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SCALACS

May/June 2014

A Joint Publication of the Southern California and
San Gorgonio Sections of the American Chemical Society

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Southern California Section

Chair's Message

It was another busy month for us. We celebrated Earth Day at several locations. We had the Expanding Your Horizons Conference, Chemistry Bowl Competition, and L.A. County Science Fair. There was a brewery and tasting tour hosted by the Younger Chemists and Women Chemists groups. Again, I sincerely thank all the volunteers who made these events happen!

We have two upcoming events that really need volunteer help. **The Intel Science Fair is on May 13-16th** and we need judges. Contact Brian Brady at brian.b.brady@aero-dot-org to volunteer.

The other event is the **Boy Scout Expo on May 31, 2014** at the Rose Bowl Stadium Concourse. The event runs from 8:30 am to 4:00 pm, and they're looking for volunteers throughout the day for a minimum of two hour shifts. Please contact Derek Marin at Derek.Marin@DunnEdwards.com or Jerry Delker at delker@earthlink.net before May 28th.

The month of May is the time to celebrate academic achievements. With this, we are pleased to announce **Dr. Debbie Bennett** as the 2014 recipient of the Paul Shin Memorial Award for High School Chemistry Teaching. Please join us on **May 16, 2014 for the High School Awards Banquet** to celebrate Dr. Bennett's achievement. We will also honor the top Chemistry Olympiad students and celebrate their achievements as well.

In June, the Environmental Improvement Committee will host a dinner event and we will have Bob Eganhouse of the U.S. Geological Survey give a presentation about his research.

I would like to take this opportunity to acknowledge a significant donation from one of our members, Curtis Thomsen. His donation will be used in support of Women Chemists programs. We deeply appreciate his generosity.

This community is for you and we would like to hear from you. If you have ideas for activities that you would like to participate in, please let us know. We are also looking for volunteers to help us with event planning. If you are interested, please let us know.

Summer is approaching. I hope that you will have some time off to enjoy it with your friends and families. Also, don't forget to follow us on Facebook, LinkedIn Twitter (SCALACS@scalacs1)!

Best,
- Yumei Lin, Chair

Southern California Section

Educational Awards Banquet Commemorating the 100th Anniversary of the High School Contest in Southern California!

Friday, May 16, 2014

Mount St. Mary's College, Doheny Campus

Donahue Center
10 Chester Place
Los Angeles, CA 90007

Awards will be presented to the top-placing students in the local High School Chemistry Olympiad, to their teachers, to local ACS scholars and to

Dr. Debbie Bennett, Recipient of The 2014 Paul Shin Memorial High School Teacher of the Year Award

6:00 p.m. Check-in
6:30 p.m. Dinner
7:30 p.m. Presentation of Awards

This year, we had more than 1,400 students representing over 40 high schools throughout Los Angeles County take the Local ACS Exam in March. Harvard-Westlake High School finished first overall while North Hollywood High School edged out Arcadia High School by one point to finish first for first year students. The winners of the local exam were invited to participate in the National Exam on April 26th at Cal. State Dominguez Hills for a chance to be part of the International Olympiad in July in Hanoi, Vietnam. These students, as well as the top performers and teachers from each school of 10 or more participants, will be honored at our annual Educational Awards Banquet, along with the Paul Shin Memorial High School Teacher of the Year, Debbie Bennett (see page 4 for her biography).

Reservations: We have an Enchilada Buffet featuring chicken and cheese enchiladas with all the fixings. The cost of the dinner is $20 per person or $15 for students, cash or check at the door. Please call Nancy Paradiso in the Section Office at 310 327-1216 or email office@scalacs.org by **Monday, May 12, 2014** for reservations.

Directions: The meeting will take place on the Doheny Campus in the Donahue Center in McIntyre Hall. For directions, please go to http://www.msmc.la.edu/about-msmc/our-campuses/driving-instructions.asp.

Dr. Deborah Bennett
2014 Paul Shin Memorial High School Teacher of the Year Recipient

I have asked my friend and colleague Larry Walker to write the story of this year's winner of the Paul Shin Memorial Award Debbie Bennett. While I have known Debbie for almost ten years, Larry has worked with her much more closely and knows her better than I do. I know Debbie is most deserving of this and has informed me about how much it meant to her when she was notified that she had been selected. She worked with Paul Shin in the Northridge Chemistry Teachers Group. I remember seeing her at Paul's funeral and realizing how much his passing had impacted her and I am quite sure he is looking down quite proudly on her.

- Michael A. Morgan, Chair
Educational Affairs Committee

Dr. Deborah "Debbie" Bennett was born in Brooklyn, NY, but has been an "Angeleno" since the age of 2. At Westlake (now Harvard-Westlake) High School, her Chemistry Teacher, Craig Deutsche, had a huge influence on her life. He blew things up, shrunk rulers so measurements wouldn't work and generally made the class fun. These traits she now passes on to her own students.

She went on to major in Chemistry at Duke and received a Ph.D. in Analytical Chem at LSU. For 12 years she then formulated cosmetics before entering the cauldron of teaching at Canoga Park high School. In her first year there, Debbie had no Prep Period and taught 3 different courses. She is filled with gratitude for the lessons, equipment and moral support given her by Barbara Sitzman and Judy Baumwirt in that traumatic year.

After 12 more years she moved on to join Larry Walker at Calabasas H.S. where she now leads the science department and is known as an innovator and a real leader in the district.

Debbie met Paul Shin at Judy Baumwirt's teacher support sessions, and was struck by his passion for teaching and clarity of ideas on conveying Chemistry to students.

Dr. Bennett met her husband Gene when both were members of the same research team at Duke. In their 32 year marriage they have had two daughters. She apologizes that both are lawyers, but they tried. As infants their nursery was decorated with Periodic Charts!

- Larry Walker, Education Committee

Southern California Section

Environmental Dinner Meeting

Tuesday, June 3, 2014

C&O Cucina

3016 Washington Boulevard
Marina del Rey, CA 90292
(310) 301-7278

"Fate of DDT in Sediments on the Palos Verdes Shelf"

Bob Eganhouse

U. S. Geological Survey

6:00 p.m. Check-in
7:00 p.m. Dinner
8:00 p.m. Presentation

Abstract: Sediments on the Palos Verdes Shelf (PVS), CA are contaminated with DDT as a result of the historical (1947-1971) discharge of DDT-bearing wastes through a submarine wastewater outfall system. Pursuant to a decade-long environmental lawsuit in the 1990s, part of the PVS was designated a Superfund site and is now being remediated by the USEPA. Microbially-mediated reductive dechlorination occurs within the sediments, resulting in conversion of the major DDT compound, DDE, to DDMU and DDMU to DDNU. Spatial variations in dechlorination rates have been observed in both field and laboratory, but the factors controlling the rates remain obscure. As part of natural recovery studies currently underway at the site, concentrations of ten DDT compounds were measured in the pore water and solid phase of contaminated shelf sediments of PVS sediments. Although concentrations and compositions of the DDT compounds exhibit strong variations vertically within the sediment column and across the shelf, apparent solid-water distribution coefficients (K_D) are remarkably uniform. Comparison of DDE inventories in cores collected from 1981 to 2010 indicates that reductive dechlorination in PVS sediments can be modeled by first-order kinetics. This may provides a means of predicting when the Remedial Action Objectives identified by EPA as part of the interim remedy will be met.

Biography: **Robert P. Eganhouse** is a research chemist in the National Research Program of the U.S. Geological Survey in Reston, Virginia. Previously, he was head of chemistry at the Southern California Coastal Water Research Project in Long Beach, CA (1987-1991) and, prior to that, assistant
(Continued on Page 6)

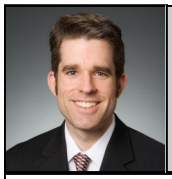
Dinner Meeting (Biography Continued from Page 5)

professor in the Environmental Sciences Program at the University of Massachusetts, Boston (1983-1987). He received a B.S. in Chemistry from Iowa State University (1970), an M.S. in Chemical Oceanography from Florida State University (1974), and a Ph.D. in Geochemistry from UCLA (1982).

His research entails the application of organic geochemical techniques to a broad range of environmental problems. A principal interest has been the identification and development of molecular markers of municipal waste and their use in aquatic ecosystems. In addition to providing a means of tracking wastes into the environment, molecular markers can, under certain conditions, facilitate quantitative source apportionment of contaminants of concern. Much of his career has been devoted to increasing understanding of processes affecting the transport and fate of organic contaminants in coastal marine sediments and shallow aquifers. This has involved both laboratory and field-based studies including the determination of physico-chemical properties of hydrophobic organic contaminants (DDTs, PAHs, long-chain alkylbenzenes, PCBs), transport and degradation of volatile organic compounds in ground water, and the use of *in situ* techniques for determining contaminant degradation rates. Recent research has focused on the development of methods for characterizing and quantifying constituents in complex mixtures of natural and man-made organic chemicals using comprehensive two-dimensional gas chromatography/time-of-flight mass spectrometry (GCxGC/ ToFMS). Examples of such mixtures include technical nonylphenol, synthetic detergent alkylates, and semi-volatile organic contaminants present in Hurricane Katrina flood sediments. Currently, he is involved in a multidisciplinary investigation of the natural attenuation of *p,p*'-DDE in sediments of the Palos Verdes Shelf, CA, a Superfund site. He has served as an Associate Editor for *Applied Geochemistry* (1996-2007) and is a Designated Country Expert for the United States on Persistent Organic Pollutants, Arctic Monitoring and Assessment Program (AMAP; since 2006).

Cost: There is a family style Italian dinner with farfalle (bowtie) pasta with a seasonal vegetable tomato sauce and chicken breast. Salad, killer garlic rolls and wine are included. The cost is $28 including tax and tip payable at the door with cash or check. Please RSVP to Nancy Paradiso at office@scalacs.org or 310 327-1216 by Thursday, May 29th. ***Please honor your reservation. If you make a reservation and do not attend, you will be liable for the cost of the dinner.***

Directions: C&O Cucina is located in Marina del Rey at Washington and Thatcher, one block west of Lincoln Blvd. For google maps and directions, go to their website at: http://www.cocucina.com/. There is free street parking or valet parking for $4.75.



Insights Into IP Law

Keith Orso*, Irell & Manella LLP
KOrso@irell.com

What does possessing rights to a patent look like? A person can have rights to a patent without "owning" it, but ownership is a good place to start the discussion.

As a general matter, ownership of a patent vests by default in the inventor or inventors who filed the patent application. But inventors can have obligations to assign their patents to others. A common example of one such obligation arises in work relationships. Employment agreements often contain clauses whereby employees give up their rights to all inventions developed during the employment that relate to the employer's business or are created using the employer's resources. The employment agreement might contain a present assignment of future inventions, or an agreement to assign in the future any inventions that are made.

If an employment agreement contains a present assignment of future inventions, then any subsequent patent that is directed to a future invention is automatically owned by the employer without any further action by the employer or the employee (although the employer will want to record the assignment once the patent issues). On the other hand, if the employment agreement simply contains an agreement to assign future inventions, then the patent does not pass into the hands of the employer until the employee subsequently assigns it.

Until recently, the general rule in the United States was that inventors must be the applicants for patents. Under the America Invents Act of 2011, patent applications may now be filed by a person to whom the inventor has assigned, or is under an obligation to assign the invention, or who otherwise shows sufficient proprietary interest in the matter. Accordingly, employers may now file patent applications for inventions developed by employees who have assigned, or have agreed to assign such inventions to the employer. The patents that result from such applications may be issued directly to the employer.

Even in the absence of an employment agreement, employers may have rights in patents developed by employees. But that will be discussed in future columns. As always, please email me at korso@irell.com with any questions or issues that you would like to see addressed here.

* The author earned engineering and chemical engineering under-graduate and graduate degrees, and is a patent attorney and partner at the law firm of Irell & Manella LLP. This column does not constitute legal advice and does not necessarily reflect the views of the firm or its clients.

This Month in Chemical History

Harold Goldwhite,
California State University, Los Angeles
hgoldwh@calstatela.edu

His obituary in the Journal of the American Chemical Society (May 26, 1954) begins "Who was Wilder Dwight Bancroft?" By 1954 this significant American physical chemist was a virtually forgotten man. I had forgotten about him until I recently re-read John W. Servos' excellent "Physical Chemistry from Ostwald to Pauling: The Making of a Science in America" (Princeton University Press, 1990). In this volume Servos gives a full account of Bancroft's career and its significance. I have drawn upon this account and also Servos' extended biographical memoir for the National Academy of Sciences (1994) which is available on-line.

Bancroft came from a distinguished family; his grandfather was a diplomat, a cabinet member, and a historian. Wilder was born in 1867 in New England, attended private schools, and entered Harvard where football competed with academics for his interest. However his interest in science led him to take electives in that area and he graduated with a degree in chemistry and stayed on for a year as a laboratory assistant. He took courses from Josiah Parsons Cooke, who specialized in chemical physics, a relatively new field. (One of Cooke's students, who received his Ph.D. at the same time as Bancroft earned his bachelor's degree, was Theodore William Richards, the first U.S. chemist to be awarded the Nobel Prize in chemistry). Bancroft became interested in Cooke's area of interest and after two years working in organic chemistry he decided to join Ostwald's institute in Leipzig in 1890. After two years he presented his thesis on electrochemistry and then undertook a grand tour of European laboratories meeting Helmholtz and van't Hoff. Returning to Harvard he had hopes of a high level appointment, but it went to Richards. Consequently Bancroft accepted a position at Cornell in 1894. By 1903 he was a Full Professor, a rapid rise for those times.

Cornell was a developing research university in the 1890s. Bancroft, a lecturer who modeled the gentleman scholar, saw physical chemistry as a central science, but was not much attracted to its more mathematical aspects. He focused his interest on two qualitative guidelines to the behavior of systems: the Phase Rule of Gibbs; and Le Chatelier's principle. His researches investigated ternary solutions, and metals among others. He published one of the first books on the Phase Rule in 1897 and a year earlier he founded a new periodical, the Journal of Physical Chemistry, which appeared monthly from Ithaca, New York, and highlighted contributions in Bancroft's own field.

Bancroft's work, reported mainly in "his" journal, was not always well received. A.A.Noyes, a leading physical chemist, said of Bancroft's work on ternary systems (e.g. two immiscible liquids and a solute which distributes between (*Continued on Page 9)*

This Month in Chemical History

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them) which Bancroft analyzed using equations with four empirical constants "no physical significance whatever can be attached to such results"! Four empirical constants is enough to describe virtually any curve. Nevertheless Bancroft kept insisting that qualitative physical chemistry was an important segment of science.

To detail Bancroft's career would take much more than my space allocation. To quote Servos' summary:

"Bancroft brought to America a firsthand knowledge of the "Ionists"' teachings about electrolytic dissociation, osmotic pressure, and electromotive force at a time when those teachings were still new and controversial…. he helped educate scores of chemists and took a leading role in founding the Journal of Physical Chemistry, the first English-language journal in its field. As its owner and editor from 1896 to 1933, Bancroft brought a sharp wit and shrewd judgment to bear on the work of his colleagues through hundreds of reviews and review articles. Although he earned enemies through his editorializing, even the victims of his criticism often found it impossible to resist his personal charm. He served two terms as president of the Electrochemical Society and, in 1910, he was elected president of the American Chemical Society."

Later in his career he made some largely ineffectual explorations of the chemistry of anesthesia. However his work on colloids, including a well-received textbook, was significant, though he rejected the idea of macromolecules put forward by Staudinger and preferred to view colloids as aggregates of smaller particles.

Bancroft's career and life ended somewhat sadly. He had to cede control of his Journal to the ACS because of financial problems. He had a bad accident that led to physical handicaps, and his wife of 49 years, mother of five children, preceded him in death. When he died in 1953 this important pioneering American physical chemist was, indeed, an almost forgotten man.

San Gorgonio Section

Chair's Message

The San Gorgonio Section would like to congratulate all of our students who participated in the local round of the 2014 U.S. National Chemistry Olympiad Competition in March. High school students who live or attend high school in a local section are eligible to compete in the event. This year one hundred fifty-four students from sixteen high schools took the local exam at three testing centers. The results were used to select five scholarship winners:

Kodiak Ravicz	Palm Desert High School
Kevin Bao	Troy High School
Sujin Heo	Diamond Ranch High School
Jason Lin	Diamond Bar High School
Timothy Tran	Troy High School

Seven additional students were selected to join the five above as competitors or alternates for the National round of competition in April.

Sang Park	The Webb Schools
Jacob Horne	Etiwanda High School
Olivia Fang	Walnut High School
Brian Fong	Centennial High School
Victor Mulvihill	Great Oak High School
Alan Yu	The Webb Schools
Kimberly Goodwin	Don Lugo High School

From the results of the National Exam, twenty students will be invited to a study camp in June to compete for one of the four spots on the National team that will advance to the 46th International Chemistry Olympiad in Hanoi, Vietnam, July 20 – 29, 2014.

Congratulations to these dedicated students and their teachers for this great accomplishment. These students, the outstanding performer from each high school along with their teachers, will be honored at the annual Awards Banquet in May.

This event doesn't happen without a lot of support. Local dues provide the means to offer scholarships each year. Thanks to all San Gorgonio section members who pay the $10 local dues each year. Many thanks to Dennis Pederson, David Srulevitch, Laurie Starkey, Ernie Simpson and Joelle Opotowsky for the time and effort they supply each year to make this event successful. And special thanks to the teachers, who instruct, motivate, register and encourage their students to participate each year!

- Eileen DiMauro

San Gorgonio Section

Student Scholarship and Awards Recognition Banquet

Tuesday, May 20, 2014

California State University San Bernardino
5500 University Parkway, San Bernardino, CA
Chuck Obershaw Dining Room, University Commons
Building labeled CO on the campus map.
http://www.csusb.edu/documents/CSUSBcampusmap-color.pdf

"Investigating functional organic single crystals at the CSUSB Center for Advanced Functional Materials"
Dr. Kimberley Cousins; Dr. Douglas Smith; Dr. Timothy Usher

Social and Check-in: 5:45 PM
Dinner: 6:30 PM
Featured Speakers: 7:15 PM
Awards/Recognition Program Following

In March, high school students in the San Gorgonio Section region took an exam to qualify for the National Chemistry Olympiad. Our section also uses this exam to choose the recipients of section-sponsored college scholarships. Please join us in honoring these truly remarkable students and their teachers at this meeting.

Attention Chemistry Professors: Please bring any extra science or chemistry textbooks that you may have to this meeting so that we may donate them to the students and high school libraries. Thank you!

Abstract: Advanced functional materials such as piezoelectrics and ferroelectrics are used to build devices that advance technology. Piezoelectric materials change shape when a voltage is applied; conversely, they produce a voltage when compressed. Piezoelectrics can be used, for example, in medical devices, for energy harvesting technologies and in building robots. Ferroelectric materials have a permanent dipole that can be reversed by application of an electric field; these materials can be used in specialized electronic components including solid-state computer memory. Our team is investigating recently discovered ferroelectric organic materials, specifically single crystals. This team effort involves computation to model the materials in order to explain reactivity and predict new functional candidates; synthesizing target compounds and preparing single crystals; and investigating materials properties. Initial studies on diisopropylammonium salts and related compounds will be described.
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San Gorgonio Section

May Meeting (Continued from Page 11)

Biographies: Kimberley Cousins, Professor of Chemistry, has been at CSUSB since 1991, teaching primarily organic chemistry courses. She has mentored about 100 undergraduate research students. In addition to theoretical investigations of functional materials, she is interested in green synthetic methods for promoting organic reactions, and in how students learn organic chemistry. Dr. Cousins received her Bachelor's degree from Duke University and her Ph.D. from the University of Texas, Austin.

Douglas Smith, Professor of Chemistry, has been teaching courses mainly in organic chemistry and medicinal chemistry at CSUSB since 1995. His research interests lie in the areas of asymmetric synthesis, heterocyclic chemistry, medicinal chemistry, and his research group synthesizes and crystallizes single crystal ferroelectric and piezoelectric candidates. Dr. Smith received his Bachelor's degree from Wittenburg University and his Ph.D. from Purdue University.

Timothy Usher, Professor of Physics, teaches courses across the physics curriculum. He has a longstanding interest in functional materials, including the ferroelectric and piezoelectric KH_2PO_4 (potassium dihydrogen phosphate). He serves as PI (principal investigator) on two current grants from the Department of Defense, and the NSF (National Science Foundation) program supporting the CSUSB Center for Advanced Functional Materials. Dr. Usher received his Bachelor's degree from Appalachian State University and his Ph.D. from the University of South Carolina

Dinner, Little Italy Buffet: Antipasto, Caesar salad, sautéed zucchini, pasta bar, pasta sauces, chicken cacciatore, rolls, tiramisu, ice tea, canned soft drinks, and coffee.

Cost and Reservations: The cost (meal, tax and tip) is $18 members, $20 non-members, $12 seniors and retirees, $8 students, free for student honorees and their teachers; cash or check only please, at the door. Please make your reservations no later than **Thursday, May 15th by 12 noon** by contacting Dennis Pederson (dpedersn@csusb.edu, phone (909) 537-5477) or David Srulevitch (srulev@charter.net, phone (909) 594-3070). Include names and number of persons. Please be certain to honor your reservation.

Parking: Free parking with pass in Parking Lot D. Please pick up a parking pass at the parking kiosk (Parking Lot D) or risk a $30 parking fine.

Directions From the East or West: take I-10 or I-210 to I-215 North. Take the University Parkway exit and turn right. University Parkway becomes the main entrance to CSUSB (at Northpark Blvd). Ahead on your left is the Parking Services Information Booth where you can pick up your parking pass. Parking Lot D will then be to the right. **From the South or North:** Take I-215 to University Parkway and turn East (towards the mountains). Proceed as above.

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IMPORTANT
Do Not Delay!

Contains Dated Meeting Announcement

PERIODICAL

Bi-Section Chemists' Calendar

For more information on these events, please check the SCALACS website at www.scalacs.org

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Have a great Summer!