THE MIDLAND CHEMIST

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In This Issue

Calendar for June/July

June 6 Climate Change Speakers
June 27 Board Meeting, 7 p.m.
July 11–15 Electrochem. Workshop and Short Course
July 25 Board Meeting, 7 p.m.

Click on the Calendar button at http://www.midlandacs for more details.

From the Chair

My World and Welcome to It

Now, as we move into June of 2011, we are approaching the half-way point of the year. That, in itself, is not very noteworthy. Yet, it does mark the point at which that which happens for the year begins to appear more like, well, we did all this stuff, and we have just this stuff left to do... but what a great load of stuff there is that is going to happen in the second half of 2011!

You can read about all the great activities that have recently happened or are about to happen in the pages of this Midland Chemist—that is what it's for. The time is going to go by quickly—that is, with all the other things we have going on in our life, sometimes the American Chemical Society doesn't feel like the most important thing around. I'm not going to try to convince you that it ALWAYS is, just that it SOMETIMES is. What you get involved with is largely up to you. Just make sure that when you do get involved, that you, in fact, get involved and stay involved with whatever it is that turns the crank for you.

Well, you thought I wasn't going to mention anything, but I just thought I would say something about the (depending on the exact date this issue is released) upcoming June 6, 2011 Midland ACS program we will have (or have had) with two speakers on the topic of Global Warming—one who says, basically that human beings are the source of the increase in temperatures and one who says, basically, that human beings are the source of only part of the increase. This topic will be (was) very interesting. If it is at all possible, look for the announcement on it, and be there—or, if it has already happened, you can view the video that will be (was) recorded of the event. Thanks are due to Gina Malczewski, Program Chair and Chair-Elect of the Section, for putting this great program together.

John (Pat) Cannady

Let me close by repeating again what was in the previous issue...

Each of you has a tremendous possibility, here, to get involved, to be involved, 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!

All for now,

Amy Tesolin-Gee and Eva Li, Publicity Co-chairs

Speakers to Offer Both Sides of Climate Change Debate

Climate Change Speaker Event

June 6, 6:30 p.m.

FREE, open to the public

Great Hall Banquet and Convention Center

Midland

Is climate change really an issue? Is the sea ice habitat of the polar bears melting forever away? And, do human actions actually make a difference? What kind of evidence is there?

Please join us for an informative discussion considering both evidence for, and against, climate change as Dr. John Christy of the University of Alabama, Huntsville and Dr. Andy Jorgensen of University of Toledo share their differing views on this controversial topic.

Dr. Christy will speak about how, in many cases, claims about human induced climate change can be tested with observational evidence. He will discuss inconsistencies between popular claims about human causes of climate change and scientific observations. He will also share views regarding how proposals seeking to reduce greenhouse gas emissions can be costly and ineffective.

Dr. Jorgensen will summarize background information about climate change, including the methods which have been used to characterize the changes. He will emphasize the human dimension of the problem, while exploring the possible consequences of various scenarios. Solutions to the climate change problem will also be considered.

Using personal response devices, participants will be able to present their views and responses to such ideas. The format will be lecture followed by open discussion, with attendees encouraged to participate.

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The event will take place on June 6, 2011, at the Great Hall Banquet and Convention Center (5121 Bay City Road; Midland, Michigan 48640), from 6:30–8:00 p.m. Lectures, discussion and snacks will be provided without charge. A cash bar will also be available.

Dr. John R. Christy's Bio:

Dr. John R. Christy is the Distinguished Professor of Atmospheric Science at the University of Alabama in Huntsville where he is Director of the Earth System Science Center and serves the state as Alabama's State Climatologist.

He has been awarded NASA's Medal for Exceptional Scientific Achievement and the American Meteorological Society's Special Award, both for his collaboration with UAHuntsville scientist Roy Spencer in developing satellite data sets. He has served as a Lead Author of the Intergovernmental Panel on Climate Change, has testified several times before the U.S. Congress and served as an Expert Witness in Federal District Court.

A native of California, he has degrees from California State University, Fresno (B.A. Math), and The University of Illinois (M.S. and PhD. Atmospheric Sciences.) and is a Fellow of the AMS. He is married to the former Babs Joslin, a fellow missionary teacher he met while teaching in Kenya, and they have two children and four (fifth due soon) grandchildren.

Dr. Andy Jorgensen's Bio:

Dr. Andy Jorgensen was Senior Fellow at the National Council for Science and the Environment (NCSE) during the 2008–2009 academic year. His primary work was the development of climate change curricular materials.

At Toledo he directs the introductory chemistry program which serves over 1,500 students per term. He previously served as an assistant vice president for academic affairs at the university. He earned a Ph.D. in Physical Chemistry from the University of Illinois at Chicago and a B.S. in Chemistry from Quincy University. He completed a postdoctoral appointment in chemical education at the University of Illinois at Urbana-Champaign.

He has conducted research in the area of the environmental impact of synthetic fuels while working at Argonne National Laboratory. He is vice-chair of the American Chemical Society's Committee on Education and serves as the councilor of the Toledo Local Section of ACS.

He has been awarded a University of Toledo Outstanding Teaching Award and was twice appointed as a Master Teacher in the College of Arts and Sciences. His present work on climate change education is supported by NASA and NSF.

You won't want to miss this exciting and informative discussion! For more information, please contact Gina Malczewski or Sue Perz:

gina.malczewski@dowcorning.com
sue.perz@dowcorning.com

Gina Malczewski, Chair-Elect, and Lisa Thackery, Outreach

News from Kids and Chemistry

Another school year is winding down, and we are looking forward to a summer hiatus to concentrate on new activity development and planning for the fall. We are finishing up a very busy spring. Ten Big Brothers/Big Sisters *Teaming Up with Youth* and *Movin' On* events have been held at schools in Midland, Mt. Pleasant, and Beal City.

Five Science Cafes have also been held. One occurred on April 4, *The Art and Science of Modern Cooking*, with Chef Aaron from Shari's. Three others involved local schools where students shared *A Cup of Chemistry* (Angelo Cassar's coffee making presentation). The last café (coffee making) was held on May 13 at the Midland Senior Center.

Angelo's presentations have been very well received. The processes of grinding, roasting and brewing coffee were described and demonstrated, and samples were enjoyed by all.

The April 4, *Art and Science of Modern Cooking* event, was a great success. About 140 people attended and the scientific subjects presented were emulsification (salad dressings and spring mix), gluten and carbonation (carbonated jam was made and served with gluten-free cookies), and an ice cream base was prepared in three different ways (the preparation method impacts the sensory experience).

Everyone present sampled all of the food. The audience, comprised of families, students of all ages, and teachers, completed feedback forms and the results were overwhelmingly positive, with 98% indicating they would attend a similar event in the future.

Training sessions were held on a "Nano Kit" obtained from the Nanoscale Informal Science Education (NISE) Network and National Science Foundation, and for *Energy* demos for Earth Day.

The Earth Day event, *Energy is Everywhere!*, was a solid success. *[Editors' note: see photo on page 3.]* The ACS coordinated this event with the MCFTA and the Midland Volunteers for Recycling.

There was a great turnout for unused drug prescription drop-offs and electronics turn-ins, and the police department offered free car seat checks. St. Mary's Neuroscience Center distributed some free bike helmets, and we had exhibitors from the Mid-Michigan Medical Center (the role of energy in their new diagnostic instruments), Delta College (cars running on biodiesel), Dow Corning Solar Solutions, and many more.

The local ACS sponsored hands-on activities related to light, sound, and electrical energy. A seed, soil, and pot give-away were also part of the day's event. We also hosted David Asselin from the MDEQ, who gave a presentation on atomic energy.

We partnered with the Mt. Pleasant Discovery Museum to host a Science Night at Beal City Elementary on April 26. ACS/MMTG contributed 5 volunteers for this event, which was themed NanoDays!, and we used the Nano Kit from the NISE Network.

We also had a presence at the Bay City Science Fair, both judging (April 30) and exhibiting at the closing ceremony (May 1). We did *The Science of Cotton Candy, Popcorn and Lemonade* for SPARK at Hemmeter Elementary on March 4. Additionally, four volunteers helped at *Explore Day* at St. Thomas Acquinas on May 6, where about 80 students participated in our *pHun with pH* activities.

Scott D. Rettelle, Editor

What Do You Think of *The MC* Going Green?

It was brought to the attention of the Midland Local Section Board to have *The Midland Chemist* "go green" by not sending out hard copies to members and, instead, rely solely on electronic distribution.

Computers and smartphones via the internet make the Local Section website—and archived newsletters—easily accessible. The cost for sending out hard copies is roughly $55 per newsletter to send to the ~45 members still receiving The MC this way.

Please send comments and suggestions to newseditor@midlandacs.org.

Cassie Hale of Mid-Michigan Technician Group, and Outreach volunteer, teaches young Earth Day participants the wonders of energy using hands-on science demos at the Midland Center for the Arts. Photo provided by Angelo Cassar.

Brian Pate, Chair, Nominations and Elections Committee

2011 Applied Electrochemistry Workshop and Short Course

The 2011 Applied Electrochemistry Workshop and Short Course, *Transition into the Renewable Energy Economy*, will be held during the week of July 11–15 at the Pueblo campus of Colorado State University (CSU).

The short course will include options for earning CSU graduate or undergraduate credit, and will be taught by a variety of expert instructors including: Dr. Alec Talin from the NIST Center for Nanoscale Science and Technology (Gaithersburg, MD); Dr. Rudy Buchheit, Department Chair of Materials Science and Engineering at the Ohio State University; Dr. Mark Bernius and Tom Gregory from Dow Chemical; and Dr. Brian Pate from Colorado State University – Pueblo.

Supporting research seminars will be given by other leading scientists in this field, including: Dr. Kandler Smith from the National Renewable Energy Laboratory; Dr. Burak Ulgut from Gamry Instruments; Dr. Veronica Barone from Central Michigan University; and Dr. Richard Farrer from Colorado State University – Pueblo. Support will be provided by Gamry Instruments and Keithley Instruments.

Anyone in the broader community with a basic introductory college-level background in physics and chemistry is invited to enroll in the course (contact Brian Pate at BDPate@FirstIntegrations.com for more information) or to register to attend select lectures.

Those working in an area within the broadly defined field—or seeking to transition into the renewable energy economy—are encouraged to participate in the accompanying intimate topical poster sessions affording the opportunity for interaction and expert feedback, and to take advantage of the workshop's job boards.

Topics of the workshop and lectures will include basic electrochemistry, electrochemical impedance and impedance modeling, corrosion, photovoltaics, batteries, fuel cells, ultracapacitors, electrocatalysis, and plasmonic phenomena.

Labs will engage students in fabrication and integration of simple electrochemical devices (solar cell, battery, fuel cell, electrochromic display), as well as impedance and other electrochemical characterization, culminating in a fun competition to achieve optimum performance of the student-fabricated integrated circuits.

Supplemental social events allowing for further interaction between participants and instructors will be included.

Instructor, Dr. Mark Bernius

Dr. Mark Bernius, Fellow (Senior Scientist), Dow Chemical, received his Ph.D. from Cornell University. He served as a postdoctoral associate and then on the academic faculty at the California Institute of Technology prior to joining Dow Chemical.

At Dow, Dr. Bernius has assumed responsibility for providing subject matter expertise in optics, optoelectronics, molecular structure-to-macroproperty relationships, and material/product characterization. He has experience in developing R&D-based business units in both thin film displays and solar products. He is currently interested in lightweight composite material development and carbon fiber.

Dr. Bernius has won outside competitive funding for his research activities; is the author of over 41 patents and patent applications as well as 45 journal articles, and has received over 1400 citations for his work in the fields of materials science. He has enjoyed

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serving as an adjunct faculty member with the Saginaw Valley State University's physics department since 1995.

Instructor, Dr. Rudolf Buchheit

Dr. Rudolf Buchheit, Department Chair and Professor, Materials Science and Engineering, Ohio State University, is Professor and Chair of Materials Science and Engineering. His research is in the area of corrosion science and engineering with emphasis on localized corrosion, corrosion protection and corrosion prediction; mainly of light metals.

He has also worked extensively in the area of corrosion inhibition, surface modification and corrosion resistant coatings. He has published 200 technical articles (110 peer reviewed) on these subjects with students and colleagues, and holds 8 patents related to surface treatments and coatings.

He has contributed 7 chapters to books, edited 3 technical proceedings and co-authored one book. He earned a BS in Engineering Science at Loyola University of Maryland in 1985, and MS and PhD in Materials Science from the University of Virginia in 1987 and 1991. He is a Fellow of NACE International and the Electrochemical Society. He is the recipient of the H. H. Uhlig Educator's Award from NACE, and the Morris Cohen Award from the Corrosion Division of the Electrochemical Society.

Instructor, Mr. Thomas Gregory

Mr. Thomas Gregory, Principal Research Scientist, Dow Chemical, received his B.S. and M.S. degrees in Chemical Engineering from Case Western Reserve University and has spent 31 years in a variety of R&D roles within Dow Chemical, including basic laboratory research into secondary Mg batteries and technology development for stationary fuel cell power plants.

He has also been involved in development and scale-up of processes for electro-organic synthesis, synthesis of novel polymers, and biochemical processes, as well as production plant technology identification and implementation. He is currently involved in development of novel materials for lithium-ion batteries and is frequently invited to speak at international conferences on this subject.

He holds 13 U.S. and several international patents, is active in The Electrochemical Society and AIChE, and has served on external review panels for the National Science Foundation and the National Renewable Energy Laboratory.

Instructor, Dr. Brian Pate

Dr. Brian Pate, Assistant Professor, Department of Chemistry, Colorado State University – Pueblo, received a B.S. in Chemistry from the University of Virginia and a Ph.D. in Chemistry from Indiana University, Bloomington. After a term as a postdoctoral associate at the MIT Department of Materials Science and Engineering and Institute for Soldier Nanotechnologies, Dr. Pate worked as a guest researcher at the Air Force Research Laboratory and as a Senior Chemistry Specialist at Dow Chemical.

He is an adjunct faculty member of the Physics Department and Science of Advanced Materials Program at Central Michigan University. Dr. Pate's research interests focus on applied electrochemistry, photovoltaics, complex fluids, and interfacial materials science.

Instructor, Dr. A. Alec Talin

Dr. A. Alec Talin, Project Leader, Energy Research Group, NIST Center for Nanoscale Science and Technology (CNST), received a B.A. in Chemistry from the University of California at San Diego and a Ph.D. in Materials Science and Engineering from the University of California at Los Angeles. After completing his postdoctoral work at Sandia National Laboratories, he spent several years with Motorola Physical Sciences Research Labs, first as a staff scientist and subsequently managing the Materials Characterization Laboratory.

In 2002, Dr. Talin returned to Sandia to direct and develop programs in nanofabrication, nanoelectronics, photonics, and sensing. He joined the CNST in 2009, and is leading projects focused on fundamental measurements of nanostructured materials in electrochemical energy storage. He has 80+ refereed publications and 23 issued US patents.

Schedule of Events

Monday, July 11
8:30 – 11:00 AM: Lecture, **Fundamental Electrochemistry** by Dr. Brian Pate, CSU
11:00 – 11:45 AM: Seminar, **Modern Electrochemical Instrumentation** by Dr. Burak Ulgut, Gamry
1:00 – 4:00 PM: Laboratory, **Cyclic Voltammetry & Fuel Cell Fabrication/Characterization**

Tuesday, July 12
8:30 – 11:00 AM: Lecture, **Impedance Spectroscopy & Corrosion Analysis** by Dr. Rudy Buchheit, OSU
11:00 – 11:45 AM: Seminar, **Physics Modeling of Li-Ion Batteries** by Dr. Kandler Smith, NREL
1:00 – 4:00 PM: Laboratory, **Impedance & Corrosion Analysis**

Wednesday, July 13
8:30 – 11:00 AM: Lecture, **Energy Storage (Batteries, Fuel Cells, Ultracaps)** by Tom Gregory, Dow
11:00 – 11:45 AM: Seminar, **Graphene for Li-Ion Battery Anodes** by Dr. Veronica Barone, CMU
1:00 – 4:00 PM: Laboratory, **Battery Fabrication/Characterization**

Thursday, July 14
8:30 – 11:00 AM: Lecture, **Photovoltaics** by Dr. Mark Bernius, Dow
11:00 – 11:45 AM: Seminar, **Electrochemical Growth of Photovoltaic Thin Films** by Dr. Brian Pate, CSU
1:00 – 4:00 PM: Laboratory, **Solar Cell Fabrication/Characterization**
Evening Social

Friday, July 15
8:30 – 11:00 AM: Lecture, **Spectroelectrochemistry & Plasmonics** by Dr. Alec Talin, NIST
11:00 – 11:45 AM: Seminar, **Photolithographic Electrode Fabrication** by Dr. Rick Farrer, CSU
1:00 – 4:00 PM: Laboratory, **Electrochromic Windows & Device Integration**

Program Committee

Seeking Speakers

Gina Malczewski, Sue Perz and Gavin Lu are considering technical programs to bring to the local section. The first event is a dual lecture format meeting entitled *Climate Change: Evaluating the Evidence and Possible Human Impacts* on June 6 at the Great Hall in Midland.

We are very fortunate to host two academics who are very involved in the climate change debate, Dr. John Christy and Dr. Andy Jorgensen. We are also seeking suggestions for additional programs. If you know of a talented and knowledgeable speaker (especially locally), please let us know. If you would like to help with arrangements, we would be happy to have you join us.

Wendell Dilling, Director and Historian

Multiple Instant Run-Off Used to Elect Committee Members

The election of three Midland Section ACS Executive Committee members from the nine Directors was carried out at the Board of Directors meeting on January 24, 2011. The multiple instant run-off method was used because this method assures that each winning candidate will be supported by a majority of the voters.

By way of contrast, the voting procedure that has been used in the past for these elections can sometimes result in a winning candidate not being supported by a majority of the voters. The previous method consisted of each voting Board member having three votes, with the three candidates receiving the most votes being elected by plurality.

When two candidates run in an election, the winner always receives a majority of votes unless there is a tie. In any election in which there are more than two candidates the possibility exists that no candidate will receive votes from a majority of the voters.

For example, if in a three-way election the vote distribution is 40:35:25, the candidate with 40% of the vote is the winner (by plurality), but 60% of the voters do not support that candidate (in the first round of voting at least). In order to have the winning candidate be supported by a majority of the voters, some method is needed to reduce the number of candidates down to two.

This reduction in the instant run-off method (and also in the regular run-off method) is achieved by eliminating the candidate with the fewest first-choice votes. The second-choice votes on those ballots where the eliminated candidate was the first choice are added to the first-choice votes of the remaining two candidates. Thus one of the two remaining candidates will receive a majority of votes unless a tie occurs. If a voter who voted for the eliminated candidate chooses not to vote for either of the two remaining candidates, that voter will in effect have chosen not to participate in the second stage of the run-off election.

When more than one candidate is to be elected, the multiple instant run-off method simply repeats the above process as many times as needed to elect the required number of candidates. See the Letter to the Editor, "Electing Two Candidates - Each By a Majority" in *The Midland Chemist*, Volume 47, Number 3, June 2010, pages 9-10, for a more complete description of this extension of the instant run-off voting procedure. A brief summary was also published in *Chemical and Engineering News*, Volume 88, Number 11, March 15, 2010, pages 5-6.

Following are the details of the Executive Committee multiple instant run-off election. For comparison, the ballots for this election were analyzed by the plurality method (both one and three votes for each voter) and a method that assigns points for each candidate depending on their ranking on each ballot. Three different groups of Executive Committee members would have been elected by these methods.

Because the election was held using the multiple instant run-off method, the Executive Committee members elected by that procedure were declared elected. It turned out that the same three Directors would have been elected by the plurality (one vote each) method.

For the multiple instant run-off method the vote counts and counting procedures to determine the first candidate to be elected are shown in Table 1.

Candidates A, D, F, and G have the lowest number of first-choice votes (0) and are thus eliminated in the first round. Because no ballots have these four candidates as their first-choice there are no ballots requiring the second-choice to be added to the other first-choice votes.

In the second round, candidates C and E are eliminated because, of the candidates remaining, they have the lowest number of first-choice votes (1). In the third round both candidates B and H are eliminated because they have the lowest number of first-choice votes (4), thus leaving only candidate I as the winner.

Because of the tie vote between B and H both are eliminated in the third round. This is an unfortunate outcome because candidate I does not have a majority vote until the seven lower-choice votes are added to that candidate's total.

The likelihood of this type of result occurring may be relatively high because of the small number of voters. With larger numbers of voters tie votes would be expected to occur less frequently. The decrease in the total number of votes from 13 to 12 occurred because one voter did not vote for candidate I.

The next step in the multiple instant run-off procedure is to remove the votes for candidate I from all the ballots, and repeat the above process. The results are shown in Table 2.

Candidates D, F, and G now have

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Table 1. Ballot Counting Procedure to Elect First Candidate

Candidate	First-Choice Votes	%	Second-Choice Votes On Ballots Where C & E Were First Choices	First- + Second-Choice Votes	%	Second- and Lower-Choice Votes On Ballots Where B & H Were First Choice + Lower-Choice Votes On Ballots Where Choices Other than I Were Eliminated	First- + Other-Choice Votes	%
A	0	0						
B	4	31		4	31			
C	1	8						
D	0	0						
E	1	8						
F	0	0						
G	0	0						
H	3	23	1	4	31			
I	4	31	1	5	38	7	12	100
Total	13	101	2	13	100	7	12	100

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the lowest number of first-choice votes (0) and are thus eliminated in the first round. Again because no ballots have any of these three candidates as their first-choice there are no ballots requiring the second-choice to be added to the other first-choice votes.

In the second round, candidate A is eliminated. In the third round three candidates, C, E, and H, are all eliminated because they have the lowest number of first-choice votes (3), thus leaving only candidate B as the winner. Because of the tie vote between C, E, and H, all three are eliminated in the third round.

This is a further unfortunate outcome because candidate B does not have a majority vote until the nine lower-choice votes are added to that candidate's total. The likelihood of this type of result occurring is even less likely than the two-way tie in Table 1. Again with larger numbers of voters three-way tie votes would be expected to occur even less frequently.

After removing the votes for candidate B from all ballots, we finally elect a third candidate as shown in Table 3.

W**e** finally have an instant run-off with no ties for the candidates to be eliminated in a step that results in a winning candidate, candidate H.

We now have elected three candidates, I, B, and H, each by a majority vote using the definition of majority for the multiple instant run-off process, although practically speaking one can argue that the first two Executive Committee members, I and B, were not really elected by majorities. With larger numbers of voters these ties are not expected to occur as frequently.

Table 2. Ballot Counting Procedure to Elect Second Candidate

Candidate	First-Choice Votes	%	Second-Choice Vote On Ballot Where A Was First Choice	First- + Second-Choice Votes	%	Second- and Lower-Choice Votes On Ballots Where C, E, & H Were First Choice + Lower-Choice Votes On Ballots Where Choices Other than B Were Eliminated	First- + Other-Choice Votes	%
A	1	8						
B	4	31		4	31	9	13	100
C	2	16	1	3	23			
D	0	0						
E	3	23		3	23			
F	0	0						
G	0	0						
H	3	23		3	23			
Total	13	101	1	13	100	9	13	100

Table 3. Ballot Counting Procedure to Elect Third Candidate

Candidate	First-Choice Votes	%	Second-Choice Votes On Ballots Where A Was First Choice	First- + Second-Choice Votes	%	Second-Choice Votes On Ballots Where E Was First Choice + Third-Choice Votes On Ballots Where First Two Choices Were Eliminated	First- + Second- + Third-Choice Votes	%
A	2	16						
C	4	31	1	5	38	1	6	46
D	0	0						
E	3	23		3	23			
F	0	0						
G	0	0						
H	4	31	1	5	38	2	7	54
Total	13	101	2	13	100	3	13	100

Analysis of Votes by Alternate Voting Procedures

The results for plurality voting (one vote for each voter) can be seen in Table 1, where candidates B, H, and I would have been elected (three or four votes each). It was assumed that each voter would have voted for their first-choice candidate. None of these candidates would have been elected by a majority.

Plurality voting (three votes for each voter) would have elected candidates C, E, and I (six votes each) assuming each voter would have voted for their first three choices. Vote counts were as follows:

A 3	F 1
B 5	G 4
C 6	H 5
D 3	I 6
E 6	

None of these candidates would have been elected by a majority.

The final voting procedure examined involves a point system where the first-choice of each voter is assigned nine points, second-choice eight points, etc, down to one point for ninth (or last)-choice. For those voters who did not select all nine choices the points for the choices not made were summed and divided by the number of choices not made so that the candidates not selected were assigned the same number of points.

To have assigned these candidates zero points would have skewed the results because some voters did select all nine candidates and thus give each some points, while the voters who did not select all nine candidates would have given some candidates no points.

The points from all 13 voters summed for each candidate gave the following results:

A 55	F 36.5
B 65	G 71.5
C 71	H 76
D 55.5	I 77.5
E 77	

Thus using this voting procedure

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would have elected candidates E, H, and I. Using a different point system could lead to different results.

This method is similar to the way a track meet is scored in which, for example, a meet in which the top four places are awarded points 5, 3, 2, and 1, so as to give extra emphasis to first place. With the uncertainty of how many points to assign to the various choices, this method is not foolproof. Further this method does not allow a voter to make an unambiguous decision as to which of two candidates the voter prefers. And election by majority is uncertain using this procedure.

An interesting feature of this Executive Committee election is the evenness of the preference for several of the candidates, which is responsible for the close result of the election regardless of the voting procedure.

Some aspects of the recent selection of two nominees for ACS Fellow status by the Midland Section Board of Directors from the six candidates were similar to the situation described here for the Executive Committee member's election.

For further information contact the author at 631-1621 (h), 774-3268 (w), or w.dilling@ att.net.

Melissa Strait, 2011 FSM Chair

2011 FSM Update

Alma College is pleased to announce that it will host the 2011 Fall Scientific Meeting on Saturday, October 22, 2011.

In keeping with the ACS theme of the "International Year of Chemistry" and our theme of "Think Globally, Act Locally," we plan to have three Invited Symposia in the areas of Power Technology, Environmental Awareness and Biotechnology.

The call for abstracts will occur in July with an abstract due date of September 30. We plan to have a poster session as well as student presentations.

We will continue to keep you updated throughout the summer as we add speakers and sessions to the schedule. Please check the website http://www.alma.edu/chemistry/FSM2011 for more information.

Bob Howell, Councilor

Jobs, ACS Business, and World Problems Discussed at 241st National Mtg.

The 241st national meeting of the American Chemical Society was held in Anaheim, CA, March 27-31, 2011. For many councilors, the meeting started with committee meetings as early as Thursday, March 24. The meeting was well-attended with 14,047 total registrants including 7,336 regular attendees and 4,682 students.

The job fair (formerly the employment clearing house) represented something of a low point for the meeting—39 potential employers posted 182 positions for 795 job seekers. While the employment situation for chemists is far better than that for the general population, it is abysmal by historical standards.

The unemployment rate for Ph.D. chemists is about 9% with that for holders of lower degrees somewhat higher. It has been widely suggested that training in chemistry should be broadened to reflect the changing needs of industry. The number of opportunities in the pharmaceutical industry has declined sharply in recent years.

Membership in the ACS remains robust with 163,111 current members. Despite the challenging economic times, the Society remains financially strong with net from operations +.5% favorable with respect to the budget for 2010.

The Society is projected to end the year in compliance with four of the five Board-established financial guidelines (reserves have not yet recovered from recent buffeting). In October, the Society plans to retire the remaining bonds from its $45 million Franklin County, Ohio, Development Revenue bond issue (1989 series). This will save $2.5 M in interest expenses over the next five years.

Midland Section Councilors were active at this meeting. Both attended Council on Wednesday, the District II caucus on Sunday evening, the student awards presentation (the CMU student group was again recognized as an outstanding chapter), and several other activities.

Howell continues as a member of the Committee on Professional Training, the Organic Examination Committee, the Polymer Education Committee, the Nomenclature, Terminology and Symbols Committee and a task force considering changes to the undergraduate chemistry curriculum to better reflect the needs of pre-professional students.

At this meeting, Council approved several items. Candidates selected for 2012 President-Elect are Dennis Chamot and Marinda Wu. Member dues were set at $148/year (a modest increase over the current $146). Two new international chapters, the Shanghai International Chemical Sciences Chapter and the Thailand International Chemical Sciences Chapter, were approved.

In her report to Council, President Nancy Jackson, noted several developments of interest or concern to chemists. The opening event for IYC (the International Year of Chemistry) was held at the Chemical Heritage Foundation in Philadelphia. Speakers included Andrew Liveris, Dow CEO; Ellen Kullman, DuPont CEO; and Rita Colwell, former Director of the National Science Foundation.

There are a number of problems facing society that will have to be addressed by chemists. Currently, small numbers of US students go into STEM fields. How can more young people be induced to pursue fields that are essential to national prosperity?

Currently, 50% of papers published in ACS journals come from authors outside the US. Is this a reflection of the fact that relatively few US students pursue a career in science?

Finally, as has been widely noted elsewhere, the growth in world population continues unabated. It is projected that there will be nine billion people on the planet by 2050. How can this number of people be fed? Utilizing all the land mass available and all the technology available (or to be developed) to modern agriculture, can it be done—and at what cost to the current standard of living or environmental quality?

On a brighter note, the meeting featured an excellent symposium on chemicals from renewable sources organized by our own Pat Smith (former Midland Section President) and Rich Gross (former Turner Alfrey Lecturer).

National ACS

Access Research from ACS Meeting

More than 500 presentations recorded during the Spring 2011 ACS National Meeting in Anaheim, CA, are now available at www.acs.org/meetingcontent.

These presentations feature PowerPoint slides synched with audio, and permit you to jump directly from slide to slide.

Reflecting the breadth of science available at ACS national meetings—including this meeting's thematic program of "Chemistry of Natural Resources"—the recorded sessions include:

- Charles Lathrop Parsons Award: Symposium in Honor of Michael E. Strem.
- Click Chemistry Approaches in Carbohydrate Chemistry.
- Frontier Energy Research.
- Functional Materials from Natural Resources.
- Natural Products and Drug Discovery.
- Nuclear Energy for Today and Tomorrow.
- Solar Power as an Alternative Energy Source.

National ACS

Annual Report

The 2010 ACS Annual Report is now available. It stresses that the Society remains financially healthy and committed to providing its more than 163,000 members with the best programs, products, and services to further their careers and advance their science.

In addition to financial information, the report features ACS-by-the-Numbers, Donor and Award Sponsor lists and the Officers' Message.

You can access the report at: http://acswebcontent.acs.org/annualreport

Wendell Dilling, Director and Historian

In Past Issues of *The Midland Chemist*

40 Years Ago This Month

In *Letter to the Editor* by Noland Poffenberger: "I was amazed to read yesterday in the April issue the article by John Abbott 'Second Careers and The Identity Crisis'. In my judgment, based on over forty years in the chemical industry, where I have been able to follow the careers of many men, some winners, some losers, the article and the ideas it presents are largely nonsense.… As a Scientist, one of the things that nauseates me the most, is the statement of the type frequently made like the one in the article 'Time in terms of change has accelerated to a point that twenty-five years today is equivalent to 500 years in the past'! Anyone making such a statement either is a scientific illiterate or a promoter, who really knows better, making a bid to gain financial support for an 'updating' program. This is a false statement. True we have had some amazing achievements in the last 25 years, but to intimate they are achievements of the last 25 years is completely false. Many are based on developments, some hundreds of years old. One should also note that many of the 'achievements' were based on Government supported programs, and did not have to meet the test of the market place. Probably the only exception is the electronic-computer development. Even here, large Government markets helped the program. None of the basic fundamentals of science have changed in the 'miraculous 25 years.' The chemist works with the laws of conservation of mass, the laws of thermodynamics, and the fundamentals of chemical kinetics and other basic principles, some of which have undergone little change in many years."

30 Years Ago This Month

In *First Announcement and Call for Papers*: "The Midland Section of the American Chemical Society extends an invitation to all chemists, chemical engineers, and scientists interested in chemistry to attend and participate in the 14th Central Regional Meeting. All sessions will be held on the Northwood Institute Campus during June 16, 17, and 18, 1982."

20 Years Ago This Month

In *Midland Hosts 9th Annual M3PEP Program*: by Joan Holtschlag and Donald Kadlec "The 9th annual Mid-Michigan Minority Pre-Engineering Program (M3PEP) will be hosted by the Midland Public Schools during the week of June 16–21. M3PEP was formed in 1982 to stimulate and encourage minority students to pursue careers in technical disciplines. Thirty students from twenty-six different cities are selected through a screening process to participate in cooperative activities sponsored by education, industry, and community organizations. Although M3PEP is engineering oriented, it is not the main objective of the program. Engineering is a subject which requires math and science and enables the student to develop problem solving skills."

10 Years Ago This Month

In *Project Science Literacy Celebrates Volunteers* by Angelo Cassar: "The fifth annual Science Literacy Volunteers Recognition Dinner was held on April 7 at Soaring Eagle Resort, Mount Pleasant. This recognition dinner, which was organized by Joan McMahon, acknowledges both those on the Project Science Literacy committee and their spouses. The recognition is well deserved, since Project Science Literacy is truly one of the outstanding efforts of the Midland Section. The members of this very dedicated committee volunteer vacation time to put on workshops for teachers. The statistics concerning the effect on students in Michigan as well as other states are impressive! Since the inception of this project in 1995, approximately 1,520 teachers have been trained in 'hands-on' chemistry through the 'Bringing Science to Life in the Classroom' workshop. Since it is reasonable to assume that every teacher has, on average, about 30 students per year, Project Science Literacy has touched approximately 45,600 students each year! In addition, the program has gone beyond Michigan to teachers in New York and New Jersey."

Midland Section Sponsors

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