/electron transport functionalities can be achieved by careful design of two-component liquid crystal (LC) oligomers. Such materials are finding use in applications that range from sensors to energy storage materials. Such materials can spontaneously self-assemble into 2D smectic mesophases with alternating ionic and electronic conducting channels. It was believed that symmetric LCs were usually associated with strong structural ordering, but complicated techniques were always needed to fabricate such films with high quality due to their high mesophase temperatures. In this study, symmetric and asymmetric thieno[3,2-b]thiophene (BTTT)-based amphiphilic LCs were synthesized via Suzuki and Stille coupling reactions. Their structural arrangement and charge-transport properties were investigated by molecular dynamics simulation and advanced characterization techniques including grazing incidence wide angle X-ray diffraction (GIWAXS). Electrochemical impedance spectroscopy (EIS) was used to measure the ionic and electronic conductivities upon the additions of dopants. Low molar mass and polymeric systems will also be described.



Mid-Michigan Chemistry Students Participated in the 2022 U.S. National Chemistry Olympiad

Michael Tulchinsky, Chemistry Olympiad Chair, Midland Section of the ACS

Five high school students from Bay, Isabella, Midland, and Saginaw counties competed in the National Exam of the 2022 U. S. National Chemistry Olympiad (USNCO) on April 23rd. The National Exam is the second round of the Chemistry Olympiad following the Local Exam. It included 60 questions with multiple choice answers (Part 1, 90 min) and 8 questions requiring problem-solving and explanations (Part 2, 105 min) offered remotely and 2 lab questions in the laboratory setting offered in-person at Saginaw Valley State University (Part 3, 90 min).

Initially, 104 chemistry students from nine high schools registered and 71 finally participated in the Local Section Exam in the week of March 14. This competition was organized by the Midland section of the ACS and administered by the chemistry teachers at Bay City Western, John Glenn, Heritage, H. H. Dow, Midland, Mt. Pleasant, Valley Lutheran, and Saginaw Arts and Science Academy (SASA) high schools. The Local Exam included 60 questions with multiple choice answers provided by the American Chemical Society.

Based on the scores of the Local Exam, the Midland Section nominated ten students to the National Exam. Landon Warner of Heritage High School achieved the highest score among the mid-Michigan contestants at the Local Exam. Six students accepted the nominations and five took part in all three parts of the National Exam: Leah Jankoska from Bay City Western High School (chemistry teacher Gwenyth Kieser), Thomas Ladwein from H. H. Dow High School (chemistry teacher Ashley Burr), Jacqueline Ko from Mt. Pleasant High School (chemistry teacher Jason Brown), Devlin Wieszczecinski and Joseph Crachiola from Saginaw Arts and Science Academy (chemistry teacher Dr. David Allan).



Picture 1: Mid-Michigan students at the Lab Practical part of the National Exam (from left to right): Joseph Crachiola, Devlin Wieszczecinski, Leah Jankoska, Jacqueline Ko, and Thomas Ladwein.

The students who participated in the National Exam were invited to the Awards Banquet on May 4th where they were recognized with ACS certificates. The students also received honor cords as gifts from the Midland Section while their chemistry teachers were acknowledged by the American Chemical Society for the guidance and encouragement given to the contestants.



Picture 2: National Exam students are recognized at the Awards Banquet.



Picture 3: SASA students and their teacher Dr. David Allan at the Awards Banquet.

Every year about 1,000 high school chemistry students throughout the country participate in the National Exam. The highest scoring twenty students receive invitations to the Chemistry Olympiad Study Camp in June. The top four uniquely strong students from this group represent the U.S. at the International Chemistry Olympiad (IChO) which will be held this year in Tianjin, China in July.

A number of volunteers helped with both local and national exams. Midland section Chair Dr. Joel McDonald welcomed and encouraged activities pertaining to the Chemistry Olympiad. Dr. Jonathan Axtell and Dr. James Cabrera served as National Exam proctors. Professor Michael Coote with the help of Dr. Anthony Revis put together experimental sets and provided the laboratory at SVSU for Part 3 of the National Exam. Ms. Diana Deese organized the Awards Banquet and offered spots for the National Exam students and their teachers. Dr. Michael Tulchinsky served as the USNCO coordinator.



Picture 4: Volunteers who helped with the 2022 Chemistry Olympiad (from left to right): Dr. James Cabrera and Dr. Jon Axtell of Dow, Professor Michael Coote and Dr. Anthony Revis of SVSU.

Accomplished Awardees: Midland ACS Scholarships 2022

Gina Malczewski, Director and Scholarship Committee, Midland Section ACS

This year two \$1500 scholarships were awarded to young women from Midland who are pursuing chemistry-related degrees at Michigan universities: Therese Joffre and Makayla Pirie.



Therese Joffre (photo: Facebook)

Therese is a Chemistry major at Hope University, where she is involved in many activities. Therese has twice done summer research in the MSU-St. Andrews program, is a webmaster on campus, and tutors. She has volunteered at Hope Hospital and Midland-Michigan Regional Medical Center, and she is politically active. Therese has a GPA of 3.71.

Makayla is on a swim team and has volunteered for Girls on the Run. She attends Alma College, is a Biochemistry major, and has a GPA of 3.96. Her summer research has focused on boron clusters, and she is interested in genetics.



Makayla Pirie (photo: Facebook)

Applications were submitted to Midland Area Community Foundation (MACF) earlier this year and reviewed by a three-member team that included a Midland ACS member. Recipients were recommended to the Foundation; the total amount of MACF funding to any one recipient is limited, so the committee offers a short, prioritized list of names in case someone on the list is disqualified by receipt of (a) larger scholarship(s) from other sources.

We congratulate these recipients, applaud their hard work, and wish them continued success as they work toward their degrees.



This is the Way – ACS Midland Section Celebrates Achievements in Chemistry and the Related Sciences

Diana K. Deese, Awards Committee Chair, Midland Section ACS

It was not long ago, May the 4th, when a galaxy of impressive science people gathered to be recognized by the ACS Midland Section for their outstanding contributions to chemistry and the related sciences. In the 13 years I have been associated with the local section awards committee, we have not had the luck of holding the annual banquet on such a fun day....May the fourth. So, for this 31st annual banquet, we may have had a little Star Wars theme running through the evening. If you attended, I might have briefly, or not, donned Yoda ears....even though I am more of a Force = Mass x Acceleration person, rather than a Force be with you girl.

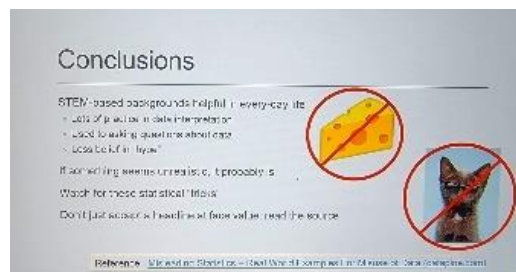


That being said, if you have read the mission statement of the American Chemical Society, it does lend itself to galactic theme: “Advancing the broader chemistry enterprise and its practitioners for the benefit of Earth and all its people.” And, what about the force? Well, that is implied with the vision of the ACS: “Improving all people’s lives through the transforming power of chemistry.” Chemistry and the related sciences...that is where our strength lies.

So, on this May the fourth, 2022, over 80 awards were presented to those who contribute, support, and advance the cause of the all-volunteer ACS force.



After a feast on well-prepared yard fowl and intergalactic cupcakes, the evening began with a lesson in assumptions and rhetoric, as Wayde Konze Ph.D, Senior R&D Director of Analytical Sciences at Dow, instructed us in “*The Use of Basic Statistics: Don’t*



Believe Everything You Read". Padme Amidala’s got nothing on Wayde’s leadership. The conclusion: maybe cats and cheese are hazardous.

In a slight deviation from the program, award recipients in attendance from 2020 and 2021 were recognized since they were denied the opportunity to stand and be celebrated in front of an audience of their peers:

- *Brad Fahlman – 2020 Outstanding Achievement and Promotion of the Chemical Sciences*
- *Chris Goralski – 2020 Outstanding Achievement and Promotion of the Chemical Sciences*
- *Janice Tomasik – 2021 Outstanding College Chemistry Teaching*
- *Choon Young Lee – 2020 Outstanding College Chemistry Teaching*
- *Michelle Rivard – 2020 Science Education Volunteer*
- *Matt McLaughlin – 2021 Outstanding Chemical Technician*
- *Heidi Clements – 2020 Outstanding Chemical Technician*
- *Michelle Cummings – 2021 Outstanding Service to the ACS*
- *Anja Mueller – 2020 Outstanding Achievement in the Promotion of Diversity in Chemistry, Related Sciences and Engineering*



It is sometimes hard to tell if art imitates science or science imitates art. This evening, four artistic scientists were recognized for their entries in the National Chemistry Week Illustrated Poem Contest. The theme for 2022 was “The Buzz About Bugs: Insect Chemistry”. No simple Dool bugs, Bacian blood hornets, or Phosfleas here.

- | | |
|--------------------------|--|
| <i>Henry LeCaptain</i> | <i>1st Place 9th-12th Grade Division
H.H. Dow High School</i> |
| <i>Harmonjot Chauhan</i> | <i>2nd Place 9th-12th Grade Division
Bay City Western High School</i> |
| <i>Emma Huang</i> | <i>1st Place 6th-8th Grade Division
Jefferson Middle School</i> |
| <i>Avery Crawford</i> | <i>1st Place 3rd-5th Grade Division
Kolb Elementary</i> |



The first group of awards recognized was our young Jedi chemists and the extent for which they train for battle in remote labs across the country. Confronting and overcoming the unknown is your destiny.

Michael Tulchinsky presented the following chemistry students with honor cords and certificates for gallantly competing in the Chemistry Olympiad:

- | | |
|------------------------------|--|
| <i>Leah Jankoska</i> | <i>Bay City Western High School</i> |
| <i>Jacqueline Ko</i> | <i>Mt. Pleasant High School</i> |
| <i>Thomas Ladwein</i> | <i>H.H. Dow High School</i> |
| <i>Devlin Wieszczeninski</i> | <i>Saginaw Arts and Sciences Academy</i> |
| <i>Joseph Crachiola</i> | <i>Saginaw Arts and Sciences Academy</i> |



The Midland Section's region of the galaxy includes Isabella, Gratiot, Midland, Saginaw, and Bay counties. Within this area, there are 50 high schools and recognize one Outstanding High School Chemistry Student from each as nominated by their chemistry department. Twenty-seven schools were represented this evening. From stoichiometry to redox reactions to the desire to resolve plastic pollutants, these brilliant, young minds have found



their passion, selected their path, and will shape the future of our industry.

<i>Breanna Lango</i>	<i>All Saints</i>	<i>Ty Murray</i>	<i>Coleman</i>
<i>Moritz Richter</i>	<i>Alma</i>	<i>Logan Lipka</i>	<i>Frankenmuth</i>
<i>Hailee Jefferson</i>	<i>Arthur Hill</i>	<i>Noah Black</i>	<i>H. H. Dow</i>
<i>Isabella Martindale</i>	<i>Bay-Arenac Community</i>	<i>Alexander Light</i>	<i>Hemlock</i>
<i>Ashley Young</i>	<i>Bay City Central</i>	<i>Brynn Bootsma</i>	<i>Ithaca</i>
<i>Alyssa Burger</i>	<i>Bay City Western</i>	<i>Adam Reno</i>	<i>John Glenn</i>
<i>Emma Carlson</i>	<i>Beal City</i>	<i>Nathan Rowe</i>	<i>Merrill</i>
<i>Meghan Oberski</i>	<i>Birch Run</i>	<i>Faith Persyn</i>	<i>Midland</i>
<i>Julia Rowe</i>	<i>Breckenridge</i>	<i>Rojie Wang</i>	<i>Mt. Pleasant</i>
<i>Sanaii Liles</i>	<i>Bridgeport</i>	<i>Sarah Parashar</i>	<i>Saginaw Arts & Sciences Academy</i>
<i>Quinn VanZile</i>	<i>Bullock Creek</i>	<i>Anna Lator</i>	<i>Shepherd</i>
<i>Caleb Hughes</i>	<i>Calvary Baptist Academy</i>	<i>Adam Klump</i>	<i>St. Charles</i>
<i>Michelle Weber</i>	<i>Carrollton</i>	<i>Maya Schnorenberg</i>	<i>Swan Valley</i>
<i>Elizabeth Kelsey</i>	<i>Coleman</i>	<i>Zack Blazejewski</i>	<i>Valley Lutheran</i>

A bit farther along in their training, several students from our local colleges and universities have made it to the edge of their galaxy and are ready to soar off into the great unknown as they become our colleagues and associates in their chosen field.

<i>Margaret Hanna</i>	<i>Alma College – Chemistry</i>
<i>Megan E. Schornack</i>	<i>Alma College – Biochemistry</i>
<i>Jack Kukulis</i>	<i>Delta College - Chemistry</i>
<i>Kaylee Jaksa</i>	<i>Central Michigan University – Chemistry</i>
<i>Alan H. Weible</i>	<i>Central Michigan University – Chemistry</i>
<i>Payton A. Wolbert</i>	<i>Central Michigan University – Biochemistry</i>
<i>Emma I. Placzek</i>	<i>Central Michigan University – Biochemistry</i>
<i>Alivia Barres</i>	<i>Saginaw Valley State University – Chemistry</i>
<i>Caleb Whittaker</i>	<i>Saginaw Valley State University – Biochemistry</i>
<i>Collin M. Clark</i>	<i>Delta College (Outstanding Chemical Technology Student, sponsored by the Mid-Michigan Technician Group)</i>



All of this passion for learning begins with inspiration, dedication, and motivation. A cadre of exceptional educators show up every day to guide these students into the next phase of their educational journey. The Outstanding Achievement awards were presented to the following:

Elementary Level Science Education: *Lori Hall* *Herig/Zilwaukee Elementary – Saginaw*





Middle Level Science Education:

<i>Michael Graves</i>	<i>Jefferson Middle School - Midland</i>
<i>Jennifer Lehman</i>	<i>Jefferson Middle School - Midland</i>
<i>Victoria McPeak</i>	<i>Northeast Middle School - Midland</i>
<i>Rebecca Stinson</i>	<i>Northeast Middle School - Midland</i>
<i>Megan Konkol</i>	<i>Northeast Middle School – Midland</i>

High School Chemistry Teaching: *Jessica Schwarz, Valley Lutheran High School – Saginaw*



College Chemistry Teaching: *Tami Sivy, Saginaw Valley State University*

Chemistry and the related sciences are rich in history, synergy, and the ability to stand on the shoulders of those that have fought the battles before us. Each year, we reach back into that history and honor those that touch the future with the knowledge they have bestowed upon us. A thousand generations live in you now (Luke Skywalker).

50 Years

Dr. Juan M. Garces
Mr. Ralph Wisner
Mr. Robert L. McKellar
Dr. Jerry Lee Hahnfeld
Mr. Fredric Louis Buchholz
Mr. James R. Falender
Mr. John W. Bruce

60 Years

Mr. Corwin J. Bredeweg
Dr. William E. Dennis
Dr. Theodore Emmett Tabor

70 Years

Mr. Owen L. Stafford (deceased)
Dr. F. M. Scheidt

In any endeavor, you have a robust class of skilled individuals that work across disciplines, collaborate across functions, take on multiple projects, and excel (often under intense pressure). They are the foundation for the success of any undertaking, from ideation to innovation to implementation to commercialization to sustaining. From the mundane to the critical, they find a way to “just make it happen” and they do it with self-sufficiency, world-class decorum, and unsurpassed technical excellence. Truly a master of their craft, even when that craft is continually evolving. The committee received a plethora of nominations in this category, which resulted in multiple selections. Our 2022 Outstanding Chemical Technicians are:



<i>Duane Vance</i>	<i>Dow (Analytical Characterization)</i>
<i>Matt Crimmins</i>	<i>Dow (Formulation Science- Colloid Interface)</i>
<i>Carl Reinhardt</i>	<i>Dow (Analytical Science-S&I Characterization)</i>
<i>Ben Schaefer</i>	<i>Dow (Analytical Science – Optical Spectroscopy)</i>

One of the core values of our ACS empire is to “Embrace and Advance Inclusion in Chemistry.” Inclusion of and respect for people of all backgrounds, perspectives, experiences, and ideas will lead to superior solutions to world

challenges and advance chemistry as a global multidisciplinary science. To infinity and beyond...wait, that is a different cinematic event. Marco Bizzarri stated, "diversity and inclusion, which are the real grounds for creativity, must remain at the center of what we do. When we all participate, we all win." The Midland Section's Diversity and Inclusion Committee presented their Diversity and Inclusion award to:

Alyssa Fielitz Dow (R&D Analytical Sciences-Surface and Interface Characterization)



Volunteers freely give of their time and themselves in passionate support of the causes they believe in. Chemistry and the Related Sciences greatly benefit from their dedication as they are a crucial bridge between education, industry, and the community. They impart their ability to connect people, to explain our craft to the uninitiated, and to generate a respect for the value of chemistry in everyone's daily life (another value of the ACS). This year, in honor of his years of dedication to the H2OQ project, the Midland Section Science Education Volunteer award was bestowed upon:

Dale LeCaptain Central Michigan University

Leveling up in the volunteer battery, would be those individuals that choose to also serve on the various local and national committees or hold offices within the ACS community. They seek out opportunity to further the initiatives, precepts, and ideals of the one of the world's largest scientific societies. They cultivate networks starting with the wee-Jedi in pre-school classes to the most knowledgeable masters of the transforming power of chemistry. Long overdue for her dedication on the local and national level, the Midland Section awarded its Outstanding Service to the American Chemical Society honor to:

Michelle Rivard Dow (AS NA Molecular Structure and Process Analysis)



2020 and 2021 were difficult years for the awards committee due to the Covid virus that decided to interrupt activities in our corner of the galaxy. Because of this, the 2020 Local Section Outreach Volunteer of the Year award presentation, as selected by the National ACS organization, was delayed to this year. In 2019, one of our local chemistry masters took post as the commander of the CERM Executor. Under his leadership, Midland was able to hold one of the most stellar regional meetings executed in our area of the country. That leader and the 2020 Local Section Outreach Volunteer of the Year recipient is:

Dimi Katsoulis Dow (Consumer Solutions R&D)

Yoda once said, “In a dark place we find ourselves, and a little more knowledge lights our way.” The recipient of this year’s Outstanding Achievement and Promotion of the Chemical Sciences is being recognized for his efforts to brighten dark places. Over his 30-plus year career, Richard K. Helling consistently used knowledge to light the way. He recognized the need to apply better rigor to issues related to sustainability. He initiated and shaped the effort, nurturing it and gaining credibility. His commitment to sustainability and to life-cycle analysis shaped both Dow and the entire chemical enterprise by creating and implementing the Sustainable Chemistry Index used at Dow, which is now a model for other companies to assess progress toward more sustainable products and practices. Rich mentored many, actively sharing his insights into life cycle assessment, often through the Green Chemistry Institute and the American Center for Life Cycle Assessment, the ACLCA. Rich has long been active in the Mid-Michigan AIChE chapter, in addition to his work with the ACS and ACLCA. With this award, Rich has now been recognized by all three groups with awards. He leaves a legacy that will live on in Dow, DuPont, and beyond.



Teamwork is the structure through which difficult tasks are made triumphant. Two years ago, the Midland Section instated a new recognition for those projects which realized commercial success through the collaborative efforts of a team. Leading such a grand army, David Malotky and Alan Piwovar are the primary technical investigators for RHOBARR™ 320 Barrier Dispersion, an aqueous polyolefin barrier coating for paper and board applied using conventional coating equipment. This product results in thin, defect-free coatings that provide barrier properties of thicker coatings or films while using less polymer and enabling articles like cups and butcher paper to be recycled. Additionally, it is a unique solution to the waste management and recycling of single-use paper articles; offering barrier protection and reduces environmental impact through recyclability, repulp (up to 40% fewer rejects), lightweighting (5-10% weight reduction), and coat-on-demand options for paper mills which eliminates environmental burdens due to transportation to external coating converters for coating application. The 2022 TEAM achievement award goes to RHOBARR™ 320 Barrier Dispersion.

(It shall be noted here that the 2021 TEAM award went to “Increased Capacity for the Growing-Meat Alternative Vegetarian Market” (*DuPont Nutrition and Biosciences*). Since the team members moved to new assignments, this plaque remains in a holding pattern until I can find the proper organization to accept and display it.)

When an entity presents such a forceful presence in the community, such as chemistry and the related sciences does in the Great Lakes Bay Region, collaborations between the Midland Section and our community members is absolutely vital to our success. Each year we select those people and enterprises that contribute to our mission and outreach. We call them the “Salute to Excellence” awards:

- John Blizzard: Quadsil/Raven Analytical*
- Creative 360: Laura Vosejka representing*
- Cyndie Roberts: Dow High Go Green Club*
- Michigan State University (St. Andrews): Clare Light representing*
- Girl Scouts Heart of Michigan (Saginaw Region): Ashley Kolka/Jacqueline Reimers representing*



Each year brings unique challenges. As chair of the awards committee for over a decade, I made a General's decision, not unlike a galactic princess, to create a Special Recognition Award for just such situations. 2022 realized the necessity for revamping the ACS Midland Section web page and there were two commanders responsible for this battle. Mission accomplished:

Michael Malczewski *Midland Section ACS volunteer (not pictured)*
Mark Jones *Dow (retired)*



For those that were unable to attend, we hope to see you next year. As the green, wrinkly one says, "Try not. Do or do not. There is no try." "Your focus determines your reality." – Qui-Gon Jin.

The author would like to acknowledge the ACS Midland Section Awards Committee: *Wendy Flory, Stephanie Barbon, Bingbing Li, and Michael Coote*

...and express a special "Thank you" everyone who attended in support of the recipients; to Doug Julian for photographing the even; to Kari Santos of "Sweet Me Off My Feet" for the spectacular cupcakes in out-of-this-world flavors; and for those that made the appearance of Darth Vader and a Storm Trooper, possible.

As a final thought, I would be remiss if I failed to end this article with "May the force be with you."

Images taken at the event will be available at www.midlandacs.org under Activities/Events – Awards Banquet. You can also find issues of "The Midland Chemist" and a list of past awardees at this site. Be sure to "like" us on Facebook (<https://www.facebook.com/MidlandACS.org/>)

2022 Central Regional Meeting of the American Chemical Society, June 7–10

Vickie Langer, Co-Editor, The Midland Chemist

The Huron Valley Local Section is hosting the 2022 Central Regional Meeting of the American Chemical Society, June 7-10, 2022. This four-day event will take place at Eastern Michigan University's Student Center.

ACS Regional Meetings feature technical programming to help you stay up to date on the latest research and keep you connected with chemists in your region. Visit the meeting website for more information: [2022 Central Regional Meeting](#).



Exhibit Progress: We're Almost There!

Gina Malczewski, Director and Outreach Committee, Midland Section ACS

After three years and many pandemic-related challenges, the Midland ACS centennial exhibit is unofficially open again for special walk-thoughts. A few school groups “tested out” the new display at Rowe Hall on the campus of Central Michigan University in May, and reviews have been good! We are still working on an update panel and all contents are not yet available for viewing, but most of the display is up and running.



Children work on an exhibit-related crossword puzzle (with Silly Putty prizes) during a recent school group visit to the ACS centennial exhibit at CMU's Rowe Hall.

Photo by Rebecca Petrone

The exhibit “A Century of Science and Service” includes three videos: “A Day without Chemistry” from National ACS, “Midland ACS Outreach” put together by a technology class at Dow High, and “Unintended Consequences,” the story of the breast implant crisis. We also offer activities for children and will soon provide model-building and an augmented reality experience showing each of our featured molecules/polymer subunits (bromine, sodium polyacrylate, Silly Putty, polystyrene, and polyvinylidene chloride (Saran)) in three dimensions. We also expect to sponsor educational programs and speakers over the exhibit run. This effort has been a successful collaboration between Midland ACS seniors and the CMU Museum Studies program.

Follow the blog on the ACS Centennial website (www.midlandacs100.org) and stay tuned for word of the official opening!

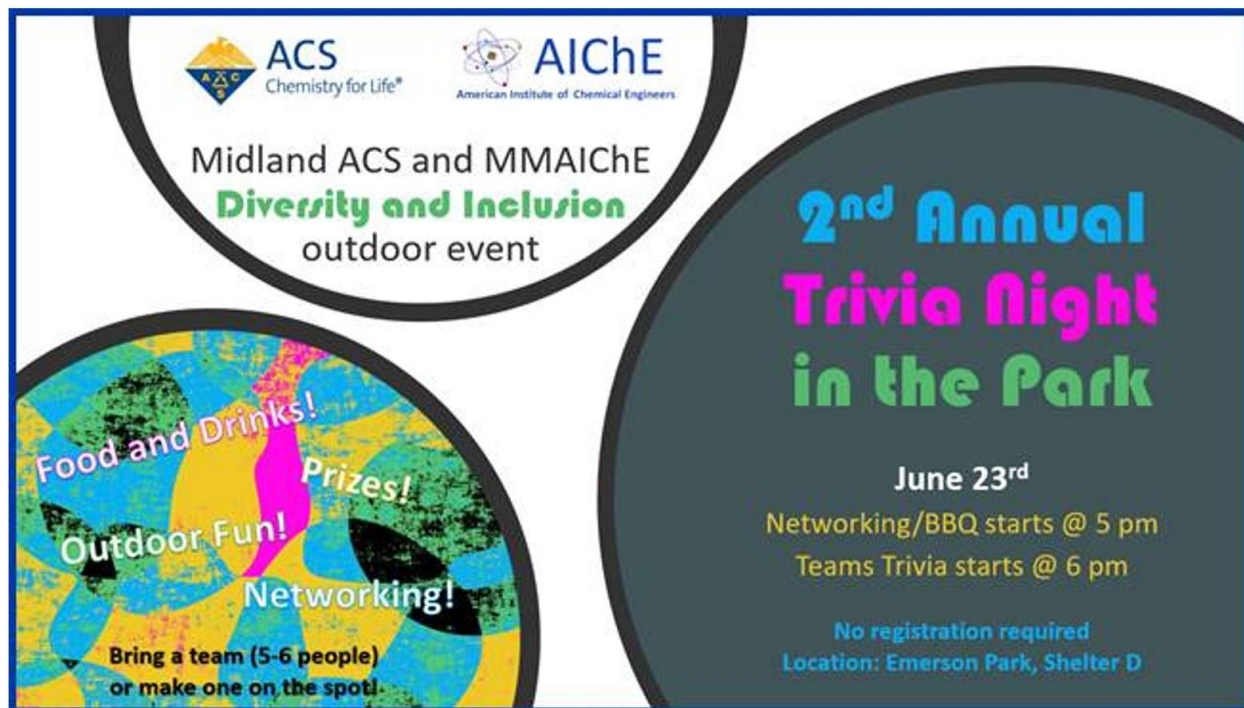


Part of the almost-finished Midland ACS Centennial Exhibit as it has been laid out in Rowe Hall. Display cases not shown.

Photo: Jay Martin

2nd Annual Trivia Night in the Park Event, June 23

Anne-Catherine Bedard, Diversity & Inclusion Committee Chair, Midland Section ACS



Please join us for an evening of networking, food, drinks, and trivia! Bring a team (5-6 people) or make one on the spot. BBQ and networking begin at 5:00 PM. Trivia begins at 6:00 PM. Location: Emerson Park, Shelter D, Midland.

Admission is free, but please RSVP so that we will know how much food to prepare. You can respond to this event on Facebook at <https://fb.me/e/3AWvUA9dT>. Please share this news with your respective network and plan to join us. For more information or any questions, please contact Anne-Catherine Bedard at diversity@midlandacs.org.



Water Quality Testing – Volunteer Adventure Opportunity, July 29–31

Dale LeCaptain, Councilor, Midland Section ACS

ACS MEMBER VOLUNTEER / BEAVER ISLAND MULTI-DAY EXPERIENCE

The ACS Midland Local Section H₂O Q Committee is offering three interactive exploration days of various fresh water sources in northern Lake Michigan in and around the Central Michigan University Biological Station (CMUBS). The excursion will focus on volunteer training in H₂O Q (the citizen science outreach program for middle and high schools) by exploring the water chemistry of various locations.



The excursion is open to members of the ACS Midland Local Section and their immediate families. Children under age 12 may be restricted from certain portions of the trips, and young children are welcome but are not included in the programming.

The three themed days of planned programming and their tentative order is listed here:

Friday, July 29 – Garden Island & Lake Michigan

Lakes and water sources of this uninhabited island just north of Beaver Island

- Small watercraft trip to Garden Island, inland hike to lake and other sites
- CMUBS analytical laboratory instrumentation tour
- Lake Michigan water quality and sampling (Emerald Isle Ferry) presentation
- *Evening adventure:* Harbor cruise aboard *The Resolute* (additional fees apply)

Saturday, July 30 – South Beaver Island

Lakes, marshes, creek, and bays of the low population density and diverse water systems

- Lake Geneserath, Fox Lake, Miller's Marsh, Iron Ore Bay & Creek
- Side explorations may include the south light house, a short hike, exploration of native snake populations, and other island iconic sites
- *Evening adventure:* Stories, wildlife, and adventures of Barney's Lake & Protar's Tomb

Sunday, July 31 – North Beaver Island

Water quality of developed use areas of Beaver Island in and around St. James

- Water chemistry of golf courses (additional fees apply)
- Font Lake and the harbor
- Water chemistry of brewing
- Side explorations may include hiking up Mount Pisgah, CMUBS Boat House (formerly US Coast Guard), Harbor Light, Gull Harbor, and other iconic sites
- *Evening adventure:* BBQ and bonfire at CMUBS

Room and board are being offered at cost to participants (\$50-\$70 per person per day). This water quality excursion is an ACS volunteer opportunity. CMUBS is an active Great Lakes research facility that is allowing us the opportunity to do mission-aligned volunteering in water quality chemistry outreach.

Early registration ends May 31 as space is limited and lodging will be assigned on a first come, first served commitment! **Registration will continue until July 15 as space permits.** Contact Dale LeCaptain at dale.lecaptain@cmich.edu for more details and sign-up information.

Please Consider the Midland ACS Scholarship Fund in Your 2022 Giving!

Gina Malczewski, Director and Scholarship Committee, Midland Section ACS

Last year in May, **Dr. Wendell and Marcia Dilling** (photo at right) issued a challenge relative to growing the Midland ACS Scholarship Fund. **Few have responded to that call so far, and the fund today currently stands at just over \$72,000.** Please read more below about the history and purpose of this fund. Past scholarship recipients are often highlighted in issues of the *Midland Chemist*.



The Midland Section ACS has been proud to offer scholarships to deserving undergraduate students majoring in a chemical science since 2002. Annually, two to four scholarships are awarded to candidates who have graduated from a high school in one of the Section's five counties (Bay, Midland, Saginaw, Isabella, and Gratiot), are studying at a Michigan university, and are ideally intending to pursue a career in some aspect of chemistry or chemical engineering. Selections are made by a committee and are based on academics, service and extracurricular contributions, and an essay on the student's sources of motivation as well as future plans.

Awards usually range from \$1,000-2,000, depending on the financial performance of the Midland ACS Scholarship Fund (#399) administered through the Midland Area Community Foundation. A long-standing goal of the Section has been to raise the base amount to \$100,000 to serve more students.

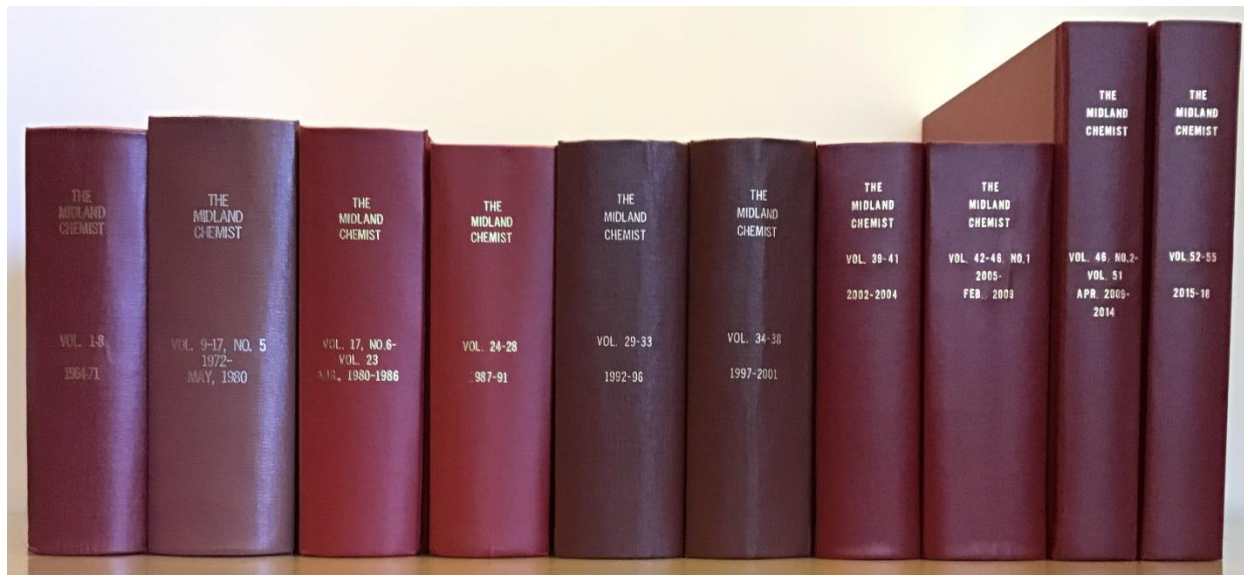
Wendell and Marcia Dilling, both trained chemists and stalwart supporters of our Local Section, are prepared to help us reach that goal by donating up to \$18,000 as part of a Challenge Grant to the Scholarship Fund, which currently stands at \$72,100. **They will match 1:1 any new contributions to the fund at the Midland Area Community Foundation over the next couple of years ($\$18,000 \times 2 + \$72,100 = \$108,100$).**

Please consider contributing to this worthwhile cause. **Your donations will help shape the future of chemistry!** If you have any questions about contributing to the Midland ACS Scholarship Fund, please call the Midland Area Community Foundation at 989-839-9661. Thank you.

An online donation form can be found through the following link:

[Midland Section American Chemical Society Endowed Scholarship Fund #399](#)

In Past Issues of *The Midland Chemist*
Wendell L. Dilling, Director and Historian, Midland Section ACS



From these volumes . . .

50 Years Ago, *The Midland Chemist* 1972, 9, No. 5, 3.

In *Midland Macromolecular Institute* by Hans-Georg Elias: “After consultation with the Advisory Council and many other leading polymer scientists, the Michigan Foundation for Advanced Research decided to set up the Midland Macromolecular Institute (MMI) as an open national laboratory dedicated to the advanced training of scientists mainly on the post-doctoral level. It was hoped that MMI could help strengthen ties between academe and industry by either providing research facilities for industrial and university scientists on sabbatical leave or by cooperative research programs.”

40 Years Ago, *The Midland Chemist* 1982, 19, No. 5, 20.

In *Welcome To The 14th CRM Participants! Greetings:* by William G. Milliken: “It gives me great pleasure to extend my personal and official welcome to the participants in the 14th Central Regional Meeting of the American Chemical Society, June 16-19 in Midland.

The work of the 120,000 chemists and chemical engineers of the American Chemical Society plays a vital role in our country’s progress in research, education, science and technology. Michigan is proud to host your regional meeting where you will have the opportunity to hear an outstanding group of keynote speakers.

Please accept my best wishes for an enjoyable and productive meeting.

Kind personal regards.

Sincerely,

William G. Milliken”

30 Years Ago, *The Midland Chemist* 1992, 29, No. 4, 9-10.

In “*Chairman*” Sits on “*Chair*” – *The National Dictates* by Paul R. Jones, Chairman National ACS Committee on Constitution and Bylaws (4-2-91): “The Committee on Constitution and Bylaws has addressed the question (of ‘nonsexist’ or ‘gender-neutral language’) on a number of occasions and, as yet, has not established a consensus on how to resolve the problem. The difficulty is compounded by the derivation and strict meaning of the words involved which form an integral part of discussions on the subject. The confusion arises from how to use the term the chair, which refers to an office or a person currently presiding at a meeting and NOT to the individual who holds that office; and the term chairman, which means the person who occupies the chair. The man in chairman, human, woman, mankind, and many other compound words means person and is derived from the Sanskrit manus meaning human being, with no implication of gender. The usage is much in the sense of the modern German Mann, man, or Mensch, all of which mean one, people, they, or (a) person(s). The word “woman” is the contraction of “wif-man” meaning the “she-person.” Thus the terms “chairman” and “chairperson” are synonymous.”

20 Years Ago, *The Midland Chemist* 2002, 39, No. 4, 16.

In *New Chemistries, Polylactic Acid (PLA)* by David Baker: “Polylactic acid (PLA) is a new resin derived from lactic acid, which is obtained from the fermentation of corn sugars. The production of this resin is being developed by Cargill Dow, a joint venture between The Dow Chemical Company and Cargill Incorporated. A new production plant in Blair, Nebraska, was opened in early 2002 to manufacture these resins from readily available corn supplies. The PLA is produced under the trademark Natureworks. The website states “Natureworks fibers are the first fibers to have the feel of nature with the performance of synthetics.” Early last year Cargill Dow signed a collaboration agreement with Mitsui Chemicals to develop new applications for these biodegradable polymers. Currently PLA is being blended with cotton for clothing in Japan. When used for packaging, this plant-derived polymer is fully degradable.”

10 Years Ago, *The Midland Chemist* 2012, 49, No. 3, 7.

In *Fireworks Science Café on June 25* by Gina Malczewski, Chair: “A science café on fireworks is being held at MCFTA at 8 p.m. on June 25 (June 27 is the rain date). Jim Malek, a certified pyrotechnician, former chemist at Dow Corning, and member of the National Fireworks Association, who has worked on fireworks for Bay City, Midland, and the Loons, is our featured speaker.

You MUST pre-register after June 1-tickets will be limited to the first 110 people. The event is FREE and includes a presentation AND fireworks outside afterward!

A new law takes effect in Michigan this year, increasing public access to many kinds of fireworks-we encourage you to learn more about their construction, chemistry, and safety.”

Upcoming Dates, Events, and Other Updates

- June 6 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, MSU St. Andrews, Midland (in person), and via a WebEx conference call connection at [Webex Board Meeting - June 2022](#), Meeting number: 2651 874 4771, or by phone at Phone number: 650-215-5228, Access code: 2651 874 4771.
- June 7 (9:00 AM – 5:00 PM) – Turner J. Alfrey Visiting Professor Lectureship Series, featuring Guest Lecturer Christopher K. Ober of Cornell University, MSU St. Andrews, Midland. Dr. Ober and his associate will discuss topics in controlling polymer structure at nanometer-length scales. Free event, but [registration](#) is required no later than Friday, June 3, 2022. For more information, please contact Clare Light at lightcla@msu.edu.

- June 7–10, 2022 – Central Regional Meeting of the American Chemical Society, *Archaeometry to Zymurgy*, Ypsilanti, MI. For more information, visit [2022 Central Regional Meeting](#).
- June 23 (5:00 PM to ??) – 2nd Annual Trivia Night in the Park event, Emerson Park, Shelter D, Midland. Networking and BBQ start at 5:00 PM, Teams Trivia starts at 6:00 PM. Admission is free, but please RSVP on Facebook at <https://fb.me/e/3AWvUA9dT> so that adequate food can be prepared. For more information, please contact Anne-Catherine Bedard at diversity@midlandacs.org.
- July 29–31 (Friday to Sunday) – Three-day, ACS Member Volunteer / Beaver Island Multi-Day Experience – water quality testing, volunteer adventure, and camping excursion for families. See the article on page 16 for more information. Contact Dale LeCaptain at dale.lecaptain@cmich.edu for more details and sign-up information.
- August 1 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, MSU St. Andrews, Midland (in person), and via a WebEx conference call connection at [Webex Board Meeting - August 2022](#), Meeting number: 2651 874 4771, or by phone at Phone number: 650-215-5228, Access code: 2651 874 4771.
- August 21-25, 2022 – ACS Fall 2022 National Meeting and Exposition, Chicago, IL. This meeting is being planned as an in-person and virtual hybrid meeting. Meeting theme: *Sustainability in a Changing World*. For more information, please see [ACS Meetings & Expositions - American Chemical Society](#).
- September 12 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, MSU St. Andrews, Midland (in person), and via a WebEx conference call connection at [Webex Board Meeting - September 2022](#), Meeting number: 2651 874 4771, or by phone at Phone number: 650-215-5228, Access code: 2651 874 4771. **Please note: This Board meeting is being held on the second Monday of September, not the usual first Monday of most months due to the Labor Day holiday.**
- October 3 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, MSU St. Andrews, Midland (in person), and via a WebEx conference call connection at [Webex Board Meeting - October 2022](#), Meeting number: 2651 874 4771, or by phone at Phone number: 650-215-5228, Access code: 2651 874 4771.
- November 3 (Save the Date) – Midland Section ACS Diversity & Inclusion Committee program, *A Day in the Life of an Industry Scientist*, Midland Center for the Arts, an event in partnership with the University of Michigan (Flint) and Kettering University. For more information, please contact Anne-Catherine Bedard at diversity@midlandacs.org.
- November 5 (Save the Date) – 2022 Midland Section ACS Fall Scientific Meeting. Location, time, and other details to follow. For more information, please contact Hari Katepalli, ACS Fall Scientific Meeting Committee Chair at fsm@midlandacs.org.
- November 7 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, MSU St. Andrews, Midland (in person), and via a WebEx conference call connection at [Webex Board Meeting - November 2022](#), Meeting number: 2651 874 4771, or by phone at Phone number: 650-215-5228, Access code: 2651 874 4771.
- December 5 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, MSU St. Andrews, Midland (in person), and via a WebEx conference call connection at [Webex Board Meeting - December 2022](#), Meeting number: 2651 874 4771, or by phone at Phone number: 650-215-5228, Access code: 2651 874 4771.



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