

THE MIDLAND CHEMIST

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Contents

We Need a Lot of Sparks...to Light the Torch!	1
FOUR-LETTER-WORDS!	2
Science Café: How to Make the Perfect Cup of Coffee	2
Glass-Blowing: Mastering the Molten Science Café Draws 100+ Crowd	3
Loco for Cocoa Science Café Engages Palates and Curious Minds	4
ACS Scholarship and Internship Deadlines Approaching	5
Section Election Results Again Show Need for Revised Voting Procedure	6
2014 Officers and Board Election Results	6
In Past Issues of <i>The Midland Chemist</i>	7
Upcoming Dates, Events, and Other Updates	8

We Need a Lot of Sparks...to Light the Torch!

Gina Malczewski, Past Chair / Outreach

The Next Generation Science Standards (NGSS) (<http://www.nextgenscience.org/next-generation-science-standards>) were developed by the National Research Council and focus on three areas: contents, concepts that cut across all sciences (like measurements, systems, and patterns), and the practices that scientists use to test and prove their ideas. There is new emphasis on critical thinking and applied knowledge.

Michigan's transition to these new standards is beginning, and implementation is planned for completion as of the 2016-2017 school year. Midland ACS has been given a grant to develop materials to assist teachers in this change from content-oriented benchmarks to performance-based assessments. http://www.michigan.gov/documents/mde/Rev_Timeline_for_posting_2-8-13_410943_7.pdf

There are multiple aspects to our plans, including: 1) Construct, test, and offer a new teacher-training program (building off the success of "Bringing Science to Life in the Classroom") that focuses on different concepts and includes engineering-based activities and applications. 2) Facilitate a blog to encourage educators to discuss their challenges and to connect them with assistance. 3) Offer a teacher workshop on NGSS to roll out the new program and bring them together for relevant speakers, discussions and activities related to the standards.

We are inviting you to participate in this leading edge activity—in any aspect of your interest. We need blog moderators, planners, demo enthusiasts, field testers, and just big idea people; we have much to do, and our enthusiasm is limited only by the number of "hands" currently involved. Please consider making a difference in this project! To offer help, ask a question, or chat...contact Gina Malczewski@989-631-4038 or reginamalczewski@gmail.com. The next generation of scientists is out there, and some need lots of encouragement and support.

FOUR-LETTER-WORDS!

Midland Section Communications Group

Please **READ** on! ACS needs **YOUR HELP** and your talent...

Love to work online? Do website design? We are in urgent **NEED** of a website coordinator. You would gradually succeed our current volunteer, Greg Cushing, who is still active but has relocated out of the section. We are considering a site rebuild to accommodate some new functions, including a blog. Get in on the ground floor where you can really take a **LEAD** role!

We also must give our current newsletter editors and publicity volunteers a break. If you like to write and deal with the public, have a go at publicity/PR. If you're a social media guru, we could use a volunteer to handle and develop those aspects of our communications. Amy, Steve and Eva will transition you into these roles—we need all takers because more people means less individual work.

These are great opportunities for community service or professional development goals – not to mention the camaraderie, networking potential and skills development! Training is available. Time commitment will vary with role, number of volunteers, and individual preferences. ACS membership is NOT required.

Volunteer—or call for more info—**DON'T WAIT**. Your award-winning section cannot sustain its activities without YOU.

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Science Café: How to Make the Perfect Cup of Coffee

Sarah Brandt, Museum Education Coordinator, Midland Center for the Arts

Date: Saturday, January 11, 2014 • 10:30 am

Location: MCFTA's new Saints and Sinners Lounge

Cost: \$5.00 per Person

Do you entertain guests with a delicious dinner, dessert and then follow it up with a coffee? Join us to get the 101 on how to wow your guests with the perfect cup of coffee. Learn the knowledge of basic roasting and brewing principals to produce optimum extraction in every cup! Featuring brew-master Angelo Cassar and chemist Gina Malczewski. Samples will be provided.

Recommended for ages 14 and up. All children 12 and under must be accompanied by an adult chaperone. Presented in partnership with the American Chemical Society – Midland Section.

To purchase a ticket visit: <http://www.mcfta.org/event/science-cafes/e17819/>

Glass-Blowing: Mastering the Molten Science Café Draws 100+ Crowd

Gina Malczewski, Past Chair / Outreach

On Friday November 22, 2013, The Midland Section of the American Chemical Society, along with the Mid-Michigan Technician's Group and Jefferson's National Art Honor Society presented Tim Drier and "Mastering the Molten" at Jefferson Middle School in Midland.

Tim, a glassblower for over 25 years at Dow Chemical, spoke about the chemistry and physics of glass, while demonstrating the flame working method of glass manipulation. To the delight of an audience of over 100, Tim used various techniques to make a wine glass with a black stem, a blue and clear decanter, and a vase. He also entertained many questions and had a number of his custom pieces available for sale. The two-hour event was a big hit!



Loco for Cocoa Science Café Engages Palates and Curious Minds

Amy Tesolin-Gee, MC Co-editor

On November 19, 2013 the Midland Section of the American Chemical Society and Chef Aaron Gaertner of the Saginaw Career Complex co-sponsored Loco for Cocoa. This free science café offered four action-packed segments, each followed by rich and tasty samples for all. Each segment began with Dr. Gina Malczewski providing the relevant background chemistry followed by a cooking lesson from Chef Aaron. Approximately 60 people were in attendance, including MCTV who recorded the event.

Pointing to a projected image of a capsaicin molecule, Gina summoned audience participation to identify atoms. Explaining the molecule's medicinal use, she pointed out chemical bonds and hydrophobic and hydrophilic portions of the structure. She proceeded with an overview of the culinary history of the cacao plant, leading to chocolate as we currently know it. The lesson took us back to nuns in the 1500s experimenting with spices and chocolate to enhance the palatability of an old turkey. Success of their endeavor resulted in mole (pronounced mo-lay) sauce, versions of which are enjoyed around the world today.

Chef Aaron then treated our senses to the aromatic sizzle of garlic, onion and spices, using preparation of a simple mole sauce to explain the concept of molecular gastronomy and today's movement back toward pure, whole artisan foods. He explained caramelization, the importance of fond and deglazing, as well as use of tomato to provide the dish's acid component.

His surprising move to finish the preparation with addition of 70% cacao chocolate provided richness, sheen, flavor and body to the sauce. Periodically he held the pan under a camera which projected the image onto a large screen, allowing a view of the wonder teasing our olfactory receptors. Several sous-chefs deftly distributed paper-plated crackers, piled generously with mole sauce and chopped chicken, to audience members.

Next, Gina and Aaron moved on to discuss drinkable chocolate, star of Loco for Cocoa's second segment. Gina's chemistry lesson covered terms such as roasting, fermenting, alkalization and tempering, as applied to cocoa beans for illustration of concepts. Projecting onscreen images of theobromine, caffeine, theophylline, phenylethylamine, and other major molecules in chocolate, she pointed out various aspects of their structures and any known physiological impact of each.

Aaron, a classically trained French chef, poured cream into a pan, grated cinnamon, added various spices, cocoa, honey and a dash of Sriracha sauce. Finally, he melted in 70% cacao chocolate, noting that you don't need much. A little goes a long way when targeting richness, versus sweetness. Chef Aaron explained that this hot chocolate affects each part of the palate while engaging the sense of smell. The audience was able to appreciate this while sampling petite cups of the smooth chocolate liquid. Its rich cocoa flavor was well complemented with a slight spiciness and satisfying hint of sweetness.

The chemist-chef duo's third segment, baconated chocolate, provided an opportunity to further discuss cooking-chemistry terminology, such as tempering and emulsification. We learned that chocolate, if not properly tempered, will exhibit an undesirable white coating known as bloom—the result of sugar or fat separating out from the chocolate. Gina explained how one could easily experiment to determine which type of bloom a chocolate has by adding a drop of water.

Emulsifiers, such as lecithin, were discussed in light of their water-loving and water-hating attributes which function to bring unlike things, such as water and fat, together. The concept was beautifully displayed by a bottle containing water and oil that Gina passed around to the audience. This was followed by another that also contained lecithin, which visibly unified the hydrophobic and hydrophilic components. A third bottle was then distributed which illustrated how an ionic substance, such as salt, could interfere with the emulsifier, separating the water and oil back into discrete layers.

While baconating a rich melted chocolate, Aaron discussed seizing, an important phenomenon to avoid when working with chocolate. Seizing, which causes the wetted sugar molecules to clump together, can occur by introducing even a small amount of water, such as steam from a double boiler. Thankfully, our resourceful chef used plain chocolate chips to demonstrate the grainy, clumpy results of seizing as we sampled his smoothly solidified chocolate with crispy bits of maple-smoked bacon.

The fourth and final segment enlightened attendees with a brief history of how chocolate chip cookies came into existence, along with an overview of the various forms of chocolate known today. As attendees nibbled lightly-crisped chocolate chip cookies baked prior to the event, Gina and Aaron closed with a recap of major points and answered questions from their very satisfied audience.

ACS Scholarship and Internship Deadlines Approaching ***National ACS***

With the academic year in full swing, now is a perfect time to share scholarship and internship opportunities with educators and students in your community. Applications are now being accepted for the following awards:

- ACS Scholars: ACS offers renewable scholarships to underrepresented minority students who want to enter chemistry or related fields. Awards of up to \$5,000 are given to qualified African American, Hispanic or American Indian students who are high school seniors or college freshman, sophomores, or juniors pursuing a college degree in the chemical sciences.
Applications will be due March 1, 2014.
- SCI Scholars: Exceptional college sophomores and juniors majoring in chemistry and chemical engineering can apply for a prestigious 10-week internship through the SCI Scholars Program. Benefits include industrial experience, a generous stipend, scientific meeting travel award, and the chance to nominate a high school teacher of their choice for further benefits. **Applications will be due Dec. 14, 2013.**

By sharing this message with students, teachers and guidance counselors in your area, you will be a Chemistry Ambassador supporting the next generation of science professionals.

Section Election Results Again Show Need for Revised Voting Procedure

Wendell L. Dilling, Midland Section Director and Historian

One part of the 2013 Midland Section Election (for officers starting in 2014) again illustrates the need for a revision of the Section's bylaws if one believes in elections being decided by a majority of the voters. Similar situations occurred in the 2011 and 2012 elections. In the 2013 election, one of the directors was elected by less than a majority of the votes cast. Current Midland Section Bylaw VI, Section 7, states, "Election depends on receiving a plurality of the votes cast." In the case of the directors, where normally three candidates are elected, the candidates who receive the most votes are the winners. This situation can allow a candidate to be elected by less than a majority of the voters.

Six candidates for three director positions received the following numbers of votes: A, 80; B, 73; C, 52; D, 43; E, 43; and F, 26. Each voter was allowed three non-prioritized votes; 108 voters voted for at least one director candidate. Candidates A, B, and C were elected. Candidates A and B were supported by majorities (74% and 68% respectively) of the voters, but candidate C was supported by only 48% of the voters. Use of the multiple instant run-off (or ranked choice) election procedure [*Chem. Eng. News* **2010**, *88*, No 11 (Mar 15), 5-6; *The Midland Chemist*, **2010**, *47*, No. 3 (June), 9-10; **2011**, *48*, No. 3 (June), 5-7] would have allowed election of all three directors by majority votes. It is likely that the same three candidates would have been elected by the instant run-off procedure, but one cannot be sure.

Between four and seven voters voted for only one or two director candidates based on the number of votes cast and the number of voters. An additional advantage of multiple instant run-off voting is that it allows those voters who voted for only one or two candidates—possibly because voting for a second or third candidate in the present procedure could have caused their favored candidate/s to be defeated—to have a vote for second and third candidates.

Clearly, if we want candidates to be elected by a majority of the voters, our voting procedures need to be changed. A bylaw amendment will be required to do this.

2014 Officers and Board Election Results

Jaime Curtis-Fisk, Chair, Nominations & Elections Committee

A summary of the results of this fall's election of the 2014 Officers and Board of the Midland Section of the American Chemical Society is reported below. A total of 111 valid ballots were received, representing about 16% of the eligible voters. This is a slight decrease from last year, but still demonstrated strong support by our local section to those who put the effort into running for a position on our board. Congratulations and welcome to the new 2014 Officers and Board members!

Chair-Elect:

Matt Grandbois

Secretary:

Gina Malczewski

Treasurer:

Anatoliy (Tony) Sokolov

Chair, Nominations & Elections:

Chelsea Quinn

Councilor:

Tina Leaym

Alternate Councilor:

Shawn Chen

Directors (3-year terms):

Wendell Dilling

Steve Keinath

Janet Smith

In Past Issues of *The Midland Chemist*

Wendell L. Dilling, Midland Section Director and Historian

40 Years Ago

In *Chairman's Column* by Dr. Gary LeGrow: "I believe it is the duty of the ACS both at the local and national level to inform not only its members but also the general public on the true facts surrounding the "Energy Crisis." Such an effort, accompanied by the action on the part of the ACS to take a leading role in the solution to the "Energy Crisis" will do much to improve the image of the chemist in society. Activities of this type took place within our local section as long ago as 1971 when we held our "Energy and The Environment" Symposium. This was undoubtedly the forerunner of the kind of activity that the ACS will now involve itself in at the national level."

30 Years Ago

In *Young Elected Regional Director, Dorman Becomes New Councilor*: "Dave Young, who has been an outstanding Midland Section Councilor for 21 years, was recently elected to the national ACS Board of Directors, for Region II. This is only the third time in the 64 year history of the Midland Section that a local member is serving on this Board, other members included Willard Dow (who will be featured in the February issue of *The Midland Chemist* and E.C. Britton. Lin Dorman was chosen and has agreed to serve as councilor, in Dave's place. Dorman, a member of the ACS since 1957, has served in many capacities in the Midland Section for over 20 years, serving as Treasurer (1966), Secretary (1967) and Director (1968-70), before serving as Councilor (1971-76 and 1980-81)."

20 Years Ago

In *Meet the President!*: "Reception with ACS President Helen Free, Ashman Court Hotel Lounge, December 17th, 1993, from 5:00-6:30 p.m. (Hors d'oeuvres and cash bar). Helen Murray Free, ACS National President, is a medical researcher, volunteer, mother, wife, author, teacher, reader of mysteries and a bridge and tennis player – not in any specific order, but all at once! She graduated with honors in chemistry from the College of Wooster, has a master's degree in healthcare management from Central Michigan University, and an honorary doctorate of science from the College of Wooster. She has taught management at Indiana University South Bend for 16 years and has spent her entire scientific career (49 years) at Miles Inc. She and her husband, Al, also a Miles retired chemist, have been married for 46 years, and their nine children have 20 college degrees and 11 children among them. Helen has been a member of the American Chemical Society for 46 years (Al has been a member for over 50!) and is the 1993 President. She has chaired the National Chemistry Week Task Force since its inception in 1987 through 1992 and was awarded the ACS Garvan Medal for distinguished service to chemistry by a woman. She serves on the Board of Directors of the National Committee for Clinical Laboratory Standards and she was the 1990 President of the American Association for Clinical Chemistry. The Frees were honored individually with Miles by the Medical Economics Press in 1986 for 40 years of contributions to medical research."

10 Years Ago

In *From the Chair, It Was a Very Good Year...* by Mike Owen, Chair, ACS Midland Section: "My biggest regret this year is that I served during a period of significant membership reduction. This is both a local and a national problem with no blame whatsoever attaching to any of our fine volunteers. As the editor-at-large of *Chemical & Engineering News* put it in August: "With wrenching suddenness the employment status of chemists-as measured by the experience of American Chemical Society members-has crumbled from the strongest since 1990 to, at least statistically, the weakest since ACS started measuring employment on a regular and reasonably consistent basis more than 30 years ago." Those statistics certainly affected many in our local section and our heart goes out to those still adversely affected by the changes we have seen around us in the last few years."

Upcoming Dates, Events, and Other Updates

- January 6 (7:00-9:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via conference call at phone number: 866-299-7945, participant code: 9837036#.
- January 11 (10:30 AM) – Science Café: How to Make the Perfect Cup of Coffee; Midland Center for the Arts, Saints and Sinners Lounge. To purchase a ticket, visit: <http://www.mcfta.org/event/science-cafes/e17819/>.
- February 3 (7:00-9:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via conference call at phone number: 866-299-7945, participant code: 9837036#.
- March 3 (7:00-9:00 PM) – ACS Board meeting, MCFTA Board Room (in person), or via conference call at phone number: 866-299-7945, participant code: 9837036#.
- March 16-20 – 247th ACS National Meeting & Exposition, Dallas, TX. For more information, see www.acs.org/content/acs/en/meetings/spring-2014.html.
- August 10-14 – 248th ACS National Meeting & Exposition, San Francisco, CA.
- October 1-4 – 45th ACS Central Regional Meeting, Pittsburgh, PA. For more information, see www.acscerm2014.org.