



THE DAYTON SECTION

Fostering scientific education and research, and promoting public understanding of science since 1930

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BULLETIN

Spring into Action Edition 2011

Meetings and Events

May 16: *Molecules to Mozzarella: The Chemistry of Cheese*, at Rumbleseat Wine Co., Dayton

June 14: Patterson High School Chemistry Awards with keynote address, *The Chemistry of Alternative Transportation Fuels*, by Dr. James T. Edwards

Section News and Other Stuff

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DATE MATERIAL - MEETING ANNOUNCEMENT - DO NOT DELAY

ADDRESS SERVICE REQUESTED

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American Chemical Society
Dayton Section
4801 Springfield Street
Dayton, OH 45431

UPCOMING MEETING

MAY 16

MOLECULES TO MOZZARELLA: THE CHEMISTRY OF CHEESE

Speaker: Dr. Michael H. Tunick, U.S. Department of Agriculture

Venue: Rumbleseat Wine Co., 5853 Far Hills, Dayton, OH 45429 (see map, below)

Agenda: Social: 6:00 – 6:30 PM

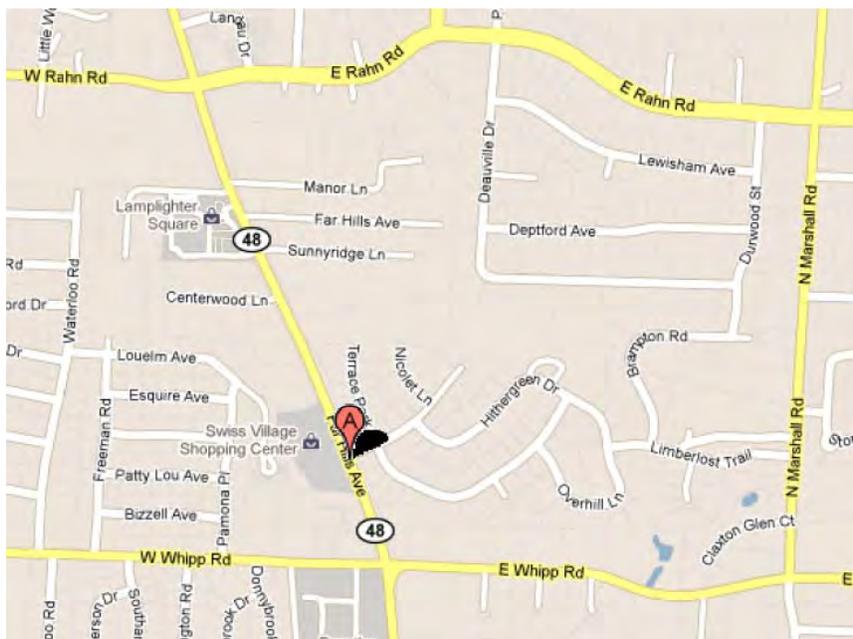
Talk: 6:30 – 7:15 PM

Cheese & Wine: 7:15 – 8:15 PM

Get ready to Rumbleseat! Join your fellow Section Members for an interesting talk about the chemistry behind cheese-making. Then, see if what you learned affects your taste buds. Either way, wash it down with a glass or two of wine – but beware the grip of the grape! Cheese and one glass of wine are compliments of the Section.

Abstract: Coagulation of milk, removal of whey, and ripening are all required in making cheese, and chemistry is involved each step. This talk describes the procedure from raw milk to final product, and illustrates the differences between cheese types, including the development of the many flavors in cheese.

About the Speaker: Michael H. Tunick received a B.S. in Chemistry from Drexel University in 1977. He was a student trainee at the Eastern Regional Research Center of the U.S. Department of Agriculture in Wyndmoor, PA, and worked on cocoa butter substitutes from beef tallow. He was hired as a chemist after graduation and performed research on treatment of leather tannery waste with the Hides and Leather Laboratory until 1983, when he was transferred to what is now the Dairy and Functional Foods Research Unit. He pursued a Ph.D. in Physical-Analytical Chemistry on a part-time basis during this period, receiving the degree from Temple University in 1985. He also became a research chemist in that year and was involved in a number of projects, including detection of mislabeled cheese and development of low-fat Mozzarella for the National School Lunch Program. He currently performs research on Hispanic cheeses and extruded whey proteins. He is Secretary and Past Chair of the American Chemical Society's Division of Agricultural and Food Chemistry.



Dr. Tunick characterizes the mozzarella on something that's a rarity in Dayton – a decent pizza.

UPCOMING MEETING

JUNE 14

PATTERSON HIGH SCHOOL CHEMISTRY AWARDS

Venue: University of Dayton, Science Center, Auditorium (SC 114)
(see map at: <http://facilities.udayton.edu/directions/Campus-Map.pdf>)

Parking: Get permits at the Security Hut near the campus entrance.

Social: 5:30 PM (Pizza and soft drinks will be served.)

Awards: 6:00 PM

Keynote: *The Chemistry of Alternative Transportation Fuels*, by Dr. James T. Edwards, AFRL

History of the Award

Originally established by Charles A. Thomas and Carol A. Hochwalt, former Dayton chemists and Monsanto researchers, the top chemistry students in the area have been recognized under the auspices of the Dayton Section since 1943. In 1990, the family of the late Austin M. Patterson, also a prominent Dayton chemist, assumed sponsorship. All area high school students are invited to take an examination and the highest scoring applicants are then invited to write essays, which form the basis of the final judging. (These finalists, although only two from one school, are also invited to take the Chemistry Olympiad Exam.) In addition, teachers of the prizewinners receive awards, and the top scoring student from each high school is awarded a plaque. Grading is performed separately for those students who have only taken one year of chemistry. Students from this group who score the highest in their High School will also receive a plaque. The top three essayists are awarded first, second, and third prizes of \$1000, \$500, and \$250, respectively.

The finalists (and their teachers) are:

| | | |
|----------------|-------------|--------------------------|
| Arjun Balwally | Centerville | (Mrs. Bonnie Buddendeck) |
| Emily Briskin | Centerville | (Ms. Summers) |
| Jeff Behm | Centerville | (Mrs. Bonnie Buddendeck) |
| Seth Cazzell | Centerville | (Ms. Summers) |
| Billy Fang * | Centerville | (Mrs. Bonnie Buddendeck) |
| Michael Jacobs | Centerville | (Ms. Summers) |
| Joseph Neff * | Oakwood | (Mr. Slagel) |
| Michael Wang * | Beavercreek | (Mrs. Tejinder Rattan) |
| Aaron Zhao * | Centerville | (Mrs. Bonnie Buddendeck) |
| Ruize Zhuang | Centerville | (Mrs. Bonnie Buddendeck) |

Students demarcated with asterisks will also compete in the Chemistry Olympiad. The other Olympiad participants are: Rachel Billock and Scott Johannes (Bellbrook); Amy Malone (Oakwood); and Samantha Venkatesh (Beavercreek).

About the Speaker: Dr. Edwards is a Senior Chemical Engineer in the Fuels Branch in the Air Force Research Laboratory's Propulsion Directorate/Turbine Engine Division. He has 27 years of experience in research in fuels and propellants, working at both of the Propulsion Directorate's sites at Edwards AFB (no relation) and Wright-Patterson AFB (WPAFB). His interests include properties and applications of hydrocarbon fuels/propellants and endothermic fuels, in support of advanced propulsion programs. Dr Edwards manages the in-house basic research program in Advanced Fuels, sponsored by the Air Force Office of Scientific Research (AFOSR), and assists in coordinating the on-site fuels research occurring at WPAFB. Recently he has become involved in the development of alternative (non-petroleum) fuels for the DOD, taking him back to his grad school PhD work at the University of California/Berkeley on coal liquefaction.

PAST MEETING

TECHFEST-2011

TechFest 2011 took place on February 19th and 20th at Sinclair Community College. As we've done every year since the inception of TechFest, the Dayton ACS Section provided an exhibit. Organized by the Affiliate Societies Council of Dayton, TechFest is an annual event that engages children from K-12 in science and technology. It is also very interesting for adults! Admission is free and TechFest is typically attended by several thousand visitors. This year was no exception.

The Dayton Section's exhibit consisted of two demonstrations. One was a hands-on demonstration of super-absorbent polymers or "instant snow". This acrylate polymer adsorbs about twenty times its weight in water, leaving a light fluffy solid that looks like snow. This exhibit is very popular with children and we gave away about 40 kg of "instant snow" this year.

Our exhibit also demonstrated acid-base properties of household chemicals. Four common household chemicals (lemon juice, vinegar, baking soda, and liquid plumber) were treated with universal indicator to demonstrate their pH values. The baking soda solution was also neutralized with vinegar to show both the pH change and the evolution of CO₂. Although this exhibit was not "hands-on," it was very popular with all ages for its demonstration of pH and indicator color changes and the reaction of baking soda and vinegar.

The Dayton Section exhibit was staffed by Dayton Section Members and Student Affiliates from local universities and colleges. Thanks to all of these dedicated individuals, especially to Dr. Wayne Cook, Tech Fest 2011 Coordinator. TechFest 2011 and our exhibit were exceedingly successful!



Unfortunately for one volunteer, what he thought was lemon juice was actually lemon-scented Clorox.



In response to Democratic parents protesting TechFest for emitting a greenhouse gas (as above), Republican parents picketed with placards that said, "Easy Solution to Global Warming: Air Conditioning! Duh!!"



It wasn't easy convincing some of the kids that the "snow" they made would not make a good snow cone.



Several thousand students later, the Arm & Hammer Baking Soda was prized among volunteers for its medicinal use.

PAST MEETING

ANNUAL POSTER SESSION & PATTERSON COLLEGE CHEMISTRY AWARDS

On March 1st at the University of Dayton's Kennedy Union Ballroom, the Dayton Section held an extraordinary poster session, jointly sponsored by the Ohio Valley Section of the Society for Applied spectroscopy. Forty one posters were presented and the Section awarded four \$50 awards for outstanding posters — two to undergraduates and two to graduate students. The Section is grateful to those members who served as judges.

Outstanding Undergraduate Student Posters

- ◆ *Graphite-Binding Peptides Identified by Phage Display*, by Laurie Wissler (Wright State & Wright-Patt)
- ◆ *Thermosensitive 2-Alkyl-2-Oxazoline Polymers for Gene Delivery*, by David To (Wittenberg University)

Outstanding Graduate Student Posters

- ◆ *Kinetics and Identification of Reaction Products of the Photochemical Degradation of β -Carotene in Carbon Tetrachloride and Hexane*, by Yuan Zhao (University of Dayton)
- ◆ *Effects of Crystal Orientation on the Dissolution Kinetics of Calcite Surfaces By an Atomic Emission Spectroscopic and Interferometric Approach*, by Michael E. Smith (Wright State)

In addition, the **Patterson College Chemistry Awards** were presented to outstanding junior chemistry majors at participating colleges and universities within the Section's boundaries. Each student received a check for \$300. The Section owes a huge debt of thanks to Dr. Leanne Petry for organizing the Patterson College Chemistry Awards as well as for making all the arrangements for the evening.

The Patterson College Chemistry Award Winners are:

Cierra Bell

Michelle Mitchener

Samantha Viviani

Xiao Shou

Sarah Kelly

Central State University

Cedarville University

University of Dayton

Wittenberg University

Wright State University



The Patterson College Chemistry Award Winners flank the Section Banner along with the presenters of the evening's Outstanding Posters. As for who is whom, your guess is as good as the Editor's.

REPORT FROM COUNCIL

I don't know about you, but Anaheim isn't my idea of the best city for an ACS Meeting. Especially in the Disney Hotels, where you have to battle through hoards of whiney, bratty kids — not to mention their middle-aged, overweight parents in bathing suits a size or two too small — to find the Conference Center. In addition, whenever I went to the Men's Room in a Disney Hotel, playing on the sound system was, "It's a Small World." I sure hope that was just a coincidence. The worst part was when I mistakenly opened a door marked, "Cast Members Only;" what I saw confirmed suspicions I've had since childhood about Captain Hook — not that there's anything *wrong* with that!

Council started off with the usual breakfast. The bagels were so plain that Councilors from the Great Plains states thought that they were bread-flavored donuts. There were 3 or 4 tables with 10 seats each for several hundred Councilors. I didn't even see the tables until Council started to convene. Unseated Councilors used any level surface to place their coffee and/or plate of pastries while they ate. Occasionally the hotel staff would take away half a dozen Councilor breakfasts because they mistook the large, circular trays in the corners for abandoned cups and dishes. With German being the typical second language for these old-school chemists, there was a significant language barrier with the hotel waiters.

The Committee on Nominations and Elections presented to the Council the following nominees for selection as candidates for President-Elect, 2012: Judith L. Benham, Dennis Chamot, Diane Grob Schmidt, and Marinda Li Wu. The reaction to this slate of candidates ranged from, "I've never seen a more outstanding set of candidates," to, "I've never seen all four candidates who are Members of the ACS Board of Directors," or, somewhat less politely, "what a bunch of bureaucrats!" (The first was a quote from a District Director; the latter two were typical of everyone else I talked to.)

I attended the Town Hall Meeting where the candidates answered questions. I was dumbfounded by some of their remarks. When asked what would be the theme of their presidency, one candidate said, "I haven't thought that far ahead." When asked what makes them unique among the other candidates, one said, "I really like people." Another said, "I've walked in other members' shoes." (Now, these are candidates who have had stellar careers, which makes me believe that this might not be true.) Turning to the economy, one candidate said, "I will be an advocate for a better business climate." Geez, I'd hope so! Here's another pearl: "ACS has the wonderful ability to convene." Another candidate said, "This is the time to stop analyzing and start implementing." I guess it's not possible to do both. None of these quotes are attributed to Dennis Chamot. Not surprisingly, using my patented four-point system, I ranked them with Dr. Chamot way ahead of the other three, with Diane Grob Schmidt second. However, at Council, I changed my vote after hearing the candidates' statements; I thought that Marinda Li Wu was much more enthusiastic. So, my incredible streak of choosing the two candidates who received the nomination has been extended! I'm sure you're proud.

In other doings:

- ◆ The Committee on Nominations and Elections announced the selection of the following candidates for Directors-at-Large for a 2012-2014 term: Ken B. Anderson, William F. Carroll, Jr., Charles E. Kolb, and Barbara A. Sawrey. The election of two Directors-at-Large will be conducted in the fall. Ballots will be mailed to the Council on or before October 10.
- ◆ The Council voted to amend the charter of the Committee on Technician Affairs to include updated terminology.
- ◆ The Council voted to set the member dues for 2012 at the fully escalated rate of \$148. This rate is established pursuant to an inflation-adjustment formula in the ACS Constitution and Bylaws.
- ◆ The Council voted to authorize the formation of the following two new international chemical sciences chapters: the Shanghai International Chemical Sciences Chapter and the Thailand International Chemical Sciences Chapter.

- ◆ The Council voted to change the name of the Northeast Oklahoma Section to the Northern Oklahoma Section. This name change is due to the recent merger of the North Central Oklahoma Section and its territories into the Northeast Oklahoma Section. The proposed name change more closely reflects the combined territories of the two Sections.
- ◆ The Council voted to continue for 3 years the current formula for determining division allotments.
- ◆ Petitions to Amend the Constitution and Bylaws — for Consideration Only

The Petition on Position Statements seeks to assure that the Board of Directors has primacy in issuing position statements that establish policy for the full Society and that Society bodies other than the Board may issue statements on issues that fall solely in their jurisdiction so long as they do not impair other Society bodies' ability to do the same. Action is expected on this petition at the fall Council meeting.

Your Faithful Councilor, Steve Trohalaki

In Remembrance of Dr. Harold Rosenberg

Harold was born in Chicago, and received a B.S. degree from Roosevelt University. He served in WWII, in the 44th Infantry Division. Harold came home after the victory in Europe and was about to be sent to the war in the Pacific when Japan surrendered. After the War, he received his PhD in Chemistry at the University of Illinois, and completed post-doctoral work at Purdue University. Harold accepted a position in the Materials Laboratory at Wright-Patterson Air Force Base, serving as a research chemist until retiring in 1978. During his career, Harold lectured and presented his research on behalf of the Air Force at national and international meetings.

During his retirement, Harold continued to travel — he'd been to every continent except Antarctica — and ran a travel agency. Harold could always find you a room at a sold-out hotel — something Expedia, *et al.*, still cannot do — because he had connections and knew the tricks of the trade.

Harold was devoted to the American Chemical Society, and especially to the Dayton Section. He served as Section Chair, and was a long-time Chair of the Investments Committee. The financial health of the Section is a testament to Harold's efforts. The Section honored Harold with a plaque in 1998 for achieving 50 years of membership in the ACS, and with another in 2008 for achieving 60 years. Those of us who attended Professional Practices Meetings, Affiliate Societies Council Awards Banquets, the Annual Poster Session, or other Dayton Section Meetings, know that Harold was never without a story to tell — from losing his voice before a major lecture to the folly of atomic-powered airplanes.

Harold died on April 14 at age 87. He will be missed.

Alzheimer's Avoidance Therapy* Unscramble the letters to reveal chemical names or concepts. Then, use the circled letters to solve the riddle. Answers next edition!

A E K L N Y ○ □ □ ○ ○ □
 A E G I N N U ○ ○ □ □ □ □ □
 A F N R U ○ ○ □ □ □

A mushroom walks into a bar. The bartender turns to him, snorts loudly, then yells, "Get out!! We don't want your kind here!" The mushroom is quite taken aback, and says, "Why not? I'm

○ □ ○ ○ ○ ○ ○ ○ ○ !"

With Chemistry being the Central Science, AAT ventures into Biology with this answer.

Answers for Last Edition

CATIONS TUNGSTON BROMO

The old, blind man is not taken aback by the monster's hideous appearance because, well, he's *blind*. Hearing the monster shriek in response to the crackling fire, the blind man calms the monster by reassuring him that,

COMBUSTION

is *good*! He demonstrates this by puffing on a cigar. He gives the monster a new cigar, lights a stick of kindling, feels for the monster's cigar, then lights the Monster's thumb. The monster shrieks in pain and runs away.

AAT-2 – Su Doku for Chemists!

Using the following nine chemical elements:

| | | | | | | | | |
|----|----|---|----|----|----|----|----|----|
| Sc | Ti | V | Cr | Mn | Fe | Co | Ni | Cu |
|----|----|---|----|----|----|----|----|----|

fill in the grid below so that each row, column, and 9-element subcell has only one occurrence of each element.

| | | | | | | | | |
|----|----|----|----|----|----|----|--|----|
| | | | | Sc | | | | Mn |
| Cu | | Fe | | | | | | Sc |
| | Ni | | | | | | | Co |
| | | Mn | Ni | | | | | Cu |
| | | | Fe | Mn | Cr | | | |
| | | Co | Cu | | | | | |
| | | Ti | | Cr | | Sc | | Co |
| Ni | | | | | | | | |
| | Sc | | | | Mn | | | Cr |

Quotable Quotes for \$2000, Alex

"A salesman minus enthusiasm is just a clerk."

Harry F. Banks

"The salesman knows nothing of what he is selling save that he is charging a great deal too much for it."

Oscar Wilde

"There are worse things in life than death. Have you ever spent an evening with an insurance salesman?"

Woody Allen

"The good lawyer is the great salesman."

Janet Reno

"I am *not* allowing my wife to date a bra salesman!"

Frank Costanza

Solution for Last Edition

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| Co | Sc | Ni | Mn | Cu | Cr | Fe | V | Ti |
| Fe | Ti | Mn | Co | V | Ni | Sc | Cu | Cr |
| Cu | V | Cr | Sc | Fe | Ti | Ni | Co | Mn |
| Ti | Ni | Cu | V | Mn | Fe | Co | Cr | Sc |
| Mn | Co | Fe | Cu | Cr | Sc | Ti | Ni | V |
| Sc | Cr | V | Ni | Ti | Co | Mn | Fe | Cu |
| V | Fe | Co | Cr | Sc | Mn | Cu | Ti | Ni |
| Cr | Mn | Ti | Fe | Ni | Cu | V | Sc | Co |
| Ni | Cu | Sc | Ti | Co | V | Cr | Mn | Fe |

*Surveys suggest that mental exercises, including word puzzles, may delay the progression of Alzheimer's Disease.