

Chesapeake Chemist

*Maryland Section
American Chemical
Society*



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Department of Chemistry and Lawrence Berkeley National Laboratory
University of California Berkeley

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Dear Maryland ACS colleague,

It is that time of the year again where we ask you to participate in our Maryland Section election for officers. I am often asked, "What is the value of section membership?" Local section membership is definitely what YOU make of it.

We hold 8 meetings a year on a variety of chemical topics. Some meetings honor chemists with significant impact in Maryland (Maryland Chemist of the Year Award) and our chemical communities (Remsen and Braude Awards) and one honors aspiring chemists with outstanding grades and performance at their colleges/universities (Student Awards). These meetings are not just an opportunity to listen to current chemical research and issues but also opportunities to network with colleagues who may have jobs available at their companies/university/government labs or to network with colleagues who might be looking for a job. I have been fortunate to meet numerous MD ACS colleagues at these events—young and old—actively working, actively looking, and retired. All have interesting chemical events (and other things) going on in their lives. Many of the ideas for future meetings come from members who take a moment to talk to one of the section leadership members about a topic that they are interested in.

The Maryland ACS has a significant outreach effort in the community. Our section spans 9 counties (Anne Arundel, Baltimore, Carroll, Cecil, Frederick, Harford, Howard, Kent, Queen Anne's) and Baltimore City and every year we host outreach events throughout our section boundaries, typically working with over 3,000 young students in Maryland. We are constantly looking towards educating future chemists—some of these students may be your children or grandchildren, your neighbors, or friends. We host Earth Day, Chemistry-in-the-Library, Kids & Chemistry, National Chemistry Week, and a variety of smaller outreach events. AND we are constantly looking for volunteers like YOU to help take on the responsibility of influencing and inspiring the younger generations of aspiring scientists.

Maryland has numerous colleges and universities; many of these institutions have ACS student affiliate groups. Many of the student affiliates, while learning about the society, are actively engaged in outreach and scientific events of their own, representing the section well. The MD ACS now offers travel grants for student affiliate members, helping them go to regional and national meetings and to get the experience of presenting at a meeting and exposure to the diverse chemical industry present in the US in academia, industry, and government.

Other programs open to all members and scientists include Earth Day events and clean-up (April), the 50-year member luncheon (May), the Maryland ACS Section Picnic (July), and special events some years like the instrumentation workshops (Mass Spectroscopy, 2004, Small-Angle X-Ray Scattering, 2005) and networking event (Orioles Game, 2004). We are always looking for new ideas and for members to suggest, help plan, and execute events. This year our special event is to co-sponsor the GEMS program (<http://www.usaop.com>) with the Army Research Lab at Aberdeen Proving Ground. The program includes 4 1-week workshops on polymer science for middle school & high school students.

Section events are published in the Chesapeake Chemist, the Maryland Section newsletter, which is mailed and e-mailed out monthly. If you are not on the e-mail list, please contact the newsletter editor, Cindy Kronman (cakvt@hotmail.com). In addition, the section has a website (<http://mdchem.org>), with everything you've ever wanted to know about the Maryland Section and with all of the pdf files of the Chesapeake Chemist.

I welcome your thoughts on any of the areas we are engaged in that I described above, and I encourage your participation in the Maryland Section. Please contribute to your

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ACS Maryland Section - Officers and Committee Chairs

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Shekar Munavalli, Shirish Shah
Paul Smith, Joseph Topping

Members at Large

Karen Hatwell, Maurice Iwunze,
Jan Kolakowski, Liina Ladon, James Nwaba

Committee Chairs

Student Awards (March):
George Farrant, 410-455-4120
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Remsen Award (May/June): Lev Ryzhkov

Braude Award (October): Charles Rowell

Maryland Chemist Award (December):
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Maryland Service Award:
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June Dinner Meeting

Wednesday, June 21, 2006, The Johns Hopkins University, The Great Hall

6:00-6:45 pm	Networking and Registration
6:45-7:45 pm	Dinner
8:00 - 9:00 pm	Remsen Award Presentation and Talk Dr. Gabor A. Somorjai, Department of Chemistry, and Lawrence Berkeley National Laboratory University of California Berkeley

Cost for the dinner is \$25.00 for members; \$20.00 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. A map of the campus can be found at www.jhu.edu/~tour/parking.html; the Great Hall is next to the Glass Pavilion.

Frontiers of Surface Chemistry. The Nanoscience of Heterogeneous Catalysis and the Evolution of Molecular Surface Biology

Novel instrumentation provides the means of molecular investigation of the surfaces of catalysts and biologically important surfaces under reaction conditions at the solid-liquid and solid-gas interfaces. The research in heterogeneous catalysis is driven by the need for developing 100% selectivity during catalytic reaction conditions to avoid byproducts and waste. The green chemistry approach requires understanding of the molecular ingredients of selectivity, including surface structure, adsorbate mobility on the catalytically active surface, oxide-metal interface sites, selective site blocking, and the presence of hydrogen. To that end metal nanoparticles of well-defined structure and shape in the 1:12 nm regime are being synthesized by colloid techniques and characterized with a combination of instrumentation. They are used as nanoparticle arrays deposited on oxide surfaces as 2-dimensional catalysts or by encapsulating them in mesoporous oxide surfaces of high surface area in a 3-dimensional mode. The catalytic selectivity of hydrocarbon conversion reactions as a function of particle size and shape has been explored and will be discussed.

A combination of sum frequency generation vibrational spectroscopy, quartz microbalance and atomic force microscopy permit us to investigate the structure of hydrophilic and hydrophobic polymer surfaces. The adsorption of polypeptides of various lengths of amino acid chains are being studied and their surface structure as modified by the hydrophilic or hydrophobic surface is investigated. The question of biocompatibility is at the heart of molecular surface biology and modern surface science techniques permit the investigation of the molecular structure and dynamics of peptides adsorbed on polymer and biopolymer surfaces.

Speaker biography: Born in Budapest, Hungary, on May 4, 1935, Gabor A. Somorjai was a fourth year student of chemical engineering at the Technical University in Budapest in 1956 at the outbreak of the Hungarian Revolution. He emigrated to the United States, where he received his Ph.D. in chemistry from the University of California, Berkeley in 1960. He became a U.S. citizen in 1962.

After graduation, he joined IBM in Yorktown Heights, New York, where he remained until 1964. At that time, he was appointed Assistant Professor of Chemistry at the University of California, Berkeley. In 1967, he was named Associate Professor, and in 1972 promoted to Professor. Concurrent with his faculty appointment, he is also a faculty senior scientist in the Materials Sciences Division and director of the Surface Science and Catalysis Program at the

Center for Advanced Materials, at the Lawrence Berkeley National Laboratory. He was appointed University Professor by the UC Board of Regents in March of 2002.

Professor Somorjai has educated more than 120 Ph.D. students and close to 200 postdoctoral fellows, about 70 of which hold faculty positions and many more are leaders in industry. He is the author of over 900 scientific papers in the fields of surface chemistry, heterogeneous catalysis, and solid state chemistry. He has written three textbooks, *Principles of Surface Chemistry*, Prentice Hall, 1972; *Chemistry in Two Dimensions: Surfaces*, Cornell University Press, 1981; and *Introduction to Surface Chemistry and Catalysis*, Wiley-Interscience, 1994; and a monograph, *Adsorbed Monolayers on Solid Surfaces*, Springer-Verlag, 1979.

Outstanding chemistry student profile: Steve Tse, Towson University

by Liina Ladon and Shirish Shah

Educators are always happy to see a truly brilliant student walk into their lives. Such was the case when Steve Tse came to Towson University from Hong Kong to study computer science. Fulfilling the course requirements for this major required mathematics and science courses, and Steve found he also particularly enjoyed chemistry, as well as mathematics. He was one of the best tutors in the Tutoring Center working with Ms. Liina Ladon (director); he also worked with Mr. Rodney Dixon (lab manager). A hard-working student, he decided to major not only in computer science, but also mathematics and chemistry. This alone is amazing, but what is truly amazing is that Steve graduated this past December with this triple major with a 4.00 average and was valedictorian of his graduating class. Keep in mind that English is not Steve's native language. Speaking at the commencement ceremony, Steve was humorous, inspiring and expressed his gratitude for the education he received at Towson University. Steve plans to attend Stanford University in the area of computational chemistry in the fall 2006. His triple major will serve him well in this pursuit, and we wish him well.

Four section undergraduates receive travel awards

by Paul Smith

Four student affiliates received awards of \$400 from the Maryland Section to assist them in attending national and regional ACS meetings. Cassie Slentz, a senior chemistry major at Washington College, attended the national meeting in Atlanta and presented two posters: one related results from her senior research project on the acid-base behavior of 2,3-diaminophenazine; the other presented activities and goals of the student affiliate group at Washington College. Kathleen Ford and Gina Siccardi, both senior chemistry majors at Loyola College, also traveled to the national meeting in Atlanta and presented a poster entitled "Making Chemical Bonds," which detailed the outreach efforts of their student affiliate organization. In June, Joanna Duckworth will travel to MARM in Hershey, where she will present results of her research on the development of an active site mimic of flavohemoglobin. Our thanks and appreciation go out to these outstanding students for their representation of the Maryland Section.

letter to colleagues continued

membership by taking a moment this spring, and when you receive your ballot in the mail, please participate in your section election.

Best Regards,

Sandy Young, 2006 MD ACS Chair, (chemists4fun@yahoo.com)

Council Meeting Report, Anaheim, March 29, 2006

by David Roswell

The Council of the American Chemical Society met during the national meeting in Atlanta, Georgia, on Wednesday, March 29. The meeting began at 8 am and lasted until about 11:45. All four Maryland councilors (Merle Eis, Donald Jones, David Roswell and Charles Rowell) were in attendance. After the opening call to order a resolution was read and a moment of silence observed in honor of deceased councilors. The minutes of the previous meeting in Washington, D.C. were then approved.

The council then moved to undertake what was to be one of its major tasks in the meeting. The Committee on Nominations and Elections presented the candidates for nomination for election to the position of President Elect for 2007, and the nominees had the opportunity to present their ideas to the council. By written ballot the council selected Bruce E. Bursten and Bassam Z. Shakhshiri as candidates for 2007 President-Elect. These two candidates will stand for election in the Fall National Election along with any petition candidates. (We would urge you to read the platforms that these candidates will present in C&E News and then vote your choice in the upcoming election.)

Oral reports from the elected officers and the executive director followed. The society's new vision statement, "Improving people's lives through the transforming power of chemistry," which resulted from the input of several thousand ACS members, was presented at this time. Also, the finances of the society were discussed as part of these reports. The society ended 2005 with a net contribution from operations of \$11.6 million, which was \$9.1 million favorable to the approved budget. The favorable variance was primarily attributable to higher-than-budgeted print and electronic information services revenue and investment income, as well as expense savings from staff vacancies and reductions in information technology spending. The society also realized \$21.0 million in investment gains. In total, unrestricted net assets increased just over \$26 million in 2005 to \$211 million, and the society ended 2005 in full compliance with the board-established financial guidelines. In her report, Madeline Jacobs, the executive director, discussed some of the changes being made to the ACS web site, chemistry.org; \$9.4M is being committed to this effort and members will notice the changes over the next several months

After reports from the officers standing committees presented reports. The report from the Committee on Budget and Finance (B&F) caused little discussion. One of the duties of B&F is to recommend changes in the annual dues. Some years ago the Council adopted a policy allowing dues to escalate with the CPI. This escalator provides for a \$6 increase in the dues for 2007, this increase along with the special assessment of \$4, brings dues for 2007 to \$136. (This is the last year for the special assessment which was put into place to allow for increased financial support to local sections and divisions to be phased in over time.) Members of the Council approved this increase with no apparent dissent. It was also reported that a Program Review Advisory Group (PRAG) has been established to assist the Committee on Budget and Finance in reviewing all programs of the Society (with some exemptions) on a periodic and regular basis. The PRAG consists of councilors, members of the Board of Directors, members of the Committee on Budget and Finance, and representatives from the committees with oversight over the programs under review in a given year.

The Committee on Nominations and Elections (N&E) reported that the recent move to electronic voting went well. As is now tradition a portion of time (30-45minutes) is set aside

Chemagination 2006 projects selected

The Chemical Society of Washington and the Maryland Sections of the American Chemical Society jointly sponsored a Chemagination competition at the American University on April 5, 2006. The Chemagination competition is a chemistry competition in which teams of students create a new product that is chemically sound and feasible for production in the year 2031. The students must also design a cover for ChemMatters Magazine and write a scientific article as though it is 25 years from now. The students must create a poster and defend their premise to a team of chemists from the ACS. More than 60 students from four Maryland and Virginia high schools participated. They competed in four categories: Alternative Energy Sources, Environment, Medicine/Health, and New Materials. One team from each category was chosen to represent CSW at the regional Chemagination competition, held June 4, 2006, during the Middle Atlantic Regional Meeting, in Hershey, Penn. The following teams advanced.

Alternative Energy Sources: “Sounds Crystal Clear,” Yeji Kim and Anthony Lee, Albert Einstein High School, Kensington, Md., Ann Coren and Scott Soderholm, teachers.

Environment: “Intact Plasma Assisted Condenser,” Tim Swaim, Kasey Cunningham, and Mike Greenburg, Damascus High School, Damascus, Md., Elena Pisciotta and Dave Culpepper, teachers.

Medicine/Health: “Save Your Own Life, Make Your Own Blood,” Naomi Heilweil, Marisa Pinchas, and Rachel Blank, Charles E. Smith Jewish Day School, Daniela Munteanu, teacher.

New Materials: “Lime-Dry,” Kira Levitzky and Thomas O’Brien, Albert Einstein High School Kensington, Md., Ann Coren and Scott Soderholm, teachers.

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for special discussion. At this Council meeting focused on membership – specifically, the requirements for ACS membership, and whether they should be made more or less restrictive, or kept the same. ACS President E. Ann Nalley invited the co-chairs of the Board-Council Policy Committee Governance Review Task Force, James D. Burke and William F. Carroll, to help frame the discussion by presenting the results of a councilor survey on ACS membership requirements. The prevailing view seems to be that some fine tuning of requirements may be in order but education and/or work experience will still be important in the requirements.

After the special discussion the Committee on Memberships Affairs (MAC) reported that ACS closed 2005 with 158,422 members, reversing a 4-year downward trend in Society membership. The membership retention number remained stable at 92.4%. They also reported that at the next Council meeting (in mid-September) they would provide some recommendations as to changes to the requirements for membership.

The Committee on Meetings and Expositions (M&E) reported that the total attendance at the meeting as of Wednesday was 12,546 of which over 4,158 were students. (It is worth noting that 1164 undergraduate students presented posters at this meeting.) The exposition was quite good with over 1200 exhibitors.

No subsequent reports led to significant discussion and being no further business the Council adjourned.

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Maryland Section picnic to feature expanded menu

Don't forget the annual section picnic on Sunday, July 9, noon to dusk, at the Patapsco State Park (Pavilion # 501) McKeldin Area, Marriotsville Road. Entrance to the park is free for seniors (62 & up) and children under 16. There is a small fee for others.

The cost for this year's picnic is \$15.00 per family or \$7.50 for an individual. The menu will include steak and chicken in addition to the usual hotdogs and hamburgers. The section will also provide soda, water, condiments, paper goods, utensils, etc.

Each participating family or individual is asked to bring other picnic food dishes: A – F, Side Dish; G – L, Dessert; M – R, Snack; and S – Z, Salad.

To make reservations, please send checks, payable to Maryland Section, ACS, to Alvin Bober, 9800 Middle Mill Drive, Owings Mills, MD 21117, adbober@juno.com. After June 30th please call 410-581-531.



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