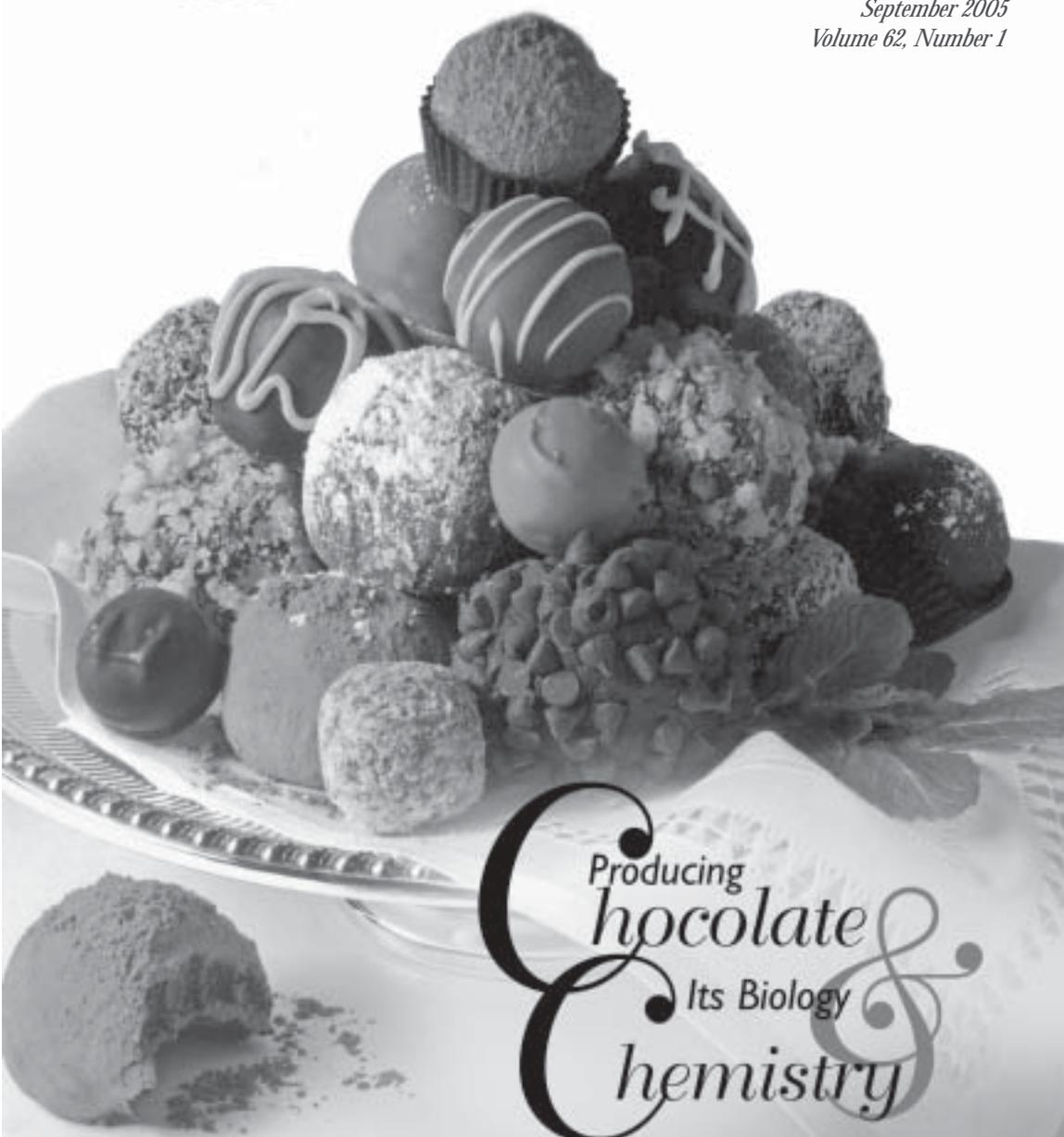


Chesapeake Chemist



*Maryland Section
American Chemical
Society*

*September 2005
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Producing
Chocolate
Its Biology
Chemistry

Section news

provided by Mike Zapf and Alvin Bober

Chemistry Olympiad 2005

The Chemistry Olympiad exam was held at Towson University, in the Department of Chemistry, on Saturday, April 16. Six talented high school students from the Maryland Section took the 6-hour exam in three parts: laboratory practical, choice, and written response. The students were nominated by their chemistry teachers. The local section staff included Dr. Shirish Shah and Mike Zapf, assisted by Mr. Steve Tsepse, a student and lab assistant at Towson. Dr. Boon Loo, from the Department of Chemistry, was host. The section appreciated the facility and lunch for staff! The students were Erik Smith and Peter Riley of Mt. Saint Joseph (B. Kenyon), Jason Strewig and Dave Geckle of Glen Elg (Kendell Morton) and Sarah Haq and Patrick Allen from Mt. Hebron High School (Tim Perry).

Chemathon 2005. University of MD, College Park

The 21st Chemathon was held on April 16 in the Department of Chemistry & Biochemistry. Thirty-one teams from 22 high schools competed at two levels. The section provided two of the major awards for each division: issues of the high school chemistry magazine, *ChemMatters*, and 12 beaker mugs.

MARM Regional High School Teacher Award

Mr. Nusret Hisim of Walkersville High School was presented the MARM Regional High School Teacher Award in May at the conference held at Rutgers University. Mr. Hisim won the Maryland Section award in 1998.

50-Year Member Luncheon 2005

On May 27, the section recognized and honored its new 50-year members of the American Chemical Society. This year we had 9 new 50-year members. Drs. Sybil Bane, Duane Parker and Paul O. P. Tso were able to accept our invitation to lunch at Belmont. It was a magnificent spring day: mild temperature and abundant wild flowers in the fields surrounding the mansion. The audience, about 20, was fascinated by the honorees' descriptions of their careers in chemistry. The presentation by Dr. Ernest Silversmith about the history of the Maryland Section was top drawer. Ernie combined fact and humor, not an easy task. The 2006 luncheon will be held at noon on the Friday before Memorial Day.

Annual Session Picnic 2005

On July 9, the section had its annual picnic at Patapsco Valley State Park, McKeldin Area. About 20 families participated. The weather was super. The campsite with its covered pavilion is just a great place to gather for a day outdoors. The food was especially fine, ranging from outstanding burgers to mouth-watering cakes. No one left hungry. There were some ACS-related conversations, but mainly it was a time for person-to-person interaction. Some of us were very much surprised by the real inside stories we heard. A very good thing to report is the proficiency of our president, Alan Samuels, with cooking utensils. The Maryland Section is in good hands for years to come. Plans are in progress for 2006. The Picnic will be at McKeldin on July 9 if all goes well with the Park Service. We may schedule a horse shoe pitching tournament. Practice up.

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Braude Award (October): Charles Rowell

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September Dinner Meeting

Wednesday, September 21, 2005, College of Notre Dame of Maryland

6:00-6:30 PM	Arrival and Registration
6:30-7:30 PM	Dinner
7:30-9:00 PM	Seminar and Chocolate Tasting Speaker: Dr. James Saunders, Towson University “Producing Chocolate, Its Biology and Chemistry”

Cost for the dinner is \$20.00 for members; \$15.00 for spouses, retired chemists and guests, and \$10.00 for students. For reservations please contact Shirish Shah at 410-323-0803(H) or by email at dr.shah@juno.com.

Producing Chocolate, Its Biology and Chemistry and Chocolate Tasting

The production of cocoa beans has decreased almost 75 % in the last twenty years because of devastating fungal diseases that have ravaged the trees of *Theobroma cacao* growing in South and Central America. Production in Africa and Indonesia has increased during this period to maintain world supplies, and many of the fungal diseases that affected Western Hemisphere cocoa production are not found in the newer production areas, yet! Although the crop has a long agricultural history, major genetic improvements have not been as rapid with this crop as with other important agricultural commodities. The flavor of chocolate comes from several different factors, including the chemistry of secondary natural products in the bean, the processing of the bean into chocolate, and the genetics of the type of bean used to make the chocolate. The history of the use of *Theobroma cacao* has not always been linked to the confectionary products. This presentation will discuss the history of chocolate production, the challenges of biological stresses and its impact on the complex chemistry of chocolate, the use of modern tools to improve quality and disease resistance of cacao, and the processing of cocoa beans into chocolate. Tasting will be involved.

About the speaker...Dr. James A. Saunders is director, Molecular Biology, Biochemistry and Bioinformatics (MB3), and a faculty member of both the Biology and Chemistry Departments at Towson University. He earned a BA in zoology from the University of South Florida (1971) and a Ph.D. in botany, with a minor in chemistry, from Miami University in Oxford, Ohio (1975). His postdoctoral work was done in the Department of Biochemistry & Biophysics, University of California, Davis 1975-77. Dr. Saunders's research interests are in the plant biochemistry of secondary natural products, including alkaloids, phenolics, drugs of abuse, smoking and tobacco issues, and the chocolate industry, as well as in molecular biology with emphasis on DNA fingerprinting, gene transfer, and gene expression methodology. He has authored 96 career publications, edited 9 books, and made over 250 scientific presentations on many different topics, including plant/insect interactions, subcellular localization, enzymology, drug crops, and gene transfer, as well as many aspects of plant natural products chemistry.



National announces Chemimagination Winners

The American Chemical Society (ACS) Office of Community Activities and the ACS Committee on Community Activities have announced the winners of the national Chemimagination contest. Articles and videos from the contestants were sent to a team of six judges around the country, who evaluated the entries. Among the national winners are students from the Maryland Section.

Alternative Energy Sources: Coalspark: The Direct Carbon Fuel Cell

This is a fuel cell designed for home use. It is powered by highly refined coal at twice the efficiency of combustion, Damascus High School, Damascus, Md.
Elliott Biondo, Adam Farrell and Gregory Iannuzzi

Environment: From Handles and Knobs to Fleece and Beyond!

Using a hydrolytic enzyme to help break the cross-links of thermosetting plastics for recycling, Albert Einstein High School, Kensington, Md.
Bilqis Fassassi, Laura Kranish and Grace Lerner

Medicine/Health: The Transdermal Nutrient System

One square patch for those who can't have three square meals.
Ridgefield Park High School, Ridgefield Park, NJ, Sapna Shah and Alexandra Vargas

New Materials: Gecko Cleats.

Scientists used the technology of Van der Waal's forces found on Gecko feet to revolutionize sports for athletes, Albert Einstein High School, Kensington, Md.
Cory Hawkins and Abigail Hunt

Winners in each category will share a \$600 U.S. Savings Bond prize. In addition, all entrants in the national contest will receive, through their advisors, a certificate of participation in the contest. These will be sent to the school address on file.

News from the American Chemical Society

Creating and Updating your chemistry.org Account

Create a chemistry.org account today and you can renew your membership, journal subscriptions, and update your contact information all online! Change of email? It's easily updated with a few clicks of the mouse. To create your chemistry.org account, follow the instructions at chemistry.org. You'll need your membership number to create an account.

Your membership number is located on your membership card or on the mailing label of your *Chemical & Engineering News*. Your membership number will be either the first seven or eight numbers on your mailing label.

Also, did you know that you can personalize your chemistry.org homepage? After registering with chemistry.org, you can access the mychemistry.org area, where Division memberships, national meetings, OASYS and community activities can all be added to your mychemistry.org webpage. In addition, ACS members enjoy access to special content such as access to ACS benefits, career tools, and AAAS's *Science Next Wave*.

Note: ACS is committed to e-commerce in its Units. With the new database system, all separate (Membership, Meetings, Pubs, NCW, etc) databases will be combined making it easier to provide services to ACS members.

Continued on page 8

Workshop a success

by Sandra Young

The section held the joint 2005 Maryland Section of the American Chemical Society/ Army Research Lab/Army Research Office (ACS/ARL/ARO) Small Angle X-Ray Scattering (SAXS) Workshop on Tuesday, July 19. It was a huge success. The goal of the workshop, which was co-organized by Dr. Sandra Young (MD ACS - vice chair) and Dr. Rick Beyer, both of the Army Research Lab, Weapons & Materials Research Directorate, Materials Division (ARL-WMRD-MD), was to educate Army, local industry, and local college/university researchers about the technique and showcase the state-of-the-art facilities available within ARL-WMRD-MD for conducting SAXS research.

The workshop was divided into two sessions. The morning session featured invited internationally recognized SAXS expert speakers who introduced the technique and then described specific materials research topics and interests where SAXS plays a critical role: Dr. Dale Schaefer, University of Cincinnati/LANL; Dr. Robert Briber, University of Maryland College Park; Dr. David Londono, DuPont; and Dr. Jan Ilavsky, Argonne National Labs. The afternoon session was a tutorial on both the practical, laboratory aspects of collecting SAXS data (using the state-of-the-art ARL SAXS instrument) and the analysis/interpretation of the data (using computers with data collected on the instrument).

There were 45 participants from 9 different colleges and universities, and 8 different companies and government labs throughout the mid-Atlantic region (90-95% of participants were students). Many of the participants were from universities outside of the Maryland Section, such as the universities in Delaware, Pennsylvania, and Virginia.

Support for the workshop was provided by the ARL, who supplied the use of its facilities, labor of coordinators, etc.; the ARO, who contributed \$5,000 toward speaker travel and other miscellaneous expenses; and the MD ACS, by way of providing the labor of coordinator, publicity, speaker dinner, etc.

While no official survey of workshop attendees took place, some very positive comments from participants were received: "One of the best technical workshops I've ever been to"; "Extremely useful presentations"; "When are you going to have another workshop?"; "The workshop was an excellent value for the cost." As to the latter comment, the charge for the workshop was \$25 and included a binder with a copy of all the presentations and an ARL bag with some ARL goodies in it; in addition, there was food/beverage service throughout the day. Several professors asked about sending students to the workshop and whether a similar workshop could be held at their facilities.

Chemistry in the Library fall schedule

September 24. KaPow! - Chemistry is Reactive & Take-Home Experiment: America Recycles Day - November 15th, Elkridge Library, 2:00 PM

October 1. NCW Celebration, Glenwood Library, 2:00 PM

October 17. NCW Celebration, Bel Air Library (Harford County), 4:30 PM

October 19. NCW Celebration, Edgewood Library (Harford County), 4:30PM

October 21. NCW Celebration, Hamilton Library (Baltimore City), 3:00PM

October 22. NCW Celebration, Elkridge Library (Howard County), 2:00 PM

September Historical Events in Chemistry

by Leopold May, The Catholic University of America, Washington, D.C.

- September 1, 1873 Birthdate of B. Smith Hopkins, a researcher on rare earths.
- September 5, 1874 Jacobus H. van't Hoff completed his famous 11-page treatise on the tetrahedral carbon atom, marking the birth of stereochemistry.
- September 6, 1870 Frederick G. Donnan, who was born on this date, was a researcher in the theory of membrane equilibria (Donnan Equilibrium) and did research in chemical kinetics.
- September 9, 1966 The first "Star Trek" was telecast on this date.
- September 10, 1797 Carl G. Mosander, who was born on this date, discovered lanthanum in 1839, erbium in 1843, terbium in 1843, and didymium ion 1842, which was later found to be mixture of Neodymium and Praseodymium.
- September 13, 1887 Birthdate of Leopold W. G. Ruzicka, a researcher on cyclic polymethylenes, terpenes, and synthesis of sex hormones. In 1939 he shared the Nobel Prize with Adolf Butenandt for his work on polymethylenes and higher terpenes for his work on sex hormones.
- September 16, 1893 Albert Szent-Györgyi, who was born on this date, isolated ascorbic acid (vitamin C). He received the Nobel Prize in physiology or medicine (1937) for his discoveries in connection with the biological combustion processes, with special reference to vitamin C and the catalysis of fumaric acid. He was a researcher on bioenergetics, carbohydrate metabolism, and cellular oxidation.
- September 17, 1901 Peter Cooper Hewitt obtained a patent for a mercury vapor lamp.
- September 26, 1754 Joseph-Louis Proust was born. He articulated the Law of Definite Proportions and distinguished oxides from hydroxides.
- September 29, 1901 Birthdate of Enrico Fermi, a researcher on neutron-induced nuclear reactions. In 1938, he was awarded the Nobel Prize in physics for his demonstrations of the existence of new radioactive elements produced by neutron irradiation, and for his related discovery of nuclear reactions brought about by slow neutrons.
- September 30, 1943 A researcher on 3-dimensional structure of proteins related to photosynthesis, Johann Disenhofer was born on this date. He shared the Nobel Prize in 1988 with Robert Huber and Hartmut Michel for the determination of the three-dimensional structure of a photosynthetic reaction centre.

Upcoming meetings and events:

October 16-22 - National Chemistry Week, "The Joy of Toys"

Wednesday, October 19, Towson University, Braude Award Dinner

Dr. Robert L. Caret, President, Towson University

Wednesday, November 9, Villa Julie College, Igor Nazarov, "Science of Wine Making"

Wednesday, December 7, Berkshire Marriott Conference Hotel, Towson

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ACS News continued

ACS Releases 2004 Annual Report

The ACS Office of Communications has released the 2004 ACS Annual Report. Members are invited to view the enhanced web edition of the report online at <http://chemistry.org/acsannualreport>.

The enhanced web version of the report includes embedded links to the web sites of various programs, along with additional highlights of the operational divisions.

In their combined officers' message for the report, ACS Board Chair Jim Burke, 2004 President Chuck Casey, and Executive Director & CEO Madeleine Jacobs write: "By their very nature, annual reports are a chance for reflection; an opportunity to look in the rearview mirror and assess how well we navigated the twists and turns and unexpected bumps in the highway over the past 12 months. But they also offer an opportunity to look ahead. Our 2004 annual report does both – it's a review, but with an eye toward the future."

This year's report, "Crossing Boundaries, Crossing Disciplines," focuses attention on the truly multidisciplinary nature of the chemical sciences. The report also spotlights four specific ACS programs that directly affect the lives of many individuals – ACS Scholars, Project SEED, Teacher Training, and the ACS Green Chemistry Institute.

Please take this opportunity to browse through the report and perhaps even share it with colleagues, relatives, friends and neighbors. It's a great way to provide them with some insight into what it means to belong to the world's largest scientific society.

The Office of Communications welcomes your questions, comments and feedback at annualreport@acs.org. Members may also request a printed copy of the 2004 ACS Annual Report by sending an email to annualreport@acs.org.

Call for Nominations – Citation for Chemical Breakthroughs Award

June 28, 2005. The Division of History of Chemistry (HIST) of the American Chemical Society solicits nominations for its new award program, Citation for Chemical Breakthroughs. This award recognizes breakthrough publications and patents worldwide in the field of chemistry. The term "breakthrough" refers to advances in chemistry that have been revolutionary in concept, broad in scope, and long-term in impact. Plaques, to be placed near the office or laboratory where the breakthroughs were achieved, will be presented annually to the departments and institutions at which these breakthroughs occurred. All nominations must be received by October 1, 2005. Information can be found on the HIST website, under the heading "Divisional Awards": <http://www.scs.uiuc.edu/~mainzv/HIST/> or write to: hist_ccb@yahoo.com.