The Origin and Chemistry of Beer

Dr. Roger Barth
West Chester University
Department of Chemistry
March 18, 2014
noon to 2:00 p.m.
DuPont, Chestnut Run Laboratories

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CHAIR’S COLUMN

Thank you to everyone who attended the meetings and events we have had this year. I enjoyed meeting all of you and appreciate the suggestions you provided.

Section Meeting

I am excited to share that our next section meeting will be a talk by Dr. Roger Barth from West Chester University on “Origin and Chemistry of Beer” in association with ChemVets. Please check the announcement section for more details. This should be a very interesting talk and is open to all public. So bring your non-chemist friends to the talk too.

Networking

There are several ways and tools to network with fellow chemists at a national level. The ACS Network is one such powerful social platform of the American Chemical Society to network and collaborate with chemists and colleagues in a safe and secure environment. There are several forums and blogs in the network arranged by audiences. Please visit https://communities.acs.org/welcome for more information.
March 2014 Delaware ACS Section and ChemVets Joint Meeting

The Origin and Chemistry of Beer

Speaker: Roger Barth

From its Neolithic origins, beer has been a constant companion to the human species in the halting march of civilization. It is a beverage of surprising complexity, requiring two rounds of transformation, even in its most primitive form. It is interesting to speculate on how the first brewers devised it.

We will discuss what beer is in the context of other alcoholic beverages, how it is made, the chemical distinctions among its styles, and the molecular basis of beer flavors and off-flavors.

Roger Barth was born in New York City. He was awarded a BA in Chemistry from La Salle College in Philadelphia and a Ph.D. in Physical Chemistry from The Johns Hopkins University. After working as an industrial chemist at UOP in Des Plaines, Illinois in the field of car catalysts, he took post-doctoral appointments with Bruce Gates in the chemical engineering department at University of Delaware and with Xenophon Verykios in the chemical engineering department at Drexel University. He has been a faculty member in the Department of Chemistry at West Chester University of Pennsylvania since 1985. He teaches General Chemistry, Physical Chemistry, Chemistry Seminar, and he created a new course on the Chemistry of Beer in 2009. Dr. Barth is working to raise awareness of beer as a suitable theme for engaging student interest in chemistry. His book, The Chemistry of Beer: The Science in the Suds, was published in November by John Wiley. He is an accomplished home brewer, making ale and lager styles by the full mash method.

Date: March 18, 2014
Time: 12 p.m. – 2 p.m.
Location: DuPont, Chestnut Run Laboratories
12:00 Lunch (Admin. Bldg.)
1:00 Lecture (Bldg. 713 auditorium)
Event Type: Open to the Public
Fee: None
Registration: Not Required
Announcements

Brown Bag Lecture: “Symbolic Elements and Generic Solutions: Humphry Davy’s Consolations in Travel”

Date: March 4, 2014
Time: 12-1 p.m.
Location: CHF
315 Chestnut Street
Philadelphia, PA 19106

Event Type: Open to the Public
Fee: Free
Registration: Not Required

A talk by Kurtis Hessel

Nineteenth-century English chemist Humphry Davy is best known for his electrochemical work at London’s Royal Institution, which included the discovery of numerous chemical elements, among them potassium, sodium, and chlorine. Davy’s experiments called into question then prevalent ideas about how the elements make up a given substance. Davy eventually inferred that perhaps chemical properties did not arise from single elements at all but from their peculiar combinations in more complex substances. By extension, despite the promise of unitary simplicity they offered, elements could only be conceived as inextricably bound to one another.

This lecture considers this chemical development in light of Davy’s posthumously published work Consolations in Travel (1830), noted for its composite genres, disjointed narrative, overt mysticism, and complex theoretical and ideological positions. Kurtis Hessel will explore the ways in which the text’s fragmentation—which has perplexed critics and scholars since its publication—should be understood as a response to the period’s growing divide between scientific and humanistic discourses. Much as elementary unity was composite, Davy’s mixing of genres seems to offer a literary solution to the problem of divisions forming in human knowledge.
Our March meeting is dedicated to Networking and provides a great opportunity to meet, and learn from each other about consulting and small business opportunities in the chemical, engineering and life science fields. We hope to see all members, those who haven’t been for a while as well as new ones. Attendance by anyone connected to the chemical or life science industries who are interested in growing "chemical knowledge based microbusinesses" of any kind, as well as those seeking employment in existing firms is encouraged. A Moderator will lead an after dinner discussion focussing on key points that the group identifies as most important at the outset. A summary of the meeting will be put on our website. Do plan to attend to learn and share and keep our Network dynamic and responsive to all members’ needs. Our strength depends on you and your involvement.

**Announcements**

**Chemical Consultants Network:**

**Networking Event – Meet Current & Future Consultants**

Our March meeting is dedicated to Networking and provides a great opportunity to meet, and learn from each other about consulting and small business opportunities in the chemical, engineering and life science fields. We hope to see all members, those who haven’t been for a while as well as new ones. Attendance by anyone connected to the chemical or life science industries who are interested in growing "chemical knowledge based microbusinesses" of any kind, as well as those seeking employment in existing firms is encouraged. A Moderator will lead an after dinner discussion focussing on key points that the group identifies as most important at the outset. A summary of the meeting will be put on our website. Do plan to attend to learn and share and keep our Network dynamic and responsive to all members’ needs. Our strength depends on you and your involvement.

**Date**: **March 12**

**Times:**
- 5:30 PM Networking
- 6:30 PM Dinner
- 7:30 - 9 PM Talk and Business Session

**Place:** The Cynwyd Club, 332 Trevor Lane, Bala Cynwyd, PA 19004
Reception and Dinner in the Meade Room

**Cost:**
- $30.00 attendee
- $35.00 late registration

**Free:**
- Talk only, no dinner

**Details:** http://www.chemconsultants.org/

**Joseph Priestley Society Welcomes Miles P. Drake**

The Joseph Priestley Society (JPS) lecture series explores topics in science, technology, and industry through professional networking receptions and lectures by industry leaders.

This month’s keynote address will be presented by Miles P. Drake, senior vice president, research and development, and chief technology officer, Weyerhaeuser Company. Drake will provide an insider’s look at the forest-products industry.

**Date:** March 13, 2014

**Time:** 11:30–2:00 p.m.

**Location:** CHF 315 Chestnut Street, Philadelphia, PA 19106

**Event Type:** Open to the Public

**Fee:** $25

**Registration:** Required


For more information about this event, please contact at 215.873.8289 or bbl@chemheritage.org
Announcements

Brown Bag Lecture: **Epistolary Chymistry, The Philosophical Golden Chicken, and Recipes for the Reform of Medicine**

*A talk by Joel Klein*

Between 1619 and 1637 the Wittenberg professor of medicine, Daniel Sennert (1572–1637), exchanged over 200 letters with fellow physician and chymist Michael Döring (d. 1644). These letters have hitherto received almost no attention, but they provide a unique glimpse into the world of 17th-century chymical medicine in the university as well as the forms of early scientific communication. This paper explores Sennert and Döring’s candid discussion of recipes for nearly universal chymical medicaments and the experiments they used to synthesize and test these.

In one such experiment that was especially important throughout Sennert’s career, he fed a living hen silver leaf for an entire month with the express purpose of filling its belly with eggs made from precious metals. When the trial failed, Sennert was disappointed, but he continued to search for metallic medicines that would augment the body’s radical moisture and influence it most deeply at an atomic level. Sennert’s recipes for similar medicaments were at the center of a proposed chymico-atomical reform of Galenist medicine and a parallel attack on the so-called secretists and empirics who refused to part with their recipes and sought to profit from selling their wares. Within this context Sennert and Döring expressed a particularly Lutheran notion of the public good that involved the open communication of chymical recipes and the abstention from profiteering.

Klein is a Ph.D. candidate in the Indiana University Department of History and Philosophy of Science as well as a research fellow at the Chemical Heritage Foundation in Philadelphia. He spent two years carrying out research in Germany via Fulbright and DAAD grants. His research focuses on the Wittenberg medical professor, Daniel Sennert (1572–1637), whose unique combination of chymistry, medicine, and atomism came to be influential throughout the 17th century. He has also worked on the Chymistry of Isaac Newton Project as an editorial assistant and has re-created several of Newton’s alchemical experiments. [joelaklein.com](http://joelaklein.com)

**Date:** March 25, 2014  
**Time:** 12:00–1:00 p.m.  
**Location:** CHF 315 Chestnut Street, Philadelphia, PA 19106  
**Event Type:** Open to the Public  
**Fee:** Free  
**Registration:** Not Required

For more information about this event, please contact at 215.873.8289 or bbl@chemheritage.org
Roy Vagelos is Retired Chairman and CEO of Merck & Co., Inc. He received an AB in 1950 from the University of Pennsylvania and an MD in 1954 from Columbia University. Following a residency at the Massachusetts General Hospital (1954-56), he joined the National Institutes of Health where from 1956-66 he served as Senior Surgeon and then Section Head of Comparative Biochemistry. In 1966 he became Chairman, Department of Biological Chemistry, Washington University School of Medicine in St. Louis and in 1973 founded the University's Division of Biology and Biomedical Sciences. He joined Merck Research Laboratories in 1975 as Sr. Vice President of Research. He then became President of Research until 1985, when he became CEO and later Chairman of the company. He retired in 1994.

The author of more than 100 scientific papers, Dr. Vagelos received the Enzyme Chemistry Award of the American Chemical Society in 1967. He is a member of the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences and the American Philosophical Society. He has received many awards in science and business as well as 14 honorary doctorates. In the past, he was Chairman of the Board of the University of Pennsylvania and served on the boards of TRW, McDonnell Douglas and Prudential Finance. He also served as Co-chairman of the New Jersey Performing Arts Center and President and CEO of the American School of Classical Studies in Athens.

He is currently Chairman of Regeneron Pharmaceuticals, Inc., a biotech company. He is also Chairman of the Board of Advisors at Columbia University Medical Center where he also chairs the Capital Campaign. He serves on a number of public policy and advisory boards, including the Donald Danforth Plant Science Center, the National Math & Science Initiative and The Nature Conservancy.

Date: April 23, 2014
Time: 5.30 p.m. - 8.30 p.m.
Location: DuPont Country Club
1001 Rockland Rd., Wilmington, DE 19803
Event Type: Registration Required
Fee: $35 (includes dinner)
Registration: visit http://www.delawareacs.org/
Minutes of the Executive Committee Meeting  
Delaware Section of the American Chemical Society  
Tuesday, January 28, Yi Palace.

Chair Rakesh Nambiar called the meeting to order at 5:50 P.M. Tiffany was congratulated for her efforts and presented with a Past Chair pin.

Secretary’s Report:  
Julie Brady reported that the election report did not reach National ACS due to an error in the address. Return receipts will be requested for future electronic communications. The Demographic report was sent to Tiffany and is available should anyone else request it. The Committee Chairperson listing was circulated for review. The time for requesting the election roster was discussed, it will be requested in early March. The By-laws amendment will be on the ballot.

Treasurer’s Report:  
Rakesh reported for Mary Jo Bock. The end of year report is near completion and she will submit it to National ACS. She has obtained electronic access to both WSFS and Vanguard accounts and is working on linking WSFS to Vanguard. Who should have access to the WSFS account was discussed.

Chair’s Report:  
Rakesh asked for comments on the amended budget. Allison Moore passed on a question from Jeff on whether investments are listed on another line besides the $10K shown from investments. He also asked her to remind the group that the long-term understanding was that 5% of the investment or the net profits were to be available to the Committee for use in the budget each year. The increased cost for travel to ACS meetings was discussed, and its dependence on location. That will have an impact this year as the meetings are not nearby. Travel and the printing of the DelChem Bulletin are the major expenses. Todd Brugel questioned the lack of spending on postage in 2013 as $1000 was budgeted. Allison pointed out it could be due to payments not following the calendar year. Rakesh will recheck with Mary Jo. $4000 of the investment money is intended for scholarships, the remainder can be used offset travel or meeting expenses. Allison made a motion to approve the budget, Todd seconded and the motion carried unanimously.

Rakesh reported on planned events. The Section Award winner, Charles Riordan will speak at a dessert event on February 26 at the Doubletree. Rakesh will take him to dinner before the event and invited other members of the Executive Committee to join them. Roger Barth of West Chester University will be the speaker at a joint meeting with ChemVets in March. It will be in the afternoon at Chestnut Run. The Carothers Award is in April. Allison has the trophy; she asked Rakesh to remind the Carothers Committee of its location and that the nameplate needs to be made. Justin needs to put $2000 for two trophies for the 2015 and 2016 awardees in next year’s budget. Rakesh questioned whether that allocation was in this year’s budget; the amount he was thinking of was for the monetary award, which is given in addition to the trophy. May’s event will be networking, in addition to recognizing the 50 and 60 year members with ChemVets. Todd mentioned looking into Webinars similar to last year’s Chemistry of Cooking. One event in the Fall will hopefully be joint with the Philadelphia Section. John Gavenonis mentioned that the ChemVets are another resource for speakers and have numerous connections throughout the Chemistry community.

Positions up for election were discussed. Chair-Elect, Secretary, and Director need to be filled. The Committee talked about where to look for potential candidates for Chair-Elect beyond DuPont. Andrea Martin will be asked if she’s interested in the Director position. Candidates need to be identified by March in order to get the biographical information. By-Laws will be posted on the website. Julie’s contact information will be supplied for those who want an email copy. Allison will take printed copies to the ChemVets steering committee for availability at the April ChemVets meeting.

The $4,000 for new awards will include minority, women, and high school awards. Rakesh and Justin will work on that. Mike Stemniski had discussed with Rakesh that some of the award amounts are low and others, such as the Tillmann-Skolnik award have no monetary component. Allison added that the Lillian Webster award is similarly deficient. Rakesh will

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work on where the money should be allotted. Outreach to the UD student chapter was discussed, along with involving Delaware State.

Justin suggested travel grants to ACS meetings as worthwhile awards. John suggested fundraising to endow awards so they didn’t depend on the discretion of the Executive Committee. Awards targeted to graduate vs. undergraduate students were discussed. John pointed out that student awards do not benefit the section long-term due to students’ transient nature. Rakesh solicited other ideas for awards from the Committee.

Rakesh went over the Committee leads. John is lead for Government Affairs, and Todd for Investment. Norm Henry is lead for Awards, and Martha has worked with him in the past. She may not be available due to other commitments. Justin and Julie volunteered to serve on the Awards Committee. Maggie will remain for NCW. Justin volunteered to lead Minority Affairs and Women Chemists. Rakesh will contact Andi about heading the Education Committee. Al Denio is listed for Environmental and Norm for Safety. Todd heads Chemists Celebrate Earth Day. Jason volunteered to Chair the Younger Chemists Committee. Tiffany will take care of electronic communications and Public Relations. Newsletter and Arrangements fall under the Chair position. Julie will check with Andi whether Leigh Thompson has been approached about chairing the Science Teachers Affiliate Group. Martha is Chair for MARM. John may be interested in hosting MARM during his year as Chair. Allison suggested that Rakesh send an email to the Chairs who did not attend to confirm their continued service and he will do so.

Chair-Elect’s Report:
Justin Chan reiterated a desire to involve non-DuPont members in Section planning and activities and asked for the Committee’s help. He attended the Leadership Institute the previous weekend and found it helpful, particularly in networking with other mid-Atlantic Sections. Concerns were raised about the lack of a MARM the last several years, Maryland may do something this year. There is a push to increase involvement by high school teachers at the National level and they are trying to involve sections. Tiffany mentioned Andi’s project as fitting this initiative.

Past-Chair’s Report:
Tiffany needs all reports by January 31st. She discussed what was in and outstanding. She thanked the Committee for their service. Allison asked about the material posted on the National Site; as a Director she does not automatically have access. Tiffany indicated Maggie is proof-reading the materials.

Reports of Committees and Related Groups:
Government Affairs: John Gavenonis reported on the Friday January 17 event. It was a joint meeting with the MIT Club of the Delaware Valley featuring Senator Chris Coons. Senator Coons spoke on Science Policy and what’s occurring in Washington. The event was part of a continuing series. It was well attended and John received many positive comments. John went over the finances for the event; the final cost was split with the MIT club and the Section. The final cost was $330 which is good value for the Section. Both National ACS and the MIT club are producing videos which will be posted on their websites. John will send pictures from Senator Coon’s press secretary for the March Bulletin.

Investments—Todd Brugel reported an end of year balance of $296,670, with a 6.3% gain this year. The investment is conservative, with a 50/50 split between stocks and bonds.

Chemists Celebrate Earth Day—Todd is contacting Hagley on the date for Naturefest. It is likely to be early in May. This year’s theme is Water Conservation. He is investigating involvement in Adopt a Stream through a local organization such as Ashland Nature Center and has some contact information that he will follow up on.

Todd has also looked into storage. Rakesh asked if it should be put into the budget. Location needs to be decided as that will determine cost. Todd has found a wide availability but costs vary. He estimated that the section’s needs could be met with a 5 x 5 storage area, and the maximum cost would be around $100/month. Todd will do further research for the next meeting.

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Old Business:
one

New Business:
one
Todd moved to adjourn, Tiffany seconded. The motion carried, and the meeting was adjourned at 7:07 P.M.

Officers and Councilors Present:
Rakesh Nambiar, Julie Brady, Todd Brugel, Justin Chan, John Gavenonis, Tiffany Hoerter, Allison Moore, Jason Rochette, Craig Westphal

Officers and Councilors Absent:
Mary Jo Bock, Norm Henry, Martha Hollomon, Jeff Moore, Nora Radu, Maggie Schooler

Others Present:
Respectfully submitted,
Julie E. Brady

Science on Tap

Date: March 10, 2014
Time: 6 p.m.
Location: National Mechanics, 22 S. Third Street, Philadelphia, PA 19106
Event Type: Open to the Public
Fee: Free
Registration: Not Required

Science on Tap is a monthly science café in Philadelphia for anyone interested in getting together with other people to discuss a range of engaging science topics. It is held the second Monday of (most) every month. Located at National Mechanics, a relaxed, convivial bar in Old City, Science on Tap features a brief, informal presentation by a scientist or other expert followed by lively conversation. The goal is to promote enthusiasm for science in a fun, spirited, and accessible way, while also meeting new people. Come join the conversation!

Announcements

Brown Bag Lecture: Romantic Experimentation: Radical Science and the Politics of Disability

A talk by Emily B. Stanback

Stanback will give a lecture based on her project “Romantic Experimentation: Radical Science and the Politics of Disability,” which explores radical science and self-experimentation in the Romantic era, and their relation to discourses on disability.

Date: March 11, 2014
Time: 12:00–1:00 p.m.
Location: CHF 315 Chestnut Street, Philadelphia, PA 19106
Event Type: Open to the Public
Fee: Free
Registration: Not Required

For more information about this event, please contact at 215.873.8289 or bbl@chemheritage.org
March Madness

Al Denio

My Increasing Entropy –

This is not good! On January 1 I lost part of a front tooth (it was getting old). I called Dr. Calhoon, my dentist, on January 2, afraid that he might be on a beach in Hawaii. Luckily he was in his office and gave me a noon appointment. He did a great repair job based on chemistry! He used a polymeric resin, which he “cured” with photons. The color match was perfect and my old tooth was as good as new.

On January 11 an adjacent front tooth partially disintegrated and my good dentist repaired it on the 13th. Chemistry again came.

Back in September, I returned from the ACS meeting in Indianapolis with a crown that came off a lower molar. I took it to Dr. Calhoon and asked him to cement it back in place. Unfortunately, when the crown came off the tooth, it took some of the tooth with it. The rest of the tooth must be extracted and replaced with a titanium plug. When that eventually heals, a crown can be placed on top. We are talking real money folks! At my age I could expire (maximum ΔS!) before the crown get mounted.

More Great Chemistry –

I have needed hearing aids for about 20 years due to the joy of aging. Thanks to modern electronics, hearing aids are small enough to fit in the ears. The power source is a tiny battery based on redox chemistry. These batteries are smaller than an aspirin and last about ten days for about a dollar each. The bottom line is that chemistry keeps me functioning (more or less).

Chemistry in West Virginia

In January we read about a 7,500-gallon chemical leak into the Elk River by Freedom Industries. This meant that 300,000 citizens living downstream were without drinking water. Even taking a shower was unsafe. The company reported that the leak on January 9 contained 4-methylcyclohexane methanol. Then on January 21, the company reported that the spill also contained a mixture of glycol ethers. Subsequently Freedom Industries filed for Chapter 11 bankruptcy.

Chemical spills in West Virginia are not uncommon since the state has few environmental regulations. They would rather encourage coal and chemical companies to create jobs. The few regulations that are on the books in the state are seldom enforced.

This unfortunate accident further degrades the image of chemistry that the ACS tries to portray in a positive light. National Chemistry Week is our attempt to point out the many wonders of chemistry. Several years ago the Delaware Academy of Chemical Sciences had a table that featured Stephanie Kwolek and “Kevlar.” She handed out swatches of fabric with her autograph.

Our efforts will continue. Every November during our National Chemistry Week celebration, “Magic Mike” Stemniski puts on his famous Chem Demo Show. He also performs at Hagley’s Invention Convention in January. Allison and Jeff Moore also do public outreach activities on behalf of Alpha Chi Sigma. And DACS does public outreach activities several times each year.

The Gold Problem –

“From Ore to Nuggets, With Peril” by Joe Cochrane appeared in the N.Y. Times on January 3. He explains how illegal gold mining is thriving in Indonesia.

People place gold ore into ball mills with water and mercury. A gold amalgam forms in the ball mill. Then the mercury is “burned off” with an open flame to yield gold nuggets. This mercury vapor is causing major health problems in the country.

Where is the mercury obtained? The Ministry of Trade in Indonesia reports that slightly less than one metric ton of mercury was legally imported in 2012. However, United Nations trade data reports that 368 metric tons of mercury were legally exported to Indonesia from several countries including the U.S., Japan, Singapore and Thailand. Most of this mercury is smuggled into the country and sold to illegal small-scale miners.

The Grasberg gold mine in Indonesia produced 60 metric tons of gold in 2012 “using modern technology.” However, it is estimated that the illegal gold production using mercury in 2012 was 65 to 100 metric tons.

The release of mercury into the air is a major problem, but mercury is also released into the soil, rivers, fishponds and rice fields in the small, illegal mining operations. The World Health Organization regards one part per million of mercury in hair as normal. In the U.S., the F.D.A. defines 2ppm as normal. One young woman engaged in this illegal gold processing operation gave a hair sample with 25.3ppm. Several males involved in this operation also had hair samples tested. The results varied up to 9ppm.

Outdoor air samples in one mining town ranged from 5,000 to 50,000 nanograms of mercury per cubic meter. The U.S. EPA recommends evacuating buildings if mercury levels are in the range from 1,000 to 10,000 ng/m3. The toxic effects of “mercury are well known and the long-term health impacts on these illegal gold workers will be serious indeed.

We are lucky in the U.S. to have O.S.H.A. regulations to protect the health and safety of our workers. Life in the “good old days” was not always safe for American workers. I feel lucky to have survived summer jobs in textile mills in the early 1950’s. Academic labs back then were also scary places compared to labs today. Having entered college in 1952, I have survived chemical exposures for over 60 years – it must be due to a healthy beer consumption.
On January 17, 2014, the Delaware Section of the American Chemical Society & MIT Club of the Delaware Valley invited Senator Chris Coons to speak about science policy and STEM education at a luncheon at the Brantwyn Estate. This is the third collaborative meeting of these two organizations in the past 6 years. In late 2008, at the dawn of the financial crisis, we welcomed U.S. Senator Thomas Carper to speak about economic policy. In 2010, U.S. Senator Ted Kaufman shared his thoughts with us about STEM education and innovation. All three of these programs follow the common thread of providing MIT alumni and ACS members an opportunity to hear from leading Washington policymakers.

Senator Coons was elected to the United States Senate from Delaware in 2010. He has emerged as a strong voice for job creation and the innovation economy, and for changing the way we think about sustainable energy production and usage to ensure greater energy security. Senator Coons has a passion for science. He received an undergraduate degree in chemistry - and political science - from Amherst College, and he worked for W.L. Gore, a materials-based science company in Delaware.

As a member of the Foreign Relations, Judiciary, Appropriations, and Budget committees, Senator Coons is uniquely positioned to nurture American innovation and to make the United States more competitive in the global market. He is committed to fulfilling the economic potential of American innovation and has introduced legislation that invests in STEM education and research. Senator Coons was an early, key supporter of the 2011 America Invents Act, commonly referred to as the patent reform law, and introduced a bill to make the R&D tax credit permanent. He currently is working on bipartisan legislation to reauthorize investments in basic science and technology through innovative programs such as ARPA-E and at the Department of Energy Office of Science. In addition, Senator Coons is working with Senator Marco Rubio on legislation that would give national labs more tools to partner with the private sector and to modernize DOE lab management. He has been a significant sponsor of the ACS Science & the Congress briefings on Capitol Hill. In 2012, Senator Coons received the ACS Award for Public Service.

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Directory of Services

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Call for Nominations for Section Officers and Councilors

The Delaware Section of the American Chemical society is looking for candidates for local section officers to run in the May 2014 elections. The terms would begin January 2015. If you or someone you know is interested in running for the following positions, please contact Rakesh Nambiar at 302-695-2760 or by email at rakeshgatech@gmail.com. The deadline for submission of materials is March 1, 2014. The positions that are open include:

- Chair Elect............................................................1 year term
- Director.................................................................3 year term
- Secretary...............................................................1 year term
- Treasurer...............................................................2 year term
- Councilor.............................................................3 year term
- Alternate Councilor..............................................3 year term

Job descriptions and duties can be found at: http://www.delawareacs.org/documents
Calendari of Events

March 2014
1 Deadline for submission for April Del-Chem Bulletin
2-6 Pittcon – Chicago, IL
4 Brown Bag Lecture: “Symbolic Elements and Generic Solutions: Humphry Davy’s Consolations in Travel”
10 Science on Tap – Chemical Heritage Foundation
11 Brown bag Lecture: Emily Stanback: “Romantic Experimentation: Radical Science and the Politics of Disability,”
12 Networking Event- Meet Current & Future Consultants- Chemical Consultants Network
13 Joseph Priestley Society Welcomes Miles Drake
16-20 247th National ACS Meeting - Dallas, TX – Chemistry and Materials for Energy
18 Delaware Section and ChemVets Joint Meeting
“The Origin and Chemistry of Beer” – Roger Barth

April
1 Deadline for submission for May Del-Chem Bulletin (Election Issue)
23 Carothers Award Banquet
“The Future of the Biopharmaceutical Industry” – Dr. Roy Vagelos
21-25 Materials Research Society (MRS) Symposium – San Francisco, CA