

THE MIDLAND CHEMIST

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April Board Meeting Held at CMU

Wenyi Huang, Chair, Midland Section ACS



We will host our April Board Meeting with the Student Chapter at Central Michigan University on April 9th, 2018. The planned schedule is as follows.

5:30–6:50 PM: Pre-meeting Network Pizza Session sponsored by the CMU ACS student affiliate group at The Cabin, 930 W. Broomfield Street, Mount Pleasant.

7:00–8:00 PM: Monthly Board Meeting, Room 108 at Dow Science Building, CMU, 203 Ottawa Court, Mount Pleasant. Call-in is available via [WebEx](#).

Thank you and look forward to seeing you at CMU!

Congressman John Moolenaar Reception, April 23
Amanda Palumbo, Chair-Elect, Midland Section ACS

You are invited

To a reception featuring

Congressman John Moolenaar



An Overview of the Congressional Chemistry Caucus
Where Chemistry and Policy Meet

**Opening remarks by A.N. Sreeram, senior vice president and
chief technology officer of the Dow Chemical Company**

Monday, April 23

5:30 – 6:00 PM Reception

6:00 – 7:00 PM Program

7:00 – 7:30 PM Networking

Event Details

H Hotel, HH Dow Academy Room

Heavy hors d'oeuvres

Cash bar

Register [here](http://www.midlandacs.org) or at <http://www.midlandacs.org> SignUp

Registration fee \$5.00; Students with valid ID will be refunded

Event limited to first 100 people

Sponsored by the Midland Section of the American Chemical Society



Michelle Rivard Receives 2018 National Chemical Technician Award from ACS



Midland native Michelle Rivard, a senior research and development technologist at The Dow Chemical Company, is the recipient of the 2018 National Chemical Technician Award (NCTA) from the American Chemical Society. The NCTA honors excellence and professionalism among technicians, operators, analysts, and other applied chemical technology professionals.

“Dow’s chemical technologists are key contributors to our innovation engine and R&D organization, with skills that help us design superior solutions for customers using rigorous science,” said A.N. Sreeram, senior R&D vice president and chief technology officer. “Michelle has a proven track record of exceptional leadership and technical expertise. We are pleased she has been recognized by ACS and congratulate her on this accomplishment.”

The award, presented by the ACS Committee on Technician Affairs (CTA), was established in 1989 to recognize the outstanding career achievements of exceptional technicians, says Dr. Aimée Tomlinson, CTA chair. “Michelle joins a group of NCTA winners who have made significant contributions to the field of chemistry not only through their technical achievements, but also by demonstrating excellence in other areas, including leadership, mentoring, publications, patents, and community outreach.”

During her career, Rivard has become a silicone-materials measurement science expert, mastering analytical characterization techniques including gas chromatography and Brunauer Emmet and Teller. Based in Midland, Michigan, she is active in the American Chemical Society and motivates the community through STEM outreach. In 2017, she spent more than 200 volunteer hours inspiring the next generation of scientists.



“I like to think that my love of chemistry is infectious, and nothing brings me greater joy than translating that passion into real impact at Dow and in the local community,” said Rivard. “For me, being a chemist isn’t just a ‘day job.’ When I’m not in the lab, I love to be an advocate for chemical technology to the next generation.”

Rivard was presented with a crystal plaque during a luncheon held in her honor on Sunday, March 18, 2018, during the American Chemical Society national meeting in New Orleans.

Editor’s note: This news release was provided by The Dow Chemical Company. Pictured with Michelle in the luncheon photos are Dr. Aimée Tomlinson, CTA chair, and Dr. Peter Dorhout, ACS president.

Dive into Marine (and Great Lakes) Chemistry for Earth Day!

Gina Malczewski, Director, Midland Section ACS

Do you or your family enjoy getting your hands “wet” doing experiments, or do you prefer drawing and poetry? Is a speaker your preference? During the month of April there will be several opportunities for you to celebrate Earth Day with ACS, doing each of these!

This is the 15th year of a national ACS celebration of Earth Day, and officially the fun is part of the newly christened “CCEW” – Chemists Celebrate Earth WEEK. Our local version of the National ACS illustrated poem contest for grades K-12 is up and running. Contest rules and details are available in the flyer within this issue; entry forms are available from Gina Malczewski (reginamalczewski@gmail.com). Three judges will determine top entries in each category (K-2, 3-5, 6-8, and 9-12); these will be displayed by the **Little Theatre at the Midland Center for the Arts** during the **Earth Day Expo 10 AM – 2 PM on April 21**. The winner in each category will be sent to the National contest, where first and second places in each group will receive \$300 and \$150, respectively.

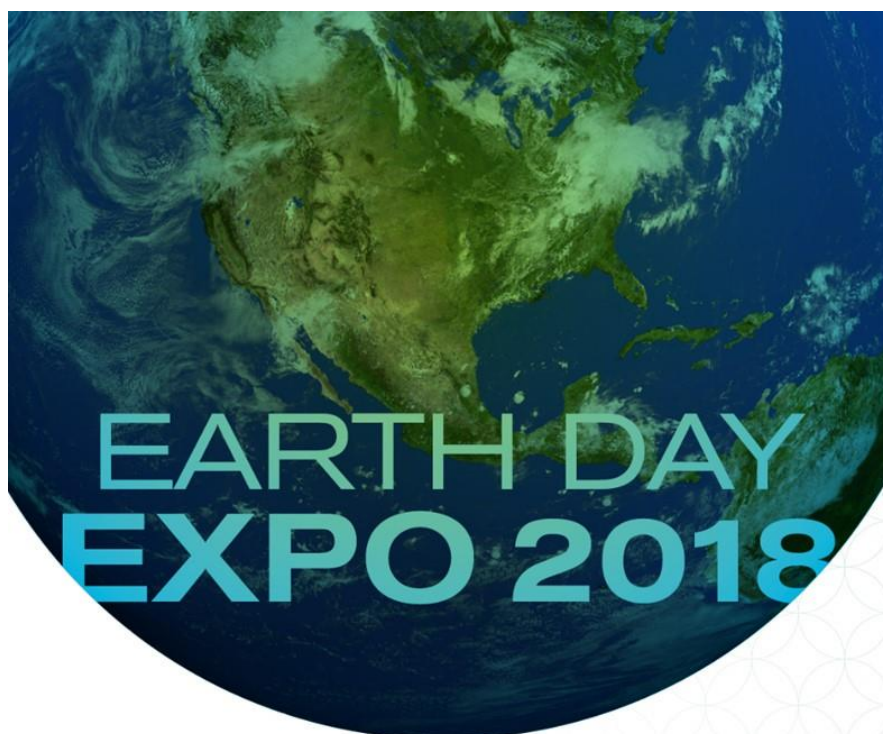
The expo is FREE and takes place in the MCFTA lobby; there will be a variety of “green”-inspired activities from local organizations, including hands-on experiments at the ACS booth (“Sea Science”). After the expo there will be a lecture from **Lt. Michael Doig of the National Oceanic and Atmospheric Agency (NOAA)** on Great Lakes spill responses—please see the poster in this issue for details.

We will also display the notable contest entries at **Creative 360 (1517 Bayliss Street in Midland)** from May 1 to May 3. On **May 1, Dr. Andy Jorgensen** will give an interactive talk on climate change at Creative 360 (see poster in this issue for details), and Midland Recyclers will provide information about recycling. There will be a reception with light snacks for the contest participants. Families are welcome! On **May 3** (also at Creative 360) we are planning a repeat of the recycling talk and a speaker on Science Ethics geared to adults—stay tuned for details!

Additional information should be available soon; Gina Malczewski can be contacted if you have questions. **Join us for lots of science and loads of fun as we celebrate our planet!**

Earth Day Expo at Midland Center For the Arts, April 21

Gina Malczewski, Director, Midland Section ACS



APR 21 / 10 AM – 2 PM

MIDLAND CENTER FOR THE ARTS

FREE! Over 15 organizations
offering kid-friendly activities
and hands-on experiments.



MIDLAND
CENTER
FOR THE
ARTS



midlandcenter.org
midlandacs.org

2018 Chemists Celebrate Earth Week K-12 Illustrated Poem Contest, April 14 Deadline
Gina Malczewski, Director, Midland Section ACS

2018 CCEW Illustrated Poem Contest
Theme: "Dive into Marine Chemistry"

The Midland Local Section of the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in **Kindergarten through 12th grade**.

Contest Deadline: April 14, 2018: bring your school's entries to the **Community Room at Grace A. Dow Library** in Midland (or make other arrangements with contact below). Top entries in each category will be **displayed at the Midland Center for the Arts on 4/21**.

Local Prizes will be awarded to top four in each age group: grades K-2, 3-5, 6-8 and 9-12; winning art will be further displayed in the gallery at Creative 360 (1517 Bayliss St, Midland) May 1 - May 3. A reception open to the public will be held at Creative 360 (with a presentation from Midland Recyclers) on May 1 at 6:30 pm.

National ACS prizes in each category are" \$300 for 1st place and \$150 for 2nd

Contact: reginamalczewski@gmail.com

First place winners of the Midland Local Section's Contest will advance to the National Contest for a chance to be featured on the ACS website and win the cash prizes above!

What to do: Write and illustrate a poem using the CCEW theme, "Dive into Marine Chemistry." Your poem must be no more than 40 words and in the following styles to be considered:

HAIKU - LIMERICK - ODE - ABC POEM - FREE VERSE - END RHYME - BLANK VERSE

Possible topics related to marine chemistry include:

Alginate	Coral	Bioluminescence	Brine
Salinity	Seaweed	Thermal Vents	Oil Spill

Entries will be judged based upon:

Artistic Merit - use of color, quality of drawing, design & layout
Poem Message - fun, motivational, inspiring about yearly theme
Originality Creativity - unique, clever and/or creative design
Neatness - free of spelling and grammatical errors



Contest rules:

- Poems must conform to a particular style. No poem may be longer than 40 words.
- The topic of the poem and the illustration must be related to the yearly CCEW theme.
- All entries must be original works without aid from others.
- Each poem must be submitted and illustrated on an unlined sheet of paper (of any type) not larger than 11" x 14". The illustration must be created by hand using crayons, watercolors, other types of paint, colored pencils, or markers. The text of the poem should be easy to read and may be printed with a computer before the hand-drawn illustration is added, or the poem may be written on lined paper which is cut out and pasted onto the unlined paper with the illustration.
- Only one entry per student will be accepted.
- All entries must include an entry form.
- All illustrated poems and/or digital representations of the poems become the property of the American Chemical Society.
- Acceptance of prizes constitutes consent to use winners' names, likenesses, and entries for editorial, advertising, and publicity purposes.

NOAA Seminar – Speaker Lt. Michael Doig: Guarding the Great Lakes, April 21
Gina Malczewski, Director, Midland Section ACS

The Midland Section of the American Chemical Society presents:



Guarding the Great Lakes: *The Science of Spill Response*

Lt. Michael Doig
National Oceanic and Atmospheric Administration

**Midland Center for the Arts Lecture Room
1801 W. St. Andrews Rd., Midland, MI 48640
2:30-4:00 pm Saturday 4/21/18**

FREE

Targeted to ages 13 and up

The Great Lakes collectively make up the largest body of fresh water on the planet. They contain 21% of the world's surface fresh water by volume. The Lakes are an important source of drinking water, provide habitat for thousands of plants and animals, and are essential to the economy.

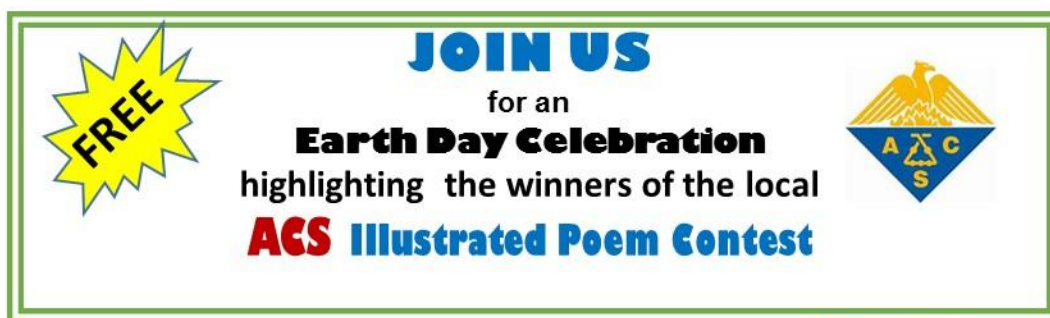
The release of oil and chemicals into the Great Lakes is a major problem. Spills can destroy habitat, contaminate the food chain, and harm wildlife. Spills also wreak havoc on the economies of nearby communities by forcing the closure of fisheries, driving away tourists, or shutting down navigation routes.

When dealing with oil and chemical spills, there are many questions that need answered. What was spilled? Where is the spill likely to travel in the water? How is the local environment affected now—and how might it be affected down the road? What's the best way to clean up the spill? How will balance be restored to the environment after the damage has been done?

NOAA brings scientific expertise to the table to help answer these questions.



Earth Day Celebration – Featured Speaker Dr. Andy Jorgensen: Global Climate Disruption, May 1
Gina Malczewski, Director, Midland Section ACS



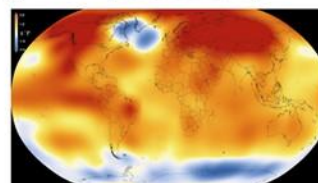
Featured Speaker

Dr. Andy Jorgensen

- Associate Professor Emeritus of Chemistry
University of Toledo
- Senior Fellow, National Council for Science and
the Environment



Global Climate Disruption: How Do We Know? What Can We Do?



<http://data.giss.nasa.gov/gistemp/maps/>

Climate change is a very intense topic which finds its way into political, business and social conversations, often with vocal disagreement among participants. This presentation will give background information about the phenomenon and methods which have been used to characterize these changes. The human dimension of the problem will be emphasized. We will then consider solutions to the problem. Participants will be able to share their views using personal response devices and to compare their replies to those of more than 5,000 members of previous audiences.

Also: important information from the **Midland Recyclers!**

Target audience: Families; children grades 5 and above

Light snacks provided



6:30-7:30 pm May 1, 2018

Creative 360 1517 Bayliss St. Midland, MI 48640


Jeremiah A. Johnson to be the 2018 Turner J. Alfrey Visiting Professor, May 23 and 24
Melanie Kauffman, Sr. Communications Manager, Michigan State University

We are pleased to announce that Jeremiah A. Johnson from MIT will be the Turner J. Alfrey visiting professor for 2018. He will speak at MSU St. Andrews on May 23 and 24. This is a free event, but we ask that attendees register via Event Bright ([EventBrite JeremiahJohnson](https://www.eventbrite.com/e/jeremiah-johnson-lecture-tickets-35444444444)) so that we can plan on seating and refreshments. If we exceed our capacity, we may move across the street to Midland Center for the Arts.

**Precision in macromolecular synthesis: when, where,
and how much do the details matter?**

Professor Jeremiah A. Johnson
Department of Chemistry
Program for Polymer and Soft Matter
Massachusetts Institute of Technology

May 23-24, 2018—9 AM to 4 PM
Event is complimentary but please register
your attendance by May 11 at
<https://johnson-lecture.eventbrite.com>



MSU St. Andrews is pleased to host the Turner J. Alfrey visiting professorship series on May 23 and 24. Johnson will provide four workshops with discussion, two in the morning and two in the afternoon, on each day.

Motivated by nature, polymer chemists have long sought methods and strategies for the synthesis of macromolecules with precise structures. Existing approaches typically require a trade-off between structural control and atom economy/scalability. Seeking more efficient strategies, and driven by specific functional targets, Johnson's team has developed approaches that simultaneously offer enhanced precision and efficiency in a variety of contexts. This symposium will highlight several of these efforts, which include:

- Iterative exponential growth plus sidechain functionalization (IEG+);
- Brush-first ring-opening metathesis polymerization;
- N-heterocyclic carbene surface anchors;
- photo-redox catalyzed growth, and network disassembly spectrometry.

The advantages of these approaches for achieving new or otherwise difficult-to-access functions will be discussed in the broader context of precision in macromolecular synthesis.



MSU St. Andrews
MICHIGAN STATE UNIVERSITY

1910 W. St. Andrews, Midland, Michigan

MSU St. Andrews High School Summer Internship Programs Application Open, April 15 Deadline
Melanie Kauffman, Sr. Communications Manager, Michigan State University

Research@MSU

STEM & STEAM (New) Internships for Summer 2018

See additional information in the flyers on the following pages of this newsletter.

Full details on the programs and application forms may be found at the MSU St. Andrews page at:
<http://research.msu.edu/internship-application-2018/>

The internship is an eight-week, 40 hours per week, paid internship at \$11 per hour, running from June 25, 2018, through August 17, 2018.

MSU St. Andrews is located at 1910 West St. Andrews Road, Midland, MI 48640.

Application deadline is April 15, 2018.

Selected participants will be notified May 11, 2018.

Eligibility

Current high school juniors who (a) will be seniors in fall 2018, (b) are able to commute daily to MSU St. Andrews in Midland, and (c) are able to commit to missing no more than one week of the program due to other obligations are eligible to apply. **Students are welcome to apply for either or both programs.**

Program 1 – STEM Internship

Two groups of STEM interns will be appointed in 2018. Selected participants will be offered either:

- (i) the opportunity to be mentored by MSU scientists on potentially publishable research projects in chemical and material sciences, or
- (ii) the opportunity to learn a modern computer coding language (such as Python) and develop a game, artificial intelligence, or robotics-related application.

The precise number of participants in each group will be determined by student interests (as expressed in the applications), Ph.D. mentor availability, and funding availability. In 2017, 28 interns participated, and the working estimate for 2018 is **approximately 45 interns**, of whom roughly two-thirds would be in the coding group.

Among the 2017 cohort, two MSU St. Andrews interns became National Finalists in the Siemens Competition in Math, Science, and Technology. MSU St. Andrews staff are supportive of interest in it, and also the Intel International Science and Engineering Fair, but such participation is not a requirement of the internship program.

Program 2 – New STEAM Writing Internship

MSU St. Andrews supports the national effort to broaden STEM to STEAM: Science, Technology, Engineering, Arts, and Mathematics. The MSU St. Andrews Summer Writing Internship is designed to expand and enhance abilities to communicate via the written word. This internship will complement the existing STEM summer internship program at the MSU St. Andrews facility by integrating a focus on the arts. It is estimated that six to ten students will be accepted for the writing internship program.

Please contact Melanie Kauffman at (517) 432-4499 or kauffm59@msu.edu with any questions or for further information.

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities without regard to race, color, gender, religion, national origin, political persuasion, sexual orientation, marital status, disability, height, weight, veteran status, age or familial status.

Accommodation for persons with disabilities may be requested by contacting Melanie Kauffman (517) 432-4499 within two weeks of any event. Requests received after this date will be honored whenever possible.

MSU St. Andrews High School Summer STEM Internship Program Flyer
Melanie Kauffman, Sr. Communications Manager, Michigan State University



MSU St. Andrews
MICHIGAN STATE UNIVERSITY

STEM Summer Internship 2018

Application Deadline – April 15, 2018

Participant selection notification – May 11, 2018

The STEM Internship is a paid opportunity for high school juniors (entering their senior year in 2018) to be mentored by MSU scientists in chemical and material sciences or learn a modern computer programming language.

The internship is paid \$11 an hour, is eight weeks long, 40-hours per week, and runs from June 25 to August 17, 2018.

Selected applicants will have the opportunity to work on one of the following projects, based on their selected interest during the application process:

- Battery – New compounds that prevent overcharging of lithium batteries or permit development of novel liquid batteries
- Water – Water Purification: Removal of fluoride and other natural contaminants from drinking water using technology that does not require electricity
- Hydrolysis – Polymer intra-conversion via hydrolysis for gene transfection applications
- Acids – Organic chemistry: Evaluation of various Lewis acids for their ability to catalyze specific reactions
- Miticides – Saving honey bees from varroa mites with controlled-release miticides: New delivery technology
- Bees – Saving honey bees from varroa mites with controlled-release miticides: Bee survivability in the presence of miticides
- Sensors – Designing sensors and fabrication with 3D printing technology: Environmental chemicals
- 3D Print – 3D printing and characterization of novel composites containing carbon nano-particles
- Chromatography – Organic compound purification and catalysis: Using novel purification techniques to purify an organic compound and determine effect on a catalyst
- Programming 1 – Computer programming with focus on interactive games
- Programming 2 – Computer programming with focus on Bayesian statistical analysis
- Programming 3 – Computer programming with focus on RFID/barcode logistics support application

Apply online at <http://research.msu.edu/internship-application-2018/>

Please share this internship opportunity with potential applicants!

Interested students and teachers may contact Melanie Kauffman at (517) 432-4499 or kauffm59@msu.edu for further information.

MSU St. Andrews is located at 1910 West St. Andrews Rd, Midland, MI, 48640

Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities.



MSU St. Andrews
MICHIGAN STATE UNIVERSITY

Summer 2018 “STEAM” Writing Internship

Application Deadline – April 15, 2018

Participant selection notification – May 11, 2018

MSU-St. Andrews supports the national effort to broaden STEM to STEAM: Science, Technology, Engineering, Arts and Mathematics. The MSU-St. Andrews Summer Writing Internship is a paid opportunity for high school juniors (entering the senior year in fall 2018), designed to expand and enhance their ability to communicate via the written word. This internship will complement the existing STEM summer internship program at the MSU-St. Andrews facility by integrating a focus on the arts.

Selected applicants will have the opportunity to learn and gain experience in the following writing areas, with some STEM focus in each case:

- Creative fiction
- Creative non-fiction
- Writing for business
- Persuasive writing
- Reporting and journalistic writing
- Writing for publication and presentation

The internship runs from **June 25 to August 17, 2018**, 40 hours per week, and interns will be paid \$11 per hour. A publication incorporating selected work from student projects over the summer will be assembled and copies made available to interns as a product of their summer experience.

To apply, please visit <http://research.msu.edu/internship-application-2018/>

Please share this internship opportunity with potential applicants!

Interested students and teachers may contact Melanie Kauffman at (517) 432-4499 or kauffm59@msu.edu for further information.

MSU St. Andrews is located at 1910 West St. Andrews Rd, Midland, MI, 48640

Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities.

Last Call for 2018 Spring Awards Nominations and Banquet Reservations

Diana Deese, Awards Committee Chair, Midland Section ACS

I am hoping that everyone who contacted me was able to get their nominations in for the 2018 Teaching, Volunteer, Education, and Chemical Sciences Awards by the April 1st deadline.

Nominations were invited for the following areas:

- Outstanding Elementary Level Science Teaching
- Outstanding Middle Level Science Teaching
- Outstanding High School Chemistry Teaching
- Outstanding College Chemistry Teaching
- Science Education Volunteer of the Year
- Outstanding Achievement and Promotion of the Chemical Sciences
- Outstanding Service to the American Chemical Society
- Outstanding Chemical Technician

Outstanding High School / College Chemistry Students

The Awards Committee also recognizes outstanding chemistry students at the high school and collegiate levels. Those students should be selected by their respective departments, and their names forwarded to the Awards Committee using the form emailed to the department contact. One selection per school; no supporting letters needed. Deadline for submission is **April 10, 2018**.

Award recipients as well as Chemistry Olympiad winners and Fifty/Sixty/Seventy Year ACS Members will be honored at the 2018 ACS Spring Recognition Dinner at the Great Hall and Convention Center, in Midland, on Wednesday, May 2, 2018 featuring guest speaker, Dr. Robert Y. Ofoli, Associate Professor, Chemical Engineering and Materials Science, Michigan State University.

(Electronic submissions are acceptable and preferred.)

Phone: (989) 636-9915, E-mail: awards@midlandacs.org or dkdeese@dow.com

For a list of ACS National Awards and local award recipients from prior years, see the January issue of the Midland Chemist.

As always, contact me if you have any questions! I hope to see everyone on May 2nd!

ACS Spring Awards Recognition Dinner – RSVP Deadline, April 20
Diana Deese, Awards Committee Chair, Midland Section ACS

ACS Recognition Dinner

Wednesday, May 2, 2018, 5:30 p.m. to 9:00 p.m.

Great Hall Banquet & Convention Center at Valley Plaza Resort
5121 Bay City Road, Midland, Michigan

Program:

5:30 p.m. Cash Bar and Social Time

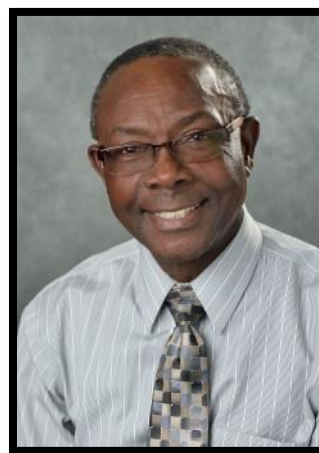
6:00 p.m. Dinner

7:00 p.m. Awards Presentations

Educators, students, ACS, industry colleagues, and 50-, 60-, 70-year ACS members/retirees will be recognized for their outstanding achievements at this 27th annual event. Our special guest speaker will be Dr. Robert Y. Ofoli, Associate Professor, Chemical Engineering and Materials Science, Michigan State University. Mark your calendar and join us in support of our award recipients, to connect with colleagues, or just to mingle with a diverse group of people passionate about science!

The cost of the dinner is \$16.00 per person and includes a plated chicken dinner, dessert, and beverage. A pre-dinner cash bar will be available. Your dinner reservation request must be received by April 20, 2018.

Payment options will be via the ACS Midland Section website www.midlandacs.org and using the SignUpGenius button to RSVP and conveniently pay ahead of time, at the door, or by mail using the address indicated below. Dress is business casual. This event is sponsored by the Midland Section of the American Chemical Society. For further information, contact Diana Deese at (989) 636-9915.



To reserve your spot by mail, return this form with payment (\$16.00/person) by **April 20, 2018**, to Diana Deese, The Dow Chemical Company, 1897 Building, E-bay East: E65, Midland, MI 48667, or RSVP via e-mail to dkdeese@dow.com. If paying at the door, you must still RSVP to Diana by April 20.

Name(s): _____

Affiliation: _____

Address: _____

Phone/E-mail: _____

ACS member? Yes / No (indicate by circling your member status)

Dietary Considerations: _____

Enclose payment of \$16.00 per person. Checks should be made payable to "Midland Section ACS".

Chemists Without Borders Sierra Leone Chemistry Education Project

Ronda Grosse, Board Member, Chemists Without Borders

Sierra Leone, Africa faces challenges that are incomprehensible to most people living in developed countries. The electricity is still unreliable in some parts of the country, and non-existent in the villages. More pertinent, the classrooms have very little in terms of equipment and supplies. Although students are required to purchase their textbooks, many cannot afford to do so and therefore students copy notes from the chalkboard and imagine or draw their chemistry experiments.

A Chemists Without Borders' team, led by Dr. Bakarr Kanu at Winston-Salem State University, has been developing green chemistry laboratory experiments to support introductory chemistry for high schools and first-year college courses in Sierra Leone. Joan McMahon, Victor Atiemo-Obeng, and Ronda Grosse from the Midland ACS section are part of this team. Our approach has been to assemble inexpensive lab kits focusing on experiments relevant to Sierra Leone and other developing countries. In addition to standard experiments that will help students understand basic chemical concepts, the laboratory exercises are unique in that they also focus on the application of chemistry towards practical knowledge relevant to the lives of Sierra Leoneans.

One of the chapters in the recent ACS published book is about this project (Sedwick et al., *Mobilizing Chemistry Expertise to Solve Humanitarian Problems*, Volume 2, Chapter 2: Developing Microchemistry Education Kits for Sierra Leone; ACS e-book Series 1268 (2017) 5-19, DOI: 10.1021/bk-2017-1268.ch002). We are in the process of assembling 15 lab activity kits to be ready for use by the end of 2018. Upon implementation, we anticipate the kits to service between 200–500 teachers and students, covering approximately 50 schools in Sierra Leone annually. Our long-term goal is to expand and adapt these resources to other countries facing similar situations. Fundraising for this important project continues. If you are interested in contributing in this way, or technically, your help would be greatly appreciated! Please contact us via email: bakarrkanu@chemistswithoutborders.org or rondagrosse@chemistswithoutborders.org.



Photos provided by Ronda Grosse

Midland Section Has Hosted Outstanding Fall Scientific Meeting Keynote Speakers

Wendell L. Dilling, Historian and Director, Midland Section ACS

For 73 years the Midland Section has sponsored an outstanding annual meeting, the Fall Scientific Meeting (FSM). Originating in 1945, the 75th meeting is scheduled for the Section's centennial year, 2019. The longevity of this meeting attests to the value ACS members have placed on this meeting. Highlights of the history of this meeting were reported in its 50th year in *The Midland Chemist*, **1994**, 31, No. 6 (Sept. 23), 11-18 (see also <http://www.midlandacs.org/scientific-meetings/>).

One of the quality aspects of these meetings has been the keynote speakers. These included three Nobel Prize winners including one who would become a Nobel Prize winner and eleven who had been, were, or would become ACS Presidents. The three Nobel Prize winners are listed in Table 1.

Table 1. Nobel Prize Winners and Fall Scientific Meeting Keynote Speakers

	<u>FSM Keynote Speaker Year</u>	<u>Nobel Prize Year</u>
Melvin Calvin	1963	1961
Herbert C. Brown	1964, 1986	1979
Roald Hoffmann	1992	1981

Melvin Calvin was a Professor of Chemistry at the University of California and a consultant for The Dow Chemical Company. His FSM keynote topic was "Chemical Evolution."

Herbert C. Brown, a Professor of Chemistry at Purdue University was a FSM keynote speaker on two occasions. In 1964 he spoke on "An Academic View of Industrial Research" and in 1986 he spoke on "Asymmetric Syntheses via Chiral Organoboranes."

Roald Hoffman, a Professor of Chemistry at Cornell University, spoke on "Molecular Beauty."

The eleven ACS Presidents are listed in Table 2.

Table 2. ACS Presidents and Fall Scientific Meeting Keynote Speakers

	<u>FSM Keynote Speaker Year</u>	<u>ACS Presidential Year</u>
Edgar C. Britton	1951	1952
Albert L. Elder	1960	1960
Melvin Calvin	1963	1971
William J. Sparks	1965	1966
W. Albert Noyes, Jr.	1969	1947
Anna J. Harrison	1977	1978
Fred Basolo	1987	1983
Bassam Z. Shakhashiri	1991	2012
Ronald Breslow	1996	1996
Attila E. Pavlath	2000	2001
Catherine T. (Katie) Hunt	2007	2007

Edgar C. Britton was a Midland Section member and Director of the Organic Research Lab at The Dow Chemical Company. His FSM keynote topic was not recorded in the meeting program and was scheduled for only 15 minutes.

Albert L. Elder, Director of Research, Corn Products Refining, spoke on “Modern Technology in the Wet-Milling Industry.”

Melvin Calvin was the only keynote speaker to be both an ACS President and a Nobel Prize winner.

William J. Sparks, Esso Research and Engineering Co., spoke on “Age, Productivity and the Obsolescence of Chemists.”

W. Albert Noyes, Jr., Professor of Chemistry, University of Texas, spoke on “Chemist and the Social Structure.”

Anna J. Harrison, Professor of Chemistry, Mt. Holyoke College, the first woman President of the ACS, spoke on “What Does Society Have the Right to Expect from Chemical Education?”

Fred Basolo, Professor of Chemistry, Northwestern University, spoke on “Chemistry and the Quality of Life.”

Bassam Z. Shakhshiri, Professor of Chemistry, University of Wisconsin – Madison, spoke on “Developing a Will to Enhance the Quality of Science Education in America.”

Ronald Breslow, Professor of Chemistry, Columbia University, spoke on “Making the Case for Chemistry.”

Attila E. Pavlath, Lead Scientist in the Process Chemistry and Engineering Unit of the Department of Agriculture's Western Regional Research Center, spoke on “It Is Time for a Change.”

Catherine T. (Katie) Hunt, Leader, Technology Partnerships, Rohm and Haas Company, spoke on “Sustainable Chemistries: Environmentally Friendly and Economically Viable Innovations.”

An upcoming review of all 75 years of the FSM's will include all the FSM keynote speakers.

Anonymous Donor Offers to Match Donations to the Museum Exhibit's Fund
Gretchen Kohl, Gina Malczewski, and Angelo Cassar

Photographs courtesy of Angelo Cassar

Momentum is growing over the reality of the museum exhibit commemorating the 100th Anniversary of the Midland Section ACS, scheduled to open in 2019! As Steve Keinath reported in the March issue of *The Midland Chemist*, our first ACS Roadshow netted some leads on our first new treasures that members have or are! As our guest speaker Gary Skory, Director of the Midland County Historical Society, told us, "Now is the time that we need to have the memories, photos, and artifacts that can be donated for the content of our exhibit." Maybe you or a neighbor or a relative have a story that you've heard or an artifact or photo that you've seen that we could investigate for possible inclusion in the exhibit.



Gary Skory recreates Midland's early history.



Joan Sabourin with a balance and microscope from St. Joseph's school.

To further "catalyze" this museum momentum, an anonymous donor has offered to match up to a total of \$2000! These funds will be used for the creation, fabrication, and installation of the exhibit. If you have been considering a donation, now would be the perfect time!

We have set up a fund at the Midland Area Community Foundation, under the name "Midland ACS Historical Project Fund." Donations may be accepted online at www.midlandfoundation.org or via phone at 989-839-9661 – please specify the fund by name. There is no deadline for the matching funds; matches will be made until contributions reach \$2000. A donor recognition wall will be part of our exhibit, with details on that to be released soon. If you have questions, please call us at 989-708-9066. Thanks!

Mid-Michigan Technicians Group ACS Program-in-a-Box

Jake Remacle, MMTG Chair Elect, Midland Section ACS

The Mid Michigan Technicians Group (MMTG) hosted an American Chemical Society (ACS) Program-in-a-Box (PIB) on 27-Feb-18. A total of 25 attendees were present, ranging from MMTG members, YCC members, a school teacher, and five Midland Police officers.

The topic of the PIB was *Opioids - Combating Addiction with Chemistry*. The live webinar was broadcast on YouTube, and concluded with an interactive question and answer session. Unfortunately, our questions didn't get answered on the webinar.

The webinar discussed how opioids were discovered, how they work as pain killers, and the reasons why they are so addictive. An in-depth analysis of the receptors and analogs boosted the academic level of the webinar. There are several companies working on different molecules that will treat the pain, but not have the addictive properties.



Most heroin and fentanyl are made in Mexico and China, respectively. Fentanyl is much more powerful because it fits the receptors better. Heroin addicts have to keep reaching for a higher state of euphoria, and therefore keep adding more drugs. Fentanyl is much easier to overdose on, but drug users want that extra high.

The PIB included two give-away prizes (a beaker coffee mug and a "hoody" water bottle). There were several handouts with the various opioids as well as anti-inflammatory drugs listed. Attendees were encouraged to fill out the paper by ranking the structures.

After the conclusion of the YouTube webinar, attendees had a discussion with the Midland Police Officers. Several interesting items were discussed.

- Opioids are everywhere, and impact a lot of people.
- The past few years have seen the epidemic grow significantly.
- The heroin/fentanyl that causes overdoses can be seen in "waves". As a new batch with impurities comes in, overdoses increase over the next few weeks.
- The cost of the drug habit is approximately \$200/day. Once a user needs to fund the habit, they steal from family members and other sources.
- The MPD carries Narcan, which is used to reverse the effects of the heroin/fentanyl. Narcan causes users to be disoriented and aggressive. The officer commented that people on the drugs aren't aggressive. In his 17-year career, he's never had an aggressive person on marijuana, whereas people on alcohol are very aggressive.

- Comparison to alcohol was that alcohol is a bigger issue because it is more readily available. The habit is less expensive (~\$10/day). However, it is much easier for people to drink and drive, which impacts many more lives.
- Recent laws have been passed that allow people with drug users to not get in trouble for calling for help with an overdose. People typically wait too long to call the police, and then the Narcan can't be effective.
- The officers have seen people as young as 15 be drug users. Typically there's not an older heroin addict because they are usually dead by then.

Upcoming Lectures Sponsored by the Mid-Michigan Section of AIChE

Ron Leng, Program Chair, Mid-Michigan AIChE

All Midland Section ACS members are cordially invited to attend any of several invited-speaker events hosted by the Mid-Michigan Section of the American Institute of Chemical Engineers (AIChE). The evening meetings will be held at the Grand Traverse Pie Company, 2600 North Saginaw Road, Midland. Admission is free and complimentary sandwiches will be available, first come, first served at 6:00 PM with the presentations starting around 6:30 PM. Meeting times and locations are subject to change, so please check the [Mid-Michigan AIChE Events](#) website for updates to the schedule. For more information or questions, contact Ron Leng at 989-636-6158 or rbleng@dow.com, or Ted Calverley at 989-636-2881 or emcalverly@dow.com.

- **Open** (please check the event website at the link above for any updates)
Wednesday, April 25, 2018, 6:00 PM dinner (optional), 6:30 PM presentation
- **Mark Weick**, Dow Global Sustainability Director – Keynote Speaker, Annual Spring Banquet
Sustainability: The Chemical Engineer's Role in the Future
Tuesday, May 22, 2018, 5:30-9:00 PM, Great Hall Banquet & Convention Center, 5121 Bay City Road, Midland

Midland Section ACS 100th Anniversary Committee Update

Steve Keinath, Co-Editor, The Midland Chemist

The 100th anniversary historical exhibit team is still looking for additional artifacts that may be in your closets, attics, basements, garages, etc. The types of things being sought include written materials, photographs, and physical objects. Try not to judge whether some of the items in your own personal eclectic collection is of any historical significance. That task will be up the historians and display designers that make up part of the 100th anniversary historical exhibit team. Any items that you may wish to donate for potential display in 2019 will be taken on a loaned basis with full documentation coming back to you for what it is that you have donated. At the end of the exhibit, your loaned materials will be returned to you. If you think you may have something to share, please reach out by e-mail to exhibit@midlandacs.org and someone will get in touch with you.

15th Annual ChEMS Research Forum, May 10

Philip Eisenlohr, MSU ChEMS Department

The Department of Chemical Engineering and Materials Science (ChEMS) at Michigan State University would like to invite you to join us at the 15th annual ChEMS Research Forum on Thursday, May 10, 2018. The forum is a full-day event, running from 9:00 AM to 4:30 PM, and will be held at the Huntington Club at Spartan Stadium, 325 West Shaw Lane, East Lansing, on the campus of MSU.

The 15th annual ChEMS Research Forum will showcase departmental research advances in the areas of:

- Energy and Sustainability
- Nanotechnology and Materials
- Biotechnology and Biomedical Engineering

The one-day program will feature three invited plenary speakers, oral presentations from faculty and students, and an extended poster session describing the latest department research results.

Keynote Speakers:



- **Brad L. Boyce** – Materials, Physical, and Chemical Sciences Center, Sandia National Laboratories
- **V. Bobby Bringi** – AFEX Project Director, Chemical Engineering and Materials Science, Michigan State University
- **Shiwan Cheng** – Chemical Engineering and Materials Science, Michigan State University
- **Balsu Lakshmanan** – General Motors
- **Adam Pilchak** – Air Force Research Laboratory

Keynote Topics:

- **Stochastic performance of additively manufactured alloys**
Agile qualification of additively manufactured (AM) structural components requires rapid, high-throughput post-process measurements of material properties. To this end, we have developed a tensile testing methodology that permits >200 tensile tests per day with no compromise in data quality. This method has been used to explore stochastic mechanical property distributions of alloys produced by laser powder bed fusion (selective laser melting). Substantial differences were revealed between vendors, and between builds for a single vendor. Detailed microstructural and fractographic analysis of weak statistical outliers reveals rare processing defects that limit reliability. For example, in one study on 945 tensile bars from 8 builds on one machine, a small subset suffered from exceedingly low ductility associated with large internal, interconnected pore networks oxidized during heat treatment. The high-throughput testing

provides a pathway to rapidly qualify process improvements that eliminate such rare defects. For example, Hot Isostatic Pressing (HIP) is a well-known manufacturing process to mitigate internal porosity. Using the same testing methodology, we demonstrate a ~100% improvement in ductility with a simultaneous ~15% increase in strength and a 7% increase in modulus associated with the elimination of internal porosity. In spite of these improvements, there remain latent defects in the additive manufactured material that prevent the material from achieving a mechanical performance envelope equivalent to the conventional wrought product.

- **Challenges in Commercializing Early-Stage Technologies: The AFEX Story**

AFEX technology, developed at MSU, is an ammoniation process that makes the sugars comprising hemicellulose and cellulose more accessible to enzymatic hydrolysis. Using AFEX treatment, agricultural residues such as rice straw and corn stover can be upgraded into a nutritious cattle feed ingredient or into a fermentation feedstock for production of bio-based fuels and chemicals. MSU is leading a global consortium to evaluate the potential of AFEX technology in developing nations and to promote technology scale-up and adoption. This lecture will cover some of the technical and regulatory challenges that are being addressed in this project and will reflect on the challenges inherent in transitioning promising technologies toward market and greater societal impact.

- **Big effects of small sticky nanoparticles on the macroscopic properties of polymer nanocomposites**

Polymer nanocomposites (PNCs) with small nanoparticles, such as fullerene, polyhedral oligomeric silsesquioxane, and their derivatives, typically end up in a reduction in the glass transition and viscosity at low nanoparticle loadings and a gelation at high loadings of nanoparticles. Consequently, the usage of small nanoparticles is largely eliminated, and the role of small nanoparticles is not well understood. In this presentation, we demonstrate that well-dispersed, small (diameter ~1.8 nm) nanoparticles with attractive interactions can lead to unexpectedly large and qualitatively new changes in PNC structural dynamics in comparison to conventional composites based on particles of diameter ~10–50 nm. At the same time, the zero-shear viscosity at high temperatures remains comparable to that of the neat polymer, thereby retaining good processability and resolving a major challenge in PNC applications. Our results suggest that the nanoparticle mobility and relatively short lifetimes of nanoparticle–polymer associations open qualitatively new horizons in tunability of macroscopic properties in nanocomposites with high potential for the development of new functional materials.

- **Balancing performance and risk in fracture-critical aerospace components**

Registration, lunch, and refreshments are complimentary, but pre-registration for the forum is requested. Please register for the event at [2018 ChEMS Research Forum](#).

For more information, call the MSU ChEMS Department at 517-355-5135, or send an inquiry by e-mail to chems@egr.msu.edu.

In Past Issues of The Midland Chemist

Wendell L. Dilling, Director and Historian, Midland Section ACS

50 Years Ago, The Midland Chemist 1968, 5, No. 1 (Apr), 6.

In *Michigan Chemical Scientists Given Best Paper Award*: "At the 23rd Annual Conference of the Society of the Plastics Industry, Inc. Reinforced Plastics/Composites Division held in Washington, D.C., February 6-9, 1968, Peter Pape, Richard C. Nametz, and Robert Nulph of the Michigan Chemical Corporation Research Laboratories presented a paper entitled 'Flammability Characteristics of Polyesters Based on Tetrabromo and Tetrachlorophthalic Anhydrides.' This paper was chosen as the Best of Conference Paper (materials) by a panel of judges, composed of Herbert Schwartz, Chairman of Air Force Materials Laboratory, Joseph Shurb, 3M Company, and George Epstein, Aerospace Corporation."

40 Years Ago, The Midland Chemist 1978, 15, No. 4, 48.

In *Report from Anaheim* by Wendell L. Dilling, Councilor: "Professional Employment Guidelines

After considerable discussion, the Council approved several changes in the Professional Employment Guidelines. Under the section on Employment Environment, the following statement was added:

The chemist should use the period of an enforced work stoppage occurring on the premises in a constructive and professional manner.

The following proposed addition to the same section was defeated:

If possible, the chemist should continue to perform all regular duties, although the chemist may choose if requested by management to assume other duties on a temporary basis.

Another guideline approved by the Council was the following:

The employer should not penalize the chemist who performs only his or her duties during any enforced work stoppage occurring on the premises."

30 Years Ago, The Midland Chemist 1988, 25, No. 3, 8.

In *25th Anniversary, E. C. Britton Symposium 1988*: "The 1988 E. C. Britton Symposium, sponsored by The Dow Chemical Company, Dow Corning Corporation and the Midland Section of the American Chemical Society, will be held in Midland on April 28 and 29. This marks the **25th anniversary of this symposium**. The annual meeting provides academic personnel with exposure to modern research and development in the chemical industry. Furthermore this symposium works to build relationships with key universities and faculty members, which may lead to cooperative research opportunities and to aid in recruiting. To encourage a personal link between industry and academia, selected industrial researchers serve as hosts for the visiting professors during their stay in Midland. Often these professors stay in the homes of Midland area residents."

20 Years Ago, The Midland Chemist 1998, 35, No. 2, 10.

In *CMU Student Affiliate Chapter Recognized as Commendable* by Paul S. Anderson, ACS President: "Professor Philip J. Squattrito, faculty advisor to the CMU Student Affiliates chapter, deserves special commendation. Few faculty members are willing to make the great commitment of time and energy that a successful chapter requires of its advisor. It takes more than exceptional effort to be recognized as a commendable chapter; it takes the nurturing attention of a dedicated advisor. Professor Squattrito's efforts certainly represent the best in undergraduate science education and mentoring around the country."

10 Years Ago, The Midland Chemist 2008, 45, No. 2, 18.

In *2008 Weyenberg Grants Announced* by Brian Marinik: "Each year, the Midland Section of the American Chemical Society has the pleasure of announcing the recipients of the Donald R. Weyenberg Memorial Student Travel Grants. Since 1999, these grants have been given to young people in an effort to support their

travel and participation at scientific conferences. This enables them to present their research and interact with academic and industry professionals with whom they will work in the future to solve the next generation of chemistry challenges.”

Upcoming Dates, Events, and Other Updates

- April 9 (5:30 – 6:50 PM) – ACS Board meeting pre-meeting pizza and networking session sponsored by the ACS CMU Student Chapter, The Cabin Restaurant, 930 West Broomfield Road, Mount Pleasant. For more information or questions, please contact Dale LeCaptain at dale.lecaptain@cmich.edu or 989-774-3993.
- April 9 (7:00 – 8:00 PM) – ACS Board meeting, CMU Chemistry Department, Dow Science Building, Room 108, Mount Pleasant, MI (in person), or via a WebEx conference call connection at [Midland Section WebEx Board Meeting April 2018](#), session ID: 739 814 648, phone number: 650-479-3208. **Please note the change of venue from MCFTA to CMU.**
- April 10 – Deadline for nominations for 2018 Spring Awards for Outstanding High School / College Chemistry Students. Contact: Diana Deese at dkdeese@dow.com or 989-636-9915.
- April 14 – Deadline for submissions to the CCEW Illustrated Poem Contest for students in Kindergarten through 12th grade. Entry forms are available from Gina Malczewski (reginamalczewski@gmail.com). See details and contest rules on page 6 of this newsletter.
- April 15 – Application deadline for MSU St. Andrews Summer Internship programs. Programs are paid internships for high school juniors (fall 2018 seniors), and include STEM and STEAM programs. See details on pages 10–13 of this newsletter. See additional information at <http://research.msu.edu/internship-application-2018/>. Contact Melanie Kauffman at kauffm59@msu.edu for questions.
- April 20 – RSVP Deadline for ACS Spring Awards Recognition Banquet, to be held May 2. See RSVP details on page 15 of this newsletter. Contact: Diana Deese at dkdeese@dow.com or 989-636-9915.
- April 21 (10:00 AM – 2:00 PM) – Earth Day Expo 2018 at Midland Center for the Arts. FREE! Over 15 organizations offering kid-friendly activities and hands-on experiments.
- April 21 (2:30 – 4:00 PM) – Lt. Michael Doig of the National Oceanic and Atmospheric Administration presents *Guarding the Great Lakes: The Science of Spill Response*. MCFTA Lecture Room, 1801 W. St. Andrews Road, Midland. For additional information see flyer on page 7 of this newsletter.
- April 23 (5:30 – 7:30 PM) – Reception, program, and networking event featuring Congressman John Moolenaar, speaking on the topic *An Overview of the Congressional Chemistry Caucus: Where Chemistry and Policy Meet*, H Hotel, Midland. 5:30 – 6:00 PM, reception; 6:00 – 7:00 PM, program; 7:00 – 7:30 PM, networking. Heavy hors d'oeuvres will be served and a cash bar will be available. RSVP is available [here](#) or at <http://www.midlandacs.org> Sign Up. Registration fee is \$5.00; students with valid ID will be refunded. Event attendance is limited to the first 100 people registered. For more information or questions, please contact Amanda Palumbo at amanda.palumbo@dow.com.
- April 25 (6:00 – 8:00 PM) – MMAICHe sponsored lecture, *Open Topic (TBD)*. Location and time: Grand Traverse Pie Company, 2600 North Saginaw Road, Midland, 6:00 PM dinner (optional), 6:30 PM presentation. Meeting times and locations are subject to change, so please check the [Mid-Michigan AIChE Events](#) website for updates to the schedule. For more information or questions, contact Ron Leng at 989-636-6158 or rbleng@dow.com, or Ted Calverley at 989-636-2881 or emcalverly@dow.com.
- May 1 (6:30 – 7:30 PM) – Earth Day celebration highlighting the winners of the local ACS Illustrated Poem contest. Featured speaker will be Dr. Andy Jorgensen, Professor Emeritus of Chemistry, University of Toledo, who presents *Global Climate Disruption: How Do We Know? What Can We Do?* Creative 360, 1517 Bayliss Street, Midland. For additional information see flyer on page 8 of this newsletter.

- May 2 (5:30 – 9:00 PM) – Midland Section ACS Spring Awards Banquet, Great Hall Banquet & Convention Center, 5121 Bay City Road, Midland. For more information, contact Diana Deese, Midland Section ACS Awards Committee Chair, at dkdeese@dow.com or 989-636-9915.
- May 7 (7:00 – 8:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via a WebEx conference call connection (TBD), phone number: 989-633-1166.
- May 10 (9:00 AM – 4:30 PM) – 15th Annual ChEMS Forum, Huntington Club at Spartan Stadium, 325 West Shaw Lane, East Lansing, on the campus of Michigan State University. Registration, lunch, and refreshments are complimentary, but pre-registration for the forum is requested. Please register for the event at [2018 ChEMS Research Forum](http://2018.ChEMSResearchForum). For more information, call the MSU ChEMS Department at 517-355-5135, or send an inquiry by e-mail to chems@egr.msu.edu.
- May 22 (5:30 – 9:00 PM) – MMAICHe Annual Spring Banquet, Keynote Lecture – *Sustainability: The Chemical Engineer's Role in the Future*, presented by Mark Weick, Dow Global Sustainability Director. Location: Great Hall Banquet & Convention Center, 5121 Bay City Road, Midland. Meeting times and locations are subject to change, so please check the [Mid-Michigan AIChE Events](http://Mid-MichiganAIChEEvents) website for updates to the schedule. For more information or questions, contact Ron Leng at 989-636-6158 or rbleng@dow.com, or Ted Calverley at 989-636-2881 or emcalverly@dow.com.
- May 23–24 (9:00 AM – 4:00 PM) – Turner J. Alfrey visiting professorship series. *Precision in Macromolecular Synthesis: When, Where, and How Much Do the Details Matter?*, presented by Professor Jeremiah A. Johnson, Department of Chemistry, MIT. Location: MSU St. Andrews, Midland. Event is complimentary but please register by May 11 at <https://johnson-lecture.eventbrite.com>. For additional information, see flyer on page 9 of this newsletter.
- June 4 (7:00 – 8:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via a WebEx conference call connection (TBD), phone number: 989-633-1166.
- August 6 (7:00 – 8:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via a WebEx conference call connection (TBD), phone number: 989-633-1166.
- August 19 – 23 – 256th ACS National Meeting & Exposition, Boston, MA. For more information, see <https://global.acs.org/events/256th-acn-national-meeting-exposition/>.
- September 10 (7:00 – 8:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via a WebEx conference call connection (TBD), phone number: 989-633-1166.

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