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SCALACS

January/February 2016

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

Southern California Section



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2016 Chair
Southern California Section
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SCALACS

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

Volume LXXI

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Number 1

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SECTION 2016 OFFICERS**

Chair: Michael Morgan

Chair Elect: Armando Rivera

Secretary/Treasurer: Barbara
Belmont

Councilors: Rita Boggs, Brian
Brady, Robert de Groot, Virgil Lee,
Eleanor Siebert, Barbara Sitzman

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2016 OFFICERS**

Chair: Dennis Pederson

Chair-Elect:

Secretary: David Srulovitch

Treasurer: Larry Mink

Councilors: Eileen DiMauro, Ernie
Simpson

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Chair's Message



Happy New Year! I hope this year finds all of you well. Firstly I would like to thank all of you for your support in electing me Chair of the section this year. I hope to do a very good job for you. I am very grateful to all of the officers who have served the section this last year and especially Veronica Jaramillo for her year as Chair.

Also if you are not aware the backbone of

this section is Nancy Paradiso who runs the office for us. Without her I would have never considered running for Chair. Secondly I would like to outline my priorities for this year and share with you some of my goals.

My biggest priority is to increase participation in all of our SCALACS events especially by the younger members of the section. We have one of the largest sections in ACS and I would like to have our events reflect this. Our section's future lies in the younger members and with that in mind I want to place a heavy emphasis on our YCC (Younger Chemists Committee). Our Chair for that committee is Alexander Alschuler and if he reaches out to you please consider what he is asking of you to help with the events. Undergraduates and high school students are our future. We must reach out to them and make sure that they know they are welcome and encouraged to take part in ACS activities. With that in mind I want to ask each and everyone of you to reach out and find a new ACS member from Southern California.

I would like to raise the profile of our section in ACS national affairs. Our section has some of the richest resources available within a local section. With all of our local Universities and their incredibly high profile in Chemistry we must take advantage of that and host events that warrant national attention. National Chemistry Week, Chemists Celebrate Earth Day, and the International Chemistry Olympiad are the best outlets for this. Please join me this year in helping raise the profile of these events. Our last meeting at Cal Tech in October was a huge success almost doubling the attendance over the average of the last few dinner meetings we had. Most of this is due to reaching out to our younger members and making it easier for them to attend. If you know of a great speaker who would be willing to speak and would be a good draw for our members please let me know about them.

Our biggest priority has to be the financial security of the section. We are not in trouble by any means but we are also not able to host some of the larger events that I think we are capable of because of limited resources. The first and easiest way to help accomplish this is to make sure that everyone in SCALACS pays their local section dues. These dues are only \$20 per year but they are optional. Please elect every year to pay your dues. I hope to do a good job this year communicating to you what your dues are used for and what we like to do
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Southern California Section

Pizza Night at CSULB

Wednesday, February 24, 2016

6:00 pm Pizza

7:00 pm Lecture

California State University Long Beach

Hall of Science (HSCI), Room 103

1250 N. Bellflower Blvd., Long Beach CA 90815

“From Pentaborane to Uranium: How a Non-linear Career Path Through the Periodic Table Led to New Oxidation States for the Rare Earth Metals and Actinides”

**Prof. William J. Evans,
UC Irvine**

Abstract: A fundamental aspect of the chemistry of any element is the number of formal oxidation states available in molecules for chemical reactions. The range of accessible oxidation states for all of the elements has been continuously tested for decades and the boundaries were thought to be well-established across the periodic table. However, recently the special environment provided by three silyl-substituted cyclopentadienyl ligands led to the discovery of the first examples of formal +2 oxidation states in molecular complexes of nine metals: yttrium, holmium, erbium, praseodymium, gadolinium, terbium, lutetium, uranium, and thorium. In the thorium case, the metal has the electron configuration expected for superheavy elements like rutherfordium and dubnium. How did an undergraduate studying boron hydrides end up discovering new oxidation states of the f elements? This talk will retrospectively examine the career path that led to these discoveries and discuss the many “roads not taken” along the way.

Biography: William Evans was born in Madison, Wisconsin and raised in Menomonee Falls, Wisconsin. He received a B.S. degree from the University of Wisconsin, where he did undergraduate research on pentaboranes with Professor Donald F. Gaines. He obtained a Ph.D. from UCLA under the direction of Professor M. Frederick Hawthorne studying metallocarboranes. He did postdoctoral research on transition metal phosphite complexes with the late Professor Earl L. Muetterties at Cornell University. When he began his independent career in 1975 at the University of Chicago, he chose an area of research completely different from his training and experience, namely the chemistry of the rare earth metals and actinides, with the central thesis that the
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Southern California Section

Prof. Evans' Biography (Continued from Page 3)

special properties of these metals should lead to unique chemistry. After receiving tenure at Chicago in 1982, he was recruited to the University of California, Irvine, where he has been a Professor since 1983.

Prof. Evans has received the Richard C. Tolman Award of the Southern California Section of the American Chemical Society, the American Chemical Society Award in Inorganic Chemistry, the American Chemical Society Award in Organometallic Chemistry, the Sir Edward Franklin Award of the Royal Society of Chemistry, the Frank Spedding Award for Excellence in the Science and Technology of Rare Earths, the Terrae Rarae Award of the Tage der Seltenen Erden Society in Germany, a Special Creativity Extension Award from the National Science Foundation, the UCI Physical Sciences Outstanding Contributions to Undergraduate Education Award, the UCI Distinguished Faculty Award for Research. He was recently named Distinguished Professor by the University of California.

Cost: Pizza and soda are available for \$5 per person. Please RSVP to Nancy Paradiso in the Section Office at office@scalacs.org by Monday, February 22nd at noon so we know how many people to plan for.

Directions: Directions and parking information are available at <http://daf.csulb.edu/maps/parking/>. The closest lots are Lots 17 and 18. There is a \$5 charge for parking.

Sponsored by SCALACS and the CSULB Student Affiliate Association

Chair's Message (Continued from Page 2)

beyond that. Also I want to have several events this year to raise funds for the section. With the wonderfully high profile chemists that are in our section, let us think of how we can have some fund raising activities that will attract our members. I am also hoping to get a quick and easy way established for you to make donations to SCALACS including remembering SCALACS in your estate planning.

Please feel free to contact me with suggestions about the section. You can email me at mmorgan@lausd.net or leave phone messages for me with the section office.

Best-
Michael Morgan

Southern California Section

Election Results

Thanks to everyone who voted in our electronic election and congratulations to our newly elected members. Their terms of office begin in January, 2016.

Chair-elect: Armando Rivera

Secretary: Barbara Belmont

Members of the Executive Committee: Derek Marin,
Thomas Mathew and Heather Mott

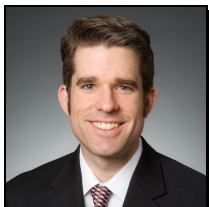
Councilors: Robert de Groot and Eleanor Siebert

Alternate Councilors: Deborah Bennett, Veronica Jaramillo,
Joseph Khoury and Thomas LeBon

Congratulations to those who won the election and thanks to those who were willing to serve as candidates.



This picture was taken at the top of the San Andreas Fault. Dr. Bob de Groot gave a great talk and tour of the fault with lots of visuals and great information. Look for more this year on chemists and earthquake safety.



Insights Into IP Law

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

Last month's column introduced a Supreme Court case addressing the topic of patent-eligible subject matter in the context of patents claiming methods relating to the use of oral thiopurine drugs to treat autoimmune diseases such as Crohn's disease and ulcerative colitis.

The claims of the patents were directed to methods of optimizing therapeutic efficacy by administering an amount of the thiopurine drug, measuring metabolite levels in the blood, and determining whether the dosage level was too low or too high according to thresholds recited in the claims. Although perhaps implied, actually increasing or decreasing the dose after practicing the method was not expressly claimed.

The Supreme Court characterized the claims as relating to natural laws describing the relationships between the concentration of the metabolite and the likelihood that the drug dosage will be ineffective or induce harmful side-effects. The Court explained that its job was to determine whether the claimed processes transformed these unpatentable laws of nature into patent-eligible applications of those laws.

The Court analyzed each element of an exemplary claim, starting with the "administering" step. The Court stated that the "administering" step simply referred to the relevant audience (doctors who prescribe thiopurine drugs), noting that anyone who wants to make use of the laws must first administer a test dose of the thiopurine drug to a patient. The "measuring" step, the Court wrote, generally tells doctors to quantify the level of the relevant metabolites in the blood through whatever well-understood, routine, conventional process the doctors wish to use. Finally, the Court stated that the parts of the claims that address determining whether the dosage level was too low or too high simply tell doctors about the natural laws—at most adding a suggestion that the doctor should take those laws into account when treating the patient.

The Court concluded that beyond picking out the relevant audience, the claims simply tell doctors to: (1) measure (somehow) the metabolite levels; (2) use unpatentable laws of nature to calculate toxicity/inefficacy limits; and (3) reconsider the drug dosage in light of the law. Since these are steps that must be taken in order to apply the laws in question, the effect is simply to tell doctors to apply the law somehow when treating patients. The Court invalidated the claims, noting: "Unlike, say, a typical patent on a new drug or a new way of using an existing drug, the patent claims do not confine their reach to particular applications of those laws."

* 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

A long established practice in chemistry is the publication of abstracts; some of the earliest appeared in the French journal *Annales de Chimie* as early as 1789. Among the significant contributions made to chemistry by the great Swedish chemist Berzelius were his splendid series of annual reports, called *Jahresberichte*, which he compiled from 1822 to 1855. Originally published in German, a number of these were translated into French. In these volumes Berzelius not only compiled each year all articles and books that he regarded as significant contributions to chemistry, but also scrutinized them critically.

By the start of the twentieth century such a summary of a whole year's chemistry was obviously too much for one chemist, but the Chemical Society of London (now the Royal Society of Chemistry) took up the challenge and began issuing its *Annual Reports* beginning in 1904 reviewing the work of chemists in 1903. As a mark of a new year, and in homage to the Chemical Society, I will devote some columns to *Annual Reports Volume XIII* covering 1916, just a century ago. You will recall that at this time Great Britain (though not yet the United States) and her allies was engaged in a bitter war with Germany and her allies. Consequently this is one of the slimmer volumes in the series.

The introduction to *General and Physical Chemistry* by H.M.Dawson makes really interesting reading to the chemical historian. One striking fact is the many references to work published in 1916 in German scientific journals by such luminaries as Paneth and von Hevesy. To quote from the introduction: "The discovery of radioactive disintegration, isotopy, and the simple linear relation between the frequency of the characteristic lines in the X-ray spectra of the elements and the atomic number [work of Moseley; killed at Gallipoli in 1915; HG] has brought to light a series of facts which are incompatible with the signification attached to the terms element and atom for about a hundred years." Dawson goes on to argue that isotopes can no longer be viewed as different elements; chemists have to accept that many elements are mixtures of isotopes that behave in a chemically identical manner.

In 1911 Nicholson suggested that the nuclei of heavier elements were assemblages of nuclei of lighter elements. Now Harkins and Hall have extended this idea by suggesting that differences in atomic masses of
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This Month in Chemical History

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elements in the same Group of the Periodic Table can be explained by differences in the numbers of helium nuclei present in their nuclei. Experiments on X-ray scattering indicate that the number of electrons in different atoms is proportional to their atomic weights, and so the actual number of electrons in an atom equals half the atomic weight (!)

Now here's an experiment involving models for you to try. This is a suggestion made by Nobel Laureate William Ramsay, the noble gas discoverer. To simulate some mechanisms of chemical change he constructed spherical atoms made of ping-pong balls for the nucleus supported so they were free to rotate about a vertical axis through the ball's poles. The revolving electrons of this atom were represented by a current passing through a copper coil attached to the ball's equator. The coil's diameter could be adjusted, and the current flow could be reversed. Use of models of this type led Ramsay to find the conditions of stability in a number of molecules including hydrogen, oxygen, ozone, hydrogen chloride and ammonia. For full details you can consult the original articles which appeared in the Proceedings of the Royal Society Series A for 1916.

To be continued: So far I have only reached page 4 of a 284 page book!

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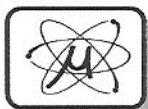
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San Gorgonio Section

Chair's Message



I begin this my first Chair's message with an expression of deepest appreciation to Eileen DiMauro for her extra years of fulfilling the obligations of this office. As she remains on the Executive Committee as Past-Chair and Section Councilor, I will be relying on her guidance as I move into my new role.

We are beginning this new year knowing that while 2015 had several successes, we also continued to face some significant challenges.

Among the successes were a significantly increased participation of high schools and students in the Chemistry Olympiad, an increase in the number of Project SEED participants, and a very well attended meeting focused on the potential uses of genomic information in drug therapy. With the September meeting we initiated an expanded effort to increase interaction with the high school chemistry teachers in the Section. Teacher input from that meeting has resulted in the January scheduled workshop at Mt. San Antonio College, focusing on laboratory safety and chemical waste management.

With regard to Project SEED, we want to thank Professor Jingsong Zhang at the University of California, Riverside for accepting and mentoring two students this summer: Alex Vasquez and Luis Enriquez-Contreras. In 2014, Katherine Gonzalez, our Project SEED student that year, also worked in Dr. Zhang's laboratory and as she told us "It was thanks to my time in his lab and Dr. Hawkin's lab that inspired me to pursue the sciences." At our November meeting we recognized Dr. James Hammond with the Section's first Lifetime Achievement Award. Jim is one of the founding members of the section, has served as Chair and Councilor, and is someone we can always turn to when we seek historical information. He also has consistently been a strong advocate for our Project SEED participation.

Now what about those challenges? Number one on the list is finding ways to increase participation of you, the members, in Section activities. Volunteer opportunities abound and the cliché "many hands make light work" certainly applies. Chemistry Olympiad, Project SEED, National Chemistry Week, Section Officer are just some of the areas where you might see yourself. We also would like to increase attendance at Section meetings and realize that topic interest plays a key role in this. I welcome suggestions of possible topics for our meetings as well as suggestions for speakers. You can always contact me via e-mail at dpedersn@csusb.edu. Let's make 2016 a great year for the San Gorgonio Section!

-Dennis Pederson, Chair

San Gorgonio Section

Academic Laboratory Workshop #3

Friday, January 29, 2016

8:30 am—3:30 pm

**Mt. San Antonio College
1100 Grand Ave., Walnut
Building 60 (Science Laboratories)
Room 60-3628**

The San Gorgonio Section of the American Chemical Society has received a grant to create a resource network for anyone involved in academic laboratories and to hold a series of four workshops to address general issues of interest. The third workshop is scheduled for Friday, January 29, 2016 at Mt. San Antonio College.

Who should come: Laboratory technical support or stockroom managers/workers, risk management personnel, department chairs, and high school teachers. Attendance at previous workshops is not required to attend this one.

Workshop Schedule

8:30 – 9:00	Continental Breakfast, Meet and Greet
9:00 – 10:15	Session 1: What were the outcomes of Workshops 1 and 2?
10:30 – 11:30	Session 2: Conversion from MSDS to SDS
11:30 – 12:15	Box Lunch
12:30 – 1:30	Session 3: Chemical hygiene plans
1:45 – 2:30	Session 4: Preventing and managing laboratory accidents
2:45 – 3:30	Closing: Planning for Workshop 4

This workshop is **FREE** to the first 30 registrants. You will be reimbursed for parking. If you are not one of the first 30 registrants, all you need to pay for is lunch (or bring your own). When you come to the meeting, bring a hard copy of your Chemical Hygiene Plan. Also bring examples of safety training handouts/procedures/worksheets used at your institution to share.

For further information see <http://sangorgonio.sites.acs.org> or contact Eileen DiMauro at 909.274.4533 or edimauro@mtsac.edu.

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San Gorgonio Section



Friday, February 19, 2016

3:00 –5:00 pm

“The Chemistry of Beer and Wine”

Dr. Ernie Simpson

**Collins College of Hospitality Management
Bldg. #79A, Wine Lecture Auditorium, Room #1263
California State Polytechnic University, Pomona
3801 West Temple Avenue
Pomona, CA 91768-2557**

See the San Gorgonio Section website (<http://sangorgonio.sites.acs.org>) for complete details and registration form.

Dr. Simpson's lecture will include an overview of wine and wine making as well as detailed descriptions of the chemical composition of grapes and wine, laboratory methods for analysis of grapes and wines, sensory and organoleptic methods used for wine, the role of tannin and other phenolic compounds in wine and some potential health aspects of wine. Parallels and differences between beer and wine making, chemistry and tasting will be discussed. Integrated with the talk will be four craft beer and four wine samples to taste and pair with light snacks.

Credit for the beer side of the presentation goes mainly to Michael Godfrey and Ron Johnson of Cal Poly's Collins College, and Koby Harris of the new **Innovation Brew Works** (iBrewWorks.com) located in Cal Poly's Innovation Village.

Biography: Dr. Simpson joined the Chemistry Department at Cal Poly Pomona in 1968 after completing his BS, MS and Ph.D. (Organic Chemistry) at the University of New Mexico and spending one year as a visiting professor at Pomona College. In 1973/74 he was on leave as a visiting Research Associate in the Department of Enology and Viticulture at UC Davis. He is an active member of American Society for Enology and Viticulture
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San Gorgonio Section

The Chemistry of Beer and Wine (Continued from Page 11)

and has served on the editorial board of the society's journal. He has published a California Wine Guide. He is a member of the Society of Wine Educators and the American Wine Society. Dr. Simpson was named as an ACS Fellow in 2012 and in 2013 received the Provost's Award for Excellence in Service at Cal Poly Pomona.

Beer and Wine Tasting: All lecture attendees must be 21 years of age or older

Reservations: Strongly recommended as space is limited to the first 75 who register. Download the registration form from San Gorgonio Section website (<http://sangorgonio.sites.acs.org>). Reservations must be prepaid in cash or check and mailed to **Dr. J. Ernest Simpson; 226 Cucamonga Avenue; Claremont, CA 91711-5015**. Reservations must be received no later than February 12, 2016.

Cost: \$15.00 fee. Make checks payable to: Cal Poly Pomona Foundation. On the note line add: Simpson Collins College Scholarship.

Directions: From Interstate 10, take the Kellogg Drive exit. Heading south on Kellogg Drive, stay in the right lane and curve right onto University Drive. Stay on University Drive past 3 stop signs, then turn at the first left (Center Circle Road) up the hill to Kellogg West. From I-57, exit Temple Ave. Go north/west following Cal Poly signs past the lights at Valley Blvd. Turn right onto University Drive. Take the third right (Center Circle Road) up the hill to Kellogg West and the Collins College for Hospitality Management at the south end of the parking lot.

A campus map can be found at www.kelloggwest.org, click "directions".

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Laboratory Workshop (Continued from Page 10)

How to Register: Download and complete the registration form.
Submit by January 22, 2016 by email to edimauro@mtsac.edu or by
USPS to: Eileen DiMauro, Mt SAC Chemistry Department, 1100 N.
Grand Ave., Walnut, CA 91789.

Directions: Mt. SAC is located on the corner of Temple Ave. and
Grand Ave. in the city of Walnut. It easily accessed from 3 major
highways (10 FWY, 57 FWY, 60 FWY). Map to the campus: [http://
events.mtsac.edu/access.htm#](http://events.mtsac.edu/access.htm#)

Building 60 is located off of Temple Ave. Turn north onto Mt. SAC Way
and enter parking lot D. Purchase a day use parking permit at the
automated dispenser (\$4). Room 60-3628 is on the third floor. Campus
map: <http://www.mtsac.edu/maps>.

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Bi-Section Chemists' Calendar

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

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