

# THE MIDLAND CHEMIST

A publication of the Midland Section of the American Chemical Society

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## Honey Bees and the Colony Collapse Disorder, June 17

**Matt Grandbois, Chair-Elect and Program Committee Chair**



The Midland Section of the American Chemical Society invites you to a special evening lecture with Professor Zachary Huang of Michigan State University. Prof. Huang's lecture will be held Tuesday evening, June 17, 7:00-9:00 PM at Creative 360 (1517 Bayliss Street, Midland). The event is free and open to the public.

Dr. Huang will discuss honey bees and the colony collapse disorder (CCD). Honey bees are the only reliable pollinator for providing pollination to large acreages of agricultural crops. In Michigan alone, the value of crops that depend on honey bees for pollination is nearly one billion dollars per year. Yet, honey bees face attacks from multiple fronts including parasites, pathogens, loss of habitat, lack of good nutrition, dwindling genetic diversity, stresses due to transportation, increasing population, and finally, man-made pesticides sprayed into the environment, which often contact hives directly. Which, if any, of these factors are responsible for causing the infamous CCD? We hope to shed new insights on this topic in the lecture.

Professor Zachary Huang is an associate professor in entomology at Michigan State University. He grew up in a small village in Hunan, China, and attended an agricultural college in China. In the early 1980s, he obtained a national scholarship to study honey bees in Canada. In 1998 he joined MSU as an assistant professor. He became tenured and was promoted to associate professor in October 2004. Dr. Huang received the J. I. Hambleton Award for Outstanding Research by the Eastern Apicultural Society of North America in August 2008. He also serves as the president of the American Association of Professional Apiculturists.

For more information or questions, contact Matt Grandbois, Program Committee Chair, at 989-636-1687 or [grandboismatthew@gmail.com](mailto:grandboismatthew@gmail.com), or Gavin Lu at 989-496-512 or [g.lu@dowcorning.com](mailto:g.lu@dowcorning.com).

## Sign Up For the New Midland ACS Photo Share Site

**Michelle Rivard, MMTG Chair, Sci-Fest Co-chair, Outreach & Publicity Committees**

Midland ACS has a new photo share site! It is a private site where ACS-related pictures are uploaded for sharing with members. Come check out what your local ACS is up to. Follow the link (<https://midlandacs.shutterfly.com/>) and ask to join today! By joining you will be able to keep up with upcoming events and see exactly what Midland ACS is doing in your community.



## CERM 2014—Registration and Call for Papers

**Heather Juzwa, General Co-Chair, CERM 2014**

The registration form for the CERM 2014 meeting is now available online at [CERM 2014 Registration Form](#). The abstract submission process is now open and ready to accept papers as well at [abstracts.acs.org](http://abstracts.acs.org). Please note that the deadline date for the call for papers is Friday, August 29. General information about anything you may wish to know about CERM 2014 can be found at [www.acscerm2014.org](http://www.acscerm2014.org).

Thank you for your consideration. We look forward to seeing you at CERM 2014! Any questions or concerns should be addressed to Heather Juzwa, General Co-Chair, CERM 2014, via e-mail to [hjuzwa@shimadzu.com](mailto:hjuzwa@shimadzu.com) or to her cell phone at 617-293-8279.

## ACS Science Café Features Fraud-Fighting Experts

**Amy Tesolin-Gee, Publicity Chair, MC Co-editor**

Approximately 80 people attended *The Science & Technology of Fighting Fraud*, a science café offered by the Midland Section of the American Chemical Society on the evening of June 3, 2014 at Bay City Western High School. NBC25 News covered the event, which was free and open to the public.

Featured speakers included Jeff Tazelaar of The Dow Chemical Company, an expert in radio frequency identification (RFID) technology and Brian Lambert of the U.S. Secret Service, who manages the Secret Service's Saginaw Resident Office. Among other duties, the Secret Service conducts investigations concerning counterfeit currency.

Tazelaar spoke about global track and trace, and its role in preventing fraud in global commerce. Noting that counterfeiters do attend these anti-counterfeiting sessions, care was used regarding information shared. He jokingly asked students in attendance how many were receiving extra credit for being there? Though several hands were raised, student interest was genuine with most engaging in hands-on activities following the speakers.



Jeff Tazelaar of The Dow Chemical Company spoke about methods companies use to protect the integrity of their products. Photo courtesy of Michelle Rivard.

Authentic Packaging displayed alongside counterfeit products revealed the sophistication of some criminal efforts. Besides designer brand knock-offs, low margin items, like counterfeit toothpaste, are showing up on our shelves. "These are complex manufacturing and distribution organizations by criminal enterprises making lots of money," Tazelaar noted, "not some guy in his garage." Americans spend \$10-15 billion annually on fake food causing death and serious illness.



To stay ahead of the bad guys, companies like Dow develop and employ multiple layers of ever-advancing technology to protect and authenticate products moving from manufacture through the supply chain. Examples include intaglio printing in combination with QR codes, embossed labels, tamper-resistant packaging, bio-markers, taggants and RFID tagging of railcars.

RFID and GPS/Satellite sensors allow mapping to geolocations, providing real time information regarding status of shipments (and if a container hatch opened at an unexpected location, for example). Litigation efforts to combat illegal selling of Dow products, as well as ongoing education of consumers are additional key measures to protect integrity of the products.

Dr. Gina Malczewski, ACS Outreach Coordinator and retired biochemist from Dow Corning, spoke about worldwide counterfeiting in food and medicine, especially Viagra. Melamine has been added to animal feed and baby formula in China to increase the apparent protein content. Quality control testing of the products assessed protein levels—which melamine mimics—but not the presence of melamine. 300,000 infants received the contaminated formula, resulting in six deaths. Malczewski explained how melamine—a complex carbon compound similar to protein—forms crystals with cyanuric acid in urine, causing kidney stones leading to renal failure and death.



Dr. Gina Malczewski and participants conducted experiments to check for melamine contamination in spiked and control milk samples. Photo courtesy of Michelle Rivard.

Brian Lambert of the United States Secret Service spoke next, accompanied by intern, Krystal Pussehl. Lambert, whose background includes presidential assignments and a tour in the New York City Field Office, currently focuses on counterfeit currency. The U.S. Secret Service is one agency with two missions. It maintains close relationships with state and local police departments for logistical coordination of the protective mission, and also for criminal investigations involving white collar fraud. He noted that 18 countries use the US dollar as their currency, up to 75% of which is in circulation outside the U.S. About 1 in 10,000 notes is counterfeit.



**Brian Lambert of the United States Secret Service explained how to use the security features included in genuine US currency. Examples of counterfeit currency were available for comparison. Photo courtesy of Michelle Rivard.**

Security features such as the watermark, optically-varying ink, red and blue fibers, microprinting, and the security thread were discussed. Examples of counterfeit currency were shown in light of these security features, as well as common techniques used to produce them. A short video described how U.S. currency is made. “The key take-away,” Lambert said, “is that it’s not paper, but actually a cotton-linen blend; more like your jeans than paper used in your printer.”

Lambert and the Secret Service do not endorse use of counterfeit detection pens as they can produce both false-positives and –negatives. Instead, they prefer to educate the public to use the security features included in genuine US currency. The pens sometimes contain iodine which reacts with starch in wood-based paper, turning it black to indicate a possible counterfeit note. Real U.S. currency would not demonstrate this reaction. However, washing it in your jeans pocket could introduce starch which may then produce a false-positive. Counterfeiters sometimes use bleaching to remove ink from lower denomination bills to create higher ones. In these cases, paper-based security features are preserved, leading to a false-negative result when checked with the pen. Still, other counterfeiting techniques that employ actual paper can avert the iodine test when coated with a chemical barrier to prevent interaction of the paper’s starch with iodine in the pen.

Hands-on activity tables were available after the talks for attendees to compare examples of real and various counterfeit currency samples. Microscopes, iodine pens, UV and black lights were available for examining security features. Various tracking devices and tags used in global track and trace efforts were also on hand. Experiments using gold nanoparticles functionalized with anti-melamine antibodies were available for participants to check for melamine in control and spiked samples down to the 50-100 ppb level.

Special thanks go to Joe Bruessow and Bay City Western High School for providing the venue.

## Call For Volunteers: 2014 Great Lakes Bay Region NOBCCHE Science Enrichment Camp

**Domonique Downing, NOBCCHE**

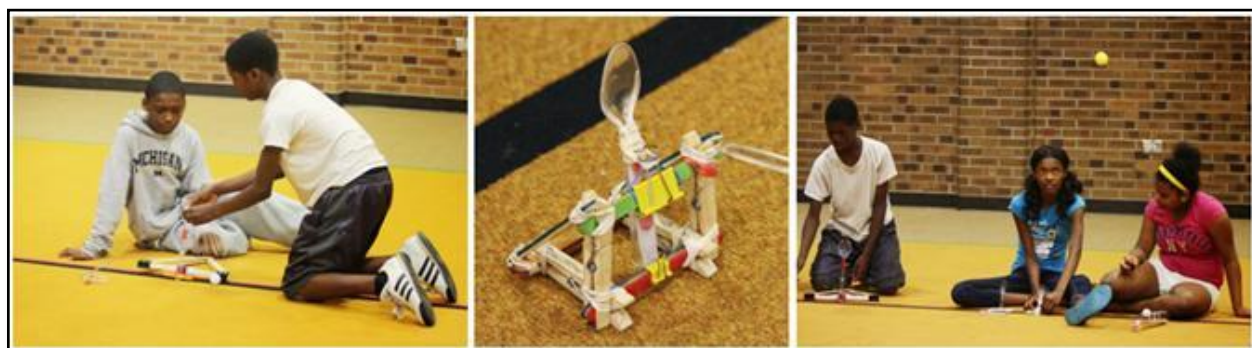
Saturdays, July 19th & 26th and August 2nd & 9th, 7:30 a.m. – 12:00 p.m.

Thompson Middle School, Saginaw



The annual Great Lakes Bay Region NOBCCHE Science Enrichment Camp will provide middle school students an opportunity to explore and understand the scientific method by posing scientific questions in an experimental design while guiding the students through hypothesis formation, hypothesis testing and data analysis. The students will work in small groups alongside a Dow Volunteer and prizes will be awarded for demonstration of comprehension and to winners of selected experimental challenges.

Please help us make this event a success by volunteering for one or all of the Saturdays during which the program lasts. TRAINING WILL BE PROVIDED for each experiment. Please contact Vennesa Williams for additional information and to indicate your volunteer week(s) preference.



## Join the Midland Women Chemists Committee (WCC)

**Jaime Curtis-Fisk, Chair, Midland WCC**

The Midland Women Chemists Committee (WCC) is now up and running to supplement the existing efforts within our local section and provide a unique focus on women in science. A key objective of the Midland WCC group is networking, and fostering connections between organizations with a strong emphasis on including students from our local universities. The intent of this group is to create a community with the specific mission of supporting women scientists in our community.



We have identified three areas where our team can provide a unique contribution: outreach, networking, and career development. Our local section is very active in outreach activities to ignite a love for science in the next generation and we saw the opportunity to supplement that with events that specifically target girls and highlight the roles of women in science. In regard to networking, the Midland Section is a unique place in that we have several chemical companies and universities within a relatively small community. We saw the need for more networking opportunities for women to build connections across organizations,



specifically between university students and professionals to help initiate mentoring relationships for women. The third key area is career development. Each of the companies/universities has their own career development programs and this group will serve as a forum to share about topics that were well received within each organization and coordinate training sessions or seminars when the topic is broad enough to be of interest to women across our entire scientific community.

If you are interested in helping us to implement efforts in any of these areas, or have suggestions on how we can make the greatest impact, please contact Jaime Curtis-Fisk (Midland WCC Chair) at [jlcurtisfisk@dow.com](mailto:jlcurtisfisk@dow.com) or talk with any of the steering committee members. We have opportunities for involvement at all levels to fit your schedule and the time that you have available to share. You may also contact us to be added to our distribution list to stay informed about upcoming events.

Initiating the Midland Women Chemists Committee and coordinating such a wonderful series of kickoff events would not have been possible without the support, time, and effort from our dedicated steering committee. It has been a true pleasure working with this team, and I look forward to all that we will do in the future. The next time you see one of these women, be sure to express your gratitude for the great work they are doing in our community!

Midland WCC Steering Committee members: Samina Azad (Savant), Michelle Cummings (Dow Corning), Jaime Curtis-Fisk (Dow), Domonique Downing (Dow), Roja Ergun (Dow), Wendy Flory (Dow), Anne Kelly-Rowley (Dow), Beata Kilos (Dow), Tina Leaym (Dow Corning), Chloe Lu (Dow), Leslie O'Leary (Dow), Patricia Peart (Dow), Lissette Perez (Independent Scientific Editor), Janet Smith (Dow Corning), Janice Tomasik (CMU), and Vennesa Williams (Dow).

### **Save the Date—MSU ChEMS Research Forum 2015** ***MSU Department of Chemical Engineering & Materials Science***

Save the date! The Department of Chemical Engineering & Materials Science (ChEMS) at Michigan State University will hold its annual Research Forum on Thursday, May 14, 2015. The Forum will be held at the Huntington Club at Spartan Stadium on the Campus of Michigan State University. Registration and program information will be available in the fall.

For information on this year's meeting and to view presentations given at the event, please visit:  
<http://www.chems.msu.edu/forum2014>.

Please "[Like](#)" the Department Facebook page (MSU Department of Chemical Engineering & Materials Science) to see photos from the forum, receive updates about next year's event, and keep up-to-date with other Department activities and announcements.

**Thank you to our sponsors!**



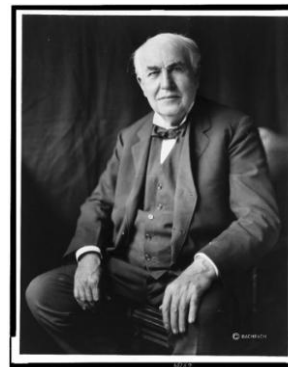
## Edison's Lab to be Recognized as National Historic Chemical Landmark in Michigan

**Keith Lindblom, National ACS Office of Public Affairs**

Chemical research and developments of American inventor and businessman, Thomas Alva Edison, will be recognized as a National Historic Chemical Landmark in Dearborn on Saturday, September 20, 2014. Thomas Edison developed an interest in chemistry as a boy in Michigan, and applications of chemistry were a common theme in many of his inventions including carbon filaments used in light bulbs, development of the nickel-iron alkaline electric storage battery, and research into domestic sources of rubber.

Edison's legendary "invention factory" in Menlo Park, N.J., was moved from its original site to Dearborn in 1928 when it was reconstructed by Edison's close personal friend Henry Ford. The family-friendly event will begin at 11:00 AM with tours of the laboratory and presentations, and Edison himself may make an appearance. The American Chemical Society, ACS Detroit Local Section, and The Henry Ford are sponsoring the event. For updates and information, visit [www.acs.org/landmarks](http://www.acs.org/landmarks).

Additional celebrations of Edison's work in chemistry will be held by the ACS at the present-day locations of his laboratories. The Edison Botanical Laboratory at the Edison & Ford Winter Estates will be commemorated on May 25, 2014, in Fort Myers, Fla., in partnership with the South Florida Section of ACS. Edison's West Orange laboratory complex will be commemorated at the Thomas Edison National Historical Park in West Orange, N.J., on June 6, 2014, in partnership with the ACS North Jersey Section.



Portrait of Thomas Edison in 1922.

Courtesy Library of Congress.

The Menlo Park Laboratory at The Henry Ford will join two existing National Historic Chemical Landmarks in Michigan: commercial production of bromine by Herbert H. Dow in Midland, and the discovery of organic free radicals by Moses Gomberg at the University of Michigan.

The American Chemical Society established the National Historic Chemical Landmarks program in 1992 to recognize important achievements in the history of the chemical sciences. Subjects recognized through this program have included Bakelite, the world's first synthetic plastic; the discovery and development of penicillin; and the work of historical figures such as Joseph Priestley, George Washington Carver and Rachel Carson. More information is available online at [www.acs.org/landmarks](http://www.acs.org/landmarks).

### In Past Issues of *The Midland Chemist*

**Wendell L. Dilling, Director and Historian**

#### 50 Years Ago

In *Is Supply Meeting Demand?*, by J. E. Dunbar, Editor: "It has been customary and somewhat expected of the practicing chemist to enlighten high school and college students on the desirability of seeking careers in the chemical profession. Perhaps this custom dates back to the post-war years when chemists and chemical engineers were in short supply. Nonetheless, as time goes on, the supply of graduating chemists and chemical engineers is more closely meeting the demand of industry, and the willingness of the individual chemist to sell careers in chemistry to young people may result in a disservice both to those already in the chemical profession and to the young people whom he seeks to assist."



### 40 Years Ago

In *Report of the Los Angeles ACS Meeting*, by David C. Young, Midland Section Councilor, Vice-Chairman, Council Policy Committee: "This is the first Council meeting which I have attended since I was elected to be Vice-Chairman of CPC. For those who are not familiar with the functioning of the governance of the ACS and what this means, here is a thumbnail Sketch: . . . The President of the Society is also President of the Council and Chairman of CPC. Because he wears so many hats and has little time to devote to CPC and the mechanics of preparation for Council meetings, the CPC elects one of its members to be Vice-chairman. That is the position which I hold during 1974."

### 30 Years Ago

In *Chairman's Corner* by Bob A. Howell: "The high level of activity within the Midland Section continues unabated. As previously indicated in this space (February issue of the Chemist), the Section is making a major effort to more uniformly include teachers in its activities. The response of area teachers to this initiative has been most gratifying. Enthusiasm for this effort seems to be widespread and we welcome the participation of teachers who have expressed an interest. These individuals will bring a wealth of new talent into the Section. On the other hand, there is an abundance of expertise within the Section which might be exploited by area teachers. We look forward to meaningful and mutually beneficial interactions initiated by representatives of both groups."

### 20 Years Ago

In *1919-1994, Midland Section Diamond Anniversary Exhibit, May 22-June 18, 1994, Grace A. Dow Memorial Library Mezzanine*: "An opening reception for the historical exhibit was held on May 22, 1994, with approximately 50 people in attendance. Chairman Bob Kohrman gave a brief introduction to the earliest days of the Section. Four 50-year members, Warren B. Crummett, Max E. Elder, Frank N. Grover, Jr., and John Speier were recognized. Mordecai Treblow, our Region II Councilor (Director) recognized Midland Section members who made significant contributions to the National ACS: E. C. Britton who was ACS President in 1951 (1952); David C. Young, who served as Region II Councilor (Director) after many years of dedicated work; and Donald R. Petersen who completed 19 years of service as Secretary of the Central Regional Meeting Committee. The significant long-term contributions of Wendell Dilling, a current Councilor, and Lin Dorman, who retired last year after 20 years on the National Council were recognized."

### 10 Years Ago

In *Professionals Day Being Planned, Call for Volunteers*: "Plans are moving forward for the Midland Section Professionals Day at the Midland County Fair, August 20, 2004. The purpose of Professionals Day is to show appreciation to our members and their families and provide information on ACS, along with several of its affiliated groups, and their outreach to members and the public. The theme for the day will be "Health and Wellness," the National Chemistry Week program for 2004."

### Upcoming Dates, Events, and Other Updates

- June 17 (7:00-9:00 PM) – Special evening lecture on the topic of *Honey Bees and the Colony Collapse Disorder*, Creative 360, 1517 Bayliss Street, Midland. This event is free and open to the public. For more information or questions, contact Matt Grandbois at 989-636-1687 or [grandboismatthew@gmail.com](mailto:grandboismatthew@gmail.com), or Gavin Lu at 989-496-5512 or [g.lu@dowcorning.com](mailto:g.lu@dowcorning.com).
- July 7 (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#.

- August 4 (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#.
- August 10–14 – 248<sup>th</sup> ACS National Meeting & Exposition, San Francisco, CA. For more information, see <http://www.acs.org/content/acs/en/meetings/fall-2014.html>.
- August 25 (5:30-9:00 PM) – Midland Section ACS 3rd Quarter Committee updates and dinner meeting. Venue to be determined. Contact Michelle Cummings ([michelle.cummings@dowcorning.com](mailto:michelle.cummings@dowcorning.com)) for questions.
- August 29 – Call for papers abstracts deadline for CERM 2014. Questions or concerns should be directed to Heather Juzwa, General Co-Chair, CERM 2014, via e-mail to [hjuzwa@shimadzu.com](mailto:hjuzwa@shimadzu.com) or by phone at 617-293-8279.
- October 1–4 – 45<sup>th</sup> ACS Central Regional Meeting (CERM 2014), Pittsburgh, PA. For more information, see [www.acscerm2014.org](http://www.acscerm2014.org).

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