THE MIDLAND CHEMIST
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A packed issue! Fall Scientific Meeting, Awards, Diversity at Dow, MMTG Activities, and more!

Snakes, smoke rings, and visible spectra...all at SciFest 2003, pg. 35

THE MIDLAND CHEMIST

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In This Issue...

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Cover photo by Joan Sabourin.

From the Chair

It Was a Very Good Year...

Mike Owen, Chair
ACS Midland Section

It seems hardly possible that my year as chair is up already but there it is. I know the speed with which the year has flown by is a common observation at this time of year, but it really did go alarmingly fast. We accomplished many things but failed to get to many others. Thank goodness the chair becomes past-chair and has a further year to work on some of these issues, once the annual report is out of the way! One of the excellent things to happen recently that must be mentioned is our success at the ChemLuminary Awards at the national meeting in New York in September. MMTG won the Best Overall Technician Affiliate Group Award for 2002, and we also received a new 2003 award for Greatest Community Involvement in Chemists Celebrate Earth Day. Congratulations to all involved in this national recognition.

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

My greatest delight was the willingness and enthusiasm with which so many of you gave of your time and energy to make this year such a personal pleasure, notwithstanding the comment in the previous paragraph. I heard a resounding "yes" far more often than I heard "maybe" or "no," and I want to sincerely thank all of you who played a part in our affairs in 2003. I had a wonderful Board of Directors and group of committee chairs to interact with, many of whom I am glad to report will continue to serve us in 2004. I wish Joe Ceraso and his team the same fortunate camaraderie that I enjoyed. I know the section is in excellent hands. Many thanks for your contributions and best seasonal greetings to you all.

Mike Owen

59th FSM a Resounding Success!

By Wendy Flory and Dale LeCaptain

The 59th annual ACS Fall Scientific Meeting is now in the past and what a successful meeting it was! The day began with a special workshop on Green Chemistry presented by Larry Koskan from Donlar Corporation and Mary Kirchhoff from the Green Chemistry Institute in Washington D.C. More than 40 people attended to see the latest developments in this area. The workshop introduced the principles of green chemistry and provided industrial and academic examples of greener technologies.

Larry Koskan and Mary Kirchhoff led the workshop on green chemistry. Photo: Angelo Cassar

The workshop was followed by lunch, kindly donated by The Dow Chemical Company. During lunch, attendees perused a poster session with 50 participants presenting their latest "eurekas" from Michigan State, SVSU, Delta, CMU, Kettering University, Dow Chemical, MMI, Impact Analytical, and Dow Corning. Fourteen vendors showed their wares as well as raffling great baskets to matching ticket holders. There were also two informative workshops that folks could drop in on: a Career Planning panel discussion and Using Microsoft Word for Technical Documents.

Richard A Gross, keynote speaker. Photo: Angelo Cassar

Opening remarks and awards kicked off the presentation portion of the meeting. Several local section members were recognized for their

outstanding performance (see pg. 4) as well as recognition of the 50-year ACS members (see the August issue of MC for photos and bios). Richard Gross (that's Richard A. Gross, not Richard M. Gross) delivered the keynote address on "Advances in Polyester Synthesis Using Lipase-Catalysis." Two technical sessions followed with a great line-up of speakers. The topics were Green Processes and Renewable Materials, with speakers from throughout the Michigan area. The after-meeting social at Oscar's wrapped up the meeting as folks relaxed and enjoyed food and drinks provided by funding from our vendors. The meeting was attended by 333 folks from over 40 different affiliations!

Poster presenters from area universities and organizations were kept busy answering questions. Photo: Angelo Cassar

Rick Gross, Dow vice-president for R&D, talks to an undergraduate CMU student about her research. Photo: Angelo Cassar

We would personally like to thank The Dow Chemical Company, particularly Rick Gross, for donating the facilities and food for this meeting, all the volunteers that helped make this meeting a success, and everyone that attended. It is wonderful to have great opportunities like this to share chemical knowledge.

Midland Section Awards Presented at FSM

By Petar Dvornic

Congratulations to the three individuals honored at the Fall Scientific Meeting with Midland Section awards! Please meet:

Dr. Robert M. Nowak, recipient of the 2003 award for Outstanding Achievement and Promotion of the Chemical Sciences. Bob spent 37 years at The Dow Chemical Company in the following positions:

- R&D director of the Plastics Department
- Director of Central Research (last 10 years at DCC)
- Named Dow chief scientist in 1990
- Led groups that developed:
  - Polycarbonates (for compact discs)
  - Metallocene catalysts for polypropylene
  - Polymers for use in automobile door panels
  - High-performance ceramics for aerospace applications
  - Drug to treat bone cancer
  - PBO technology

According to the nomination letter: "Bob played a key role in guiding Dow's R&D during a period when the fundamental nature of the polymer-based materials business was undergoing dynamic change. He helped keep Dow at the forefront as a global leader among plastics manufacturers by pressing for detailed understanding of polymer synthesis, fabrication and processing."

Bob has spent 10 years as president and CEO at Michigan Molecular Institute, with activities in the following areas:

- Dendritic polymer nanotechnology (including dendrimers and hyperbranched polymers)
- Silicon-containing polymers
- Specialty coatings
- Advanced sensors
- Plastic recycle
- Utilization of renewable resources in potential products
- Instrumental in launching two for profit subsidiaries
- Instrumental in creating analytical services business at MMI

Bob also launched the creation of the MMI endowment fund and pioneered the concept to commercialize technologies that are not profitable for big companies. From the nomination letter: "He is extremely critical of his staff (in a positive way), maintains high standards, and pushes for con-

tinual creativity, always with an eye toward commercialization potential."

From the support letter from one world-renowned scientist-academician: "I believe that Bob is the most deserving individual for this honor. In fact, I am surprised that he has not received this recognition long ago."

Bob has also spent 8 years as president and CEO of Dendritech Inc., the major US producer of dendritic polymers and one of five in the world.

Mike Owen presents the award to Bob Nowak (right). Photo: Angelo Cassar

In spite of all the managerial duties that he performed, Bob has always remained a scientist first. To his credit he has:

- 18 publications in scientific journals
- 23 US and 21 foreign patents (and several more pending applications)
- Member of the National Academy of Engineering
- Past member of the Council for Chemical Research
- Served on a number of university and company advisory boards (including MSU, EMU, U. of Wisc., U. of Calif., Berkeley, Maxdem)
- Charles Hurd Lecturer at Northwestern University in 1991
- Alumni Achievement Award from the College of Liberal Arts and Sciences, University of Illinois in 1995
- B.S. in Chemistry, University of Wisconsin in 1953
- Ph.D. in Organic Chemistry, University of Illinois ("Speed" Marwel) in 1956.

John Blizzard, recipient of the 2003 award for Outstanding Service to the ACS. John has been a vital member of the Midland Section, directly involved in activities such as:

Mike Owen presents the award to John Blizzard (right). Photo: Angelo Cassar

- Served on numerous ACS committees at both the local and national level
- In the early 1990s member of the National Chemistry Week steering committee at the national level and local coordinator
- An architect of the Midland Section Project Science Literacy program
  - The program was established over 10 years ago
  - The first module *"Bringing Science to Life in the Classroom"* received the ChemLuminary Award from the National ACS
  - The second module *"Clowning Around With Polymers"* won the first ChemLuminary Award presented by the ACS Division of Polymer Chemistry
  - On John's initiative, program included both AIChE and SPE societies
- Coordinated Midland Section Salute to Excellence program
  - At the 1999 National ACS meeting in New Orleans he presented Section activities on this program
- Participated in the ACS National Historic Chemical Landmark program that recognized the significance of Herbert H. Dow's first production of bromine by electrolysis in Midland
- Regularly takes part in
  - "Professional Day" program at the Midland County Fair
  - Annual Fall Scientific Meetings

In many other activities, not directly related to ACS, John serves as an excellent science ambassador and mentor:

- Member of numerous committees promoting the benefits of chemistry and the ACS in both high schools and in the Tri-Cities, including:
  - Bay Area Vision for Education
  - Science demonstrations
  - Career days for K–12 students
  - High school chemistry clubs
  - Area schools science fairs
- Serves on various Mich. Dept. of Education science subcommittees

From the nomination letter: "It was his leadership and enthusiasm that convinced me to become an active participant in the Science Literacy program and SciFest." From a support letter: John has been… "the real catalyst, that ACS now nationally knows Midland Section." And further: "Most recently, John has inspired a second generation of Blizzards, namely his daughter, Andrea, to energize the whole city of West Branch with National Chemistry Week events. Last year …they had …*Chemistry Keeps Us Clean* …program… with 1200 of the total 2600 students of West Branch directly involved in the hands-on activities."

Robert Krystosek, recipient of the 2003 award for Outstanding Chemical Technician. Bob is a senior technologist at The Dow Chemical Company and has worked for the company for 22 years.

From the nomination letter: "In addition to his technical achievements, what sets Bob apart as an exceptional professional are his extraordinary leadership, communication, interpersonal, organizational and mentoring skills… He takes pride in his chosen profession and takes an active role at the national level of the ACS."

Mike Owen presents the award to Bob Krystosek (right). Photo: Angelo Cassar

From one support letter: "He is one of the reasons I decided to stay in my group. Bob has a personality that makes you glad that he is one of your team members. He is willing to help others and has a huge network of contacts to help out when problems at times seem hopeless. I consider Bob …. with loads and loads of knowledge…in…..just about everything it seems." From another support letter: "Bob embodies what a chemical technician should strive to be…"

Bob's fields of professional activities include:

- Materials Science Testing Lab
- Molecular composites
- Low dielectric films
- Fiber applications development
- Ceramics
- Ceramic/metal composites
- Disk drive commercialization

- Homogeneous catalysis
- Combinatorial chemistry

Some selected accomplishments include:

- 18 internal Dow technical reports
- Presentation to the Dow Chemical Science Capability on experiences at first national ACS meeting
- 1 US patent
- 6 Dow Special Recognition Awards
- Organized *"The Adaptable Technician: A Retrospective of Diverse Career Experiences"* symposium at the 2002 ACS national meeting in Orlando
- 5 presentations at various ACS meetings
- 2003 chair-elect of the ACS Division of Chemical Technicians
- Recently invited to represent the Division of Chemical Technicians at the ACS Regional meeting in Pittsburgh

New Chemistries

Detection of Chemical, Biological Warfare Agents

By Kristine Danowski

Detection of chemical and biowarfare agents is crucial to world security. Although they frequently appear together, the terms "chemical agent" and "biological agent" are not synonymous. Biological agents are living organisms, such as anthrax bacteria or smallpox viruses. Chemical agents tend to be small molecules, such as sarin and VX, not living organisms. After initial distribution, biological agents infect and reproduce in individuals in the distribution area; thereafter the infection is contagious and can spread. Small molecules are not contagious; they exert their effects by direct contact or ingestion. After their initial delivery they are limited to affecting individuals in the distribution area although they can spread through wind or water.

Biological agents may not cause symptoms of exposure immediately. Some organisms have an incubation time of days to weeks before any symptoms appear. The symptoms themselves may also seem nonspecific (flu-like) and may not seem unusual. Conversely, the effects of chemical agents are felt within minutes or hours of exposure. Large numbers of affected individuals suffering or dying quickly will at least raise suspicions and cause further investigation.

Distinguishing between a biological or chemical attack and a disease outbreak or widespread accidental chemical exposure can be difficult. Chemists and other scientists are developing new technologies to recognize microbes and toxins quickly, sensitively, and specifically.

Lab-on-a-chip devices have been proposed for use in hospitals, physicians' offices, laboratories, chemical plants, and the battlefield. These miniaturized, self-contained analytical systems include optoelectronic sensors and output processing that respond to changes in optical absorbance, fluorescence, delayed fluorescence, or phosphorescence caused by interaction between the sample and the device recognition system. The sample would be dissolved in a carrier liquid that is deposited onto the device. After allowing time for any agents present to interact with the sensor, a detector detects any optical changes. The patterns associated with different agents of interest allow identification. The advantages of a lab-on-a-chip are portability, low cost, ease of use, speed, and large number of agents recognized (1).

Polymerase chain reaction (PCR) has also been miniaturized to a microchip. These devices contain an excitation light source, multiple bioprobes and bioreceptors, a sampling platform, sensing elements, and a signal amplification and treatment system. Probes used include antibody,

DNA, enzymes, tissues, organelles, and other bioreceptors. PCR chips are designed to be used in the field to detect smallpox, anthrax, plague, hemorrhagic fevers, and brucellosis. They can also be used in clinical diagnostics and agriculture (2).

A similar device is a handheld advanced nucleic acid analyzer (HANAA). HANAA is a 1-kg real-time thermal cycler that can also detect anthrax in the field in approximately 30 minutes. The conventional detection method is cultivation of biological agents on plates, which can take days (3).

Another type of device for DNA detection uses custom-designed DNA hairpins that contain a fluorophore at one end and a quencher on the functionalized substrate. When homologous target DNA binds to the hairpin, the hairpin unfolds and the fluorophore fluoresces. Nonspecific DNA binding produces minimal fluorescence. The DNA hairpin determines pathogen specificity, so multiple targets can be detected on a single chip. This technique has not been miniaturized, but seems very promising (4).

A liquid-phase sandwich immunoassay array can also detect multiple agents. This array uses polystyrene beads embedded with precise ratios of red and infrared fluorescent dyes. The resulting array consists of 100-bead sets, each with a unique spectral signature. Target-specific antibodies are immobilized on the bead surface. When any agents of interest bind to the antibodies, fluorescently labeled secondary antibodies detect them. Each bead is analyzed using a flow cytometer at a flow rate of several thousand beads per second. The unique spectral signature allows identification and quantification of the agents of interest. While not a lab-on-a-chip device, this system is sufficiently portable that it could be used in the field (5).

Pathogens can also be detected using their spores. Numerous bacterial spores contain a high concentration of dipicolinic acid (DPA) to which divalent cations can bind and luminesce. One method uses lateral-flow immunoassay and Tb^{2+} ions bound to DPA. The immunoassay provides species specificity while the Tb^{2+}-DPA complex provides increased sensitivity (6). Similarly, the fraction of viable spores can be quantified using similar technology. The method works whether or not the spores are attached to particulate matter (such as dust) and takes about 20 minutes. Once the Tb^{2+} ions bind to DPA in solution, they can be triggered to germinate by adding L-alanine. Viability is determined by the ratio of germination-induced luminescence and total luminescence (7).

Genetically engineered cells can also function as sensors. The cellular analysis and notification of antigen risks and yields (CANARY) system uses murine B lymphocytes to detect pathogens in air, water, body fluids, and contaminated surfaces in under 3 minutes. B-lymphocytes rapidly respond to bacteria and viruses. A strain of murine B-lymphocytes was

genetically modified with aequorin, a Ca^{2+}-sensitive bioluminescent protein, and membrane-bound antibodies to pathogens of interest. When the modified B cells are exposed to pathogens, the antibodies crosslink and elevate intracellular Ca^{2+} in seconds. The aequorin then luminesces (8).

One concept for a disposable sensor applies to both biological and chemical warfare agents. "Smart dust" is created from silicon chips electrochemically corroded in a conductive solution, creating a network of etched parallel pores. When the etched chip is shattered, it breaks into particles about the width of a hair. By varying the corrosion current and solution composition, the silicon particles can produce different colors when illuminated with a laser. The "smart dust" can be used as a chemical tag in certain bomb-making reagents to indicate a certain manufacturer, to track precursor compounds to illegal drugs, or to detect environmental pollutants. As a sensor, smart dust can be created to produce certain colors in the presence of chemical and biological warfare agents. Smart dust can be scattered over a target area or attached to a robotic camera (9).

A wallet-sized chemical agent detector containing a sensor has been developed. This device combines metal oxide semiconductors (MOS) with polymer-coated surface acoustic wave (SAW) sensors. The device is sensitive to VX, sarin, soman, and mustard gas in the parts per billion (ppb) range. An individual user of this detector would know immediately when to don protective gear (10).

The telecom and compact disc (CD) market is also driving the development of chemical sensors. A CD player can be converted to a portable nerve gas sensor. This solid-state device detects agents with a P-F bond, such as sarin, soman, and GF in the ppb range. Once a catalyst breaks the P-F bond, a Si interferometer detects HF using an optical coating. The laser from the CD player measures the change in light intensity. This CD player device is designed for personal use and also to track gas plumes in the field (11).

The chemical warfare agent sensors just described detect their targets by molecular shape or a spectroscopic signature. A different technology uses the agent's reaction with an indicator molecule instead. An agent may have its shape or spectrum changed so it escapes detection, but its reactivity is its real toxin. The reactivity detector is a thin film containing an indicator such as a naphthalene derivative bearing a pyridyl and a hydroxy or siloxy substituent. The nerve agent reacts with the indicator's hydroxy or siloxy group to form a phosphate ester. The phosphate ester is a good leaving group, so the indicator undergoes intramolecular cyclization to form a tetracyclic product. The product fluoresces at a different wavelength from that of the starting indicator molecule. In other words, in the presence of 10 ppm of nerve gas, the sensor changes color from blue to

green in a few seconds. This sensor can also be configured to respond to toxic industrial chemicals (12).

Airborne agents are not the only chemical threat. Water reservoirs are also potential targets. One concept for an aquatic sensor is using algae or other photosynthetic organisms which are extremely sensitive to their environment. Real-time fluorescence measurements from intrinsic fluors in these organisms can be monitored for changes in the organism's health. This technology is capable of detecting changes in fluorescence in response to herbicides in untreated water and unconcentrated algae. A prototype system, AquaSetinel[SM], is currently being manufactured (13).

Research on the detection of chemical and biological warfare agents has steadily progressed during the last few years. Recent events have increased the urgency of this work. The new technology described herein can also be applied to other areas such as clinical diagnostics, environmental pollution, and law enforcement. Hopefully, it will never need to be used for warfare.

Further reading:

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4. Hui Du *et al.* Hybridization-based unquenching of DNA hairpins on Au surfaces: prototypical "molecular beacon" biosensors. *J. Am. Chem. Soc.* **2003**, *125*(14), 4012.
5. McBride, MT, *et al.* Multiplexed liquid arrays for simultaneous detection of simulants of biological warfare agents. *Anal. Chem.* **2003**, *75*(8), 1924.
6. Species specific bacterial spore detection using lateral-flow immunoassay with DPA-triggered Tb luminescence. *NASA Tech Briefs*, March 2003, p. 6a.
7. Live/dead bacterial spore assay using DPA-triggered Tb luminescence. *NASA Tech Briefs*, March 2003, p. 7a.
8. Rider, TH, *et al.* A B cell-based sensor for rapid identification of pathogens. *Science* **2003**, *301*, 213.
9. Harney, J. Smart dust senses bioweapons. MIT Enterprise Technology Review, http://www.technologyreview.com/articles/print_version/wo_harney031203.asp (Accessed March, 2003.)
10. Personal chemical agent detector ready for trials. Space Daily Express, http://www.spacedaily.com/news/biofilter-03c.html. (Accessed

March, 2003.)
11. CD player converted to nerve gas sensor. University of California San Diego, August 23, 2000. http://invent.ucsd.edu (Accessed March 2003.)
12. Dagani, Ron. A better sensor for nerve gas. *C&E News* March 10, **2003**, *81*(10), 12; Zhang, S-W and TM Swager. Fluorescent detection of chemical warfare agents: functional group specific ratiometric chemosensors. *J. Am. Chem. Soc.* **2003**, *125*(12), 3420.
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Publishing Dates for *The Midland Chemist*

By Ann Birch

Issue	Copy Deadline	Issue Delivery
February, Vol. 41, No. 1	Jan. 5	Jan. 31
March, Vol. 41, No. 2	Feb. 2	Feb. 29
April, Vol. 41, No. 3	Mar. 1	Mar. 31
June, Vol. 41, No. 4	May 3	May 31
August, Vol. 41, No. 5	Jul. 5	Jul. 31
September, Vol. 41, No. 6	Aug. 2	Aug. 31
October, Vol. 41, No. 7	Sep.6	Sep. 31
December, Vol. 41, No. 8	Nov. 1	Nov. 30

2004 Midland Section Officers Elected

By Gary Kozerski

On behalf of the Nominations and Elections Committee, I would like to thank all the candidates for agreeing to run this year for an elected position in the ACS Midland Section. To remain strong and vibrant, our society depends on volunteers. Your willingness to consider giving of your time and talent in the leadership of the Midland Section is a perfect example of this spirit.

Our congratulations to the following individuals who were elected to the offices indicated. The director position carries a term of three years; all others carry a one-year term:

Chair-Elect	Pat Smith
Secretary	Deb McNett
Treasurer	Doug Beyer
Chair NEC	Maneesh Bahadur
Directors	Jennifer Dingman
	Petar Dvornic
	Don Miller
	Dave Stickles

The 2004 term of office begins January 1, 2004. All elected officers will receive additional information in the upcoming weeks. Feel free to contact me at any time with questions (Gary Kozerski, 989-496-6788, gary.kozerski@dowcorning.com).

For those who were not elected (and for all members), please consider other volunteer opportunities within the Midland Section. The names of the various committees and their current chairpersons can be found by clicking on Contact Information at http://membership.acs.org/M/Midl/Leaders.htm. Also, please consider running for elected office in the future!

Collection of IR Spectra Has Long History

By Richard A. Nyquist

Editor's Note: Richard Nyquist was employed by The Dow Chemical Company for 41.5 years and became a Dow consultant after he retired in 1994. He is also currently president of Nyquist Associates, a consultant to Impact Analytical, and an adjunct professor at Michigan Molecular Institute in Midland.

It was recently reported in *Chemical & Engineering News* that Dr. Richard Gross, Dow corporate vice-president for R&D, formally presented to Dr. Arden L. Bement Jr., director of the National Institute of Standards & Technology, 50,000 infrared spectra that are to be evaluated and included in the NIST's web book (http://webbook.nist.gov/chemistry/). The chemistry web book is a free online resource for scientists worldwide.

It is the author's opinion that the scientific world would like information about the origin of these spectra from within The Dow Chemical Company. The father of infrared spectroscopy with The Dow Chemical Company is Dr. Norman Wright. Upon completion of his Ph.D. at the University of Michigan, Dr. Wright designed, developed, and built an IR spectrometer. He then used this instrument to solve chemistry problems arising within the company. He, together with L. Herscher, H.D. Ruhl, and A. Bartz, designed and constructed several new prism and grating IR spectrometers. Many of the advances incorporated into these instruments were later incorporated in IR spectrometers manufactured by instrument companies.

Norman Wright is the Wright in the Williams-Wright Award presented annually to a scientist, since 1978, by the Coblentz Society for significant contributions to vibrational spectroscopy while working in industry. Wright became director of the Dow Spectroscopy Laboratory, and subsequently, the director of the Chemical Physics Research Laboratory. These world-class laboratories contained all of the known spectral instruments, and many of the structures of new chemical compounds synthesized by Dow researchers were confirmed or established not only by application of IR, but also by application of NMR, MS, and Raman spectroscopy. These IR spectra were also recorded using commercial spectrometers equipped with prism, grating, or Michelson interferometer Fourier transform systems.

A short time after Dr. Wright's retirement, the Chemical Physics Research Laboratory was merged with the Dow Analytical Laboratory, also in Midland, Michigan. The merged laboratories were subsequently named Analytical Sciences Laboratory, retaining the world-class status.

Besides Norman Wright, many Dow vibrational spectroscopists and technicians contributed in producing this compendium of IR spectra donated to NIST. These scientists are listed below in alphabetical order:

A.W. Baker[1]	G. Crable[1]	M. McKelvey[1,3]	T. Reder
B. Blake	S. Hankin[1]	R.D. McLachlan	R.T. Schedel
K.B. Bradley[4]	G. Huffman[4]	S. McLean	J. Scherer[1]
V.B. Carter[1]	A. Johnson	I.M. Cote-Nyquist	H.J. Sloane
R. Chrisman[1]	R.O. Kagel[1]	R.A. Nyquist[1]	G. Spencer
C. Deibel	L. Kiley	J. Overend[1,4]	F. Stec[4]
R.B. Duvall[4]	S.T. King[1]	R. Papenfuss[4]	J. Strope[4]
W. Eichorn	M. Laboda	D. Peterson	B. Stubbs[2]
D.S. Erley	M.A. Leugers[1,3]	W.J. Potts, Jr.[1,4]	J. Thompson
J.C. Evans[1]	Y-S. Lo[1]	J. Prewozniak[4]	G. Ward
J. Gavin	W. Long	C.L. Putzig[3]	L.B. Westover
R. Goetz	B. Loy	L. Record	L. Yurga

[1]*Ph.D.*
[2]*M.D.*
[3]*Presently employed at Dow Analytical Sciences Laboratory*
[4]*Deceased*

Many of the scientists listed above are well known in their field, presenting technical talks at national meetings and publishing papers and book chapters or books. Several of the above continued their careers in other Dow departments, other companies, or academia.

MCFTA Calls for Educators

By Joe Kchodl

New and exciting science programs are beginning at the Hall of Ideas Science Museum at the Midland Center for the Arts. Do you have a little extra time and are you willing to share your knowledge and expertise educating students? This is your chance to make a difference with students yearning to learn and experience science. Program instructors are needed to travel to local schools to give 45-minute classes to eager students. Outreach programs are scheduled around your availability. Eight-week in-house programs (2 hours once a week) allow you to cover a subject in depth. All subjects are being investigated—do you have a science hobby that fascinates you or chemistry experiments kids will love ? Please call Joseph Kchodl (kchodl@mcfta.org; 989-631-5930) at the Midland Center for the Arts for more information. Positions do offer modest compensation. Call soon—new classes begin in January.

National Chemistry Week Scores another Hit

By John Blizzard

When the National Chemistry Week event was over, there were 1206 people involved at National City Bank in West Branch, including teachers and student helpers and guests. There were 521 student flight competitors, 351 grade school participants, and 170 high school participants. There were 46 different teachers (classes) visiting the bank during National Chemistry Week along with 73 high school after hours credit students visiting the bank during this time.

Rose City bussed in over 400 students to National City Bank for student science demonstrations. Student demonstrators, 52 Ogemaw County High School chemistry students, did an excellent job performing science demonstrations and explaining the science principles involved with the experiments to grade school students and the public. Experiments included dropping a feather and a coin in a vacuum, Bernoulli's principle of flight, how a Frisbee flies, sound and movement, boiling water in a vacuum, how a feather floats in air, and the smoke gun. Even the West Branch chief of police and Michigan State Police post commander came into the bank to "see" what was going on. The school superintendent along with the National City Bank branch managers from three Northern Michigan cities also came to the West Branch event to observe National Chemistry Week in action. These individuals were so impressed they asked "what do we need to do to get ACS to do something like this in our areas?"

Left to right: Assistant Principal, Mr. Ruppert, presenting awards, Angel Helsel who was first place for smallest glider, Alexis Buchoz who was part of a group that was second place for longest time in the air, Catherine Laurion who was part of the group with Alexis Buchoz, and Peter Elliott who was part of the same group with Alexis and Catherine. Photo: John Blizzard

Students were to asked build some sort of flying machine, one of these three types: rubber-band-powered plane, glider, or hot air balloon (heated up by a hair drier). Each flying machine was accompanied by a two-page report that would discuss what the students built and why

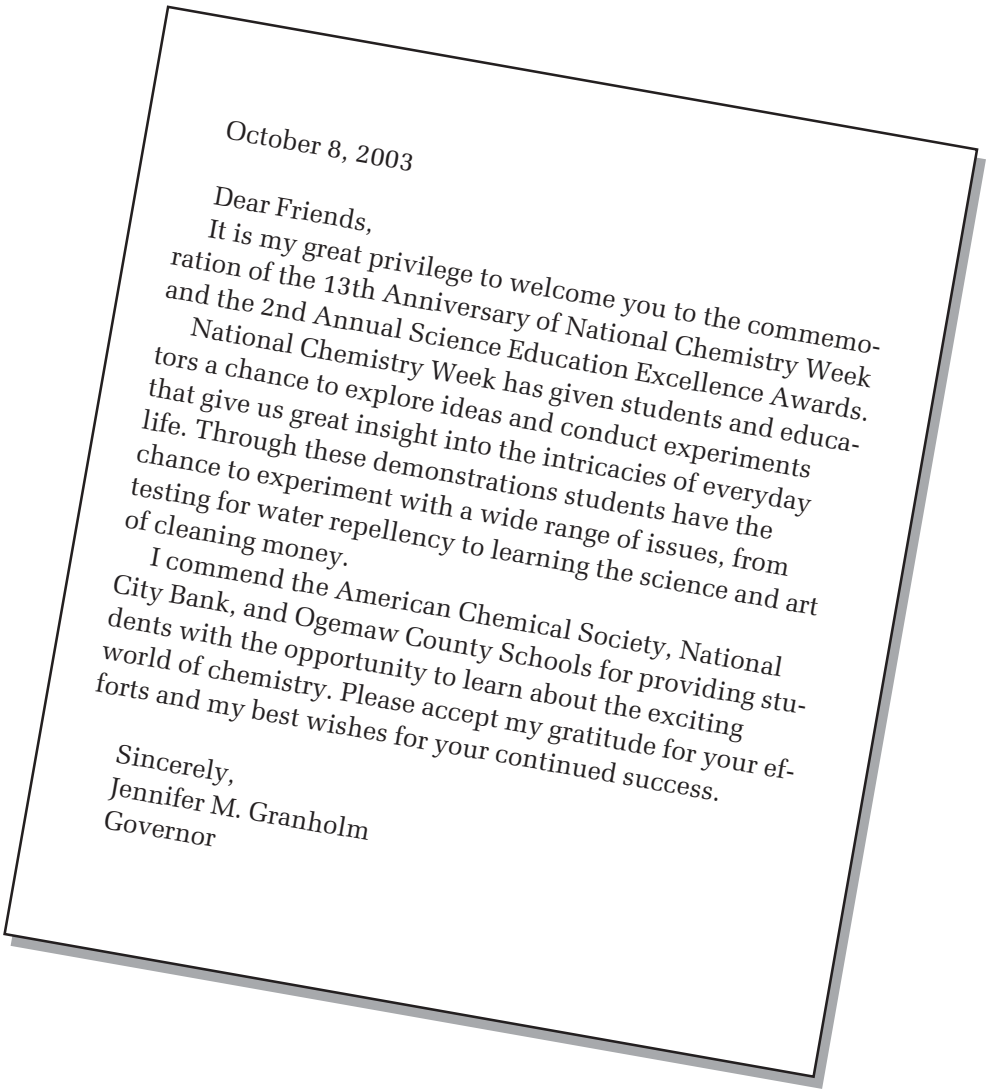
they built it the way they did. The paper was formatted into four parts using the STAR method of reporting on a task. This method is prevalent in industry. STAR stands for Situation, Task, Analysis and Results. Student reports were judged based on the student's grade level. Some students worked alone and some in groups of 3–5 students.

Left to right: Shane Wynkoop who was part of a group that took first place for longest time in the air, Sean Eagan who was part of the same group as Shane, David Sellers who was part of the same group as Sean and Shane, Alfred Bilicki who took a third place for longest time in the air, and Ms. Kaczmarek who is a science teacher at the high school and was presenting this group their medals. Photo: John Blizzard

During the week of the 20th through the 25th of October, winning flying machines were on display in 30 different businesses around the community, including some in Rose City. There were "voting" cans with each flying machine where people voted for their favorite at one penny per vote. The money collected was donated to charity and the flying machines with the most votes won prizes donated by local businesses.

At a gala wrap-up evening, Doug Grezeszak, Ogemaw High School chemistry teacher and event coordinator, was presented with a "Salute to Excellence" award by the Midland Section ACS. Michigan State Senator,

Tony Stamas, presented a Senate proclamation and read a tribute letter from the Governor of Michigan, Jennifer Granholm:



October 8, 2003

Dear Friends,

It is my great privilege to welcome you to the commemoration of the 13th Anniversary of National Chemistry Week and the 2nd Annual Science Education Excellence Awards.

National Chemistry Week has given students and educators a chance to explore ideas and conduct experiments that give us great insight into the intricacies of everyday life. Through these demonstrations students have the chance to experiment with a wide range of issues, from testing for water repellency to learning the science and art of cleaning money.

I commend the American Chemical Society, National City Bank, and Ogemaw County Schools for providing students with the opportunity to learn about the exciting world of chemistry. Please accept my gratitude for your efforts and my best wishes for your continued success.

Sincerely,
Jennifer M. Granholm
Governor

Diversity in Chemistry, Part I: The Dow Chemical Company

By Kristine Danowski

Editor's Note: The author is an employee of The Dow Chemical Company. She is a participant in or on the mailing list of all Dow's employee networks. She is also on the Steering Committee for the Technical Women's Network.

William Stavropoulos, chair and CEO of The Dow Chemical Company, recently reaffirmed Dow's strong commitment to diversity and inclusion. Dow Chemical defines *diversity* as difference…all kinds of differences we encounter among individuals, cultures, and organizations, such as age, gender, race, culture, religion, background, style, and thoughts. At Dow *inclusion* means thinking, behaving, and working together in ways that ensure the impact of differences is always positive.

Dow Chemical's Respect and Responsibility Non-discrimination Policy includes sex, race, color, national origin, age, disability, religion, veteran status, and sexual orientation. Everyone brings a unique background to their job, and Dow values those unique perspectives to create growth and opportunity for each individual as well as for the company.

This author surveyed several Dow chemists and chemical engineers on the topic of diversity and its personal and professional importance. This article is the first in a series that will examine diversity in chemistry and institutions in the Midland Section geographic coverage area. All comments in the article are personal opinions of the interviewees. They do not represent Dow's corporate view.

All those interviewed cited globalization and a larger talent pool as impetus for corporate diversity. Dow chemist Tom Wells says, "Diversity is important in chemistry, science, industry, and society. With the global nature of science and business, homogeneous approaches and groups are at a disadvantage. Having diverse perspectives and an environment that respects that diversity often results in better problem solving. Also critical these days is the ability to build collaborative relationships with customers, suppliers, and colleagues from diverse backgrounds. A company or group that has developed internal diversity can more effectively develop these relationships with external entities."

"We want to be able to hire the best and brightest—and not overlook the majority of the population," adds another Dow chemist. "If we only consider white males, we limit our access to over 50% of the talent pool (women are 50% and nonwhites are 20% of recent graduates.)"

Dow chemist Vincent Oriedo elaborates: "Diversity is important in

chemistry and the chemical industry as a whole, just as it is in all aspects of our society; particularly in a democratic society such as ours. It is important to note that the true essence of *diversity* is an all-encompassing one. Therefore, diversity must be embraced in all of its traits. Furthermore, Mother Nature has given us diversity, and we have an obligation to both embrace and nurture it, as well as effectively mine it for social-economic purposes. One cannot dub himself/herself as a true scientist if they fail to abide by the basic principles of science; namely, it's a scientifically proven fact that nature dictates hybridization as a natural course of sustainable development. In chemistry and chemical industry, embracing diversity translates into promoting sustainable development of science and technology by gaining access to an enriched and diverse supply of valuable expertise. Thus, to be competitive, the chemical industry must embrace and nurture diversity accordingly. Needless to say, the chemical industry no longer competes in isolated geographical markets. Instead, we compete in a global market and in order to remain competitive, we must be an effectively globalized industry which dictates that we must embrace diversity in all its forms—particularly cultural and gender diversity."

According to those interviewed, diversity-related changes have occurred in the chemical industry. "Over the past 20 years, it [the chemical industry] has become more diverse due to increasing numbers of women studying/working in this area," one chemist explains. "So in appearance it has become more diverse but not in practice. There has also been a big improvement in work/life balance programs and communication of these (although I still think those who take advantage of them are still viewed as not as professional as those who do not). It could improve by women taking full responsibility for their careers and advancement and not expecting someone to 'notice' them or reward them for their quality work. This will never happen. Women need to exude self-confidence and get out of the 'victim' mentality. Make corporations and academia accountable by calling attention to the inequities (like the MIT women professors did)."

"Insist on specifics from your manager for employee development and improvement. Insist on objective metrics to gauge growth vs. subjective opinions," another chemist says. "The improved 'visible' diversity can easily be seen with the increase in the number of women and minorities at colleges, universities, and at Dow. I believe it can be improved by not seeing diversity as 'diversity'; i.e., by providing opportunities of growth and/or breadth to all individuals regardless of their visible diversity or invisible diversity. This will likely occur with education on diversity, exposure, and time."

"The statistics show that diversity has increased over the past 20 years," replies another Dow chemist. "In 2002, women earned over 50% of

the BS and MS degrees in chemistry, and 45% of the PhDs. Women were 17.4% of industrial chemists in 1990; ten years later that increased to 23.3%. Increases for other minorities are not as visible; the percentage of black chemists increased from 1.1 to 1.8% from 1990 to 2000 and Hispanic chemists grew from 1.4% to 2.5%." (Note: this information is from the ChemCensus 2000 ACS survey and the most recent starting salary survey, published in *C&EN* April 7 [2003]). "I have seen an increase in women in management roles, but not much increase in technical leadership. I do see that Dow and other companies are more aware of diversity issues. I am not sure that they are working on all the right things and that the efforts are pervasive throughout their institutions. Across the industry, women report having few opportunities for training. They are less satisfied than men with their perceived prospects for advancement."

Another chemist offers a different perspective. "The chemical industry is not very diverse, especially in places like Michigan. Diversity cannot be a government 'score card.' The way to get diversity is to start with education, then follow by acceptance. I think [Dow Chemical] has gotten much more accepting of some groups such as African-Americans, but not for gays and lesbians. No two of us are alike. People should think of diversity as the diversity of background and thought we all bring to the workplace and community. Everyone should be looked on as an individual. Corporate America is still run by the 'white male.' People should be picked by what they bring to the position, not race, creed, color, sexual orientation, etc."

The chemical industry can improve, according to one process engineer. "The chemical manufacturing industry (CMI) could improve by helping to encourage girls and young people of all races and income levels to excel in the sciences. This will give companies a wider field of eligible candidates from which to hire their future researchers, technicians, engineers, and leaders. Locating plants in impoverished areas, then bringing in employees who have little in common with the local residents does not help to foster favorable public opinion of the CMI. If the workforce were more diverse, this hurdle might be easier to overcome."

Vincent Oriedo expands this idea. "To make chemistry and the chemical industry more diverse, we have to pursue a two-pronged strategy—a long-term and short-term (immediate) strategy. The long-term strategy would entail programs that start at the academic institutions—the resource pool from which the chemical industry recruits. The strategy has to be effectively coordinated between the various stakeholders. The value to the chemical industry is that by helping promote and nurture diversity at the academic level, the industry is developing an enriched resource pool from which the industry would be able to recruit, and thus realize

the corresponding benefits. On the other hand, the short-term strategy has to focus on both recruiting and sustaining a diverse workforce. Of the two, recruiting and retention, retention tends to be the greatest challenge because oftentimes there are no nurturing mechanisms in place within the chemical industry to sustain diversity. For example, if we, in the chemical industry, are truly committed to fostering diversity, we must also implement promotion programs that adhere to the all-encompassing concept of diversity. The chemical industry must take an active role in educating the public and politicians that diversity is essential to sustainable development of science and technology and to the overall economic welfare of our entire society. Again, making sure that diversity is defined in its all-encompassing characteristics, and not just ethnicity and gender."

"I think we want to change but it is uncomfortable. Naturally, we want to minimize the change or energy of the change," says chemical engineer Lu Li.

At this writing, there are six employee networks at Dow: African-American Network; Asian Diversity Network; Disability Employee Network; Gays, Lesbians, and Allies at Dow; Hispanic Latin Network; and Women's Innovation Network. All the networks are employee-initiated and employee-led. The networks are intended to bring together like-minded employees who share a common interest and dedicate themselves to advancing the company's vision and values as well as their members' personal and professional growth. Each network has a management sponsor, two or more internal consultants, a chairperson or two cochairs, and a plan with a vision statement, objectives, and goals. CEO Stavropoulos acknowledged the efforts of the employee networks in helping create value for Dow Chemical. He stated that the work should continue if Dow is to build a truly inclusive work environment. The chemists and chemical engineers interviewed for this article gave employee networks mixed reviews in helping their careers.

"I participate in the diversity networks as an opportunity to improve my skills and network with people in other functions at Dow," says a Dow chemist. "These organizations often offer training courses or workshops of interest to me. I have met people from other groups and learned more about what they do. I have built a stronger network of contacts, which can be applied to my work projects."

"First it builds awareness, which is knowledge. Knowledge is power," says Cathy DeMars, the Steering Team leader for the Technical Women's Network. "As long as networks are conducted positively and openly they can be very powerful in helping individuals, groups, and businesses succeed. They help us find our potential, give us opportunities to be mentors or mentees, and help us determine our desires in our careers. These all

can help companies and individuals succeed."

"I have only been a member of GLAD [Gays, Lesbians, and Allies at Dow] for the last year or two," relates Tom Wells. "However, the improved awareness of diversity issues catalyzed by GLAD and the other diversity networks has improved the climate at Dow and helped me do my job as a manager better…I have been pleased with the trend for diversity networks to encourage allies to join, which expands the environment of support and awareness."

Some respondents disagreed about the impact of employee networks. "[Employee networks] allow the leadership of the organization to think that there is 'action' being taken to address issues. Behaviors of the gatekeepers of the glass ceiling do not change. They are still of the last generation."

"I suffer both career-wise and community-wise because I choose to belong to GLAD," relates one Dow chemist. "I'm assumed either to be 'gay' and negatively perceived or negatively perceived as helping people whom 'God will punish.' If some people are not brave enough to speak out, nothing will ever get better and we will lose folks that have so much to contribute to Dow. These folks also deserve to be able to live and work without the fear of persecution/exclusion. I think it lends the next level of credibility when a 'non-gay' person is speaking out. If you're 'gay,' of course you want it to be this way... it's for you. Well, that's the way 'outsiders' often (unfortunately) see it. People currently feel free to say they belong to AAN [African-American Network], which I also belong to. Membership in GLAD is 'secret' because of fear of persecution/exclusion. Looking at the horrible notes that were sent out when the [GLAD] web site went up, I understand why."

"The WIN [Women's Innovation Network] group is counterproductive to a female in Dow trying to learn how to succeed/survive in the R&D environment," relates another Dow chemist. "It is too general and includes all females. An office professional has different issues/career goals from a technically trained woman. Work/life balance, fashion shows, car care for women all are interesting but serve to point out our inabilities rather than utilize and enhance our strengths. It looks good on the outside but has done nothing for me personally."

Professional societies like ACS also have subsections for women and underrepresented minorities, and they can offer additional resources that local or corporate networks cannot. "I believe the employee networks help provide common ground, education, and networking interactions within Dow," explains a chemical engineer. "However, these are not specific to a chemistry/CE career. Thus, the networks are useful in understanding/adopting to Dow, but I have not observed a direct link to chemistry. For

improving chemistry networks, I would recommend the Young Researchers Community, scientific poster sessions, professional organizations, etc."

"I think it is important that these groups collect data (statistics and status) on women in chemistry and publicize these findings," explains a Dow chemist. "They help create awareness throughout the chemical enterprise and help create dialog on the issues. They can engage the chemical industry leadership in conversation, provide details on what/how to improve, and recognize and communicate best practices. They have helped my career by offering me opportunities to improve my leadership, communication, and teamwork skills as a volunteer within the organization. I have had an opportunity to work with (and learn from) a variety of leaders."

"They make the professional societies more inclusive," says chemical engineer Antulio Borneo.

However, one chemist points out a disadvantage of professional society subsections. "I haven't participated due to fear of being labeled as a 'woman' first and a scientist dead last."

Despite education and promotion of diversity, discrimination within the chemical industry still occurs. "It is not overt," relates one Dow chemist. "Technical leadership ignores the 'different' ones. It's easier for men to associate with men. And there are plenty of technically strong men to mentor. Little to no effort is spent in reaching beyond their comfort zone."

"[Discrimination was] nothing that I could not overcome very fast with competence," says Antulio Borneo.

"I have experienced discrimination many times in my career, as a woman," relates one chemist. "I know I am thought of 'differently' by many because I choose to support GLAD. I know that many parents, who find out I'm a member, no longer treat my son the same. He's also punished. He understands how I feel and knows that his real friends will like him for what's inside. He and I have talked many, many times about Martin Luther King, Jr., and what he did and why. I'm no Martin Luther King, Jr., (not that brave or that good of a person), but I've watched the persecution of gays and lesbians and feel that I need to help."

"One time only," recalls a process engineer. "An operator in a plant where I was working (in 1999) came up to me and told me that he wasn't 'going to take orders from some lady engineer. You should be at home in the kitchen where you belong.' This freaked me out, but didn't affect my career except to help me understand what some people may be thinking. As a result I now word my communications (both written and spoken) very carefully, especially when communicating to certain groups of operators. I would have liked to have something like the Technical Women's Network to turn to for support in this instance. As it was I had some good

people around with whom I was able to discuss this and garner the learning."

"I have heard comments about 'others' that seemed to reflect prejudicial views," says Tom Wells. "Fortunately that has decreased significantly over the last 30 years at Dow to where I rarely hear such comments. However, it could be that people know my attitudes and refrain from that type of discussion around me."

"Everyone experiences some kind of discrimination in one form or another," says Vincent Oriedo. "Discrimination is a hindrance to an organization's ability to effectively harness value from its human resource investment. Accordingly, individuals—leaders and/or subordinates—who engage in on-the-job discriminatory behavior are not good stewards of their organization's resources and should be counseled to that effect. If they fail to demonstrate a positively discernible behavioral change, they should be demoted from their leadership role and/or released from the organization."

The workplace, institutions of higher education, and public schools may frequently be the only diverse environments people experience. "I think this sort of article is very important ... good for you!" concludes a Dow chemist. "Awareness, education, acceptance, 'normal' ... gotta keep working on getting there."

"It is 2003 and we still only have four female Scientists in Dow. This is appalling," says another chemist. "There is no mentoring or path set up to include women or under-represented minorities in the Scientist community. Other technical companies are not in much better shape. Action and accountability by Scientists and women interested in development towards advanced technical positions is needed to change this. No one can develop alone."

"I find that I have had opportunity and recognition, and that my leadership is supportive of women," concludes another Dow chemist. "I would like to see more senior technical leaders become active mentors for women (seeking out female mentees, not just answering questions that come to them)."

Antulio Borneo concludes "judging from a letter of our global business team (which I am part) to all people leaders in our business, inclusion allows us to tap into the richness of our differences to create success. Inclusion puts our diversity to work for us and at the same time creates a culture that attracts and retains the people that give us the variety of talents we need for success today and tomorrow. Inclusion produces a respectful, welcoming place to work, that allows new possibilities, new directions, new ideas and new products that come from our differences."

Diversity is a long journey. Dow is on its way.

Thank You to All Our Volunteers

By Mike Owen

I can't thank all you volunteers enough who gave their time and energy to the Midland Section ACS this year. Many new initiatives were possible because of your enthusiasm as well as the continuance of our well-established endeavors. I am extremely grateful for the consistent help and support that was constantly provided. Among the new features that I should like to mention are: formation of the Younger Chemists committee, integrated Science Demos and Professional Day at the Midland County Fair, redesign of our web-site, launch of the new, endowed scholarship fund, initiation of 2006 Regional Meeting planning, formation of a new electronic communications advisory committee, and the list goes on.

Other superb, well-established events that particularly come to my mind are the 12th Spring Science Education Recognition Banquet, our 59th Fall Scientific Meeting, and our 10th SciFest extravaganza. With your enthusiasm and dedication we have also been able to maintain our tradition of outreach to the local community, including Project Science Literacy, National Chemistry Week, Chemistry Olympiad, Kids and Chemistry, and Project SEED as well as the Weyenberg student travel grant program.

I would also like to sincerely thank all those who contributed to other important activities such as Minority Affairs, *The Midland Chemist*, Publicity, Program, Historian, Corporate Agent, Auditors, Technical Society Interface, Nominations and Elections, Government Affairs, Career Services and Professional Relations, Explorers Post, Membership Growth, and Retention and Science Promotions. I would refer you to my April *The Midland Chemist* article for as complete a list of our volunteers as I could assemble. It must be incomplete but nobody has complained yet, a further admirable quality of the ideal volunteers we evidently are blessed with.

There are two groups I want to draw specific attention to as their fine efforts were rewarded by national recognition at the New York meeting in September. Special congratulations and heartfelt thanks go to the MidMichigan Technician Group and all those who participated in our Earth Day activities at West Branch in April. Also I proffer particular, personal thanks to the Board of Directors for making my task this year so pleasant. Pythagoras tells us that the oldest shortest words—"yes" and "no"—are those which require the most thought. Thank you so much for saying yes this year when you might have been tempted to say no. Your contributions are greatly appreciated.

Midland Section Reaps Harvest in Big Apple!

By Gretchen Kohl and Bob Howell, Section Councilors

This report was delayed from the last issue of *The Midland Chemist*, due to all the program information for the Fall Scientific Meeting and the election, but we assure you that your councilors were on the job at the 226th National Meeting, September 7–11, in NYC!! ACS hasn't had a meeting in New York City for a while, and with the prices of hotels, it's doubtful that ACS will be having another meeting there soon, if ever. But, it was an experience and a very successful meeting for the Section. The Midland Section was nominated for two ChemLuminary Awards: Greatest Community Involvement in National Chemistry Week (for last year's celebration in West Branch) and Best Overall Section Committee on Minority Affairs. The good news is that we were nominated and that we had such beneficial community outreach programs, but the bad news is that we were not chosen for the award. But, honorable mention in those categories, out of a possible 189 sections, is great. In addition, what we did win, unexpectedly but very deservedly, is one of the first-ever awards for the ACS Chemists Celebrate Earth Day for the activity in West Branch. The crystal trophy is currently on display at National City Bank in West Branch. The MidMichigan Technician Group was also nominated in all three ChemLuminary categories for the Division of Chemical Technicians and won the Best Overall category. MMTG is consistently excellent and our Section members should be proud not only of their activities here, but how good and well attended their programming is at the national meetings.

Stephanie Burns, president and COO, Dow Corning, was keynote speaker at the meeting of the Women Chemists Committee. Photo: Angelo Cassar

Other highlights of the Council meeting were:

- An update that you might have seen in *Chemical & Engineering News*, which positively impacts our Section is that the ACS membership did vote to increase funding from our member dues for local sections and divisions (for the 20,430 and against 3,197). There will be incentives for divisions to do more programming at local and regional meetings, so we

can leverage this increase further by working together.

- Discussions are continuing at the board level on a possible merger of AIChE with ACS. The bylaws of the two organizations are different on even making this decision. With ACS it would be a board decision; with AIChE this is a member-voting proposal. There could be benefits to both organizations, nationally and locally, for such a merger, but there are mechanics and finances to be decided, too. Watch for updates in *C&E News*.
- The search continues for a replacement for John Crum, who has served ACS national for over 40 years, the last 20 as executive director. There were over 250 applicants considered. Many tributes were made to John during the council meeting for his dedicated service.

Wendy Mathews, member of the MidMichigan Technician Group, accepts the award for Best Overall Technical Affiliate Group. Photo: Angelo Cassar

The Meetings and Expositions (M&E) Committee reported that the NYC ACS meeting had over 14,000 registered by Wednesday morning's council; the meeting exhibition had 360 companies occupying 528 booths, a new record.

The National Employment Clearinghouse (NECH) had 293 job openings from 97 employers for 1564 job candidates (compared to 512 jobs listed by 270 employers, with 1242 candidates in Boston, 2002). The statistics reflect the economy, with a much tougher job market and more displaced chemists than even a year ago.

Before council meeting, earlier in the week, Bob attended his Patent and Related Matters Committee meetings and other technical sessions, and Gretchen spent a very full day attending meetings of the Committee for Environmental Improvement (CEI) and others at National Chemistry Week (NCW) workshops.

Upcoming themes for 2004 are "What Do You Know About H_2O" for the April 21 Earth Day Celebration and a still-to-be-developed theme in the area of health for the official NCW in October. And, speaking of NCW, on the lighter-than-air side, we can report that our Section publicity chair and NCW cochair, Angelo Cassar, won another honor representing Midland Section, at the NCW workshop on "Atmosphere and Beyond," in

NYC. Being the first competitor, no less, in the national workshop for construction and test flying of paper airplanes, Angelo's airplane miraculously "caught a thermal" in mid-room and glided all the way across and crashed into the wall. No other competitor came within half a meter. David Harwell, NCW program director, presented Angelo with the first edition of the Milli Mole Bobble-head lapel pin, which was premiered at the NYC meeting.

As always, if you have any comments that you'd like to make to us, please call or e-mail to Gretchen (496-8200 or gretchen.kohl@dowcorning.com) or Bob (774-3582 or bob.a.howell@CMICH.edu).

Call for Nominations for Industrial Innovation Awards

By Wendell L. Dilling

The ACS Regional Industrial Innovation Awards sponsored by the ACS Industry Members Programs honors individuals and teams for their creative chemical innovations that have resulted in a commercial product or process. Through these awards the Society recognizes scientific researchers for their creative contributions to society and their corporate leadership for the advancement of a healthy regional economy. Those individuals and groups receiving awards are honored at an awards event and symposium at regional ACS meetings that feature recent discoveries in contemporary industrial research and development.

Nationwide these awards were first presented in 1998 and in the Central Region of the ACS in 2001. In the three years of the program in the Central Region, which includes the Midland Section, five awards have been presented to scientists at Proctor and Gamble, General Motors, Ford, Bayer, and Dow Corning. At the recently completed Central Regional Meeting in Pittsburgh, Sudarsanan Varaprath of Dow Corning Corporation was honored for his work on "Understanding the Environmental and Biological Fate of Silicones."

The nomination deadline for the 2004 regional meeting cycle is January 15, 2004. For additional information about this program, visit chemistry.org/industry/regionalawards or contact Vanessa Johnson-Evans at 800-227-5558, ext. 4373, or cheminnovations@acs.org. In light of the outstanding research and development conducted at companies within the Midland Section, nominations for individuals or teams from Section members would be quite appropriate.

Fall Is Busy Time for Members of MMTG

By Dana Bitzer

What's been keeping members of the MidMichigan Technician Group (MMTG) busy since September? Since our last update, MMTG has held two talks and participated in SciFest at Delta College. Elections for the 2004 Executive Board were held and the results are in! The Programming Committee is busy planning seminars for members for 2004 and the plans for our Adopt-A-Family event are in full swing.

Are you interested in becoming a member of the MidMichigan Technician Group? If so, please contact one of the 2004 Executive Board members. For $2 a year, you can be a member of this nationally recognized Technician Affiliate Group (TAG).

MMTG has added another award from the national American Chemical Society to our collection. Wendy Mathews accepted the "Best Overall TAG" for 2002 at the ChemLuminary Awards held at the 2003 National ACS meeting in New York in September of 2003. MMTG also holds the "Salutes to Excellence Award" for supporting National Chemistry Week for 2001; "Most Innovative TAG" from 2001, 1998, and 1996; "Best Overall TAG" from 2000 and 1999; "Best Local Section" and "TAG Interaction" from 1997; and "Outstanding Performance in Our Class Size" for 1995.

Why has MMTG been recognized at the national level for so many years? MMTG offers talks and workshops that can be applied to a member's personal or professional life. MMTG offers networking opportunities with employees of Dow Chemical, Dow Corning, Kelly Services, Bayer Corporation, SC Johnson, MMI, and Delta College. The members of MMTG also participate in community outreach programs.

2004 MMTG Executive Board

Position	Member	Telephone
Chair	Sarah Kushon	989-636-5314
Chair Elect	Wendy Mathews	989-636-3934
Past Chair	Amy Betz	989-636-9549
Treasurer	Becky Swanson	989-638-5343
Secretary	Dana Bitzer	989-636-4854
Board of Directors	Dave Stickles	989-496-3273
	Wendy Klein	989-636-4182
	Pam Slavings	989-638-9482
	Carol Shea	989-496-4939
Delegates	Tricia Wilson	989-636-9171
	Deb Mendrick	989-638-3094

On September 25, Connie Murphy and Bob Krystosek spoke to MMTG members and guests about the Division of Chemical Technicians (TECH). Connie spoke of the history of TECH and Bob told MMTG members what TECH will be doing in 2004 and the future direction of TECH, as well as the benefits of belonging to the National ACS and its affiliated groups. Lunch was provided for free to all MMTG members and for a $3 fee to nonmembers.

MMTG members presented hands-on science demonstrations at SciFest on Saturday, October 18. The participants learned how to perform chromatography with markers and filter paper and how to make putty using Elmer's® school glue and Borax®. They saw the difference in density of six different liquids and the difference in viscosity of four different liquids. They also saw how the surface tension of water helps prevent a liquid from pouring out of a jar and how rings of smoke can blow your hair.

On October 23, the Midland Diversity Networks and MidMichigan Technician Group cosponsored a multimedia presentation by Stacy Allison. "Many Mountains to Climb" was an intriguing and enlightening talk that was enjoyed by all in attendance. As the first American woman to climb and reach the summit of Mt. Everest, Stacy gave a firsthand account of the physical and mental strength and skills it took to accomplish her

Shown here is speaker Stacy Allison with representatives from several of the sponsoring networks. From left to right, back row: Heather Seebeck, Gina Schecter, Elizabeth Abbott-Sirrine, Julie McAlindon, Margo Santoya, Leona Flores. Front row: Amy Betz, Stacy Allison, Diane Wirsing, Liane Foote.

goal. She also spoke of how she applies the skills learned from climbing to her residential building business and personal life.

MMTG is currently planning the Adopt-A-Family event for the 2003 holidays. For the past several years, MMTG members have donated their time and money to give back to a local family by providing gifts and a holiday meal. Plans are being made and donations towards this event are now being accepted.

For 2004, MMTG is planning a 5-hour, hands-on "Skills Assessment Workshop." In this workshop, members will evaluate their unique skill-sets, identify gaps, and relate their skills to a specific career plan. MMTG applied for and received the ACS Recruitment, Retention, and Recognition mini-grant to finance this workshop, which will be open to members only. If you are not already a member, you are welcome to join at any time.

2004 Board Meetings Scheduled

By Joe Ceraso

Following is a list of the 2004 ACS Board of Directors Meetings and their meeting location. All meetings are from 7-9:00 p.m.

Date:	**Location:**
Monday, January 12, 2004	Delta College Midland Center, Room 12
Monday, February 9, 2004	Delta College Midland Center, Room 12
Monday, March 8, 2004	Delta College Midland Center, Room 12
Monday, April 12, 2004	Delta College Midland Center, Room 12
Monday, May 10, 2004	Delta College, Room TBD
Monday, June 14, 2004	CMU, Room TBD
July — No Meeting	
Monday, August 9, 2004	SVSU, Room TBD
Monday, September 13, 2004	Delta College Midland Center, Room 12
Monday, October 11, 2004	Delta College Midland Center, Room 12
Monday, November 8, 2004	Delta College Midland Center, Room 12
Monday, December 13, 2004	Delta College Midland Center, Room 12

Midland Section Launches Fund Drive for Scholarship Endowment

By Lin Dorman

In October, the Midland Section of the American Chemical Society launched its inaugural fund drive for an endowed scholarship fund. This endowment was initiated last year with the Midland Area Community Foundation at the threshold level of $5,000. The ultimate endowment fund goal is $100,000, which would enable the funding of five annual scholarships of $1,000, or more, to students seeking academic degrees in the chemical sciences at colleges and universities in the Midland Section area. The Section area includes Midland, Bay, Saginaw, Gratiot, and Isabella counties. It is anticipated that the first scholarship will be awarded in 2005.

For many years the Midland Section has had an active portfolio of outreach programs to further the mission of the American Chemical Society, which is "to encourage in the broadest and most liberal manner the advancement of the chemical enterprise and its practitioners." This scholarship fund will make a significant addition to Section's outreach portfolio. Educational costs have risen faster than inflation, requiring a constant need for monetary reinforcement to support academic pursuits.

Unique to this new outreach program is that *every* member of the Section has an opportunity to make an everlasting contribution to its success by giving to the fund. All members have been sent a solicitation letter. Now, all that is necessary is sending a check and/or pledge to the Midland Area Foundation, P.O. Box 289, Midland, MI 48640-0289. Gifts can also include stock, bonds, real estate, or charge card donations. Charge card donations require contacting Nicole Lomas of the Foundation at 989-839-9661 ext 13. The fund drive ends September 30, 2005. Contributors to the inaugural fund drive will be cited at these funding levels:

$20,000 and above	$10,000–$19,999
$5,000–$9,999	$1,000–$4,999
$500–$999	$100–$499

Questions about this scholarship fund drive may be addressed to any of the committee members:

Lin Dorman, chair 989-631-0213	Wendell Dilling 989- 631-1621
Bob Howell 989-774-3582	Joan Sabourin 989-686-9249

MMTG, Midland Section, Delta Celebrate SciFest 2003

By Dave Stickles and Joan Sabourin

The 2003 National Chemistry Week theme "Earth's Atmosphere and Beyond" permeated SciFest, held at Delta College on Saturday, October 18, 2003, from 10:30 a.m. until 2:30 p.m. Over 2000 people joined in the science fun. The Midland Section of the American Chemical Society, the MidMichigan Technician Group, and Delta College sponsored the event. Members of the committee developed several ideas around the theme and shared these with the exhibitors.

Topics included but were not limited to materials on aviation, meteorology, astronomy, "microbes in space," acid rain, plastics, solar power, and air and water quality.

Hot air balloon rides were scheduled, but the wind velocity was too high. Participants viewed the gondola and asked many questions of the pilot. The National Plastics Center and Museum provided their PlastiVan hands-on activities on center stage, which included information on the chemistry, history, and processing, and environmental issues involved with plastics.

There were many activities, including:

Frisbee throwing contests	Smoke rings
Static electricity	Production of a miniature tornado
Rats, mice and snakes	Fireworks video
Aurora borealis	Glassblowing

Tim Drier entertained a continuous group of onlookers with his glassblowing expertise. Photo: Angelo Cassar

Color changing beads
History of the atmosphere
UV light experiments
Space shuttle heat shield
Atmospheric chemistry
Paper airplane contests
Balloon piercing
Portable planetarium
Visible spectra from different sources
Solar power
Aviation science

Additionally, the Dow Corning Corporation sponsored 12 shows at the Delta College Planetarium. Four shows were open to the public on the day of SciFest. Eight additional shows were offered free of charge to groups of students from schools with limited monetary resources, several of whom had not previously attended a planetarium show. Over 600 students and adults took advantage of this opportunity.

Photo: Joan Sabourin

Companies and groups with exhibits and hands-on activities included:

- American Chemical Society Midland Section
- American Institute of Chemical Engineers MidMichigan Section
- Bangor Middle School
- Delta College Astronomy Club
- Delta College Aviation Program
- Delta College Environmental Club
- Delta College Greenhouse
- Delta College Intervarsity Christian Fellowship
- Delta College Meteorology
- Dr. Slime
- Midland Center for the Arts Hall of Ideas
- Midland Radio Controlled Modelers Club
- MidMichigan Technician Group
- National Chemistry Week Committee
- Quality Air and Water of Michigan
- Saginaw Valley State University Chemistry Club
- Science Literacy
- Society of Plastics Engineers MidMichigan Section

- Sunset Astronomical Society
- TriCities Microbiology Club

Approximately 29,000 flyers were distributed to Bay City, Coleman, Freeland, Meridian, Midland City, Bullock Creek, and Saginaw School districts and to St. Brigid, Blessed Sacrament, and St. John Lutheran parochial schools in Midland, Sacred Heart Mt. Pleasant, and Trinity Lutheran in Auburn. The event was advertised in the area *Home Schooling Newsletter*, in the Tri-City newspapers, TV bulletin boards, and through a 4-minute segment on CNN Hometown News.

Photo: Joan Sabourin

The attendance this year was larger than in the past. Participants enjoyed free cider and donut holes. Lunch was provided to all presenters. The event was very much a success, with everyone having a good time. Good comments about the event are still being heard several weeks later.

In Past Issues of *The Midland Chemist*

By Wendell L. Dilling, Midland Section Historian

- **30 Years Ago This Month**—The Science Quiz Program is entering its 17th season. This time, eighteen area junior high schools will be competing. The contests are shown on WNEM-TV5 each Sunday morning at 9:30 a.m.
- **20 Years Ago This Month**—The 1983 Award for Outstanding Achievement in the (sic) Promotion of the Chemical Sciences has been received by Dr. Donald R. Weyenberg, Vice President of Research, Technical Service and Process Engineering of the Dow Corning Corporation.
- **10 Years Ago This Month**—Bob Kohrman invites Midland Section members to a Cross Country Ski Outing on January 29, 1994, at Neithercut Woodland, CMU's nature study and conservation education area.

Important Dates on the ACS Midland Section Calendar

Dec. 8	Midland Section board meeting, Delta College Midland Center, Rm. 12, 7:00 p.m.
Jan. 5	Deadline for February issue of *The Midland Chemist.*
Jan. 13	Midland Section board meeting, Delta College Midland Center, Rm. 12, 7:00 p.m.

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