# THE MIDLAND CHEMIST

A publication of the Midland Section of the American Chemical Society

**Vol. 48, No. 6** **December 2011** **www.midlandacs.org**


In This Issue



**Calendar for Dec./Jan.**

Dec. 9 Extended Adopt-A-Family Donation Deadline
Dec. 12 Section Board Meeting
Dec. 15 YCC Brewery Tour / Party

Jan. Section Board Meeting TBD

Visit http://www.midlandacs.org/ for more details.

*From the Chair*

## You Can Make A Difference

Now is the time for all good people of the chemistry-biochemistry-chemical engineering sort to be engaged in... what else, the field of your dreams! I assume that you are working in or toward that field of your dreams. Or, perhaps, you have finished the fight and have retired—but, wait, that only means you have more time to spend at your desire, and could you maybe, just maybe, spend some of that time toward making the world a better world to hear, see and experience the benefits brought to it by the chemical-related realities of life? Well, I assume that is so, else, why would you even be reading this?

With the space graciously given to me to twist your ears just a little bit, I'd like to first congratulate Alma College and Melissa Strait for the fine Fall Scientific Meeting that they put on back on October 22, 2011. It was a great location, and the talks were interesting. I believe you will find a bit more about it, that is, if you weren't there, in this issue of *The Midland Chemist*.

Sci-Fest 2011 was another event that was held, in November, on the 5th. Dave Stickles did another great job in bringing the world of science and chemistry just a little closer to school-age kids.

*John (Pat) Cannady*

Elections for 2012 (and beyond) offices of the Midland Section were held. Congratulations are due to the winners—look for the article contained herein for details of who won what!

Let me also add that the elections are for the offices—you don't need to be elected to make a big difference in the ways in which people around you respect chemistry and its associated field. You can make a difference. How best to do so? Merely contact someone who is an officer. In fact, I'll go so far as to give you the name of Gina Malczewski, and the contact address of gina.malczewski@dowcorning.com, who is the chair of the Section in 2012. She will be able to get you plugged into whichever group you have an interest.

Let me close by repeating again what was in the previous issues… Each of you has a tremendous possibility here, to get involved, to be involved, and to stay involved. So why don't you read the rest of this issue, find the things you would like to be involved with, and get out there and help. Your time will be greatly appreciated and you just might find that you enjoyed it!

*Brian Pate, Chair of Nominations & Elections*

## 2012 Board Election Results Are In

A summary of the results of this fall's election of the 2012 Board of the Midland Section of the American Chemical Society is reported below.

This was the first year that the Section voted electronically. 136 total valid ballots were received, which represents 19% of the eligible voters—this is a slight increase over the number of ballots received last year. In addition, the expense of this year's election was $229, which is a savings of $481 over last year.

A tie vote for councilor occurred—64 votes for each candidate—and was resolved by the Board, in accordance with Midland Section Bylaw VI, Section 8. You can see that every vote does count—thanks for your participation in this year's election!

Congratulations and welcome to the new Board members!

**CHAIR-ELECT:**
Wayde Konze

**SECRETARY:**
Seiji Inaoka

**TREASURER:**
Robert Freeman

**CHAIR, N&E COMMITTEE:**
Shawn (Xiaoyun) Chen

**COUNCILOR:**
Bob Howell

**ALTERNATE COUNCILOR:**
Connie Murphy

**DIRECTORS** (3-year terms):
Pat Smith
Dave Stickles
David Karpovich

**DIRECTOR** (1-year term):
Darren Hansen

*Amy Tesolin-Gee, MC Editor*

# Howell, Murphy, Lane Named National ACS Fellows

The American Chemical Society announced the selection of 213 members as 2011 ACS Fellows; an honor recognizing distinguished individuals for their significant contributions to science, and for providing excellent service to the ACS.

Midland Section members honored by election to the 2011 Class of Fellows are Connie J. Murphy, Dr. Thomas Lane, and Dr. Bob Howell. They were recognized for this honor at the Fall ACS National Meeting in Denver where each received a lapel pin and certificate. The complete list of awardees is available at http://cenm.ag/fellows.

Each of these remarkable and inspiring individuals had many nominations submitted on his or her behalf. Portions are shared further below to help illustrate the impact of their outstanding achievements.

To be eligible for consideration as an ACS Fellow, nominees must be current ACS members in good standing. The selection is based on demonstrated contributions in two areas. First, nominees must demonstrate excellence in their science/profession, which may include the following: excellence in R&D; teaching or education; and demonstrated leadership or managerial excellence in an organization within the chemical sciences.

Second, nominees must have demonstrated outstanding service to the American Chemical Society, including: governance on a divisional, local, regional, national and/or international level; publications, such as editor, assistant or associate editor; meetings through organization of symposia or major presentations; involvement in National Chemistry Week, Chemists Celebrate Earth Day, and similar outreach activities; and public communication by press, radio, TV or electronic media.

Individuals can be nominated by ACS National Committees, Technical Divisions, local sections or individual members. The nomination period for 2012 ACS Fellows will open around the end of the first quarter of 2012. Fellows are chosen by the Selection Committee appointed by the Board Committee on Grants & Awards which has governance oversight for the program.

Congratulations to Connie Murphy, Tom Lane, and Bob Howell!

*Dr. Bob Howell (l), Connie J. Murphy, and Dr. Tom Lane (r), named National ACS Fellows in 2011.*

**Excerpts from Connie J. Murphy's Nomination Letters:**

"Without a doubt, Connie exemplifies the leadership, excellence, and passion for our science and Society that the ACS Fellows program seeks to acknowledge and recognize."

"Ms. Murphy's technical achievements have been widely recognized by her employer, The Dow Chemical Company. Her contributions have been substantial and sustained over the course of her career." She was awarded several Special Recognition Awards from The Dow Chemical Company for her contributions to several projects and for her contributions leading to over five U.S. patents.

"Further, she has been recognized for her leadership, commitment, and experience by the number of teams, boards, and awards that she has amassed during her career." Multiple examples of Connie's achievement in this area were given and include her service as a Delta College Chemical Technology Advisory Board member since 1995, as well as an invited speaker to chemical technology students on careers in chemical technology, ethics at work, and intellectual property.

"It is incredibly telling and humbling to recall that Connie is the recipient of her company's, the Midland Section and the ACS Division of Chemical Technicians awards for outstanding service and achievement." These include the Distinguished Service Award, awarded by the ACS Division of Chemical Technicians in 2006; Outstanding Chemical Technician Award, awarded by the Midland Section of the ACS in 1997; and the Outstanding Technologist Achievement Award, awarded by the Dow Central R&D Scientists Organization in 1994.

"Connie's service to the Society has been equally impressive. She has given her time, talent and treasures freely to the American Chemical Society; quietly, effectively, and proactively adding value to the enterprise. She moves freely across all levels of authority and is able to "sell her ideas" in a fashion that fosters support and action. Connie gets stuff done!"

"Ms. Murphy is an incredible woman with vision, energy, passion, and commitment to our discipline and the Society. She has been relentless in her pursuits and effective in her causes. When faced with barriers or challenges, she stands tall and simply does what is required; facing each challenge with courage and an optimistic outlook that has assured her success. She is an ambassador for

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chemistry and a champion for the chemical technologist."

"I first got to know Connie as a Technologist and quickly came to recognize that her intelligence, curiosity, motivation for excellence, and work-style adaptability made her a Technologist that you wanted on your project team."

"In Connie's later career at Dow Chemical, she again showed her versatility and ability to develop new skills by becoming a people manager and leader."

"In addition to her technical abilities, Connie's demonstrated people and leadership skills led to the founding, organizing, and leading The Dow Chemical Midland R&D Technologist Group….This effort led to the formation of the Mid-Michigan Technician Group affiliated with the ACS Midland Section which led to her contributions and participation in the establishment of the National ACS Division of Chemical Technicians."

**Excerpts from Dr. Thomas Lane's Nomination Letters:**

"Tom has always made himself available to the applied chemical professional whether it is a career or personal issue. He takes an active role in the careers of other professionals and possesses a unique ability to develop people for future assignments."

"In his 35 years at the Dow Corning Corporation, he earned the title of Research Scientist, making him one of an elite group highly respected for their contributions to organosilicon chemistry and technology. He was an inventor on 15 US and 85 International patents, authored 170 research reports, and made 390 technical presentations. He has also written six book chapters….In honor of his many scientific contributions, he has been named a Chartered Scientist by the Science Council of the UK and the Royal Society of Chemistry. From Cambridge he received the "International Leader in Achievement Award" (1987) and in 1991 our local ACS Section honored him for Outstanding Achievement and Promotion of the Chemical Sciences. He has been recognized by two institutions (Purdue and Central Michigan Universities) with Distinguished Alumnus Awards."

"He is an instinctive and engaging leader, who understands individual motivations and inspires all ages with his positive message and his insights. He is an excellent communicator, able to speak about difficult concepts in a clear and incisive way—but he is also an exceptional LISTENER. He led his employees by example and with finesse, building effective teams by encouraging interaction and enjoyment—he is the ultimate Chemistry Ambassador who convinces all his audiences that science can and should be FUN."

"The American Chemical Society (both at the local and national levels) has long benefited from Tom's commitment to its mission….but his service is no better exemplified than by the achievements of his national presidential terms 2008-2010."

"Ultimately, all his accolades and accomplishments cannot begin to describe fully Tom as a professional or as a person. He represents chemistry at its best, and is, like that profession, honorable, remarkable, and greatly concerned with the improvement of people's lives."

"At the 2011 ACS National Meeting in Anaheim, Tom attended the Awards Ceremony of the National Student Affiliates of the American Chemical Society Chapters. When he approached the podium, the students roared! He can communicate with them in a way that very few people in his position can….they chant with him, "I am proud to be a Chemist!" He is most definitely empowering the next generation of chemists and chemical engineers."

"When Tom was elected to the Presidential Succession, he asked his constituents for advice as to what he could do during his term for the betterment of the Society and the global society as well."

"Tom's interactions with the ACS are substantial. He has worked long and hard at making chemistry a word and a work of success in the world….he has accomplished a great venue, a great way of doing things that would be an icon for those younger who are looking about and saying: who should I be like, who has done what should be done? The answer is Tom Lane."

**Excerpts from Dr. Bob Howell's Nomination Letters:**

"Professor Howell's area of expertise is in polymer chemistry, particularly in the research and development of novel flame retardants in polymeric materials. He has published extensively and lectured widely on this and other aspects of polymer science. In the last five years alone he has co-edited five books and authored seven book chapters including three in the ACS Symposium Series of books. In addition he has published over 30 research papers during this time, mostly in the Journal of Thermal Analysis and Calorimetry, a fully peer reviewed, highly cited journal. Overall his impressive record includes 250 scientific publications, 400 presentations at national/international meetings, numerous invited seminars at various institutions including consultations for several major US corporations."

"He has demonstrated excellence in research in polymer science and in the teaching of chemistry and has served the American Chemical Society in an outstanding manner for many years…..Over the years I have become increasingly aware that he has become one of a very select group of chemists in the region who have shown great leadership both in promoting the chemical sciences and in making outstanding contributions to the American Chemical Society."

"His contributions to the American Chemical Society are most impressive, both nationally and locally. At the national level, Prof. Howell is a Member of Council and a member of five committees including the Patents and Related Matters Committee which he has diligently served for twenty years. His local contributions are equally impressive having led the Midland Section as chair twice and served many years as councilor and member of the Board of Directors. Moreover, he has chaired a variety of committees including the Government Affairs Committee, served on several more, notably the Scholarship Committee, and organized symposia for our annual Fall Scientific Meeting and a number of Central Regional meetings. His contributions to the local section were recognized by receipt of our Award for Outstanding Service."

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"He ensures that his actions on national committees properly reflect the views of our Section. We have received many ChemLuminary awards over the years, in large measure due to his advocacy and leadership in this area."

"I worked with Professor Howell on a number of projects, most notably on the degradation and stabilization of poly(vinylidene chloride) copolymers. His extensive knowledge of the literature and his creative insights quickly impressed our R&D leadership, such that they quickly recognized the need to incorporate him into the research team."

"I believe Professor Howell's primary passion is teaching and mentoring students. He has won several teaching awards, among them are the excellence in teaching awards from both CMU and the ACS, Midland Section, and he also received the Mortar Board Outstanding Teacher Award twice. He received the Outstanding Mentor, ACS Project SEED recognition in 2003....I really appreciate the time, effort and patience he provides to the mentoring relationship. He is very deliberate about ensuring that the student receives the scientific direction needed, as well as imparting his personal example for attentiveness to the literature, attention to detail in experimental procedure and integrity all along the way."

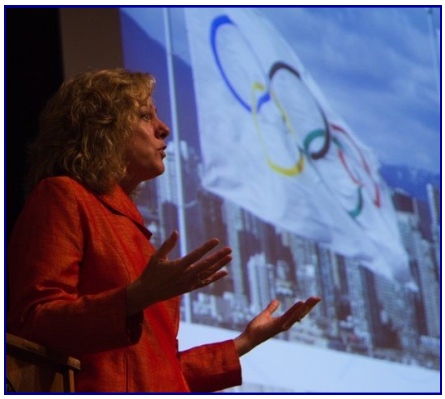
"Professor Howell has received many other awards and honors throughout his career….and in 2002 was elected Fellow of the North American Thermal Analysis Society (NATAS). This honor is accorded to only one or two NATAS members a year and recognizes a history of distinguished scientific achievement in this discipline."

"He has been an example to me in many areas but most notably in excellence in scientific research, in visionary leadership as evidenced by the programs he initiated both in the Chemistry Department at CMU and within the local section, in persistence when times get difficult, in commitment to students, and in personal integrity and character….He is the type of person we should celebrate as a role model within our society."

*Melissa Strait, FSM Chair*

# Alma College Hosts Successful FSM

On the glorious fall day of Saturday, October 22, 2011, the Fall Scientific Meeting of the Midland Section of the American Chemical Society was held at Alma College. With the theme of "Think Globally, Act Locally" a range of international and local speakers were present to talk on topics near and dear to our hearts here in mid-Michigan, but also of import to the international community.



*Ann Duffy, the corporate sustainability officer for the 2010 Olympic Games talked about the environmental and sustainability legacy of the Vancouver 2010 games.*

The keynote speaker, Ann Duffy, spoke about making the 2010 Vancouver Olympic games a sustainable venue. She was followed by three symposia in Power Technology, Environmental Awareness and Biotechnology. The symposia were followed by parallel oral and poster sessions where eleven talks and more than 40 posters were presented.

In addition to the scientific activities, several vendors were present to promote their wares. The meeting was attended by more than 100 people. At the end of the scientific sessions, awards were made to the best graduate and undergraduate oral and poster presentations. The afternoon concluded with a walk through the lovely fall weather to the post-meeting reception.

Awards were given to Angela Clayton (best undergraduate poster), Matthew Quast (best graduate poster), Mary Martin and Sarah Murphy (best undergraduate oral presentation) and Daniel Holycross (best graduate oral presentation). All winners received a monetary prize and a Merck Index.

*FSM attendees enjoy the posters (below), the symposia (above) and the presentations.*

*Gina Malczewski, Chair-Elect / Kids & Chemistry Co-chair*

# Outreach Sponsors Activities, Designs Speaker Award

On November 5, ACS Outreach had a booth at Sci-Fest at which the theme of "Our Health—Our Future" was reinforced with activities that covered nutrition including starch and Vitamin C content of food, as well as iron in breakfast cereal and Pepsi vs. Diet Pepsi (density and sugar content). We also showed various types of bacterial growth from common surfaces and used a "Glo Germ kit" to teach the kids about effective hand-washing. We had very dedicated volunteers who worked non-stop for the entire four hours!

Aaron Gaertner, Shari's Executive Chef and General Manager, ran a science café on the "Art and Science of Modern Cooking" with science explanation provided by Gina Malczewski at Saginaw High School on November 10. This program was a reprise of the one done at Bay City Central in April, and one will likely be held in Midland next year. All 60 attendees got free samples of tasty items from cookies to ice cream, and our feedback indicated the program was again very successful.

On November 12, the third installment of the Camp Chemistry program for Junior Girl Scouts was held at Delta College. This year's theme was Polymers: Girl Scouts Bonding at Camp Chemistry. Activities were organized in four different lab rotations. The feedback was very positive. The kids had fun and some were very excited to go home and tell their parents something they learned.

Three of the labs were run by the college instructors and one was run by a student who had good rapport with the girls. Delta instructors offered their students extra credit to come in and volunteer for the event and so we had 1–2 volunteer helpers for each room. Over 40 girls attended (ages 9–12) and at least 15 adults worked on the experiments with the girls. The guest speakers were young women from Dow that talked about their jobs there. It was informal but kept the scouts engaged.

We are now preparing for our Pittcon involvement in Orlando 2012, and science coaching is just getting started. We have also offered to do a special "Bringing Science to Life" session at the Michigan Science Teachers Association meeting in Lansing on March 8, and are just starting to plan Education Day with the Saginaw Spirit, which will take place February 28. If you have any ideas for demos or programs, or would like to volunteer, please contact Gina or Lisa (gina.malczewski@dowcorning.com or Lisa.Thackery@dowcorning.com).

**Update for Program Committee**

The Program Committee (Gavin Lu, Gina Malczewski and Sue Perz) has developed a speaker award with the help of Tim Drier, Dow Chemical glassblower and glass artist.

For $40 per award, Tim has crafted a goblet for each speaker (first ones awarded to Biofuel speakers Harding and Dale on October 6), with a compartment in the stem that contains ion exchange resin made by Dow Chemical. An ACS logo also appears on the front of this compartment. The glass (and silicone bead which closes the resin compartment) represent Dow Corning.

A note was provided with each award explaining the close connection Midland ACS has with Dow Chemical and Dow Corning, and thanking each speaker.

Because each piece is hand-blown, it is unique, and we believe these provide a wonderful memento (which is also useful!) of each speaker's trip to Midland. We will also be sending Drs. Christy and Jorgensen these awards for their presentations in June.

The committee is also planning talks for next year, and looking forward to the involvement of the new chair-elect.

*The Program Committee offers speaker awards by master glassblower, Tim Drier. The design incorporates Dow and Dow Corning technologies.*

*Marilyn Tourné, YCC Chair*

# YCC Sponsors Brewery Tour

**Tour & Holiday Party**
**Tri-City Brewery**
**Bay City, MI**
**December 15th, 6pm**
**Food, Drinks, Cash Bar**
**Open to All**

Since we had such a good time at the first brewery tour we decided to have another. This time we will be co-hosting the event with the Young Research Committee (YRC) from Dow. Repeat offenders are definitely WELCOME!

Anyone and everyone is welcome to attend—you do not need to be a member of YCC or YRC. We will be having it at the Tri-City Brewing Company in Bay City on Thursday, December 15th.

As before, we will take a small tour of the brewery and then enjoy food and drinks for the rest of the evening. A cash bar has been tentatively planned for our members after the tour (they will provide a discount on six packs and growlers).

Don't miss out on what is sure to be a GREAT TIME!!! We will be meeting at the Brewery at 6:00 pm. Food and drinks will be served after the tour. Please contact Marilyn Tourné at tourn1m@cmich.edu if you have any questions.

Hope to see you ALL there!

*Amy Tesolin-Gee, Publicity Co-chair / MC Editor; photo provided by Eva Li, Publicity Co-chair*

# Midland Section and MCFTA Sponsor Biofuels Discussion

The Midland Section of the American Chemical Society (ACS) and Midland Center for the Arts (MCFTA) co-sponsored the panel discussion, *"Biofuels: Thinking Outside the Barrel"* on October 6, 2011.

Approximately 70 people attended the event held in the Garden Room at MCFTA. Light refreshments were provided. Speakers were Dr. Bruce E. Dale, of the DOE Great Lakes Bioenergy Research Center and professor of Chemical Engineering at Michigan State University and Russ Harding, senior environmental policy analyst at the Mackinac Center for Public Policy and director of the Center's Property Rights Network.

Professor Dale began his presentation *Inventing the Biofuel Future: We Can Have Biomass for Fuel and Eat it Too* by explaining that "biofuels" refers to any liquid fuels made from plant matter. He presented Energy Information Administration data showing a strong correlation between gross domestic product per capita and energy consumption per capita, illustrating that energy use and wealth are linked. Further, United Nations HDI (human development index) data correlate to a substantial extent per capita energy consumption with well-being. There are five billion low-income people in countries with rapid economic growth whose energy needs are increasing.

Petroleum accounts for 96% of the energy supplying basic services including heat, light, and transportation. Further complicating matters, the petroleum industry as controlled by oil companies is not truly an open market. Dr. Dale showed the International Energy Agency forecast of global all-oil production, which indicates that by the year 2030, output from producing crude oil fields will be down to about half of what it was at maximum production. There are also few additional sources of vast amounts of oil.

Our economy and culture have been built around the fact that world crude oil prices from 1870 to the early 1970s were stable at around $20 per barrel. Forty years ago, some spiking in prices occurred due to the Arab oil embargo and Iranian Revolution. From 2000–2011, we have seen politically-driven price increases, with a peak in 2008 coinciding with the start of the "Great Recession." While prices declined somewhat with decreased economic activity, and thus demand, they are again on the rise. In Dr. Dale's view, as long as we rely on petroleum for our energy needs, we will remain on the "precipice of recession."

*Russ Harding (left), Pat Cannady, Gina Malczewski, Gavin Lu, Dr. Dale*

The lack of investment capital resulting from such economic instability presents significant challenges for developing alternate fuel options, Dr. Dale explained. The bottom line is we cannot continue on our current path. Cellulosic biomass (non-food plant material) is the only potentially renewable, low greenhouse gas (GHG) feedstock for large scale liquid fuels to replace petroleum.

Per Dr. Dale, the cost is $60-70 per ton of plant material to convert the sugar and energy content to a combustible form. Compared to the cost of oil per barrel, we are now at a point where it makes sense to use plants for energy. Dr. Dale cited Brazil which has been reducing ethanol-from-sugarcane costs for 30 years; there, cellulosic ethanol costs have now declined to significantly less than that of gasoline. The US Department of Energy found that we can produce 1.3 billion tons of biomass per year, the equivalent of 3.5 billion barrels of oil—the amount produced at our peak production.

Dr. Dale stressed the need to densify the biomass to make it economically feasible for transportation. Their lab uses an approach called AFEX where pellets and char can go into a biorefinery for fuel and electricity as stable and storable briquettes. The key question is: can we redesign US Agriculture to produce biofuels, food and feed in an economically practical manner?

Per Dr. Dale, 90% of agricultural land use is for animal feed. By using a technique called "double-cropping," biomass can be increased 2.5 times. Greenhouse gases would decrease by 10%; 50% of gas and 5% of electricity would be displaced without decreasing food and feed production. The technique works by extending the useful growing season of the land whereby corn could be harvested in the fall, then a cool season annual such as winter grass is planted and harvested in the spring. Upon harvesting the winter grass, corn is again planted.

Challenges include the two-year time requirement for building a biofuels plant once all other factors are in place, as well as the feedstock supply, biomass densification and logistics. However, considering the current state of economic instability, we must do something.

Dr. Dale's closing remarks maintained that oil will not go away; we need to diversify transportation fuels. We also need to provide food for a growing and wealthier global population while controlling GHGs and supplying energy for the developing world. The challenges and opportunities intersect at biofuels. He acknowledged it is going to take decades to make this transition, but we need to do it for future generations.

With years of experience as a policy analyst, Russ Harding's presentation *Ethanol: Boon or Boondoggle* focused on many of the political issues, including how economics cannot be separated from the science. While he is not opposed to alternate energy and spent many years working for EPA, he is opposed to government "interference." He cited the Solyndra solar plant and the nearly bankrupt Nevada Geothermal Power, Inc. as examples where substantial amounts

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*Jeff Seifferly, MMTG Chair*

# Adopt-A-Family Donations Needed!

Mid-Michigan Technicians Group would like to ask your help this holiday season in our annual Adopt-A-Family donation drive. As in years past, we are again adopting a family in need in our area.

This year, we've adopted a single mom with four boys, ages 3–15 years. In order to do this, we are asking for monetary donations. It's a great way to help others that are very much in need with minimal effort and monetary support. Every dollar counts…so even if you don't have a lot of money to spare, even your loose change can make a difference for those that will otherwise go without this holiday season.

If you aren't familiar with the program, when we adopt a family, we typically select a 4–5 member family. It may be a single parent with several children or a husband and wife with children. They do have one thing in common though—they have fallen on hard times and there will most likely be no presents under the Christmas tree this year without our help!

What do we do? We collect the money and purchase, wrap and deliver gifts off of their Wish List. We spend about $50–$75 per person on gifts, and we also provide a holiday meal. When we ask the mother or father for the Wish List, they will tell us what their children would love to have. When we ask them what is on their own list, they will usually say that they don't need anything or just to spend the money on the kids. Some of the items that we've purchased for the parents in years past have been necessities like socks and underwear. Not exactly what most people ask for from Santa for Christmas!

How can you help? It's not too late to volunteer to help shop/wrap/deliver gifts. If you would like to help, please contact Michelle Rivard or Dana Fuerst. If you would like to make a monetary donation, please send your tax deductible donation to Dana Fuerst or Michelle Rivard BEFORE December 9. In the event we collect more money than is needed for the current family, we will then adopt additional people since there are always several (about half who are eligible) who do not get adopted.

Please make any checks payable to either Michelle or Dana. Your donations will be kept confidential. Only Dana and Michelle will know how much money you donate because they will be sending you a receipt for your tax records.

If you have ANY questions, or if you would like to volunteer, please do not hesitate to contact us:
Dana Fuerst: The Dow Chemical Company; 1776 Building, Office B14C; Midland, MI 48674; 989-636-4854.
Michelle Rivard: Dow Corning Corporation; Mailstop #CO41C1; Midland, MI; 989-496-5399.

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of taxpayer dollars had been used to subsidize what turned out to be unsuccessful alternative energy ventures.

Harding spoke of "crony capitalism" leading to "soft corruption," an example of which is cap and trade provisions limiting carbon dioxide emissions that, if passed, would lead to government decisions as to whom such credits would be given. Similarly, the ethanol issue, while good in theory for farmers and national security, and supported by environmental groups, has become a matter of subsidy and mandate with billions of taxpayer dollars spent.

Harding commented that E85 as a fuel is not as energy dense as gasoline (so mpg is reduced) and in some locations has kept increasing in price along with gas prices, so offers little cost savings over gasoline. Now it has also decreased in popularity with environmental groups. Dr. Dale later pointed out that E85 in areas with abundant corn—such as Iowa—were indeed priced properly relative to gasoline making it a viable alternative in those places.

According to Harding, the World Bank found that about one third of the cost increase in food prices is due to ethanol production from biomass. Yet, Congress mandated the use of 36 billion gallons of ethanol by the year 2022. He further cited a Columbia University study claiming more energy is utilized in producing corn-based ethanol than gasoline. The ethanol industry now claims it is able to produce more energy out of ethanol than it is using to generate it.

Harding agrees with Dr. Dale that we do not have a free market for energy. For alternative fuels he hopes that research—such as Dr. Dale's—can provide practical options. However, he emphasizes that we cannot do it with government subsidy and mandate.

Further, he says we are not developing our natural resources, such as giant coal reserves. It was decided in this country to electrify cars, but we have lots of untapped reserves of natural gas and oil. He indicates that it's estimated there are enough natural gas reserves in the US to take care of our energy needs for at least another 100 years. Hydraulic fraction with horizontal drilling is a new technology that could allow us to tap into previously unavailable reserves. However, environmental groups that want us to switch to non-carbon based fuel tend to oppose this.

The fact that the US has a 14 trillion dollar national debt means we won't be able to afford subsidized oil, says Harding. Elimination of the fuel credit for ethanol and all fuel subsidies is necessary. To get us competing again as a nation, he suggests we implement a consumption tax and eliminate the ethanol mandate.

With respect to a legislative role for government, Harding suggests it be limited to sponsoring basic research at universities that the private sector may not be able to fund. Other than that, he says, the government needs to "get out of the way."

Several questions were taken from the audience. The final question posed to both speakers was "so what do we do?" Both speakers clearly agree that restoring a free market is necessary.

Dr. Dale's final comments are that we have enough biomass here for both our food and our fuel needs. With land collecting solar energy less than half the time, and the current practice of only taking half the corn plant, there are opportunities to more efficiently grow and use biomass.

The ACS presented an appreciation gift to each speaker made by Tim Drier, master glassblower. Drier's design incorporated local Dow and Dow Corning technologies into each piece.

*Rusty Govitz, MMI Communications Director*

# Impact Analytical Partners With CMU

When Impact Analytical took on a summer intern working toward her doctorate, the testing lab had no idea how well the whole thing would work out for all involved.

*Barbara Pavan*

The intern, Barbara Pavan, is one of the first students taking part in Central Michigan University's new Science of Advanced Materials (SAM) program in the College of Science and Technology. As part of her curriculum, she spent a few months interning at Impact.

"The purpose of the internship was to give Barbara some hands-on experience in industry," said Eric Hill, Impact's Business Marketing/Sales Manager. "Barbara worked directly on more than 40 customer projects, and she did an outstanding job. She worked in the Molecular Spectroscopy laboratory, performing FT-IR and NMR analysis."

While Pavan gained valuable experience in the testing lab, Impact gained another expert chemist in its increasingly busy labs for several months.

"It truly was a win/win for both sides," Hill said. "She got a chance to apply her skill set in an industrial laboratory setting, and we were able to utilize a valuable resource to meet the rising demand at Impact Analytical. She applied her chemistry knowledge to solve customers' needs. She will be presenting a poster at the Fall Scientific Meeting of the American Chemical Society, outlining some non-customer work she did here at Impact."

CMU's SAM doctoral program provides an interdisciplinary environment to train effective researchers for both academic and industrial careers. Throughout their academic and research experiences, students gain hands-on experience exploring the chemical, physical and mathematical properties of advanced materials. CMU faculty maintains active research labs and is involved in collaborative relationships with other institutions and with industry, providing valuable contacts with experts in a variety of materials areas.

For her part, Pavan said her time at Impact provided a chance to flex some different muscles in the lab, as well as inform where her career will go next.

"My internship at Impact Analytical was challenging and rewarding," Pavan said. "One of the challenges I encountered was the large variety of materials we analyzed, but this also provided me with a great learning experience, which helped to expand my knowledge of materials and analytical techniques.

"This was my first experience in an industrial environment, and I definitely enjoyed the dynamism of the job and how supportive all my colleagues were," Pavan added. "I feel I learned a lot, both scientifically and professionally, and the whole experience helped clarify what I would like to do after graduation."

"For Impact, the internship was a resounding success," Hill said. "We have communicated the positive feedback to CMU and asked to be considered for internship opportunities next summer."

Impact Analytical is a contract testing laboratory established within Michigan Molecular Institute. MMI is located in Midland, Michigan, with the mission to promote the advancement of applied scientific research in the areas of chemical and polymer science.

Impact Analytical works with more than 300 companies around the world and is dedicated to providing top-notch analytical service that supports the success of its customers.

Working in a variety of industries – pharmaceutical, plastics, consumer products, medical devices, packaging, automotive and specialty chemical – Impact Analytical combines unparalleled service with a full suite of capabilities. From quality control testing to identification of an unknown to support for research efforts, Impact Analytical is established in the industry as a partner that delivers reliable data and top-shelf service.

More information about Impact Analytical is available by visiting www.impactanalytical.com; to learn more about MMI, go to www.mmi.org.

Contact: Eric Hill, Impact Analytical Business Marketing/Sales Manager - 989-832-5555, ext. 502 or hill@impactanalytical.com.

*Jeff Seifferly, MMTG Chair*

# MMTG Continues Activity Into Fall

The Mid-Michigan Technician Group (MMTG) continued to be active with involvement in many different events throughout the fall. We sponsored our third "Lunch and Learn" – Swagelok Safety / Tube Fitting Installation Class, hosted by Midland Valve and Fitting. Our members received hands-on, individual instruction in pipe thread and straight thread identification along with methods of sealing.

This training also included correct pull-up instruction, use of the Swagelok Inspection Gauge, methods to pre-swage nuts and ferrules, disassembly and remake instruction, and safety considerations of tube systems. Following the course, a question and answer session was held along with an MMTG-sponsored lunch for our students and the employees of Midland Valve and Fitting.

MMTG member Dave Stickles was once again chair of Sci-Fest, held this year at Dow Diamond. Our members helped plan and staff the MMTG and Midland Section Science Outreach tables. Attendance was brisk with a constant stream of students viewing and participating in our demos (see photo below).

MMTG "Lunch and Learn Seminars" are free and open to current MMTG members and prospective new members. We are always looking for new members interested in science, networking, outreach activities, and career development. For further info about MMTG, contact Jeff Seifferly 989-496-4239; jeff.seifferly@dowcorning.com.

*Dave Stickles, Sci-Fest Chair / Director*

# Sci-Fest Marks National Chemistry Week's 24th Anniversary

This year's Sci-Fest theme was "Chemistry—Our Health, Our Future" as part of National Chemistry Week, which was celebrated on November 5th, 2011 at Dow Diamond, home of the Great Lakes Loons. The Midland Section of the American Chemical Society, the Mid-Michigan Technician Group and The Great Lakes Loons sponsored Sci-Fest, as well as the Dow Chemical Co. and Dow Corning Corporation in honor of the 24th Anniversary of National Chemistry Week.

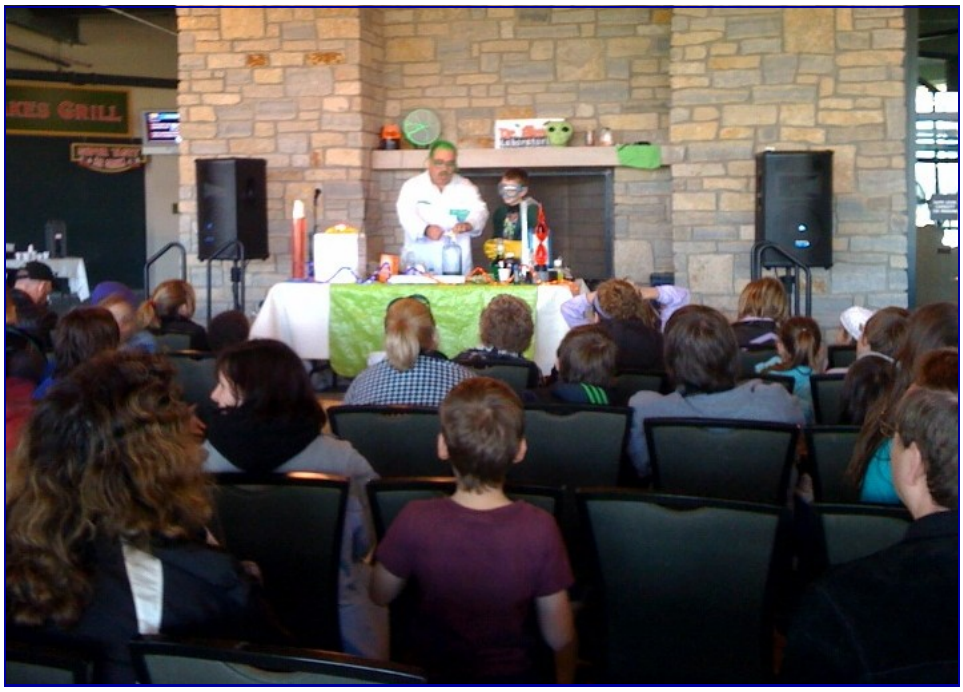
The Theme "Chemistry—Our Health, Our Future" along with the following ideas were used to give exhibitors ideas to tie in their exhibits: health, nutrition, exercise, exercise equipment, recreation, air quality, water quality, safety equipment, environmental health, sports, sporting equipment, dental health, stress reduction, and a host of other things that will in some way help improve our future health or that of the environment.

There were many hands-on activities for the approximately 1000 or more participants from 10:30 am–2:30 pm in and around the Dow Diamond Concourse. A slide show of everyday applications for over 50 different elements ran continuously on the center field scoreboard display and TVs in the concourse.

The kids launched Rocket Balloons, or braved the barrel of the smoke cannon, worked with molding "Moon" sand, surface tension of water, construction magnets, magnet yo -yos, hula-hoops, walked on slime, created hologram light shows in their hands, and groomed faces with iron filing hair.

They tested their hand washing skills by applying hand lotion, containing fluorescent dye, which simulated where microbes/germs could be on their hands. They viewed their hands under UV light to detect the dye, washed their hands with soap and water, and then viewed their hands again under the UV light to see if all of the dye had been removed. If no fluorescence was detected, their hand washing skills were excellent.

Animal furs, feathers, and bones were available for tactile exploration. UV light changed the colors of some white beads before their eyes, but sunscreen prevented this—which showed the effectiveness of sunscreens. Families learned about bicycling and all its health benefits, about Senior Olympics and many of the implements used in the events and what they are made from.



*Dr. Slime's show taught that chemistry is not magic, but is the work of atoms and molecules.*

There was information about sugar and glucose, about stroke education/ smile/reach/speech, and Dow Corning Healthcare provided activities addressing medical tubing, wound care, drug delivery, and skin care.

Attendees also learned about protecting the Saginaw Bay Watershed. Recycling exhibits dealt with the health of our environment. They got to watch a glassblower make Christmas ornaments and glass figures. Girl and Boy Scouts that attended in uniform were given a participation patch after answering questions about something they learned. Model airplanes and helicopters were on display, as well as video of them in flight. To the delight of the kids, Lou E. Loon, the Great Lakes Loons mascot was there.

Exhibitors were as follows: Mid-Michigan AIChE, American Chemical Society Midland Section, ACS – Wendell Dilling, ACS – Kids and Chemistry, ACS – Science Literacy/National Chemistry Week, Central Michigan University ACS Student Group, Chippewa Nature Center, Dow Corning – Healthcare, Glassblowing, Lou E. Loon, Midland Radio Controlled Modelers, Midland Volunteers for Recycling, MidMichigan Medical Center Midland, Mid-Michigan Technician Group, Mt. Pleasant Discovery Museum, Saginaw Bay Watershed Initiative, Saginaw Valley State University Chemistry Club, and Tri-City Cyclists.

Dr. Slime, a Delta College laboratory manager, was center stage with his Science Show giving demonstrations such as the production of an elephant's toothpaste (decomposition reaction of hydrogen peroxide and potassium iodide); exploration of the states of matter through demonstrations with dry ice, liquid nitrogen, and air; an acid/base reaction with colorful results; and spontaneous changes of pressure blowing a cork off in one instance; and creating a vacuum that inflated a glove inside a jar.

His main theme was that chemistry is not magic, but is the understanding of how molecules work. He had a "standing room only" audience of around 500–600 watching his show, while the rest of the exhibits continued to have a crowd of visitors around each of them.

Many teachers, parents, and caregivers picked up the National Chemis-

*(Continued on page 10)*

*Wendell Dilling, Director and Historian*

# In Past Issues of *The Midland Chemist*

**40 Years Ago This Month**

In *Flagg and Schmidt Earn RESA Award*: "Two Midland scientists, Drs. Edward E. Flagg, and Donald L. Schmidt, both of the Dow Chemical Company, have been named winners of the seventh annual Award sponsored by the Research Society of America (RESA) for excellence in published research."

**30 Years Ago This Month**

In *Candidates for ACS President and National Directors from the Midland Section* by Wendell L. Dilling, Midland Section Councilor: "Five men from the Midland Section, Willard H. Dow, Edgar C. Britton, Ray H. Boundy, Howard S. Nutting, and David C. Young, have served as President or as members of the National Board of Directors of the American Chemical Society or have been candidates for these offices. Although not all were elected, nomination for these high offices in the ACS is an honor indicative of the esteem fellow members held for these men."

**20 Years Ago This Month**

In *1991 Fall Scientific Meeting Highlights* by Steve Gluck, General Chair: "The 47th Fall Scientific Meeting, held October 26, was an experiment created by the organizers to try and generate more interest in the meeting. The experiment was a success as judged by the response of the attendees. About 700 people attended the meeting. The format of having experts lecture for 45 minutes, inviting science educators, getting a nationally recognized keynote speaker, increasing the size of the poster session and maintaining our traditional oral sessions were the parts of the plan which meshed together to create this meeting."

**10 Years Ago This Month**

In *Midland Section Members – A Call to Action* by Pat Cannady: "As the current year wends its way to a close, many of us are still adjusting to the tragic events of September 11 and the ongoing effort by the nations of the world to root out and eliminate terrorism. The response of Americans and our friends across the globe has been truly amazing in its reach and scope. We can see in the increase in enlistments in our own armed forces and in the official support given from foreign governments a strong resolve to come together to accomplish a worthy goal. Many hands in this activity are making for lighter work."

*Letter to the editor*

# Election Shows Need for Revised Voting Procedures

Two parts of the 2011 Midland Section Election (for officers starting in 2012) illustrate the need for a revision of the Section's bylaws if one believes in elections being decided by a majority of the voters. The chair-elect and three of the directors were elected by less than majorities of the votes cast.

Current Midland Section Bylaw VI, Section 7, states that "Election depends on receiving a plurality of the votes cast." Regardless of the number of candidates, the candidate who receives the most votes is the winner. When there are three or more candidates for a single office the winning candidate sometimes receives less than a majority of the votes cast.

Three candidates for chair-elect received votes as follows: A, 60; B, 41; and C, 19. Thus candidate A was the winner with exactly 50% of the vote. A majority in this case would be 61 votes. In all likelihood candidate A would have been the winner anyway in a run-off election as only one more vote would have been needed to make a majority.

Use of an instant run-off election in which voters select first and second choices would have served to select a winner with a majority of the votes. This procedure is the one used for election of a president-elect in a National ACS election when there are three or more candidates.

This revised election procedure for the Midland Section is usually not needed because rarely are there three or more candidates for any Section office other than director, but recently there have been a couple cases were there have been more than two candidates.

Ten candidates for four director positions had the following votes: D, 69; E, 62; F, 55; G, 49; H, 47; I, 46; J, 44; K, 41; L, 35; and M, 26. Each voter was allowed four non-prioritized votes; 129 voters voted for at least one director. Candidates D, E, F, and G were elected. Candidate D was supported by a majority (53%) of the voters, while candidates E, F, and G were supported by only 48%, 43%, and 38%, respectively, of the voters.

Use of the multiple instant run-off 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 elected four directors, each being elected by a majority of voters. With several candidates, H, I, J, and K, finishing close behind candidate G with 47, 46, 44, and 41 votes, respectively, one or more of the latter four candidates could easily have been elected with only a few lower choice votes from voters whose higher choice candidates had been eliminated.

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.

*Wendell L. Dilling*

*(Continued from page 9)*

try Week magazines and other giveaway items. Doughnut holes, apple cider, and punch were served to visitors, as well as lunch provided for the exhibitors.

For advertising the event, 25,000 flyers were distributed to schools throughout mid-Michigan. An article appeared in the Midland Daily News and the event was posted on the marquee at Dow Diamond. WNEM TV 5 also gave a promotional mention of the event. There were many positive comments from the participants of all ages, and the venue was a big hit.

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