

THE OCTAGON



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Lehigh Valley Section of the American Chemical Society

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823rd Meeting of the LVACS Wednesday, March 16 Cedar Crest College

Location: Cedar Crest College

Reception, Dinner, Meeting and Talk : Complete meeting details were not available at time of publication. Please see website for additional meeting information which will be posted when received.

Directions:

<http://www.cedarcrest.edu/ca/admissions/bycar.shtm>

Campus map:

<http://www.cedarcrest.edu/ca/campusmap.shtm>

Speaker: Dr. Paul E. Anderson
Energetics and Warheads Division, Explosives
Research and Development Branch
US Army Picatinny Arsenal, Picatinny, NJ 07806

Biography:

Paul Anderson received his BS in Chemistry from Muhlenberg College and his Doctorate in Physical Chemistry from Northeastern University in Boston, MA. He worked for five years in industry (Columbian Chemicals Co., Marietta, GA) where he was employed to research, develop, and analyze multiwalled carbon nanotubes, catalysts, and treated

graphite powders and optimize production from the lab scale to the pilot plant level. He currently works in the Energetics and Warheads Explosives Research Branch at Picatinny Arsenal, NJ, where he and his team lead formulation efforts utilizing new energetic materials, updating ancient military specifications to accommodate new procedures and techniques, and developing next-generation materials and explosives for the soldier. He resides in Ogdensburg, NJ with his wife and daughter.

Topic: Design of Experiments and the Development of Explosives for the Warfighter

Abstract: In development of new explosives, it is often necessary to balance a number of attributes in performance while certain formulation constraints exist. A series of basic tests will be presented that allows the researcher to characterize the explosive. Because testing of explosives is time consuming, expensive, and highly specialized, it is important to utilize statistical design of experiments (DOE) when developing new formulations. For instance, certain formulation may attain the proper performance, but its sensitivity toward external stimuli may render it unusable in the field. In metal-loaded explosives designed for enhanced blast, it was recently discovered that some portion of the metal additive participates early in the detonation event and also contributes to blast later during expansion of the gaseous products. Thus, both the mechanical energy (for fragmentation or

“metal pushing”) and blast (for lethality and “shock and awe”) are available in a single explosive fill. This allows the warfighter to engage a broader range of targets while not sacrificing lethality. The development of such an explosive and the importance of modern statistical design of experiments will be shared.

In the war on terror, Picatinny Arsenal continues to play a pivotal role in the research, development, and engineering of a broad range of armaments for today’s warfighter. The laboratories are uniquely designed to serve nearly all phases of a munition’s acquisition lifecycle, all the way from concept, research and development, validation and testing, deployment and field support, and proper recycling and/or disposal. Picatinny continues to be the leader of DoD laboratories in the development of explosives, propellants, pyrotechnics, and warhead designs.

Mark your Calendars!

Upcoming Meetings and Events Winter-Spring 2011

Event: Science Café - Barnes & Nobel,
April 6, Allentown, Pa, Speaker TBA

Meeting - April 26, Moravian University
*Student Awards
and Research Poster Session*
Speaker: Dr. Joe Francisco "From Earth's
Atmosphere to Planetary Engineering of Mars:
An Adventure in Chemistry"

Meeting -May TBA -
Night Out at Weyerbacher Brewery

Event-Summer 2011 TBA-
LVACS at the Iron Pigs



Participate in MARM 2011 - May 21-24

The 2011 Middle Atlantic Regional Meeting (MARM) of the American Chemical Society will be held May 21-24, 2011 on the campus of the University of Maryland, College Park, hosted by the Chemical Society of Washington. This meeting will feature national and international leaders in the chemical sciences and will include a broad selection of symposia in BIOCHEMISTRY / ORGANIC CHEMISTRY, INORGANIC / MATERIALS CHEMISTRY, ANALYTICAL / PHYSICAL / THEORETICAL CHEMISTRY, and CAREER/ EDUCATION / PROFESSIONAL areas. Several Workshops are planned, and there will be events that feature career development, funding opportunities, and education.

Visit the website at: <http://www.marmacs.org>
<http://www.marmacs.org/?53400_01>

- Meet your colleagues
- Networking Opportunities
- Accelerate your career
- Catalyst for success
- Renew, Reward, Re-energize
- Top speakers
- Make sure you attend - Be part of it!

Be part of this special event with speakers from industry, education and government at a variety of TECHNICAL AND POSTER SESSIONS. Research presentations are open to all, and symposia will include contributed papers selected from those submitted that best represent the symposium topic. Invited speakers for each symposium will include national and international leaders. Graduate students, postdoctoral associates, and young professionals are encouraged to come to increase their visibility, and undergraduate students will find ample opportunity to learn about employment and graduate school opportunities. There

will be activities for senior chemists, who will also be available to advise and inform younger chemists.

Email: contacts@marmacs.org

General Chair: Mike Doyle

Program Chair: Phil DeShong

Treasurer: Carl Womack

Exhibits Chair: Dolores Jackson

Submissions to the Octagon

LVACS members, we want to know about what you do! Please submit pieces of interest to the chemistry community for publication in the Octagon. Articles about chemistry or science in the Lehigh Valley are always welcome. Let us know about upcoming events, educational opportunities or job openings.

The Octagon is published eight times per academic year, September through May. Each issue generally arrives three weeks before a section meeting. Thus the deadline for submissions is approximately one week earlier. Please email the editor at lvacs@verizon.net for specific questions about deadlines for any issue. Email submissions to lvacs@verizon.net

A note about formatting:

Please submit text as simple .txt files, or you may paste the text into an email. If you use later versions of MS word please do not submit documents as .docx files. I cannot always read all content in .docx formatted files. It would be best to use the "save as" option, generally found under the file menu, to save the document as .txt. Also images embedded (pasted) in MS word (particularly later versions) are problematic to extract and put in the newsletter while retaining good image quality. Whenever possible, please submit images in a standard format such as .jpg, .jpeg, .gif, .tiff or .bmp as individual files, rather than embedded within a document. If the placement of images is critical you could submit two versions (one embedded so that I can see where you would like images placed) and the other as separate files so that I may maintain figure resolution.

LVACS Officers - 2010

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A Nobel Biography



Harold Urey - 1934 for the discovery of heavy hydrogen

This autobiography/biography was written at the time of the award and first published in the book series Les Prix Nobel. It was later edited and republished in Nobel Lectures. http://nobelprize.org/nobel_prizes/chemistry/laureates/1934/urey.html

Harold Clayton Urey was born in Walkerton, Indiana, on April 29, 1893, as the son of the Rev. Samuel Clayton Urey and Cora Rebecca Reinoehl, and grandson of pioneers who settled in Indiana. His early education in rural schools led to his graduation from high school in 1911 after which he taught for three years in country schools. In 1914 he entered the University of Montana and received his Bachelor of Science degree in Zoology in 1917. He spent two years as a research chemist in industry before returning to Montana as an instructor in Chemistry. In 1921 he entered the University of California to work under Professor Lewis and he was awarded the degree of Ph.D. in Chemistry in 1923. He spent the following year in Copenhagen at Professor Niels Bohr's Institute for Theoretical Physics as American-Scandinavian Foundation Fellow to Denmark and on his return to the United States he became an Associate in Chemistry at Johns Hopkins University. In 1929 he was appointed Associate Professor in Chemistry at Columbia University and he became Professor in 1934; during the period 1940-1945 he was also Director of War Research, Atomic Bomb Project, Columbia University. He moved to the Institute for Nuclear Studies, University of Chicago in 1945 as Distinguished Service Professor of Chemistry and became Martin A. Ryerson Professor in 1952. He was George Eastman Visiting Professor, University of Oxford, during 1956-1957 and in 1958 he took his present post as Professor-at-Large, University of California.

Professor's Urey's early researches concerned the entropy of diatomic gases and problems of atomic structure, absorption spectra and the structure of molecules. In 1931 he devised a method for the concentration of any possible heavy hydrogen isotopes by the fractional distillation of liquid hydrogen: this led to the discovery of deuterium. Together with the late Dr. E.W. Washburn, he evolved the electrolytic method for the separation of hydrogen isotopes and he carried out thorough investigations of their properties, in particular the vapour pressure of hydrogen and deuterium, and the equilibrium constants of exchange reactions. He later worked on the separation of uranium isotopes and, more recently, he has been concerned with the measurement of paleotemperatures, investigations into the origin of the planets, and the chemical problems of the origin of the earth.

He is the author of the books *Atoms, Molecules and Quanta* (1930, with A.E. Ruark), and *The Planets* (1952). He was editor of the *Journal of Chemical Physics* during 1933-1940 and he has written numerous papers on the structure of atoms and molecules, the discovery of heavy hydrogen and its properties, separation of isotopes, measurement of paleotemperatures and the origin of planets. These have been published in many different chemical journals.

Professor Urey received the Willard Gibbs Medal (American Chemical Society) in 1934; Davy Medal (Royal Society, London), 1940; Franklin Medal, 1943; Medal for Merit, 1946; Cordoza Award, 1954; Honor Scroll Award (American Institute of Chemists), 1954; Joseph Priestley Award, 1955; Alexander Hamilton Award, 1961; and the J. Lawrence Smith Award (National Academy of Sciences), 1962. He has received honorary Doctor of Science degrees of Montana, Princeton, Newark, Columbia, Oxford, Washington and Lee, McMaster, Yale, Indiana, Birmingham Universities, and of the Universities of Athens, Durham, and Saskatchewan; also honorary Doctor of Law degree from Wayne University and the University of California. He is a member of many of the more important scientific societies of the world, and is Honorary Fellow of the Chemical Society

(London), the National Institute of Sciences of India and the Weizmann Institute of Science (Israel).

In 1926 he married Frieda Daum. They have three daughters and one son. Harold C. Urey died on January 5, 1981.

News from National - Information and opportunities provided by ACS

Call for Applications – Overcoming Challenges Award

The Women Chemists Committee (WCC) of the American Chemical Society is pleased to announce a call for applications for the 2011 Overcoming Challenges Award. This award is designed to recognize a woman undergraduate from a two-year or four-year institution for her efforts in overcoming hardship to achieve success in chemistry. The recipient of the Overcoming Challenges Award will receive a plaque, a monetary award of \$250, and a \$1,000 travel stipend for expenses to attend the Fall 2011 ACS National Meeting where she will be recognized at the WCC Luncheon. Visit www.acs.org/diversity for more details. Submission deadline is April 1, 2011.

Considering a Career in High School Chemistry Teaching?

The American Chemical Society (ACS) can help you pursue your dream of becoming a high school chemistry teacher with the ACS-Hach Second Career Teach Scholarship. The ACS-Hach Second Career Teach Scholarship is awarded to professionals with work experience in chemistry-related fields. Scholarship recipients receive up to \$6,000 for full-time study and up to \$3,000 for part-time annually. Applications are due on April 1, 2011. Learn more about this exciting scholarship program at www.acs.org/hach.

Transform Your Classroom with an ACS-Hach High School Chemistry Grant

The ACS-Hach High School Chemistry Grant is awarded to teachers interested in enhancing the teaching and learning of high school chemistry. Applicants can receive up to \$1,500 to support ideas

that improve classroom learning, foster student development, and reveal the wonders of chemistry. Applications are due on April 1, 2011. Apply for the ACS-Hach High School Chemistry Grant today at www.acs.org/hach

The ACS Network: A Key Tool for ACS Volunteer Leadership

The world is abuzz about social networking, and it's easy to see why. Social networking has become a key tool for global communication and collaboration. ACS recognized social networking's importance within the chemistry enterprise, and developed the ACS Network. Quickly becoming the go-to online destination for science, the ACS Network is ideal for supporting collaboration among Network members, especially participants in ACS volunteer leadership. This draft white paper explores the many ways in which governance is using, and might expand its use of, the Network. It highlights recent enhancements, and outlines opportunities to use the Network for remote collaboration among ACS committee members, Councilors, Local Section and Technical Division officers, and other volunteer leaders.

This white paper was prepared in response to a recommendation on "Committee Collaboration Services," which was contained within the 2010 ACS Technology Trends Roadmap report, presented to the ACS Board of Directors in August, 2010. It is intended to serve as a handy information source for how ACS governance volunteers can use the Network to further enhance and support their work. Use of the Network can and will enable the Society to achieve our strategic goals, which include bringing together the community of global scientists and, through the use of electronic documents and collaboration, making progress towards a more sustainable future. This white paper serves as a guidepost for a particular moment in time, and will be updated as governance use of the network grows and in accordance with the innovative nature of social networking environments.

We welcome your comments and suggestions with respect to the white paper which can be found at <https://communities.acs.org/message/6702#6702> Please comment email strategicplan@acs.org with your thoughts.

Thank you for all you do on behalf of the American Chemical Society, The Staff Working Group on Governance Use of the ACS Network

Join the People to People Green Chemistry and Chemical Engineering Delegation*

Travel to Brazil with Nancy B. Jackson, Ph.D., and Russell J. Boyd, Ph.D., in May 2011 as a member of the People to People Green Chemistry and Chemical Engineering Delegation. A unique collaboration between the American Chemical Society, the Chemical Institute of Canada, and People to People Citizen Ambassador Programs will allow chemistry and engineering professionals to experience a cross-cultural exchange that's both professionally and personally rewarding. Join colleagues from around the world who understand the need for greater depth of knowledge in green chemistry and engineering. RSVP by February 15, 2011 to join the delegation!

ACS Webinar Events for February 2011

American Chemical Society Webinars (ACS Webinars™) is a weekly online event connecting ACS members and scientific professionals with subject matter experts and global thought leaders in chemical sciences, management, and business on a variety of professional issues. Each webinar is 60 minutes in length, comprising of a short presentation followed by Q&A. The live webinars are held on Thursdays from 2-3pm ET.

February 24, 2011 at 2pm ET: Employment Trends in the Chemical Enterprise: Past, Present, and Future with Gareth Edwards, Brian Roberts and Michael Wolf

Description: How has employment in the chemical enterprise fared since the Great Recession began? Layoff, restructuring, and unemployment are now the headline news to watch. The national unemployment rate has been stuck around 10% since 2009. Will it stay and what to expect for the future? Hear from ACS and Bureau of Labor Statistics analysts as they describe recent trends in unemployment and provide projections about the future of employment. Our speakers will also provide answers to your questions when you join us live! Be sure to register today.

Registration: <http://acswebinars.org>

Cost: Free

The Fine Print

ACS Webinars™ does not endorse any products or services. The views expressed in this presentation are those of the presenter and do not necessarily reflect the views or policies of the American Chemical Society.

Do the Chemistry Cha Cha Slide for an IYC YouTube video

Join fellow chemists as they rap and dance for the International Year of Chemistry, just before the start of SciMix on Monday, March 28, from 7:30 – 8:00 pm at the Anaheim Convention Center, Hall B. Come as you are, or come in a chemistry-themed costume. The event will be videotaped and posted to YouTube to help generate enthusiasm for IYC. Interested? Just show up, or send an email to chemistryambassadors@acs.org for further updates. Prizes will be awarded to the best costumes.

Celebrate the International Year of Chemistry 2011

It's time for ACS Chemistry Ambassadors to celebrate the International Year of Chemistry 2011 (IYC 2011). Visit a classroom or scout troop meeting and do hands-on experiments with children. Have an IYC 2011 birthday party or conduct a demonstration at a local library. There are many ways to introduce the wonders of chemistry to children in your community. We encourage you to join the effort or learn more by visiting www.acs.org/iyc2011 and www.acs.org/chemistryambassadors. In addition to the many sample experiments on the Chemistry Ambassadors web page, we have a limited number of free Kids & Chemistry kits you can request if you wish to conduct hands-on activities with groups of up to 32 students. For more information about the kits and to place your order, click www.acs.org/chemistryambassadorsgiveaway.

Once you experience the rewards of helping students and teachers better appreciate science, consider doing it again. The Chemistry Ambassadors program makes it easy to stay involved during IYC 2011, whether you have a lot of time, or just a little.