

THE VORTEX

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CALIFORNIA SECTION
MAY 2012



Sheila Kanodia, recipient of the 2012 Petersen Award

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Chair's Message

Jim Postma



You will find several articles in this month's Vortex reporting on various aspects of the national ACS meeting held in San Diego in March. I thought I would

add two comments from my experiences at the meeting.

I cannot remember exactly where I heard it, but the comment was, "The best thing about the ACS is its size." And then shortly after, "The worst thing about the ACS is its size." It's easy to relate to the first comment as you observe nearly 17,000 chemists bustling around the talks, exhibitions, and meetings at the Convention Center and nearby hotels. The range of topics is staggering and the array of possible involvement is overwhelming. The full span of the ACS's international reach is displayed and the services it offers, including employment, publications, education are readily available.

But the second comment is also appropriate to the setting. With this wide array of possibilities, it's hard to know which to spend time on. Most, if not all, look interesting but clearly one cannot digest it all. If you haven't had the experience, I encourage you to attend a national meeting.

But I also want to note that the local sections of the ACS are the structures that allow

chemists to participate without being overwhelmed by the responsibilities of national commitments. If you're interested in just a limited participation in a huge enterprise, I encourage you to volunteer for one of our weekend, local events and get to know a few of us, contribute just a bit to an international effort, and expand your network. Contact the Section Office or check out our website (www.calacs.org) for a few ideas.

Another interesting aspect of the meeting was the Council Meeting. This forum is usually packed with committee reports, policy discussions, and assorted elections. But President Shakashiri actually led a session where chemistry was discussed. That might not strike most of you as strange, but for those who have attended Council meetings in the past, it was quite unusual.

The theme of the discussion was climate change and the significant chemical issues that are fundamental to any discussion of the topic. Two things were clear from the session: the topic is not at all simple (even when you leave out the politics) and professional chemists have a lot of gaps in their knowledge of the chemical issues. It is a theme that the President and the ACS intends to highlight over the coming months (and years.) I encourage you to become more informed. The pages of CE&N and the ACS website (www.acs.org) provide a good start.



May Joint Meeting
SF Section of the Electrochemical Society and CALACS

Dr. Joel W. Ager Staff Scientist Joint Center for Artificial Photosynthesis and Materials
Sciences Division, LBL
"Artificial Photosynthesis:
Photovoltaics + Electrochemistry"

Date: Tuesday, May 22, 2012 **Social Hour: 6:00, Dinner: 7:00, Talk: 8:00**

Place: Potala Organic Café; 1045 San Pablo Ave, Albany, CA 94706; (510) 528-2375.

The Potala Café is a Tibetan vegan restaurant.

Cost: \$18 (Students \$9) Wine for Social Hour no charge.

RSVP: By 10pm Friday, May 18, 2012

ECS members: *Paypal (preferred):* go to <http://www.paypal.com> > Send Money > Send Money Online > To: ecs.sanfrancisco@yahoo.com and follow the instructions.

Contact: **Tim Chin**, cell: 617.455.2301; ecs.sanfrancisco@yahoo.com

ACS members: reservations at office@calacs.org or 510-351-9922. Pay at door.

Membership in ECS or ACS is not a requirement for attendance.

Directions: from I-80 or I-580; Take exit for Albany / Buchanan St., head east on Buchanan St, turn right on San Pablo Ave, turn left into parking lot, just before the next light (Monroe)

Biography

Joel W. Ager III is a Staff Scientist in the Materials Sciences Division of Lawrence Berkeley National Laboratory. He is Principal Investigator in the Electronic Materials Program and a Project Leader in the Joint Center for Artificial Photosynthesis (JCAP). He graduated from Harvard College in 1982 with an A.B in Chemistry and from the University of Colorado in 1986 with a PhD in Chemical Physics. After a post-doctoral fellowship at the University of Heidelberg, he joined Lawrence Berkeley National Laboratory in 1989. His research interests include materials development and fundamental electronic and transport characteristics of photovoltaic materials, development of new photoanodes and photocathodes based on abundant elements, and the development of new oxide and sulfide based transparent conductors. Recently, he has organized energy related symposia at the Materials Research Society and American Physical Society annual meetings and has served on program committees for the International Symposium on Compound Semiconductors and the Electronic Materials Conference. Dr. Ager has published over 230 papers in refereed journals.

Abstract

A practical method to use sunlight to generate liquid transportation fuels would be a carbon-neutral energy source which could dramatically change the landscape of global energy generation. The fundamental steps involved in developing such an "artificial photosynthesis" scheme will be discussed, along with the scientific barriers which have prevented development of a feasible system to date. At LBNL, an approach based on inorganic light absorbers coupled to oxidation and reduction catalysts is being developed in the Joint Center for Artificial Photosynthesis (JCAP). This presentation will focus on the interactions between the photovoltaic (PV) element which provides the electrical driving force and the electron/hole transfers with the redox couples which perform the synthetic chemistry.

The minimum voltage required to split water into H₂ and O₂ is 1.23 V (values for reducing CO₂ to methanol or to methane are similar). The JCAP PV approach uses separate photocathodes (H₂ or hydrocarbon producing) and photoanodes (O₂ producing) arranged in a tandem geometry. P-InP photocathodes

(Continued on page 9)

*California Section Councilors Report
American Chemical Society 243rd ACS Meeting San Diego
March 25-29 2012*

Councilors Attending

Bryan Balazs
Michael Cheng
Sheila Kanodia
Lee Latimer
Alex Madonik
Eileen Nottoli
Paul Vartanian
Elaine Yamaguchi (unable to attend)
Jim Postma (attending for Yamaguchi)

Committees*

ConC, SOCED
not on a committee
CCA
LSAC (chair), CPC
CEI
CEI
C&B
LSAC
not on a committee

* ConC = Committee on Committees of Council; SOCED = Society Committee on Education; CCA = Committee on Community Activities; LSAC = Committee on Local Section Activities; CPC = Council Policy Committee; CEI = Committee on Environmental Affairs; C&B = Committee on Constitution and Bylaws.
Council and Society Actions

By vote of the Council, Thomas J. Barton of Iowa State U. and Luis Echegoyen of the University of Texas – El Paso were chosen as candidates for the Fall election for President of the ACS over William A. Lester (UCB) and Barry Trost (Stanford).

Districts I and V will elect Directors to the Board this Fall. The Candidates for those will be: District I – Neal Jespersen (incumbent) and Tom Gilbert; District V – Peter Dorhout (incumbent) and John Adams.

Ballots will be mailed on October 10.

The Committee on Project SEED was voted to continue for another five years.

Despite the sluggish economy, the ACS generated strong operating results in 2011. Revenue was up 1.8% and the net was above the projected results. See details in C&EN shortly.

Dues for 2013 will be \$151 as a result of the formula and approval by Council.

Two petitions were overwhelmingly approved as amendments to the constitution and Bylaws of ACS. The Petition on Market Data Collection which allows some controlled experimentation with dues as incentives to membership was approved. Also, procedures for recorded votes of Council were clarified.

The Society hit a new high in membership of 164,215 at the end of 2011. There continues to be a roughly 15% attrition rate each year primarily by members in their first five years including undergraduate students who shift majors, etc.

Attendance at the meeting was 16,921 including 5742 students.

A revised Chemical Professionals Code of conduct was proposed by CEPA and approved by Council. It will be available shortly online.

The virtual Career Fair was again a big hit with a doubling of the companies participating compared to being at the meeting, and a significant increase in members seeking interviews through this mechanism.

Watch C&EN for additional items and discussion from the meeting, including details of committee actions.

Of particular additional note for members:

A new professional association for pre-college chemistry teachers is being initiated

(Continued on page 9)



Mysteries of Chinese Purple (Part 3)

Bill Motzer

As I indicated in Part 2 (March 2012 Vortex), Chinese Purple

[BaCu(Si₂O₆)] has never been found as a natural mineral. However, as described in the “The First Chemists” (December 2010 Vortex), Egyptian Blue occurs as the rare mineral cuprorivaite [CaCu(Si₄O₁₀)] and Chinese Blue [BaCu(Si₄O₁₀)] has been found as the rare mineral effenbergerite, discovered in 1993, in the Kalahari Manganese Field in northwest Cape Province, Republic of South Africa at the Wessel mine’s east central ore body. Although initially reported in 1994 in the *Mineralogical Magazine* (v. 58, pp. 663–670), it was only recently described in more detail in 2010 by K.S. Knight, et al. in the *European Journal of Mineralogy* (v. 22, pp. 411–423). Effenbergerite occurs as very minute bright blue crystals (~4 mm long), with an elemental composition of barium: 29.02%, copper: 13.43%, silicon: 23.74%, and oxygen: 33.81%. The mineral was named for Dr. Herta S. Effenberger, a mineralogist and crystallographer at the University of Vienna (see: <http://www.mindat.org/min-6911.html>).

For almost 1,000 years, Chinese Purple was used for adorning pottery, coins, burial vaults, and the terracotta army. Sometime after 200 CE (define CE), its usage on these items vanished in the archeological record. It is probable that Chinese Purple’s recipe was lost during the upheaval and chaos that occurred at the end of the Han dynasty. When rediscovered and analyzed in the 20th century, Chinese Purple was just a curiosity. However, by the late 1980s, chemists and physicists attempting to synthesize high-temperature superconductors accidentally found Chinese Purple as an experimental by-product. Researchers at the University of Cambridge in the UK had prepared barium and copper compound mixtures that, when heated in a silica container, formed magenta to purple residues, which were subsequently found to be Chinese Purple.

In 2004, an international research team at

New Mexico’s Los Alamos National Laboratory (LANL), that also included researchers from Stanford University, performed superconductor experiments by subjecting a Chinese Purple sample to a high-powered magnetic field while subsequently lowering the temperature toward absolute zero (–273.15 °C or 0 K). Magnetic waves emanating from the BaCu(Si₂O₆) formula unit entered a rarely observed quantum physical state known as a Bose-Einstein Condensate (BEC). Physicists have been intensely interested in BECs because they reveal how magnetic waves behave at quantum levels. For BaCu(Si₂O₆) formula units, the various magnetic waves forming between the copper atoms became “superimposed” on each other and began acting as a single larger wave. By lowering the temperature even further, the researchers noticed that magnetic waves emanating from the BaCu(Si₂O₆) formula unit actually lost a dimension. Magnetically, it began behaving like that of a water surface forming a single “gigantic” wave in not the usual three but in just two dimensions. Such behavior had not previously been observed. It was thought that this phenomenon was not possible so close to absolute zero, because the temperature point very near or at 0 K is known as the “quantum limit” – a limit when



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Plenary Highlights from the 243rd ACS National Meeting in San Diego

Recent ACS National Meetings reflect a deliberate shift towards more thematic programming, including multiple plenary sessions that cut across traditional disciplinary boundaries and attract large audiences. The March 2012 meeting in San Diego exemplified this trend. Banners displaying the theme, “Chemistry for Life” were visible everywhere in the Convention Center and throughout the nearby Gas Lamp district.

The Plenary Symposium on Sunday afternoon, organized by Thematic Program Chair Peter Senter, featured four distinguished speakers:

Roger Tsien, “Molecules to image biology and disease in living color”

Laura Kiessling, “Building the cell’s sugar coat”

Samuel Stupp, “Chemistry for regenerative medicine”

J. Craig Venter, “From Reading to Writing the Genetic Code,”

Roger Tsien of the Howard Hughes Medical Institute and 2008 Nobel laureate in chemistry described a powerful technology for labeling living cells that takes advantage of the highly fluorescent proteins that he cloned, binding them selectively to cell surfaces. Tumor cells are key targets, and the most dangerous ones break free from tumors using metalloproteases to cut through the surrounding tissues. Tsien has created synthetic peptides that will bind to cell surfaces after a metalloprotease cuts a key linker; when attached to fluorescent labels, they precisely illuminate tumors in living mice.

Laura Kiessling, Professor of Chemistry and Biochemistry at the University of Wisconsin, Madison, and recent MacArthur Foundation Fellow, spoke about unraveling the complex carbohydrate structures that cover cell surfaces. For example, the presence of sulfate groups (sulfation) is a key signal that marks the transition between pluripotent stem cells (which have the potential to develop into any type of specialized tissue) and differentiated cells that are programmed to become a specific tissue type. Other

cell-surface structures (integrins) are present in high levels on tumor cells, and properly designed ligands bind to them selectively, allowing antibodies to target and destroy the tumor cells.

Samuel Stupp, Professor of Materials Science, Chemistry, and Medicine at Northwestern University, described new polymeric materials that are compatible with living tissues. These polymers are built from components that are capable of self-ordering to form predictable, “supramolecular” structures.

Finally, J. Craig Venter, genomic sequencing pioneer, presented his current vision for assembling new living organisms, using, as genetic “components,” the 30 million different genes identified over the past 20 years – mostly from bacteria and other microorganisms. Potential applications range from rapid vaccine development to new, efficient biofuel production methods.

Monday morning kicked off with the Presidential Symposium, “Production of Fuel Directly from Sunlight: A Grand Challenge for Chemistry of the 21st Century,” organized by Harry Gray and Nathan Lewis of CalTech, and featuring:

Thomas Meyer, University of North Carolina, Chapel Hill
Michael Wasielewski,
Northwestern University
Jenny Yang, CalTech
Timothy Donohue,
University of Wisconsin, Madison

The first three speakers focused on synthetic coordination complexes that demonstrated the possibilities and challenges in using sunlight to split water and generate hydrogen or other fuels. In the final presentation, Timothy Donohue, Director of the “<http://www.glbc.org/>” Great Lakes Bioenergy Research Center, described progress towards efficient conversion of low-cost biomass to liquid fuels, with minimum consumption of other resources and no net use of fossil fuel.

Monday afternoon’s highlight was the Kavli Lecture, presented by UC Berkeley’s Carolyn Bertozzi to a standing-room only crowd of many thousands. The Kavli Foundation Innovations in Chemistry

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Walter B. Petersen Award

This award honors the memory of Walter B. Petersen by recognizing a person who has made significant contributions over a period of years to the well being of the California Section. Walter B. Petersen was noted for his many years of outstanding service to the Section. He held numerous section offices and was Chair of the California Section in 1969. He authored a popular column in the *VORTEX* entitled "Personals by Petersen" that covered news of promotions, awards and general information about Section members. Thus it is in his honor, with recollection of his high standards of service, that we recognize others who have given significantly to the advancement of the California Section. This award was established in 1982 and is supported by the California Section.

Nominees must be a member, a former member, or an affiliate of the Section. This year's recipient is Sheila Kanodia former Section Chair, Councilor, co-chair for several years of WCC, chair of Minority/diversity committee, Earth Day organizer since its inception, and organized a day symposium on green chemistry during 2000 Western Regional meeting in SF.



Robert M Stewart Jr (1927-2012)

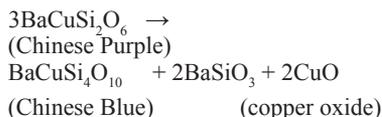
Bob Stewart of Oakland died suddenly on March 14th, just short of his 85th birthday. He was born in San Mateo, CA and received his Master's Degree in Chemical Engineering at Cal Tech, Pasadena in 1950. He was a 62 year member of the American Chemical Society.

Bob worked for 36 years as a Chemist in the San Francisco Bay area. He then got a secondary teaching credential from Mills College and taught Chemistry part time at Los Medanos Community College in Pittsburg, CA. He is survived by his wife, two brothers and two sons.

(Continued from page 6)

all thermal motion ceases and only quantum motion exists: that no net translational motion but internal vibration and rotation still occur.

These results initially surprised and then intrigued researchers: that dimensional loss could occur from a quantum effect solely from the unique physical arrangement of Chinese Purple atoms because these molecules interact in a manner allowing them to enter unusual quantum states. This discovery has potential applications in developing new superconductor materials for quantum computing. But researchers also found that Chinese Purple may not be a "real" purple. In its purest form, Chinese Purple is actually dark blue because as it breaks down or decays over time or when subjected to high temperatures (generally occurring from prolonged firing at temperatures >1,050 °C to 1,100 °C), and small amounts of red copper oxide form. The reaction that occurs is:



Thus, the blue and red combine to give variations of purple and when the pigment is finely ground, it becomes even more purplish.



(continued from page 4)

optimized by surface nanostructuring have current densities well over 30 mA cm⁻² under AM 1.5G illumination and H₂ production efficiencies under bias approaching 15%; these values are comparable to what is achieved in InP solar cells. Both thin film and nanostructured metal oxide photoanodes have shown good stability under water oxidation conditions but have lower current densities than the photocathodes. Initial results of spontaneous (no-bias) water splitting from series connected photocathodes and photoanodes will also be discussed.

JCAP is a DOE Energy Innovation Hub supported through the Office of Science of the U.S. DOE under Award Number DE-SC0004993.



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CALACS 2012
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Through the collaborate efforts of Sheila Kanodia, Jamie Anderson and Alex Madonik, the Section arrived at their own logo for Earth Day 2012. This design was printed on t-shirts and presented to volunteers helping to celebrate Earth Day with the community at the John Muir Home in Martinez.

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as a stand-alone organization supported within the ACS' Education Division and its staff, with governance oversight by ACS volunteers. Meetings through 2019 have been scheduled including Fall, 2014 and Spring, 2017 in San Francisco. Dates are at www.acs.org.

The Council held a lively 30 minute discussion/commentary of Climate Science and a proposed toolkit for members to use in discussions of the science. This does not attempt to bias the discussion but to encourage careful review of techniques and results of climate science, a key focus by President Bassam Shakishiri.

Again, the Board of Directors held its Open Meeting during lunch on Sunday, with a light lunch provided for whoever came (about 250 members). This is proving to be a very successful forum with a main topic that drew many comments as well as the report of Board business. The topic for this meeting was from a commission formed by President Shakishiri on graduate education in chemical sciences.

The Speakers Directory of the ACS continues to need additional interesting speakers with a geographic spread, especially from the West. Those personally interested or those who wish to nominate a speaker they find interesting are encouraged to contact speakers@acs.org for more information.

Audio and slides of many talks will again be available online from this meeting, a very successful program from recent meetings. These talks can be used for classrooms and other discussions by members. Attendees at the meeting will have access one month



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*California Section American Chemical Society
Annual May Awards Luncheon honoring the 50 and 60 Year
Members of the California Section, The Walter B. Petersen
Award Presentation, and The Lloyd Ryland Outstanding High
School Teacher Award*

Place: Solano Grill and Bar, 1133 Solano Ave. albany CA 94706

Time: Saturday May 19 12:00-2:30pm

Cost: \$25 (no charge for Honorees) There will be a no host social hour at noon followed by lunch and award ceremony

Please let us know if you are able to attend by Friday, May 11, 2012, by calling (510) 351-9922 or email office@calacs.org. Please indicated whether you will be bringing a guest and which entrée you would prefer (Breast of Chicken, Grilled Agra Farm Pacific Bass w/ Basil Black Bean Jalapeño Sauce or Vegetarian Dirty Rice).

*California Section - American Chemical Society
2012 San Francisco Bay Area Science Fair and Alameda County
Science and Engineering Fair
Special Awards*

The Section participated in both the San Francisco Bay Area Science Fair held on March 13to 15, and the Alameda County Science and Engineering Fair held March 20 to 22, by judging entries for special awards. The Section awards are a certificate, \$100, and a subscription to the ACS magazine CHEMMATTERS. One entry from each fair was selected for the Section awards. The awards are made for excellent entries that involve some principle of the chemical sciences. The awards were presented to the students at the San Francisco awards ceremony held by the Fair on March 15, and the Alameda awards ceremony held March 22. The two individuals selected for the Section awards also won first place awards in their respective fairs.

We congratulate all the Fair participants and especially the two students who received the Section's awards:

San Francisco Bay Area Science Fair (Golden Gate Park)

Student	School	Entry Title
---------	--------	-------------

Max Jenkins	Cunha Intermediate (Half Moon Bay) Teacher Ms. Hitchner	To Dab or not to Dab
-------------	--	----------------------

Alameda County Science and Engineering Fair (Chabot College)

Ryan Ball	Sunol Glen (Sunol)	Are Disposable Products Really Green?
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Teacher Ms Takei

*FEAST (Fun Exchanges and Activities for Science Teachers)
Presents: Chemistry Demonstrations from the American Chemical Society (ACS)*

Dr. Eileen Nottoli and Dr. Paul Vartanian were the stars at the March 31 FEAST session with their chemistry demonstrations for science teachers hosted by the Chabot Space & Science Center, and organized by Tanya Phillips, Tim Ostrom, and Tracy Ostrom. About two hours of exciting chemistry demonstrations were provided. <http://www.chabotspace.org/feast.htm>



“We need a Climate Science Toolkit.”

Prior to the March National Meeting in San Diego, ACS President Bassam Shakhshiri invited all councilors to review the Climate Science Toolkit web site that is under development by his Climate Science Working Group. President Shakhshiri attended the Saturday morning meeting of the Committee on Environmental Improvement to gather comments and suggestions, and then led an open discussion at the Council meeting on Wednesday morning. He opened the Council discussion by posing a series of basic questions about the greenhouse effect, and polled the councilors using the electronic system that allows votes to be counted in real-time. Each multiple-choice question elicited a range of responses, and each time President Shakhshiri observed, “We need a Climate Science Toolkit!” As Councilor Lee Latimer stated in his report, a lively discussion followed.

The fact that 500 experienced scientists are unclear about the most basic facts related to the Earth’s climate means that we are

ill-prepared to discuss the pressing issue of climate change among ourselves, let alone with the general public and or with our elected representatives. Yet, informed input is essential in making policy choices, and, as representatives of the “Central Science” and the world’s largest organization of professional scientists, we have a responsibility to provide clear and up-to-date scientific input. As I stated in my comments to the Council, most of us are not climate experts, and we need common points of reference. The ACS has access to authoritative scientific information, and it’s reasonable for our members to look to the ACS as an unbiased source. We need a shared language and shared images. When communicating with non-experts, images are the most powerful tools of all.

President Shakhshiri encouraged anyone with comments or suggestions to contact him directly, and I, too, would like to hear from our members about how we can promote Sustainability through Section programming and through our community outreach efforts.

Alex Madonik, Councilor and National Chemistry Week Coordinator

Lloyd Ryland Outstanding High School Teacher Award

The award is named after Mr. Lloyd Ryland, a member of the California section of the American Chemical Society for 65 years and a strong believer in chemistry education. He was born in San Francisco in 1912 and lived his entire life in the Bay Area. Mr. Ryland received his bachelors degree from U.C. Berkeley and was employed by Chevron Development Company for 65 years as a chemist. During World War II he joined the U.S. Coast Guard Auxiliary and after the war became a member and officer of three Yacht Clubs. Mr. Ryland made a generous contribution to the Section and we are pleased to honor him by naming this award after him.

The award includes a \$500 cash award to the chemistry program of the recipient’s school, a \$500 cash award to the teacher, and a subscription to the ACS’ ChemMatters magazine. We hope to expand granting subscriptions to ChemMatters and additional grants to other high school teachers. This year the award will be presented to Heather Pereira of Amador Valley High School at the Section’s May 19 Awards Luncheon.

(continued from page 7)

Lecture series was initiated in 2011 and will invite important scientists to speak at each of the ACS national meetings through 2013. Bertozzi, Professor of Chemistry and Professor of Molecular and Cell Biology, returned to UC Berkeley in 1996 as Assistant Professor, after post-doctoral work at UC San Francisco. That same year she spoke to a meeting of the Cal ACS Women Chemists Committee, telling a rapt audience (including this author) that her team of undergraduates and first year graduates students (mostly women) had developed a new technique for labeling the sugars that are attached to the proteins on the walls of living cells. Her theme, then and now, is “Bioorthogonal Chemistry,” that is, organic chemistry that can be carried out in water at 37C without disrupting normal biological processes. The key is to introduce a functional group that is inert under these conditions, yet reacts readily with the right chemical probe. Among the classic functional groups known to organic chemists, azide has proven unique in combining the stability and reactivity required, especially in its cycloaddition to strained alkynes (“click” chemistry). Azide-modified sugars are incorporated efficiently into cellular glycosides, and cells bearing these modified sugars can be labeled in seconds using fluorescent alkynes.

No ACS National Meeting is complete without SciMix, the vast scientific smorgasbord on Monday evening that brings together young researchers (including many undergraduates) from across the country and the world. The only way to improve this event would be to double the allotted time from two hours to four.

Alex Madonik, Councilor and National Chemistry Week Coordinator



The Kavli Foundation

The Kavli Foundation was established in December 2000 by its founder and benefactor, Fred Kavli, a prominent California business leader and noted philanthropist. The Foundation is actively involved in establishing major research institutes at leading universities and institutions in the United States, Europe and Asia. It also supports scientific conferences and symposia, science journalism, endowed chair professorships and other activities that support and inspire advances in basic science and enhance the public's appreciation of scientists and their work.

In addition, the Foundation supports the Kavli Prizes, which recognize scientists for their seminal advances in astrophysics, nanoscience and neuroscience. The Prizes, which were first presented in 2008, are awarded every two years in Oslo, Norway.



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May Historical Events In Chemistry *by Leopold May*

May 1, 1493 Paracelsus or Theophrastus Bombast von Hohenheim, who founded a new school of chemistry, iatrochemistry, which is the application of chemistry to medicine; was born on this date. He believed that the four elements (air, water, earth, & fire) were present in substances as three principles, mercury (volatility and fusibility), sulfur (inflammability), and salt (incombustibility), and he developed a cure for St. Vitus Disease.

May 2, 1912 One hundred years ago on this date, BF Goodrich Co was incorporated.

May 3, 1892 George Paget Thomson was born this date. Seventy five years ago in 1937 he shared the Nobel Prize in Physics with Clinton Joseph Davisson for their experimental discovery of the diffraction of electrons by crystals.

May 6, 1871 One hundred ago, F. Victor Grignard who developed the magnesium reagent used in organic chemistry was born on this date and shared the 1912 Nobel Prize in Chemistry with Paul Sabatier

May 7, 1939 Sidney Altman, who proved that ribonucleic acid (RNA) can act as a catalyst in the cell, was born on this date.. He shared the Nobel Prize in 1989 with Thomas R. Cech for their discovery of catalytic properties of RNA.

May 8, 1873 Nevil V. Sidgwick, who was born on this date, was a researcher on molecular structure and theory of valency. He did research in bonding in coordination compounds and investigated phase equilibria and the solubility of organic acids and bases.

May 11, 1904 Donald F. Othmer was a chemical engineer who developed the Othmer still and was born on this date. He was co-founder & editor of the Kirk-Othmer Encyclopedia Encyclopedia of Chemical Technology.

May 16, 1950 Twenty-five years ago, J. Georg Bednorz shared the Nobel Prize in Physics with K. Alexander Müller for their important breakthrough in the discovery of superconductivity in ceramic materials. He was born on this date.

May 18, 1778 Andrew Ure, first to use chemical solutions in terms of chemical equivalents, i.e., normality, was born on this date.

May 19, 1914 Fifty years ago, Max F. Perutz shared the Nobel Prize in Chemistry in 1962 with John C. Kendrew for studies of the structure of globular proteins. He studied structure of hemoproteins using x-ray diffraction and was born on this date.

May 20, 1890 Francis O. Rice, a researcher in free radicals, was born on this date. He served as Head of the Chemistry Department at The Catholic University of America from 1938 to 1959.

May 22, 1912 One hundred ago, Herbert C. Brown was born on this date. He was a researcher in organoboron and carbocation chemistry and shared the Nobel Prize in Chemistry in 1979 with Georg Wittig for their development of the use of boron and phosphorus-containing compounds, respectively, into important reagents in organic synthesis.

May 28, 1887 One hundred and twenty-five years ago, Kasmir Fajans was born on this date. He established the radioactive displacement law and initiated the concept of heat of hydration of gaseous ions.

May 29, 1794 Antoine A. B. Bussy, who isolated magnesium in 1828, was born on this day.

May 30, 1912 One hundred years ago, Julius Axelrod was born on this date. He was a researcher on catecholamines. He shared the Nobel Prize in Medicine or Physiology in 1970 with B. Katz and U. Von Euler for discoveries concerning humoral transmitters in the nerve terminals and the mechanism for their storage, release and inactivation.

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