



DECISION 2006

Section leadership candidate profiles begin on page 8



Midland Section of the American Chemical Society

62nd Fall Scientific Meeting

8:30 a.m. to 12:30 p.m.

October 21, 2006

**Keynote: New Science Education Requirements
for Michigan Public Schools**

Dow Science Building
Central Michigan University
Mount Pleasant, Michigan

THE MIDLAND CHEMIST

Volume 43, Number 5
October 2006

In This Issue...

Chair Column: Flight Arrivals for Fall	1
Breaking News	2
6th Annual Professionals Day at the Midland County Fair	3
Where Have the Chemistry Sets Gone?	4
Celebrate National Chemistry Week at Sci-Fest	7
2007 Midland Section ACS Election	8
Candidates for Chair-Elect	8
Candidates for Secretary	9
Candidates for Treasurer	10
Candidates for Chair, Nominations and Elections Committee	10
Candidates for Director	11
Speaker to Address High School Requirements	13
Ballot for Election of 2007 Midland Section ACS Officers	14
62nd Fall Scientific Meeting: The Future of Science and Science Education in the Mid-Michigan Area	15
Sixty-Year and Fifty-Year Members Honored	32
In Memoriam: Ted Doan	35
In Past Issues of <i>The Midland Chemist</i>	37
Important Dates on the ACS Midland Section Calendar	38

The Midland Chemist is published six times a year by the Midland Section of the American Chemical Society.

American Chemical Society
Midland Section
PO Box 2695

Midland, MI 48641-2695

<http://membership.acs.org/M/Midl>

Volunteer Staff

Ann F. Birch Editor
989-832-7485
ann.birch@editech-mi.com
Dave Baker Writer
Debbie Rothe Photographer
Peggy Hill Writer
James R. Birch Design, layout

Please submit all articles and photographs to the editor, Ann Birch. Instructions for article submission are on the Midland Section web site, as is contact information for other staff members. Authors can also contact Ann directly with any questions.

Neither *The Midland Chemist*, nor the Midland Section, nor the American Chemical Society assumes any responsibility for the statements and opinions advanced by contributors of or to *The Midland Chemist*.

© Copyright 2006 Midland Section of the American Chemical Society

Chair Column

Flight Arrivals for Fall

Welcome back from your summer. Please return your seats and tray tables to the upright position as we prepare for fall, and what a fall your Midland Section of the American Chemical Society has in store!

By the time you read this, we will have held our first annual (to our knowledge) Midland ACS Open House at Plymouth Park, where folks enjoyed cold sodas, beers, and snacks, met some of our local Section leadership *and* leadership from local industry *and* academia representatives, *and* learned more about the Section's activities and volunteers. What a perfect opportunity to come out and meet your Midland ACS and search for the perfect volunteer opportunity. Extra-special thanks to Dee Strand for leading this hopefully recurring event.



Buford Lemon, Chair
ACS Midland Section

Then, in October, we have a triple-treat of ACS activities to pique your interest and stimulate your mind. First off, we're holding our annual Fall Scientific Meeting at Central Michigan University on Saturday, October 21, from 8:30 a.m. to 12:30 p.m. The theme of this year's meeting is "The Future of Science and Science Education in the Mid-Michigan Area." The meeting is chaired by CMU representatives Wendell Dilling and Robin Hood (thank you, Wendell and Robin!) and will feature a poster session, a keynote delivered by Dorothy Horan, Science Coordinator for Midland Public Schools, a panel discussion on the new Michigan K-12 science education standards, as well as our Section awards. You will find the program for the meeting in this issue of *The Midland Chemist* and also on the Section web site <http://membership.acs.org/m/midl/>. No need to preregister...just show up! I personally look forward to seeing you there!

Two short days later, we're partnering with the Alden B. Dow Museum of Science and Industry to host Mike Flanagan, Superintendent of Public Instruction for the State of Michigan, who will be speaking on changing high school graduation requirements. The talk and discussion will be held October 23, from 5:00 to 6:00 p.m. in the Founder's Room at the Midland Center for the Arts. Please join us for this important discussion of our future as realized through the science education of our youth.

Also, please don't miss our 2006 Sci-Fest, Saturday, October 28, at Delta College. If you haven't attended or volunteered for this spectacular event, I can't encourage you strongly enough to do so—this event is one of

the many highlights of our Section's efforts and is guaranteed to make you smile and restore much of your faith in the future. Please contact Dave Stickle (dstick44@chartermi.net) or Joan Sabourin (jmsabour@delta.edu) or check our Midland ACS web site for more information.

And, I'd like to wrap this column first by thanking Jennifer Dingman, Lena Nguyen and their crew for all of their hard work and dedication in putting together this year's Professionals Day at the Midland County Fair on August 14. Nothing's better than having the honor of working with a Section as resourceful and committed as this one.

Second, I'm calling on each and every one of you, our Midland ACS membership, to step forward and find your volunteer niche within the Section. While we have an incredible bunch of hardworking folks that keep this section running as well as it does, we're also incredibly short-handed and could really use your hands, hearts, and brains. Please contact me, Buford Lemon (midland_acs_chair@yahoo.com) or our chair-elect, Dee Strand (strandda@dow.com) and we'll step right up to get you started.



Breaking News...

The Midland Section received four ChemiLuminary awards at the recent National meeting! More in the December issue of *The Midland Chemist*.



Living.
Improved daily.

6th Annual Professionals Day at the Midland County Fair

Article by Jennifer Dingman, Photo by Debbie Rothe

The Midland Section of ACS, with the help of the MMTG and YCC, hosted its annual Professionals Day at the Midland County Fair on Monday, August 14. The event was held in the Brown Picnic Building on the north end of the fairgrounds next to the grandstand. It was a gorgeous day to be at the fair. Members and their families were provided with free drinks, popcorn, and sno-cones in addition to live science demonstrations to pique the kids' curiosity in chemistry. And if that was not enough action for an afternoon at the fair, Midland County provided our members



with a significant discount on the “unlimited ride bands” and an extended period of time those bands were good for that day. Approximately 200–250 members stopped by the area and participated, and some never left!

An event like this could not have been pulled off without the time and energy of volunteers, and we would like to thank them. In a time when no one seems to have a free minute, these people took hours out of their schedules to help out with this event. Next August...see you at the fair!!!

Buford Lemon
 Dave Stickles
 Shawn Tran
 Jessica Bell
 Bill Warren
 Hobart Barker
 Grant Thomas

Deborah Rothe
 Christin Greiman
 Lena Nguyen
 John Blizzard
 Mike Ferritto (and Mike's son Kyle)
 Pamela Slavings
 Liz Shauger

Where Have the Chemistry Sets Gone?

By R. W. Von Korff

Chemical Heritage has published several articles on chemistry sets and how they fit into the legacy of chemistry.¹⁻⁴ From these articles, two phases are evident in the history of these chemistry teaching tools. In the 1930s–1950s, chemistry sets played an important role in stimulating young people to become chemists or to at least become familiar with chemicals. They provided small wooden or glass containers with solid chemicals as seen in the cover illustration of *Chemical Heritage*, Spring 2001. The physical form of an element or compound, whether solid or liquid, crystalline or amorphous, and the color were evident. However, from the 1980s on, a different picture emerges, with dilute solutions replacing the vivid materials of years past. Schmidt suggests that “Liability concerns have forced most of what is ‘dangerous’ out of the sets, no doubt also forcing out some of their mystery and appeal.”¹ Sacks’ initial sentence, “There has been an increasing restriction on the availability of many chemicals in the past 40 years,”² is followed by the citation of the Columbine High School incident as an example of how easily obtained chemicals can be deadly when misused.

With these thoughts in mind, I’d like to illustrate how important an exciting chemistry set was in initiating my research career, and reflect a bit on chemistry sets as they are used today.

My first chemistry set was obtained at the age of 11 in Portland, Oregon, while the family was touring the west. It led to my desire and determination, encouraged by my Dad, to become a chemist. The picture shown below, taken 5 years later, is of my first lab in what had been the sewing room of my grandmother’s home. By this time, I was taking a correspondence course in chemistry. The texts are shown in the upper right of the photo and the chemicals on the shelves to the left. (My experiences in obtaining chemicals from the drug store were nearly identical to those given by Sacks, Linus Pauling as



cited by Sacks, and Talkin³.) The experiment in progress involved the preparation of ethyl ether from alcohol (denatured, I'm sure). The source of heat was an open flame fed from a portable acetylene tank; cooling of the distillate was via gravity-fed ice water—definitely a dangerous way to do this experiment as an explosion could have resulted!

In my late teens I was fortunate in having a much larger lab built by my Dad with a fume hood, Kipp generator, analytical balance, gas and water connections, etc. I worked methodically through the chemistry of as many elements as possible using Treadwell and Hall's text on qualitative analysis as my guide.

In the late 1940s my thesis research at the University of Minnesota required trapping of $C^{13}O_2$ and $N^{15}H_3$. I frequently transported a five-gallon container of several gallons of liquid nitrogen about six blocks by bicycle to the university lab for my experiments. In various analytical and synthesis projects during my career I worked with perchloric acid in the determination of silicon in iron, perchloric–nitric acid mixtures for wet ashing of agricultural products, or blood to determine silicon from silane-coated plastic tubing used in heart perfusions in the early days of heart surgeries. Similarly, I used diazomethane for methylation, and phosgene and liquid ammonia for various syntheses, all accomplished without problems. In later years I was amazed that some of my biochemist friends refused to have perchloric acid in the lab or were fearful of using diazomethane. I learned that proper planning and care would prevent disasters.

Some 15 years later, while on a National Heart Institute post-doctorate under David E. Green⁵ I was able to break several log jams holding up the publication of a couple of important papers. One involved a coenzyme Green thought to be different than Coenzyme A (CoA) while others in the field were sure it was CoA. As he left for vacation, Green assigned me the task of comparing two analytical procedures, one that required what he termed Co-reductase and the other a classical method for the determination of CoA. When he returned from vacation he looked at the data, which showed identical results for the two assays on the same samples. This resulted in a boost to my reputation for the year.

A couple of months later we made a surprising discovery of how Coenzyme A could be isolated in large amounts by a relatively simple process. However, the manuscript could not be released because of the appearance of glutamic acid and glycine, not components of CoA. It was found, by questioning the analysts, that they were using an acid hydrolysis prior to microbiological analysis. This resulted in the release of glutamic acid and glycine, the latter from decomposition of the adenine moiety of CoA and the former from glutathione, an agent used in the isolation of CoA. This finding allowed release of the manuscript⁶ for publication. Later I was in-

volved in the removal of another log jam that involved an answer to the mechanism by which acetate ion is converted to a high energy form (acetyl CoA) for further utilization. Much of the approach that I took to these and other problems can be attributed to those early days in my home lab.

Experiments with chemistry sets in the 1980s were a disappointment to me and failed to interest my oldest grandson in chemistry. (A Harvard graduate, he is now a graduate student with a major in math and physics at the University of California, Berkeley.) To perform an experiment one withdrew a few drops of dilute chemical solution by means of a plastic pipette bulb and added it to a test tube or beaker with other constituents—not exciting or particularly educational. My first reaction was to write letters to the ACS and to the manufacturers of the sets. However, living 700 miles away from my grandchildren and procrastination overcame my first reaction. But reading about the experiences of others as described in *Chemical Heritage* rekindled my interest in recounting my own experiences.

It is interesting to speculate on the factors that may be responsible for the decline in the availability and usefulness of chemistry sets. They are probably numerous, including an increase in fear of chemicals due to misuse of tremendous quantities of certain chemicals e.g., ammonium nitrate; fears promoted by increased publicity of environmentally toxic chemicals; changes in the nature of chemical research and teaching methods; and exponential growth in the availability of computers, leading to some attempts at the use of virtual labs employing computer software experiments. One such case I explored was very misleading in regard to safety aspects. Also, experimentation online is a bit like reading hundreds of pages from a good book on a computer screen instead of turning pages by hand in an easy chair...not nearly as rewarding!

I owe an undying debt of gratitude to my wife Jane, who I lost to an amelanotic melanoma after 47 years of marriage. Her everlasting support and encouragement was a priceless gift of love.

1. James Schmidt, "The Chemistry Set: Chemistry's Legacy of the Home Laboratory," *Chemical Heritage*, Spring 2001, p. 12.
2. Oliver Sacks, "Hard Times for Curious Minds," *Chemical Heritage*, Spring 2001, p. 27.
3. Phillip S. Talkin, "A Nostalgia Cocktail," *Chemical Heritage*, Fall 2001, p. 22.
4. Rosie DiVernieri, "The Chemistry Set: From Toy to Icon," *Chemical Heritage*, Spring 2006, p. 22.

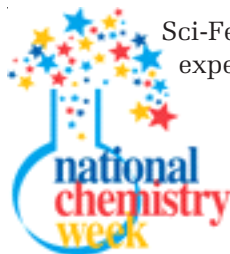
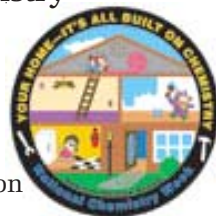
5. Institute for Enzyme Research, University of Wisconsin, Madison, WI.
6. Helmut Beinert, R.W. Von Korff, D. E. Green, D.A. Buyaske, R.E. Handschumacher, Harvey Higgins, and F.M Strong, "A Method for the Purification of Coenzyme A from Yeast," *J. Biol. Chem.*, 200, 385. (1953).

Editor's Note: Dick has been a member of the American Chemical Society since 1939 and has had a rich and varied career. He obtained his Ph.D. in 1951 from the University of Minnesota and began working with Dr. Lewis Thomas. After six months, he went to the University of Wisconsin at Madison on a National Institute of Health fellowship, working with Dr. David Green, a famous enzymologist. In six months they made three important discoveries involving CoA and fatty acid oxidation. After a year, Dick returned to the University of Minnesota as an associate professor in biochemistry, working again with Dr. Thomas. According to Dick, Dr. Thomas was not only a great medical research investigator, he was also the author of a number of well-read books and was a frequent contributor to the New Yorker magazine. After Dr. Thomas left, Dick worked with Dr. Robert Good, who did the first human bone marrow transplant, then with Dr. John Anderson, head of pediatrics in the medical school. In 1966, he moved to Maryland to become director of biochemical research, initially for Friends of Psychiatric Research, Inc., and then for the state of Maryland's new Maryland Psychiatric Research Center in Catonsville, Maryland. In 1977 he came to Midland as a research professor in biochemistry at what is now the Michigan Molecular Institute, retiring in 1985 at the age of 68.

Celebrate National Chemistry Week at Sci-Fest

"Your Home—It's All Built on Chemistry"

**Delta College, Pioneer Gym
October 28, 2006
10:30 a.m.–2:30 p.m.**



Sci-Fest 2006 features exhibits and hands-on experiences involving:

- Materials used to build homes
- Home safety and preparedness
- Recycling and conservation in the home

2007 Midland Section ACS Election

Candidates for 2007 Midland Section offices are listed on subsequent pages by position and then alphabetically. These individuals are willing to spend their personal time working for you. ***Please respond by voting for the candidates of your choice using the ballot on page 14.***

Candidates for Chair-Elect

Dorie Yontz

Candidate Statement: As I sit here thinking about my candidate statement, I find myself pondering the purpose of ACS in general and the Midland Section in particular. Why bother? Is the Midland Section—ACS even relevant to my life? At the most basic level, professional societies like ACS exist for the benefit of their members and the field. Societies provide a means for us to keep current in our field, they provide a networking and career forum, and they serve to educate the community about our discipline. The national organization does these in a grand way; the Midland section can do so in a focused, intimate way.

My goal is for the Midland Section to be a place where our members can recharge their passion for science. All day long, I am surrounded by science, but it's work – work with deadlines, work with deliverables. After being an inactive member for a number of years, I decided to finally become involved in ACS because I felt the need to reconnect with the heart of science. Each person rejuvenates in a different way, but the Midland Section is diverse and opportunities for touching science in new ways abound. Some of us might get a charge out of a scientific discussion or a technical puzzle. Some of us might enjoy sharing our love of science through mentorship or teaching. Others of us might be interested in government relations or community awareness about chemistry. The past chairs-elect have centered on encouraging member participation and education, and I fully support those endeavors because robust membership is the lifeblood of our group. Now we need our local division to become relevant to us.

Professional Experience: R&D Specialist, The Dow Chemical Company, Latex R&D (2004–present); 1999–2004: The Dow Chemical Company, Core R&D (worked with Advanced Electronic Materials, Fabricated Products, Engineering Plastics, and Polyolefins Research); 1994: summer internship at Monsanto (nylon fiber research).

Education: Ph.D. Polymer Science & Engineering, University of Massachusetts, Amherst Thesis: Investigated the influence of temperature on the competition of polymerization, crosslinking, and phase separation in a

heterogeneous polymer system, Structure/property relationships; B.S. Polymer Science, University of Southern Mississippi, Honors Thesis: Examined the link between ionic aggregation and crystallization in semi-crystalline ionomers.

ACS Activities: Member of Midland Section and Polymeric Materials Science & Engineering Division (ACS member since 1995); Taught 10-week polymer short-course to Mid-Michigan Technologist Group

Other Information: Industrial Advisory Board for University of Southern Mississippi Materials Research Science & Engineering Center (2003–present, Chair 2003, 2004); Chair of Dow Discussion Group (2001–2003), Secretary (2000–2001); Member of Materials Research Society (MRS) and American Physical Society (APS)

Candidates for Secretary

Michelle R. Cummings

Professional Experience: Development Scientist at Dow Corning Corporation, currently working on emerging technologies in thermal management. Joined Dow Corning in 1998. 2001–2006 development of protective materials for LEDs and other electronic devices. 1998–2001 interlayer dielectrics. 1995–1998 Dow Chemical Corporation; materials characterization.

Education: B.Sc. from Central Michigan University.

Other Information: Member of Dow Corning's Scientists in the Classroom. Native of Midland.

Beth Nichols

Professional Experience: Joined The Dow Chemical Company July 2006, currently on Research Assignments Program in New Products R&D; Teaching Assistant (University of Wisconsin 2001, Bradley University 1998–2001); USDA-Agricultural Research Service Intern, Plant Polymer Laboratories (Peoria, IL 1999–2000).

Education: Ph.D. Analytical Chemistry, University of Wisconsin-Madison, 2006; B.S. Chemistry/Biochemistry, Bradley University (Peoria, IL), 2001.

ACS Activities: Joined ACS 2001; Chair, Bradley University Student Affiliate 2000–2001; Presentations at National and Regional ACS meetings; High School Chemistry Contest- Peoria Local Section ACS, (Proctor 1999–2001, Participant 1996–1997).

Other Information: Served as Analytical Division Representative (2002–2004) and Chair (2003–2004) of departmental graduate student committee at UW; College for Kids instructor (UW, 2004–2005); Children's Education Volunteer (Olbrich Botanical Gardens, Madison, WI 2002–2006); enjoy volunteering with science outreach programs, especially for K-5.

Candidates for Treasurer

Gregory S. Becker

Professional Experience: Associate Development Specialist in the Global Conductive Materials Platform, Dow Corning Corporation. Joined Dow Corning in 1998 in Electronic Materials Research and Development group. Previously had been with Dow Chemical from 1992–1997 in Electronics R&D and with DowElanco (Dow's former Ag unit) from 1989–1991.

Education: B.Sc. Chemistry Central Michigan University, A.A.S. Industrial Chemistry Ferris State University.

ACS Activities: Joined ACS in 1997.

Other Information: Co-authored 8 external publications and has 5 combined patents.

Csilla Kollar

Professional Experience: Joined Dow Corning, 2000; Associate Research Specialist in Business & Technology Incubator, Dow Corning Corporation; Before Dow Corning: Analytical Chemist Roberson Microlit Laboratories and Novartis Pharmaceuticals.

Education: B.S. and M.S. Chemical Engineering, Technical University of Budapest, 1987 and 1990.

ACS Activities: Joined 2000; Treasurer of Midland Section 2006.

Other Information: Currently working on various bioscience research activities; previously developed expertise in surface modification technologies, and rubber development; coauthor of eight US patents.

Candidates for Chair, Nominations and Elections Committee

Charles W. Olsen Jr.

Professional Experience: Currently working in sales development for the transportation segment reinforcing Dow Corning's presence as a supplier of high quality elastomer and other product solutions; joined Dow Corning 1997 working with silicone polyether surfactants; developing and commercializing silicone polyurethane hybrid polymers, AlliedSignal (Honeywell); seven years working on the space shuttle program solid fuel rocket boosters, Thiokol Corporation, Utah

Education: M.S. Management of Technology, Stevens Institute of Technology, Hoboken, NJ, 1996; B.S. Chemical Engineering, University of Washington, 1985; A.A. and A.S., Olympic College, Seattle, WA

ACS Activities: Joined 2002

Other Information: Active in boy scouts as an adult leader; practicing member of Toastmasters International

Brett Zimmerman

Professional Experience: Senior Research Chemist currently working in the Emulsion Technology Platform, Dow Corning Corporation, 1996–present; Manteq and TAD Contract Services at Dow Corning Corporation, 1994–1996.

Education: B.S. Chemistry, Central Michigan University.

ACS Activities: Joined 2004; Chair of the Nominations and Elections Committee 2006; Finance Committee (Exposition Chair) for 2006 ACS Central Regional Meeting and Silicon Symposium; helped with Project Science Literacy through school demonstrations and on-site job shadowing (2004–present).

Other Information: 2 external publications, 7 U.S. patents, special interests include elementary science education particularly via school demonstrations (active since 1996) and colloid science.

Candidates for Director

Jennifer Dingman

Professional Experience: Dow Corning Corporation; Sr. Industry Chemist 2006–Present, Industry Chemist 2002–2006, Analytical Chemist 1998–2002; Amway Corporation Sr. Product Development Technician 1996–1998.

Education: B.S. Biology, Alma College 1996; M.S. Chemistry, Central Michigan University 2004.

ACS Activities and Positions Held: Joined 1998, Midland Section Elected Director 2004–2006, Professional Day Chair 2006

Other Activities: Dow Corning United Way Corporate Site Coordinator 2001 and Fall Day of Caring Team Leader, Dow Corning 2005 AETS Excellence Award Winner, ACS Polymer Division Excellence in Graduate Polymer Research Award (National Meeting 2004), CMU Outstanding Thesis Award 2004, Midwest Association of Graduate Schools Nominee for Distinguished Master's Thesis Award

Dale J. Meier

Professional Experience: Michigan Molecular Institute, 1972–present; Professor/ Distinguished MMI Fellow/Program Manager; Shell Development Co. 1951–1968 and 1969–1972, Supervisor Research; Visiting Scientist The Netherlands 1968–1969., Visiting Professor, Poland 1975 and Japan 1981 and 1982.

Education: B.S., M.S., California Institute of Technology; Ph.D., University of California at Los Angeles.

ACS Activities: Joined 1950, Director Midland Section 1979–81, Committee Member: Author's Night 1984–1991, Fall Scientific Meeting 1990, ACS Rubber Division Education 1987–1990, Session Chairman, ACS 14th Central Regional Meeting Symposium Chairman, ACS 22nd Central Regional Meeting.

Member ACS Divisions: Polymer Chemistry, Rubber, Polymeric Materials: Science and Engineering.

Honors: ACS Midland Section: "Outstanding Achievement and Promotion of the Chemical Sciences" 1993; "Outstanding Achievement in College Teaching" 2003; Sigma Xi "Best Paper Award" 1997; Maurice Huggins Memorial Award, Gordon Research Conferences 1997; Journal of Polymer Science selected a paper "Theory of Block Copolymers", D. J. Meier, as one of the twelve most significant papers published in the 50 years of the Journal, 1997; Fellow, American Physical Society.

Pat Smith

Professional Experience: Scientist, Analytical Sciences Laboratory, The Dow Chemical Co. 2000–present, Analytical Sciences, Polymer Characterization Group, 1998–2000; Cargill Dow Polymers, 1978–1998; Analytical Sciences, 1976–1978; Michigan State University (Dow Scholarship), Ph.D., 1974–1976; Analytical Sciences. Co-author of over 400 Dow technical (CRI) reports, 70 external to Dow publications and 1 patent. An Adjunct Professor at Central Michigan University, a member of the American Chemical Society, Polymer Chemistry Division, and the Society of Plastics Engineers.

Education: A.S., Flint Community Junior College, 1970; B.S., Chemistry, Michigan State University, 1972; M.S., Physical Chemistry, Michigan State University, 1974; Ph.D., Physical Chemistry, Michigan State University, 1978.

ACS Activities: Joined ACS in 1974; Chair, Midland Section, 2005; Director, Midland Section, 2003; ACS Fall Scientific Meeting, Midland Section (1978–1989, 1998, 1999, 2002, 2003); Keynote Speaker Committee, 1982, 2002, 2003; "Green Chemistry" Symposium Co-Organizer, 2003; Toronto National ACS Meeting: Symposium Organizer on NMR Characterization of Macromolecules, 1998; National ACS Meeting, San Francisco, CA, NMR Symposium Organizer, 1997; Chair of ACS Committee on Continuing Education, 1991; Twenty-Second Central Regional ACS Meeting; Physical Chemistry Symposium Chairman, SVSU, 1990; Given courses on NMR spectroscopy at Central Michigan University (1990, 1992); Central Regional ACS Meeting (1990); and at Howard University (1985, 1986,

1987, 1988, 1990, and 1991).

Other Information: Midland Chapter Sigma Xi Award for Outstanding Research Publication, 1987; Midland Chapter ACS Award for Outstanding Achievement and Promotion of the Chemical Sciences, 1998; Dow Analytical Science's V.A. Stenger Award, 1984; Dow Michigan R&D Scientists' Award, 1994; Flint Community Junior College Freshman Chemistry Award, 1969.

Phil Squattrito

Professional Experience: Professor of Chemistry, Central Michigan University, 1998–present; Associate Professor, CMU, 1994–1998; Assistant Professor, CMU, 1989–1994; Postdoctoral Associate, Texas A&M University, 1986–1989.

Education: Sc.B., Brown University, 1982; M.S., Northwestern University, 1983; Ph.D., Northwestern University, 1987.

ACS Activities: Joined 1983. Midland Section participation: Awards Committee, 1992, 1999–2002 (chair); Project SEED preceptor, 1993–1994, 1997–1998; Fall Scientific Meeting, 1994 (Program Co-Chair), 1997 (General Chair), 1999 (Booklet Editor); Board of Directors, 1999–2001.

Honors/Awards: Midland Section Award for Outstanding Achievement in College Chemistry Teaching (1997); Central Michigan University Provost's Award for Outstanding Research and Creative Activity (1997).

Speaker to Address High School Requirements

*Monday October 23, 2006, 5:00 to 6:00 pm
Midland Center for the Arts, Founders Room*

Mike Flanagan, superintendent of public instruction for the State of Michigan, will talk about changing high school graduation requirements and how organizations like ACS can help. For more information, contact Dee Strand, strandda@dow.com, 989-636-5056.



Global Language Translations and Consulting, Inc.
A Full Service Technical Translation Agency

Email: info@gltac.com
Toll Free: 877 688-7267
Phone: 989 839-5804
Fax: 989 839-5838

Looking for a reliable, skilled technical translation service?

Want better translations for a lower cost with a local company?

Need to translate foreign patents into English?

Over 60 languages available, MSDS, Labels, Patents...

WWW.GLTAC.COM

720 W Wackerly St., Suite 8
Midland, MI 48640-2769



Ballot for Election of 2007 Midland Section ACS Officers

1. Vote for the candidate of your choice, selecting one for each office except as noted.
2. **IMPORTANT:** To maintain anonymity, **do not sign** the **ballot** or the **inner ballot envelope**.
3. Place the ballot in the ballot (inner) envelope. Place the ballot envelope in the return envelope and sign and print your name on the return (outer) envelope. You **must sign** your name on the **outer envelope** to have your ballot counted. See #4 below.
4. In order to vote, you must be a member or associate member in good standing with the ACS. Affiliates are ineligible to vote according to National ACS bylaws.
5. Ballots must be received at the address below **on or before October 25, 2006.**

Attn: Nominations and Elections Committee
Midland Section ACS
P.O. Box 2695
Midland, MI 48641-2695

BALLOT

CHAIR-ELECT (vote for one)

Dorie Yontz

SECRETARY (vote for one)

Michelle Cummings

Beth Nichols

TREASURER (vote for one)

Greg Becker

Csilla Kollar

CHAIR, NOMINATIONS & ELECTIONS COMMITTEE (vote for one)

Charles W. Olsen, Jr.

Brett Zimmerman

BOARD OF DIRECTORS (vote for three)

Jennifer Dingman

Pat Smith

Dale Meier

Phil Squattrito

62nd Fall Scientific Meeting

The Future of Science and Science Education in the Mid-Michigan Area

Saturday, October 21, 2006, 8:30 am-12:30 pm

*Dow Science Building
Central Michigan University*

The Midland Section of the American Chemical Society would like to welcome you to the 62nd Fall Scientific Meeting. Because of the presentation of the Central Regional Meeting by the Section in May, this FSM is scaled down from meetings in the past. But there's plenty of thought-provoking information, from the timely topic of science education requirements to the wide-ranging research interests in the Midland Section area. Please join us!

Fall Scientific Meeting Committee:

Robin J. Hood, co-chair

Wendell Dilling, co-chair

Ann Birch

Program

- 8:30–9:00 Registration and reception (coffee and pastries)
First floor hallway of Dow Science
- 9:00 Welcome: Dr. David Ash, Chairperson, Department of Chemistry, CMU
- 9:05 Presentation of Awards: Dr. Buford Lemon, Chair, Midland Section, American Chemical Society

We're responsible . . .

In 1988, the American Chemistry Council (ACC) launched Responsible Care® to respond to public concerns about the manufacture and use of Chemicals. Through this initiative, Dow Corning Corporation and other ACC members and partners are committed to continually improving our responsible management of chemicals.

We're responsible because we care.

DOW CORNING



Responsible Care®
Good Chemistry at Work

© 2001 Dow Corning Corporation. Dow Corning is a registered trademark of Dow Corning Corporation. Responsible Care is a registered service mark of the American Chemistry Council

9:20 Keynote: Ms. Dorothy Horan, Coordinator of Science, Midland Public Schools

The State of Michigan is currently in the process of revising the science education requirements for the public schools of Michigan. New high school graduation requirements for science and the changes to the Michigan Merit Exam are being implemented in spring 2007. Curricular changes in content and benchmarks for K-12 are under development. This talk will look at the changing requirements and expectations in science education in the State.

10:00 Roundtable Discussion: Dr. Dee Strand, Dow Chemical, Moderator

Panelists: Dorothy Horan, Midland Public Schools; Claudia Douglass, Department of Biology, CMU; Stanley Hirschi, Department of Physics, CMU

The changes in K-12 science education in the Michigan public schools will have significant implications for the preparation of science teachers. The roundtable panelists will look at how this will affect teacher training in science.

10:30-12:30 Poster presentations: Mid Michigan Science

Authors of odd numbered posters will be present from 10:30-11:30 and authors of even numbered posters will be present from 11:30-12:30.

Poster Abstracts

[1]

Characterization of Amide-Containing Diaryl Phenylphosphonites

C.-K. Ahn and B. A. Howell

Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48859

Nitrogen compounds may function as prompters for phosphorus flame retardants. Phosphorus compounds containing nitrogen might display superior flame retardant properties. A series of such compounds can be generated by treating 4-hydroxybenzoic acid, first with thionyl chloride followed by diethylamine (or related amine) to form the corresponding 4-hydroxybenzamide and then with dichloro(phenyl)phosphine or other suitable phosphorus reagent. The degradation characteristics of the resulting diaryl phenylphosphonites have been examined using thermogravimetry.

[2]

Imprinted Polymers: Selected Removal of Heavy Metal Contaminants from Waste Water

Syed A Ashraf, Manny Randhawa, Anja Mueller
Department of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

In wastewater treatment, the removal of heavy metals is difficult but important due to the health effects of these toxic compounds. Imprinting polymerization is a method that allows for the efficient separation of specific compounds. This research project is developing common flocculated resins imprinted with heavy metal ions, to increase the capacity of the flocculants for these toxins and improve removal of these from water. The structure and the thermal properties of all resins are carefully characterized. Retention data for cadmium (Cd) and cesium (Cs) will be presented. It is shown that imprinting improves heavy metal retention, but retention is highly dependent on surface area. Porosity and swelling of these resins in water will also be discussed.

[3]

MALDI-TOF-MS as an Analytical Procedure for Sequence Determination and Oligoribonucleotide Differentiation

Jennifer Bridwell
Department of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

Faulstich *et al.*, used MALDI-TOF-MS to sequence synthetic oligoribonucleotides by observation and use of specific kinetic properties. In contrast to current spectrometric sequencing procedures, this allows for differentiation between all four nucleotides. Contrary to the common spectrometric sequencing procedures, specific endonucleases and ^{13}C -labeled nucleotides were used to yield fast and accurate data. The proposed method is to be useful in sequence determination for oligoribonucleotides with a length greater than 20 bases.

Konrad Faulstich, Karlheinz Wornner, Hannelore Brill, Joachim Engels. "A Sequencing Method for RNA Oligonucleotides Based on Mass Spectrometry." *Journal of Analytical Chemistry* 69 (1997): 4349-4353

[4]

Stability of Vinylidene Chloride Polymers Containing the Additives BHT and ESO

Katelyn Carter and Bob A. Howell
Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48859

Vinylidene chloride copolymers are important in the formulation of barrier plastic packaging. These materials display low permeability toward both oxygen (as well as other small molecules) and flavor/aroma compounds. For food packaging one is necessary to inhibit ingress of oxygen and consequent spoilage and the other to prevent loss of flavor during storage (flavor scalping). Because of the pro-

pensity to undergo degradative dehydrochlorination during processing these polymers often contain additives to scavenge chlorine atoms (and other radical species) and to trap evolved hydrogen chloride. In this case, the effectiveness of butylated hydroxytoluene (2,6-di-*t*-butyl-4-methylphenol; BHT) and epoxidized soybean oil (ESO) as stabilizers for vinylidene chloride polymers has been assessed using thermogravimetry.

[5]

Poly(styrene) Attached to a Nanoscale Silica Surface

Young-Jun Cho and Bob A. Howell

Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48859

Nanoscale silica particles can serve as multifunctional initiators for atom transfer radical polymerization (ATRP). The particle must first be functionalized with a compound containing a suitable initiator fragment. Treatment of 400 nm diameter silica particles with an ethoxysilane derived from 4-vinylbenzyl chloride generates multifunctional initiators for ATRP. These initiators can be utilized for the polymerization of styrene. This generates particles containing multiple polymer chains attached to the surface. The thermal decomposition of the polymer in this confined environment has been compared to that of free poly(styrene) using thermogravimetry.

[6]

Recent Studies on Asymmetric Induction in Photocycloaddition Reactions

Wendell L. Dilling

Department of Chemistry, Central Michigan University
Mt. Pleasant, MI 48859

Several recent studies on asymmetric induction in photocycloaddition reactions will be reviewed. Three types of cycloadditions will be considered: 2 + 2 + 2, 4 + 4, and 2 + 2. The 2 + 2 + 2 additions involved acetylenes and nitriles to give pyridines. The asymmetries were induced by asymmetric Co^I complexes and involved hindered biaryl rotations. The 4 + 4 additions involved anthracene derivatives, either cross additions with a naphthyl amide, where the asymmetries were derived from an asymmetric crystallization and involved a hindered rotation around a carbon-carbon single bond, or dimerizations, where the asymmetries were derived from substituted β -cyclodextrins. The 2 + 2 additions involved the dimerizations of coumarins in the presence of chiral diols and the cross additions of substituted cyclohexenones with ethylene. In the latter case the asymmetries were derived from classical chiral auxiliaries.

[7]

Chemically Related Subjects on Philatelic Covers

Wendell L. Dilling

Department of Chemistry, Central Michigan University
Mt. Pleasant, MI 48859

Philatelic covers have been issued covering a multitude of subjects including some relating to chemistry. This poster will display several such covers issued by the American Chemical Society, its subunits, and related organizations. Included in these covers are those commemorating the 75th, 100th, and 125th anniversaries of the ACS and anniversaries of the New York and California Local Sections and the Division of Analytical Chemistry. Also included is a series from 22 ACS National Meetings from 1984 to 1995 commemorating the first 21 presidents of the ACS, from John W. Draper (1876) to Ira Remsen (1902). From the Midland Section came four covers in 1997 commemorating the Dow Brine Well as a Historical Chemical Landmark, 100 Years of The Dow Chemical Company, the 10th Anniversary of National Chemistry Week, and the Chemis-Tree. Three additional covers were issued during the 2006 Central Regional ACS Meeting and Silicon Symposium hosted by the Midland Section. From the Cleveland Section came four covers in 1998 commemorating National Historic Chemical Landmarks, Production of Aluminum Metal by Electrochemistry—Developed by Charles Hall, Research on the Atomic Weight of Oxygen by Edward Morley, Kem-Tone® Wall Finish, and The Sohio Acrylonitrile Process.

[8]

Polysaccharide Hydrogels: Testing for their Use as Skin ScaffoldsJustin M Ebaugh, Bob Kross, Anja MuellerDepartment of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

In this project we are making polysaccharide hydrogels for use as skin scaffolds. These hydrogels are based on a patented mixture for skin patches used for drug delivery (Kross; Robert D., 6,664,301, 2002). A series of mixtures have been prepared changing the amount of one constituent at a time in an effort to determine the effect each constituents has on the properties of the gel. IR spectroscopy, Dynamic Mechanical Analysis (DMA), Thermal Gravimetric Analysis (TGA), and Differential Scanning Calorimetry (DSC) were performed to characterize the mechanical and thermal properties of each gel. The results are summarized in this report.

[9]

Methanol Synthesis from Carbon Dioxide

Kristen Gabby

Department of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

As the world's pollution problems become more evident and continue to build, the solutions for removing pollutants to make useful products becomes a more important research topic. There are many avenues of research and what to do with the CO₂ build up (a greenhouse gas), which is one of the main issues. In the synthesis of methanol, knowing whether CO₂ or CO was being converted would be an important step in the reduction of the greenhouse gas. There are arguments for both CO₂ and CO as the reactant. To find whether one or the other is being reduced, Lee (*et al.*) used a Cu/ZnO/Al₂O₃ catalyst. Lee shows that by using electrochemistry, CO₂ and H₂ can be converted to methanol, which is economically important.

Work Cited: Lee, J.S., Lee, K.H., Lee, S.Y., Kim, Y.G. (1993) A comparative study of methanol synthesis from CO₂/H₂ and CO/H₂ over a Cu/ZnO/Al₂O₃. *Journal of Catalysis*. 144: 414-424.

[10]

Developing Process Analysis for the Conversion of Plant Oils to Biodiesel

Brian Hales, William Kelley, and Dale LeCaptain

Department of Chemistry, Central Michigan University
Mount Pleasant, MI 48859

International political instability and finite supply are only two factors that raise huge question marks about the future of US energy demands. Biodiesel is a renewable energy source that is produced in the US and is proposed here to be produced at CMU. Using the campus dining 'waste' cooking oil, this project is to research and develop analytical methods for monitoring the chemical synthesis of biodiesel. The novel analysis proposed will enable effective monitoring of the process, which is key to efficient chemical production.

[11]

New Classes of Polymers for Surface Acoustic Wave (Saw) Sensors

Claire Hartmann-Thompson,¹ Douglas L. Keeley,¹ Brigitte Voit,² and Skip Gallagher³

¹Michigan Molecular Institute, 1910 West St. Andrews Road,
Midland, Michigan 48640-2696

²Leibniz-Institut für Polymerforschung Dresden e.V., Hohe Strasse 6, D-01069
Dresden, Germany

³USDA, 1100 Robert E. Lee Blvd., New Orleans, LA 70124

In the first study, three hyperbranched hydrogen-bond acidic aromatic polyesters were coated onto 500 MHz SAW sensors and their responses to hydrogen-bond basic nerve and explosive vapor simulants were evaluated. A polyester carrying both internal and exo-presented phenol functionality gave a strong response to

the nerve simulant dimethyl methylphosphonate (DMMP), and this was compared with the DMMP responses of other phenolic SAW sensor materials of varying architecture and composition.

In the second study, a linear polysiloxane carrying hydrogen-bond basic phosphonate groups was coated onto a 500 MHz SAW sensor. In contrast to conventional hydrogen-bond basic SAW polymers such as polyethyleneimine (PEI) that can give slow SAW responses and incomplete recovery to baseline, the siloxane phosphonate polymer gave excellent initial and long-term responses to hydrogen-bond acidic phenol vapor.

[12]

Resolution and Mass Accuracy of High Mass Ions in TOF Mass Spectrometry: Applications to PAMAM Dendrimers

Robin J. Hood¹; J. Throck Watson²; A. Daniel Jones²

¹Central Michigan University, Mount Pleasant, MI

²Michigan State University, East Lansing, MI

Dendrimers are an important group of polymeric materials with the potential for use in new nanomaterials. The size and surface chemistry of dendrimers can be modified by control of the synthesis reactions. Molecules ranging in molecular weights from a few thousand to a million Da have been prepared with relatively good homogeneity. Analytical procedures for these molecules by mass spectrometry in many ways are similar to those used for intact proteins. However, dendrimer samples are usually more heterogeneous and less stable following ionization than proteins; this presents challenges to obtaining accurate mass data by mass spectrometry. In this work, we examine the practical limits of resolution and mass accuracy in the mass spectral analysis of dendrimers. Samples of G2(MW=3256), G3(MW=6909), and G4(MW=14215) PAMAM dendrimers were obtained from Dendritic Nanotechnologies, Inc. and analyzed by MALDI-TOF and ESI oa-TOF mass spectrometry.

The MALDI-TOF data for the dendrimers were obtained on an Applied Biosystems Voyager-STR mass spectrometer in linear mode with an -cyano-4-hydroxycinnamic acid matrix. The larger dendrimers produce only broad peaks presumably due to prompt in-source decomposition. Electrospray ionization produces ions with significantly less internal energy, but the multiple charge states decrease sensitivity and complicate mass assignment. A Micromass LCT Premier ESI oa-TOF was used for analysis of these dendrimers. The sample heterogeneity and multiple charge states of the larger dendrimers limited the useful information.

[13]

***In situ* Raman Spectroscopic Study of the Regeneration
of Ammonium Bisulfate from Ammonium Sulfate**

Maheshwari Jariwala, Dale LeCaptain

Department of Chemistry, Central Michigan University
Mt. Pleasant, MI 48859

The regeneration of ammonium bisulfate from ammonium sulfate is a the crucial step in the completing the “green” bio-based synthesis of succinic acid. This regeneration step can be achieved by thermal cracking. Various designs in thermal cracking apparatus and parameters pertaining to it were studied in order to check the feasibility of this reaction. This work demonstrates the use of *In situ* Raman spectroscopy to study the reaction. The continuous scanning of the reaction allows monitoring any physical and/or chemical changes taking place in a short time period. Efforts were directed in designing and building a system that could help monitor different structural changes occurring and the products formed during this reaction. Ultimately the reaction mechanism was determined along with experiment parameters necessary for the conversion.

[14]

Thermal Stability of Vinylidene Chloride Copolymers Exposed to Moisture

Stephen M. June and Bob A. Howell

Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48859

Vinylidene chloride copolymers display low permeability toward a variety of compounds. This property places them in a position of prominence in the barrier plastics packaging industry. The utilization of these materials has been hampered by their propensity to undergo degradative dehydrochlorination at process temperatures. It has been noted that exposure to a high humidity environment during isolation and drying of the polymer tends to accelerate this process. The impact of moisture on the thermal stability of these polymers has been examined systematically. Solutions of the polymer in tetrahydrofuran or *o*-dichlorobenzene containing five to ten volume percent water were stirred at room temperature. Samples were removed as a function of time and examined by thermogravimetry. Polymer stability decreased strongly after contact with the solvent mixture. Infrared analysis of the samples indicated that a carbonyl absorption increased in intensity as a function of time in the solution.

[15]

**Survey of Instruments and Techniques as used in
Instrumental Analysis Lecture and Laboratory**Stephen M. June, Dale J. LeCaptainDepartment of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

The growing complexity, usefulness, and availability of analytical instrumentation has presented a significant need for students to be trained in analytical techniques. A survey was done to compare the changes in usage of analytical instrumentation and techniques in laboratory and lecture for Instrumental Analysis courses between 1981 and 1998. The results demonstrate that there has been a change, and that the change follows a trend towards the education of students on increasingly complex analytical instruments and methods and towards a decrease in concentration on more traditional analytical techniques. A comparison has been made to correlate the changes in professional usage of and education of analytical instruments.

Review of: Girard, James E.; Diamant, Constance T. *J. Chem. Educ.* **2000** 77 646.

[16]

Asteroid Collision StudiesW. Joseph Kreft¹, M. M. Strait¹, G. J. Flynn², and D. D. Durda³¹Dept. Of Chemistry, Alma College, Alma MI 48801²Dept. of Physics, State University of New York – Plattsburgh³Southwest Research Institute

The purpose of our study on asteroids and meteorites is to understand their original porosity and the size distribution of particles after fragmentation from the main body of the asteroid. A careful study of this process will help estimate the composition of the parent body asteroid and also aid us in understand the origin of interplanetary dust particles. In this study, meteorites are disrupted using the NASA/AMES vertical gun. Some fragments are collected in aerogel capture cells to be analyzed for chemical composition. To measure the particle sizes being fragmented, aluminum foils are placed around the site of the collision and holes are created in these foils by the flying fragments. A computer program called ImageJ is used to analyze the holes to observe the variations in the sizes of the holes. The remaining fragments are collected, sorted by size distributions using sieves, and weighed. The resulting data are put into cumulative mass frequency diagrams to evaluate the size magnitudes of the resulting particles. The current work is filling in data gaps in previous data sets. Preliminary results show that the cosmic dust size range can be produced in this process.

[17]

Development of Two Dimensional Fluorescence Analysis Method for the Determination of Atrazine and Atrazine Degraded Derivatives

Michael Lubitz, Greg Coleres, and Dale LeCaptain

Depts. of Chemistry and Biology

Central Michigan University

Mt. Pleasant MI 48859

The herbicide atrazine is widely used on corn and sorghum in the United States. It does not fully degrade leaving several toxic chemicals in the environment. Some of these atrazine degradation derivatives are known carcinogens and have been found to cause developmental problems in human. Central Michigan University Biologist Dr. Coleres is researching six microorganisms that can degrade the herbicide atrazine. The experimental method for screening the microorganism is to expose them to atrazine and analyze the chemicals remaining as time passes. The research proposed here is the development of a novel 2-d fluorescence method for determining both qualitatively and quantitatively the atrazine and atrazine derivatives in the aforementioned microorganism experiments.

[18]

Analysis of a Potential Method for Detecting Nitroorganic Explosives

Casey Manning

Department of Chemistry, Central Michigan University

Mt. Pleasant, MI, 48859

Robert Hodyss and J.L. Beauchamp of the California Institute of Technology propose a new method for the detection of nitroorganic explosives. Gas chromatography, pyrolysis, and UV spectroscopy are used in sequence to detect the presence of nitric oxide, a common product of decomposition of nitroorganics. Nitrobenzene, 2,4-dinitrotoluene, and the nitramine explosive tetryl were used as simulants for the system and showed detection limits of 25 ng, 50 ng, and 50 ng, respectively. Implementing this method in real world situations would require higher sensitivities, and selectivity for nitroorganic explosives. This method is also compared to the current methods used for the detection of explosives. Literature Summary: Hodyss R.; Beauchamp J.L. *Anal. Chem.* **2005**, *77*, 3607-3610

[19]

Bio-based Plasticizers for PVC

M.M. McCallum, J.J. Smith F. Damming, D.J. LeCaptain, C. Lee,

Department of Chemistry, Central Michigan University

Mt. Pleasant, MI, 48859

PVC plasticizers especially phthalates are under increased scrutiny. The currently popular plasticizer, di-(2-ethylhexyl) phthalate (DEHP), along with other phthalate plasticizers have been linked to many different environmental toxicity problems to humans, toxic in disposal, and are produced from non-renewable petroleum based sources. This problem has led to the research of designing ef-

fective plasticizers that are produced from bio-based materials that are also cost competitive. These bio-based plasticizers are being synthesized from amino acids and low molecular weight carboxylic acids and alcohols.

[20]

Mid-Michigan Technician Group in 2005

Deb Mendrick,¹ Debbie Bailey,² Sue Perz³

¹Biocides Process Research and Development, Dow Chemical Company, 677 Bldg., Midland, MI 48667

²Analytical Sciences Department, Dow Corning Corporation, 2200 W. Salzburg Rd., Auburn, MI 48686

³Sealant Tech Center, Dow Corning Corporation, 2200 W. Salzburg Rd., Auburn, MI 48686

The Mid-Michigan Technician Group (MMTG) had a very challenging year in 2005. Despite a slowly dwindling membership and lack of member participation, MMTG still had a SUCCESSFUL year. MMTG held two very interesting and highly attended lunch seminars. The seminars were titled "Everybody WINS: How to Turn Conflict Into Collaboration" and "What You Should Know About Fireworks". MMTG was also very active in public outreach programs, with members participating in National Chemistry Week, Sci-Fest 2005, Fall Scientific Day and many chemistry demonstrations at local fairs and schools. MMTG will continue to provide Technicians with opportunities to learn, develop and expand their life skills.

[21]

Compounds Containing Thermally Liable Bonds as Stabilizers for Poly(styrene)

Ross R. Nelson and Bob A. Howell

Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48859

Poly(styrene) is a widely used commodity polymer. It finds particular application packaging food items, particularly baked goods. It is easily formulated, transparent and permits attractive display as well as a protective environment for cookies, cakes, pies, etc. Because of its distinct taste and aroma, the level of styrene monomer in the finished package must be very low. Styrene monomer can be produced from the polymer at process temperatures. This arises because of a head-to-head unit present in the polymer mainchain as a consequence of polymerization termination by radical coupling. Homolysis of the head-to-head bond generates macroradicals which can undergo rapid depolymerization with the expulsion of monomer. The presence of radicals in the polymer matrix capable of trapping the poly(styryl) radicals should have a strongly stabilizing influence on the polymer. While it would not prevent chain scission it would prevent the generation of monomer. Several compounds with strained carbon-carbon bonds have been examined as potential stabilizers for poly(styrene). The thermal stability of poly(styrene) in the presence of these compounds has been assessed using thermogravimetry.

[22]

Stability of Vinylidene Chloride Copolymers Containing 4-Vinylpyridine Units

Adeyinka O. Odelana and Bob A. Howell

Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48859

Vinylidene chloride copolymers are prominent in the barrier plastic packaging industry. These materials display excellent barrier to the transport of oxygen (and other small molecules) as well as flavor and aroma molecules. However, they suffer from a propensity to undergo degradative dehydrochlorination at process temperatures. To scavenge hydrogen chloride formed and prevent its interaction with the metallic components of process equipment, a passive base is usually included as an additive prior to processing. The base is most often an inorganic oxide or salt. These may negatively impact the properties of the polymer, particularly as a film. An organic base that could be covalently incorporated into the copolymer might display better behavior. Accordingly, a series of copolymers containing low levels of 4-vinylpyridine (0.05-3 mole percent) have been prepared, characterized, and examined by thermogravimetry to assess thermal stability. In all cases, polymers containing 4-vinylpyridine units are less stable than the polymer containing none of this comonomer. Clearly, the pyridine moiety is a sufficiently strong base to promote E2 elimination of hydrogen chloride to generate dichloromethylene units in the mainchain from which thermal degradation may be initiated.

[23]

Environmental Chemical Analysis of US-Mexico Border Soil.

Benjamin J. Place,¹ Trevor D. Leser,¹ Melissa M. Strait,¹ and Edward C. Lorenz²

¹Department of Chemistry and ²Departments of History and Political Science,
Alma College, Alma, MI 48801.

A overview of current environmental issues that face the land lying on both sides of the U.S.-Mexico border, specifically in the region between El Paso and Ciudad Juarez, will be presented. The majority of the pollution in this area originates from factories and quarries in the nearby the Rio Grande valley region, including major industrial parks. Atomic Absorption Spectroscopy was used to analyze contamination of the soil, along with other qualitative and quantitative tests. The analytes of interest include heavy metals that are toxic in large concentrations in the environment, including chromium and lead. The resulting data revealed that there is little environmental hazard in the tested regions from lead or chromium contamination. The soil was then compared to United States environmental standards to determine compliance of local factories to regulations set by the country. Using data collected by previous Alma College groups along with the current analysis, a comprehensive evaluation of the environment on the US-Mexico border has been obtained to verify that the environmental situation on the border is not a concern, especially in the tested regions, and there are few differences between the soil on the United States and the Mexico side of the national border.

[24]

Comparison of the Analyte Response between Three Different Gas Chromatographic DetectorsThomas J. Randall, Joe E. Binkley

Impact Analytical, 1910 W. St. Andrews, Midland, MI 48640

Analytical scientists often find themselves in a “coaching or mentoring role” when it comes to working with researchers wanting immediate results using a specifically requested technique. For example, researchers are routinely interested in identification and quantitation of the components in a freshly-prepared synthetic sample, and GC-MS area percent is routinely requested for this quantitation. The GC-MS technique does provide extremely valuable information for structure elucidation, but GC-TCD is the more widely accepted technique for area percent quantitation. If accurate quantitative data could be obtained by area percent using GC-MS, advantages would be realized because identification and quantitation could be accomplished in a single analysis.

The purpose of this study was to determine the best detector for area percent quantitation by gas chromatography. Three common GC detectors were compared to determine which would give the most accurate representation of the relative concentrations of analytes in a known sample. A mass selective detector, a flame ionization detector, and a thermal conductivity detector were compared during the study. Raw data were examined to calculate percentages of components based on the detector response to specific analytes in a known mixture. The results obtained from this study help determine the best detector for area percent quantitation by gas chromatography. The study also demonstrates the magnitude of errors that may be encountered when selecting an inappropriate detector for quantitation.

[25]

Quantitative Analysis of Free Fatty Acids in Rat Plasma Using MALDI-TOF-MS

Tom Randall

Department of Chemistry, Central Michigan University, Mt. Pleasant, MI, 48859

Quantitative analysis of fatty acid content was done by Matrix Assisted Laser Desorption Ionization-Time of Flight-Mass Spectrometry. Meso-tetrakis porphyrin was used as the matrix and Cesium acetate was used as the cationizing agent. The cationizing agent was used to shift the peaks, in turn, reducing the background interference. The free fatty acid content was compared between non-fasted and fasted rat plasmas. Eight fatty acids showed up in the analysis including 15:0, 16:0, 16:1, 17:0, 18:0, 18:1, 18:2, and 20:4. Quantitation of the free fatty acids was done by use of an internal standard. The method developed proved to be an effective method for analysis and quantitation of free fatty acid content in plasma; however, other techniques may have been examined for molecular weight determination.

Review of: Haiqiang Yu, Edwin Lopez, Stephen Young, Jian Luo, Hui Tian, Ping Cao. *Analytical Biochemistry*. Quantitative analysis of free fatty acids in rat plasma using matrix-assisted laser desorption/ionization time-of-flight mass spectrometry with meso-tetrakis porphyrin as matrix. 26 May 2006.

[26]

AFM Analysis of C₆₀ and a PAMAM Dendrimer-C₆₀ Nanoconjugate

Srinivas Ravi,¹ Minghui Chai,¹ Anton W. Jensen,¹ Hosam G. Abdelhady,² Donald A. Tomalia²

¹Department of Chemistry, Central Michigan University, Mt. Pleasant, MI 48859

²Dendritic NanoTechnologies Inc., 2625 Denison Drive, Suite B, Mt. Pleasant, MI 48858

Atomic force microscopy (AFM) was used to study the nanoscopic structure and topography of buckminsterfullerene (C₆₀) and a conjugate of C₆₀ with generation four, amine-terminated, poly(amidoamine) dendrimer (PAMAM-G4). The conjugate contains a PAMAM-G4 core and C₆₀ shell formed by reacting PAMAM-G4 with an excess of C₆₀. Fractal patterns of C₆₀ were observed in nanoscopic AFM images when solutions of different concentrations of C₆₀ in pyridine or toluene were dried at room temperature. In contrast, no fractal patterns were detected in the AFM images of the dendrimer-C₆₀ nanoconjugate, prepared from pyridine solution in a similar manner. While in a much diluted solution (1 pg/mL), a C₆₀ fractal pattern was observed in the AFM images of the dendrimer-C₆₀ conjugated. Thus, the C₆₀-shell doesn't have sufficient space to impart the same fractal patterns on the conjugate in a very concentrated condition. When the conjugates exist in a proper concentration, the regular alignment can be achieved to form fractal patterns.

[27]

Analysis of Sodium Ion Leak from Glassware using Ion Chromatography

Michael Skriba, Thomas Peters, and Minghui Chai

Department of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

Ion chromatography (IC) is an effective method for measuring low concentrations of ions in a water solution. Sodium ions have been known to leak from laboratory glassware, but there is no further study on the rate and amount of the sodium leak from the glassware. Because IC measurements of purified water often gives an alarmingly high reading of the sodium ion concentration, monitoring the sodium leak using an appropriate method is imperative to devise ways to get more accurate sodium readings.

In this presented research, using Dionex ICS-1000 Ion Chromatography system, three different glass brands based their availability (i.e. Pyrex, VWR, and Wheaton) were used for studying the sodium ion leak from the glassware in water analysis. All three samples were filled respectively with an equal volume (50 mL) of purified deionized water from the Barnstead E-pure water system (18.0-18.2 megaohms). Each of the three samples was then manually injected into the IC instrument at the appropriate time intervals for analyses. The analyses were continued for four weeks in order to reach a no the sodium concentration. The data was then collected and the amount of sodium leak as well as the rate of the sodium leak was calculated for all three samples. The standard sodium ion solutions ranging from 1 to 5 ppm were made using plasticware and tested, respectively, to generate the standard curve for this study.

[28]

Glow Discharge Ionization and its Role in Environmental Analysis

Michael Skriba

Department of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

Research by: Christine Nickels Dalton, University of North Carolina
Despite the fact that mass spectroscopy and liquid chromatography continue to be useful instrumental techniques for environmental analysis, other methods must be developed in order to meet the governmental demands for toxin identification and physical reduction. Current methods of great analytical value involve mass spectroscopy/liquid chromatography (LC/MS) and mass spectroscopy/gas chromatography (GC/MS). Because many new pollutants/toxins prove exceedingly difficult for these methods, not only must new methods be developed, but existing methods must be improved. The method that is discussed in this research performed by Christine Nickels Dalton of the University of North Carolina at Chapel Hill, is known as glow discharge ionization (GDI), which is used as an analytical method for the analysis of many environmental molecules. GDI is the formation of ions in the gas phase and from solid samples at the cathode by application of a voltage to a low pressure gas.

Interfaces to the GDI source have been evaluated in addition to the use of the GDI for ionization of analyte molecules. These techniques (ES-ASGDI, TD-ASGDI, and Aerosol/SICI-ASGDI) have been used to analyze two groups of environmental pollutants. The electrospray (ES) and thermal desorption (TD) are used to introduce liquid phase samples into the glow discharge source. The organic products obtained from this are analyzed using the Aerosol-ASGDI interface and the selected ion chemical ionization (SICI-ASGDI) interface. Operational parameters for each of the techniques are evaluated for all of them to monitor the effect they have on the pollutant.

[29]

LIBS Analysis of Blood Samples in Clinical ApplicationsKishore Singirikonda and Dale J. LeCaptainDepartment of Chemistry, Central Michigan University
Mt. Pleasant, MI 48859

The analytical ability to perform *in situ* and multi element analysis without direct sample contact is desired to monitor clinical samples. The LIBS technique uses a ND:YAG laser beam to strike the blood sample and completely ionize the sample by creating a micro-plasma, which causes atomic emission that is detected by an Andor Mechelle spectrophotometer. The sample preparation needed makes this LIBS application demonstration a potentially useful tool for analysis in clinical settings. The work presented here utilizes LIBS for quantification of calcium, sodium, and other biologically significant metals in blood sample specimens.

[30]

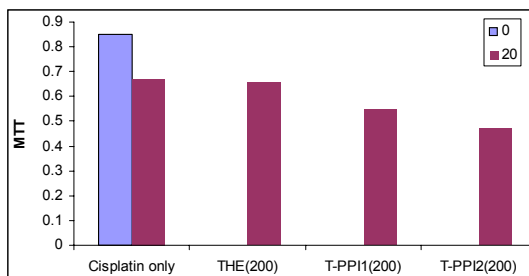
Controlling Analyte in an ES with a Three Electron Emitter Source

Michael Todd

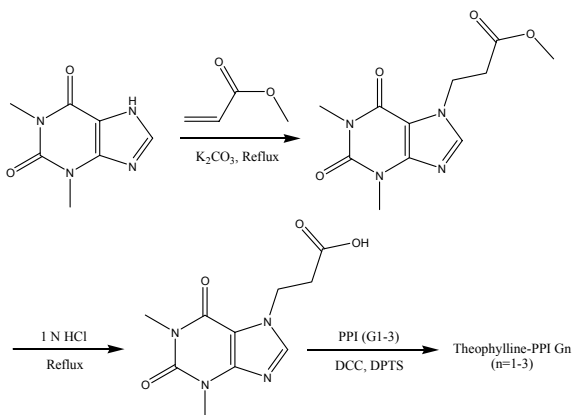
Department of Chemistry, Central Michigan University
Mt. Pleasant, MI, 48859

The focuses on the inherent electrochemistry involved in electrospray mass spectroscopy. The basic of an ES ion source behave much like that of a galvanic cell. They share the idea of electrode controlled electrochemical reactions. Unlike a

normal cell this doesn't have a fixed potential between the electrodes, this system has a complex function of current density and flux. There is also the three-electrode controlled potential electrochemical cell (CPE). This has a working electrode that is controlled to the reference electrode by a potentiostat. This leaves a problem at the third electrode, the emitter electrode, where change can occur. This is not a good situation if trying to do analytical studies on the analyte. Under certain circumstances the electrochemistry the composition of the compound being sprayed can be altered. This isn't a bad thing if the experiment requires electrochemical altering, but this can be hazardous if trying to identify an unknown.



Under certain circumstances the electrochemistry the composition of the compound being sprayed can be altered. This isn't a bad thing if the experiment requires electrochemical altering, but this can be hazardous if trying to identify an unknown.



This will be a critical evaluation of: Anal. Chem. 2004, 76, 1493–1499, by Gary J. Van Berkel and Keiji G. Asano and presented by Michael C. Granger.

[31]

Synthesis and Bioevaluation of Novel Theophylline-Dendrimer Conjugates

Xingyi Yang,¹ Minghui Chai,¹ Ping Zhou,² Shengxiang Qiu³

¹Department of Chemistry, Central Michigan University, Mt. Pleasant, MI, 48859

²Department of Physiology and ³Department of Chemistry, Washington University, One Brookings Drive, St. Louis, MO 63130

Theophylline, a common drug for the treatment of asthma and chronic obstructive pulmonary disease, was found to be able to treat cancer in normal therapeu-

tic doses. In this work, we first successfully conjugate multiple theophylline drug entities on the periphery of poly(propyleneimine) (PPI) dendrimers. The PPI dendrimers used for the synthesis are from generation 1 to 3 (PPI-1, PPI-2 and PPI-3). The novel drug-dendrimer conjugates have been characterized using UV-Vis, high resolution NMR and MALDI-TOF-MS. The solubility tests on these dendrimer-drug conjugates indicate that the water solubility of the conjugates per drug unity is increased in comparison with the drug alone. MTT [3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide] assay was also performed on Hep G2 cells for anticancer testing of these novel drug-dendrimer conjugates. Comparing theophylline itself, a better synergistic effect with cisplatin on the induction of cancer cell death was observed for the drug-dendrimer conjugates, which may permit a reduction in the dose and toxicity of cisplatin in cancer treatment.

[32]

Diels-Alder Generation of Initiatory Mediators for Radical Polymerization

Jin Zhang

Center for Applications in Polymer Science, Central Michigan University
Mt. Pleasant, MI 48858-0001

Nitrosobenzene acts as a dienophile in cycloaddition reactions with a variety of dienes. Reduction of the unsaturation in the adduct 1,2-oxazines, i.e., cyclic alkoxyamines. These alkoxyamines containing no alpha hydrogen atoms undergo thermally induced homolysis of the carbon-oxygen bond to generate a carbon radical capable of initiating vinyl polymerization and a nitroxyl radical capable of scavenging carbon radicals (thus such compounds might serve as useful initiators for mediated radical polymerization). Alkoxyamines containing alpha hydrogen atoms decompose in other ways. A series of cyclic alkoxyamines have been synthesized, fully characterized and subjected to thermally induced decomposition using thermogravimetry.

[33]

Application of Amphiphilic PAMAM Dendrimers in Biomimetic Interfaces

Tracy Zhang, Steven N. Kaganove, and Petar R. Dvornic
Michigan Molecular Institute, Midland, MI

Amphiphilic polyamidoamine (PAMAM) dendrimers of six different generations and with three different types of hydrophobes were synthesized for studying their properties as supported thin films. Attachment of long chain hydrophobes to the periphery of hydrophilic PAMAMs leads to star-shaped macromolecules that have flexible, medium-dependent shapes. Room-temperature film balance measurements were used to study monolayers at the air-water interface. Monolayer films were also deposited on mica, silicon and ITO substrates, and probed by AFM, ellipsometry, and electrochemical methods. Amphiphilic PAMAM monolayers have great potential as biomimetic interfaces due to their well-defined, monodisperse architecture, and controllable thickness of fabrication.

Sixty-Year and Fifty-Year Members Honored

By Peggy Hill

At the Fall Scientific Meeting on October 21, the Midland Section will honor six members who this year reached their 60- or 61-year ACS membership status. They are:

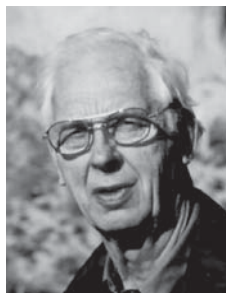
Richard Anderson (60 years), now retired, has a 33-year history with The Dow Chemical Company. He earned his bachelor of science in chemistry at Western Michigan University in Kalamazoo in 1941 and a year later, his bachelor of science in engineering at the University of Michigan, Ann Arbor. At Dow, Richard put his engineering skills to work as a senior process engineer. Retirement finds him still busy working with the Council on Aging and Meals on Wheels. Richard and his wife, Helen, travel to Florida every winter where their two daughters reside.



Max Bottomley (60 years) retired from The Dow Chemical Company in 1985 after 39 years of service. He had been a process development specialist in R&D, developing commercial processes for new products. He is a 1946 graduate of Michigan State University. For the past twenty years, Max has volunteered for the Midland County Historical Society. He has also served as president of Kiwanis Club, where he has maintained membership since 1967. The golf course is another place you're likely to find Max when he is not traveling with his wife, Martha, to visit their six children, 12 grandchildren, and six great-grandchildren. The couple resides in Midland; they have been married for 63 years.



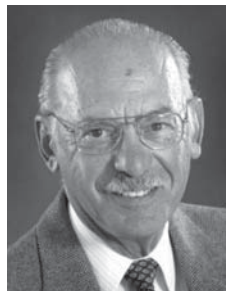
Harold W. Moll (61 years) spent 43 years as a research scientist at Dow, beginning in 1937 until 1980, when he became a Dow consultant. He retired in 1988. His productive research career resulted in 36 patents. In 1982, to honor him for his outstanding accomplishments, his alma mater, Andrews University, awarded Harold with the Honorary Doctor of Science degree; he had graduated in 1937 from Andrews with a bachelor of science degree. Since retiring, archaeol-



ogy has become an avocation—local Michigan archaeology (Saginaw Valley and the northern part of the Lower Peninsula), as well as Near Eastern and Egyptian archaeology and history. Harold served on the board of directors of the Clarke Historical Library in Mt. Pleasant as long as it was in existence.

No information was available for Russel Tree, Jr. (60 years), Norman DeLisle (60 years), or Dr. John Safranski, Jr. (61 years). The 50-year members to be honored include:

Thomas J. Delia's 35-year academic career at Central Michigan University didn't end with his formal retirement in 2001; he continues research on biologically active heterocyclic compounds in his lab at CMU, where he holds professor emeritus status. Tom is one of a very few individuals who has earned two of the top awards presented annually by the Midland Section: he was presented with the Outstanding College Chemistry Teaching Award in 1998 and in 2002 received the ACS award for Outstanding Achievement and Promotion of the Chemical Sciences. Also in 2002, he received a Camille and Henry Dreyfuss Foundation Senior Scientist Mentor Award. Tom has authored over 40 research publications, many of which include undergraduate and/or master's students as co-authors.



Tom's formal education includes undergraduate work at the College of the Holy Cross (Worcester, Massachusetts) where he earned a B.S. in chemistry in 1957, and graduate work at Virginia Polytechnic Institute, where he earned an M.S. in 1959 and a Ph.D. in 1962. Before beginning his academic career at CMU, Tom did postdoctoral work at the University of Virginia and research at Sloan-Kettering Institute in New York. Tom has also served as chair of the Department of Chemistry at CMU.

Currently, research and woodworking are his main pursuits. Tom and his wife, Sarah, who is also retired from teaching at CMU, have four children. The couple resides in Mt. Pleasant.

Linneaus Dorman is a familiar name to this newsletter, having contributed a great deal of his time and energy to the Midland Section. His professional career began with his completion of a bachelor's degree at Bradley University (Peoria, IL) in 1956 and a Ph.D. at Indiana University in 1961. During the four summers from 1956 to 1960, Lin conducted oil seeds research at the USDA. In 1960, he joined The Dow Chemical Company, where he spent the next thirty-five years working in research and

development. Over the course of his career at Dow, Lin was awarded 26 patents.

Lin is the recipient of many awards, including the 1999 Percy L. Julian award, the most prestigious award presented by the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE). In 1990, the Midland Section honored Lin with its award for Outstanding Service to the American Chemical Society. Among his many outreach and volunteer efforts, Lin currently serves the Midland Section as chair of the minority affairs committee and chair of the scholarship committee. He is also involved in Midland Rotary Club, the Midland County Historical Society, Hidden Harvest, Bradley University Council, Indiana University Alumni Association, and serves on the Dow Corning Community Advisory Panel.

Lin and his wife, Phae, live in Midland. They have a son, John, and a daughter, Evelyn.



Duane S. Lehman came to The Dow Chemical Company in 1959 after completing his doctoral degree at Indiana University that same year. Duane spent his undergraduate years at Wheaton College, Wheaton, Illinois. He enjoyed a 33-year career at Dow working in both research and management, retiring in 1992. He now serves on the board of directors governing Community Mental Health for Central Michigan. Duane and his wife, Dorothy, reside in Midland. They have one daughter.

H. David Russell spent thirty-three years at The Dow Chemical Company (1960–1993), progressing from bench chemist in the analytical group to manager of college relations, then patent agent, and later, inventions manager. David earned his bachelor's degree at The College of Wooster (Wooster, Ohio) in 1954, his master's degree at Northwestern University in 1957, and his Ph.D. at the University of Nebraska in 1961. Now retired, he spends time working with volunteer services, traveling, and compiling family history. He resides in Midland with his wife, Shirley. They have a daughter, Lisa, and a son, Jeffrey.



Editor's Note: We are also honored to have a 70-year member this year, Ludo Frevel. We hope to feature Ludo in the December issue of The Midland Chemist.

In Memoriam

By Peggy Hill

Ted Doan

Herbert (Ted) Dow Doan, businessman, philanthropist, and longtime Midland resident, died on May 16, 2006. He was the last Dow family member to serve as president of The Dow Chemical Company, a post he held from 1962 to 1971, following his father, Leland I. Doan (1949–1962), his uncle, Willard H. Dow (1930–1949), and his grandfather, Herbert H. Dow, the original founder of the company (1918–1930).

Ted was born in 1922, the third of three children, to Ruth D. and Leland I. Doan in Midland. According to biographical notes in the obituary published on the Dow web site, the nickname “Ted” was given to him early on, since, as Ted himself commented, using his grandfather’s name was “too much to hang on a kid.” Herbert H. Dow died in 1930 when Ted was eight.

In his formative years, Ted attended local Midland elementary schools and then enrolled at Cranbrook, a private school near Detroit. He graduated from Cranbrook in 1941 and went off to Cornell University (Ithaca, New York), where he majored in chemical engineering. His college career was interrupted by the war in 1943. He enlisted in the Air Force and was sent to the Pacific area as a meteorologist. He returned to finish his studies at Cornell and graduated with a bachelor of science in chemical engineering in 1949.

After graduating from Cornell, Doan joined The Dow Chemical Company, still under the leadership of his uncle, Willard H. Dow. Shortly thereafter, his uncle died in a plane crash, and his father, Leland I. Doan, stepped up to lead the company.

In 1962, Leland retired, and Ted, then 40, became president and CEO of Dow. The company had been expanding and making great strides, and under Doan’s management, continued in this trend. Ted was credited with restructuring the company so that it could most effectively function on a global scale.



Ted Doan, relaxing at the naming ceremony for the H.D. Doan Midland County History Center. Photo courtesy Post Street Archives.

The obituary published on the Dow web site summarizes his impact on the company: “Mr. Doan initiated practices that are still a strong part of the Dow culture: an open-door policy with employees, an emphasis on research, an attitude that people were the company’s most enduring strength and a commitment to the communities where Dow had people and facilities.”

Ted stepped down in 1971 after serving nine years as CEO. He was 48. He commented at a later time that both he and Dow were “as healthy as horses” at the time of his retirement. This allowed him to pass on the management to younger folks, something he felt was important according to several memorial statements written about him.

Ted did not retire from the business world, but went on to found Doan Associates, a venture capital firm, and later Doan Resources Corporation, a small business investment company. Ted’s efforts were also integral to the founding and development of the Michigan Molecular Institute, which opened in 1972. He served as MMI’s chairman of the board for many years, stepping down just recently to take an advisory role as a director.

During his years as CEO of Dow and after, Ted was well known for his philanthropic and public service work. He served as chair of the Herbert H. and Grace A. Dow Foundation, co-chair of Governor John Engler’s Venture Capital Task Force, and president of the Michigan High Technology Task Force. Doan served on the National Science Board and on the Board of the Office of Technology Assessment in Washington, D.C. He also served on advisory boards at the University of Michigan and the University of Chicago, and on the board of directors of Neogen Corporation in East Lansing and Chemical Bank and Company.

Ted and his father, Leland Doan, were instrumental in helping to launch Saginaw Valley College in 1963, which has since grown to become Saginaw Valley State University. Over the years, the Herbert H. and Grace A. Dow Foundation has given millions of dollars to assist in that growth. In recognition for all that Doan has done, in 2001 SVSU named its newly constructed science building, the Herbert Dow Doan Science Building.

Andrew Liveris, current CEO at Dow said, “Ted Doan was not only a man of bold action, but also keen intellect and quiet reflection. But most of all, he was a man who understood that the gifts of wealth, position, and intellect carried with them responsibilities to others, particularly to his beloved company and its hometown of Midland, Michigan. I can think of no one who better exemplified the bedrock small-town Midwestern values of hard work, generosity, humility, and genuine concern for others that Ted demonstrated every day of his wonderful life.”

Note: Ted joined the American Chemical Society in 1950, shortly after graduating from Cornell University. In 2004, the Midland Section recog-

nized Ted's contributions with the Section award for Outstanding Achievement and Promotion of the Chemical Sciences.

Information sources:

http://www.news.dow.com/dow_news/corporate/2006/20060517.htm

[http://www.mlive.com/news/sanews/index.ssf?/base/news-19/](http://www.mlive.com/news/sanews/index.ssf?/base/news-19/1147958411118990.xml&coll=9)

[1147958411118990.xml&coll=9](http://www.ourmidland.com/site/news.cfm?newsid=16650532&BRD=2289&PAG=461&dept_id=472542&rfti=6)

[http://www.ourmidland.com/site/](http://www.ourmidland.com/site/news.cfm?newsid=16650532&BRD=2289&PAG=461&dept_id=472542&rfti=6)

[news.cfm?newsid=16650532&BRD=2289&PAG=461&dept_id=472542&rfti=6](http://www.ourmidland.com/site/news.cfm?newsid=16650532&BRD=2289&PAG=461&dept_id=472542&rfti=6)

In Past Issues of *The Midland Chemist*

By Wendell L. Dilling, Midland Section Historian

- **40 Years Ago This Month**—In Letter to the Editor, by E.H. Blair, Chairman, Committee on Nominations and Elections: “Another surprising and disheartening aspect about the previous elections has been the apparent lack of interest. It is hoped that this year’s election will be different. We have an excellent group of candidates; the election procedures are simple. Yes, the affairs of the Midland Section are now in the hands of its members.”
- **30 Years Ago This Month**—In Cast Your Vote! by John A. Schneider, Section Chairman: “It’s that time of year again—the election of new officers. Your vote and participation can influence and impact the action and policies of the Midland Section. ... We need your vote—it is your right, it is your responsibility. Even if you can’t find the time or interest to get involved in our programs, you can help us by taking a few minutes out to vote.”
- **20 Years Ago This Month**—In Letter to the Editor, by Marcia L. Dilling: “The Midland Section Board of Directors decided at a recent meeting to store the Section’s historical records with the Clarke Historical Library at Central Michigan University in Mount Pleasant. The records currently have no permanent home and have been stored in various places at The Dow Chemical Company.”
- **10 Years Ago This Month**—In TECH Talk, by Dave Stickle: “Our last sponsored event was in April with a hands-on course on the basics of the Microsoft Windows 95 Operating System. With both Dow Chemical and Dow Corning switching over to Windows 95, this was a chance to get a jump start on mastering this system. This course was well received by those in attendance.”

Important Dates on the ACS Midland Section Calendar

- Oct 18 Disability Mentoring Day (Kathy McCreedy, kmmccreedy@chartermi.net, 989-631-8867)
- Oct 21 Fall Scientific Meeting, Dow Science Bldg., Central Michigan University (Robin J. Hood, CMU, hood1rj@cmich.edu, 989-774-1455, or Wendell Dilling, CMU, dilli1wl@cmich.edu, 989-631-1621)
- Oct 23 Mike Flanagan, superintendent of public instruction for the State of Michigan, speaking on changing high school graduation requirements, 5:00-6:00 p.m., Founders Room, Midland Center for the Arts (Dee Strand, strandda@dow.com, 989-636-5056)
- Oct 28 Sci-Fest, Delta College, 10:30 a.m.–2:30 p.m. (Joan Sabourin, jmsabour@delta.edu)
- Nov 1 Deadline for December issue of *The Midland Chemist*.
- Nov 13 Midland Section board meeting, Delta College Midland Center, 7:00 p.m., Room 8

AMERICAN CHEMICAL SOCIETY
P.O. Box 2695
Midland, MI 48641-2695

NONPROFIT ORG U.S. POSTAGE PAID Midland, MI Permit No. 91
--