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**SCALACS**

**January/February 2018**

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



## **Southern California Section**

### **January Dinner Meeting**

**John Pollard, University of Arizona**

**"Let's Teach How We Think, Not What We  
Know - The Chemical Thinking Story"**

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**Welcome Bob de Groot, 2018 Chair**

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## **San Gorgonio Section**

**Welcome Bruce Liu, 2018 Chair**

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\*\*\*\*\*



## **February Section Meeting**

**Dr. Ernie Simpson**

**"Sweet Wine Chemistry"**

**Friday, February 16, 2018**

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Southern California and San Gorgonio Sections of the  
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Volume LXXIII

January/February 2018

Number 1

**SOUTHERN CALIFORNIA  
SECTION 2018 OFFICERS**

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**Chair Elect:** Heather Mott

**Secretary/Treasurer:** Barbara  
Belmont

**Councilors:** Brian Brady, Robert de  
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Pappatheodorou, Eleanor Siebert,  
Barbara Sitzman

**SAN GORGONIO SECTION  
2018 OFFICERS**

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**Chair-Elect:**

**Secretary:** David Srulevitch

**Treasurer:** Dennis Pederson

**Councilors:** Eileen DiMauro, Ernie  
Simpson

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### Chair's Message Get your mole on!

Happy New Year! I hope you had an opportunity to rest, spend time with family, and also consider a few resolutions. If you have room for one more I request that you "get your mole on" in 2018.

I am regarded as a bit of an oddball due to my affection for the family of ACS moles (e.g. Milli, Avogadro, and Meg). I partially owe this affliction to actually having been the ACS mole. At several ACS National Meetings, I volunteered to parade around the exhibition hall in this top-heavy costume. I posed for pictures and managed to knock over several displays. Perhaps you have a picture with the mole in your collection.

"Getting your mole on" is simple. Consider the ACS vision:

### **Improving people's lives through the transforming power of chemistry!**

Think of one **new** thing that you could do this year that would assist you in fulfilling the ACS vision – this will help you "get your mole on." For example, you might consider getting involved with local section governance or activities. There are many opportunities for participation such as joining a committee, running for an elected office, hosting a Chemists Celebrate Earth Week (CCEW) or National Chemistry Week event, planning a Science Café, and/or becoming a chemistry ambassador.



Thanks to Armando Rivera for his hard work as chair in 2017. The gold nugget he's holding is his recognition gift from SCALACS!

The year will be filled with many great activities and opportunities. On January 25<sup>th</sup> we will have a section dinner and presentation by Dr. John Pollard from the University of Arizona. He will be sharing his groundbreaking work in chemistry education. His presentation "Let's Teach How We Think, Not What We Know – The Chemical Thinking Story" will be very interesting. The theme for Chemists Celebrate Earth Week 2018 is "Diving into Marine Chemistry." In 2018 CCED becomes CCEW - now a weeklong celebration!  
*(Continued on Page 4)*



### January Dinner Meeting

Thursday, January 25, 2018

California State University,  
Los Angeles

Golden Eagle Ballroom 3  
5151 State University Drive  
Los Angeles, CA 90032-8202

### "Let's Teach How We Think, Not What We Know - The Chemical Thinking Story"

John Pollard, Ph.D.,  
University of Arizona, Tucson

This talk is geared toward all General Chemistry Instructors. John Pollard, Ph.D. will be giving a talk on the story behind developing the Chemical Thinking curriculum that is used for General Chemistry at the University of Arizona.

**Abstract:** Despite multiple calls for reform, the curriculum for first-year college chemistry at many universities across the world is still mostly fact-based and encyclopedic, built upon a collection of isolated topics, oriented too much towards the perceived needs of chemistry majors, focused too much on abstract concepts and algorithmic problem solving, and detached from the practices, ways of thinking, and applications of both chemistry research and chemistry education research in the 21<sup>st</sup> century. This talk will describe an alternative way of conceptualizing the introductory chemistry curriculum for science and engineering majors by shifting the focus from learning chemistry as a body of knowledge to understanding *chemistry as a way of thinking*. Starting in 2007, we have worked on the development and implementation of a new curriculum intended to: promote deeper conceptual understanding of a minimum core of fundamental ideas instead of superficial  
(Continued on Page 4)

## Southern California Section

### John Pollard Talk (Abstract Continued from Page 3)

coverage of multiple topics; connect core ideas between the course units by following well-defined learning progressions; introduce students to modern ways of thinking and problem-solving in chemistry; and involve students in realistic decision-making and problem-solving activities. (*Chem. Educ. Res. Pract.*, 2010, **11**, 74–83)

**Biography:** Professor Pollard received his B. S. in Chemistry from Saint John's University in Collegeville, MN and his Ph.D. in Inorganic Chemistry from the University of Arizona, Tucson, Arizona. His research is Ligand Effects and Periodic Trends in Metal-Metal Multiple Bonds: Theoretical and Experimental Studies of Electronic Structure by Gas-Phase Photoelectron Spectroscopy. He is Associate Professor of Practice and Interim Assistant Dean of Academic Affairs at the University of Arizona, Tucson.

**Cost:** There will be a BBQ Chicken dinner with salad, roasted red potatoes and grilled corn and Chocolate Granache for dessert. **The cost is \$27 including tax and tip. Please email Nancy Paradiso in the Section Office at [office@scalacs.org](mailto:office@scalacs.org) by Thursday, January 18th if you'd like to attend.**

**Directions:** For a campus map of Cal. State LA, please see <http://www.calstatela.edu/univ/maps>

### Chair's Message (Continued from Page 2)

Consult the SCALACS newsletter and website for these and many other wonderful opportunities in the months to come. I am constantly inspired and humbled by my fellow ACS members who tirelessly transform people's lives through good chemistry. I would like to congratulate our newly elected SCALACS leaders. Please see the results of our election on page 5.

Best wishes to all in 2018 and go forth and get on your mole!

Bob de Groot  
Chair-SCALACS

P.S. Armando had to return the gold nugget and we gave him a nice plaque and gavel instead!

## **Southern California Section**

### **2018 Expanding Your Horizons Saturday, April 7, 2018 Mount Saint Mary's University**

**Expanding Your Horizons** (EYH), a career day generously supported by the Southern California Section, informs girls in grades 5-8 about careers in math- and science-related fields. Girls participate in hands-on workshops such as dissecting pig hearts, isolating DNA, and making colors with chemistry. There are also workshops for parents, teachers and counselors about making math and science a career option for girls. If you are a woman interested in leading a hands-on workshop for girls, volunteering to help, or have questions, please contact Eleanor Siebert (esiebert@msmu.edu).

Registration for the conference will open in mid-January. All girls in grades 5-8 and their parents are invited to participate. There is a \$15 fee for each participant to cover lunch and materials. Note that only paid registered participants may attend the conference. Please register online; there is no on-site registration: [www.expandingyourhorizonsla.org](http://www.expandingyourhorizonsla.org).

### **Election Results**

Thanks to everyone who voted in our electronic election. We've gotten a lot of good response about how easy it is to vote. We'd also like to congratulate our newly elected members. Their terms of office begin January 1, 2018.

**Chair-elect:** Heather Mott

**Secretary/Treasurer:** Barbara Belmont

**Members of the Executive Committee:**

Gerald Delker, Krishna Kallury and Charlotte Reininger

**Councilors:**

Brian Brady and Virgil Lee

**Alternate Councilors:**

Deborah Bennett and Alexandros Oxyzolou

We want to thank those members who were willing to serve as candidates in this election. It's not too early to start thinking about nominating a candidate for our next cohort of section leaders. Get involved!

## Southern California Section

There are a lot of advances in chemistry that we don't always hear about. SCALACS is presenting a new column to highlight these new discoveries.

### **An Economic Testing Device for Lead in Drinking Water Invented by an eleven year old girl from a STEM School**

Gitanjali Rao, 11, won the 2017 Discovery Education 3M Young Scientist Challenge with her invention of a device to measure lead in drinking water. Rao is a seventh grader at STEM School Highlands Ranch. She hails from the Denver suburb of Lone Tree. She points out that she got concerned about lead in drinking water two years ago, when she learned of the crisis in Flint, Michigan. And it's not just Flint, she says, approximately 5,000 water systems in the U.S. have problems with lead contamination.

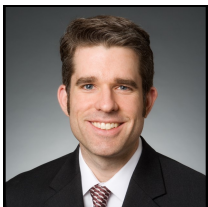
The seventh grader told *Colorado Matters* that this troubling statistic was on her mind when she heard of the Discovery Education 3M Young Scientist Challenge, a national competition for middle schoolers to find innovative solutions to everyday problems. This month Rao won that competition, and a \$25,000 prize, for her lead-detection device. Her Mentor, Dr. Kathleen Schaffer works for 3M. Rao's teachers helped her 3D print the outer cover of the device and her cartridge. This allowed her to keep all parts within the device intact. Her computer teacher chipped in to develop a user friendly interface.

Rao says that there are two main ways to test for lead in water. One is the test strips, and the other is sending our water off to the EPA. The test strips are easy to use and fast. But they're not accurate. Sending water samples to the EPA provides accurate results, but it's expensive, and needs expensive equipment. Her solution proposes using carbon nanotube based sensors that detect the presence of lead and its compounds. Due to the sensitivity and connectivity of carbon atom structures, this sensor can detect lead faster and accurately than any other current techniques.

Rao thinks her device could become a competitively priced alternative: "The prototype cost just over \$20 to make, but all of the materials were custom-manufactured. At bulk, I expect the production cost to be significantly less than that."

For more information on this story, follow this link: <https://www.digitaltrends.com/home/tethys-water-testing-device/>





## **Insights Into IP Law**

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

The previous edition of this column explained that a single copy of a doctoral dissertation that has been cataloged and indexed in a single university library may qualify as a prior art “printed publication” that could render unpatentable a later-claimed invention. Generally, “printed publications” are documents (such as books, journal articles, periodicals) that have been disseminated or otherwise made publicly available to the extent that persons interested and ordinarily skilled in the subject matter of the art, exercising reasonable diligence, can locate them.

What if access to a dissertation in a library is limited or restricted some way? One case that addressed this issue involved a thesis entitled “Coordination Complexes of 2-methyl-5-hydroxy-1,8-naphthyridine,” written by a graduate student at the University of Toledo. There was evidence in the case that the library accumulated new theses in an office to which only library employees had authorized access. Members of the Cataloging Department would catalog each thesis, send it to a book bindery, continue processing, and then transfer it to the Circulation Department to be shelved in the library for use by the public. Prior to completion of processing, a thesis could be accessed through the office by identifying the author or title or describing the subject matter. There also was evidence that the graduate student defended the thesis before a graduate committee comprised of the student’s advisor and two other faculty members before the thesis was submitted to the library. The question in the case was whether the thesis defense before only “part of the public” constituted an announcement to the scientific community that the subject matter of the thesis, identifiable by author and title, would be unofficially available in the library, such that the thesis could be considered a printed publication even before it was shelved.

The court generally ruled that a document may qualify as a “printed publication” notwithstanding that accessibility to it is restricted to only “part of the public” so long as accessibility is sufficient to raise a presumption that the public concerned with the art would know of the subject matter. But the court ruled that, in this case, accessibility to the graduate student’s thesis by three members of the graduate committee did not raise such a presumption. Because the thesis could have been located in the university library only by someone having been informed of its existence by the graduate committee, and not by means of the customary research aids available in the library, the court found that the probability of public knowledge of the contents of the thesis was virtually nil.

\* The author earned engineering and chemical engineering undergraduate 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

Among the women scientists who were overlooked or ignored for a Nobel Prize (C&EN September 11, 2017) is the French chemist Marguerite Perey. The following account of Perey and her contributions is based substantially on a Wikipedia article.

Perey was born in October, 1909 in Villemomble which is a small commune of about 25,000 inhabitants some 12 km east of the center of Paris. When Perey was in her teens, and was looking forward to a career in medicine, her father died and the family became financially challenged. Consequently, Marguerite had to seek employment and she was hired at the Curie Institute to work with Marie Curie on radioactivity. The Institute was originally founded in 1909 following the award of the Nobel Prize to the Curies and Becquerel for their pioneering work on radioactivity. By 1928, when Perey joined, the Institute was already a world leader in research on radioactivity and on radiation treatments for cancer.

Although Perey had no university degree she was clearly a promising scientist and Marie Curie became her mentor. The radioactivity of fractions of the uranium ore from which polonium and radium had been isolated nearly two decades earlier still showed evidence of other active elements. Perey, guided by Curie, spent many years isolating actinium that Curie studied in depth. But there was another unexplained activity in the actinium samples. Perey's perseverance then led to the isolation in 1939 of yet another new element, the heaviest of the alkali metals, which she called francium, honoring her native land. Francium is produced in a rare (1%) branching decay of actinium; its abundance has been estimated at about 15g in the top 1 km of the earth's crust! (Incidentally there are two elements named for France, the other being gallium. As a former Brit. I am chagrined to admit that there is not one element named for the United Kingdom.)

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## This Month in Chemical History

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Eventually, after achieving these impressive successes in radiochemistry, Perey was given a grant to continue her studies, and she received her doctorate from the Sorbonne in 1946. She was soon appointed head of the Department of Nuclear Chemistry at the University of Strasbourg where she continued to work on francium. From 1950 to 1963 she was a member of the International Atomic Weights Commission, and in 1962 she became the first woman to be elected to the French Academy of Sciences – an honor that had been denied to her mentor, Marie Curie.

Sadly Perey's beloved element, francium, contributed to her death. It is carcinogenic and in her efforts to use it to diagnose cancer she was exposed to too much radiation, contracted bone cancer, and died of cancer in May 1975. Perey was nominated a number of times for a Nobel Prize, but never received one.



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## San Gorgonio Section

### Chair's Message



New year's greetings to all! Our section has a long and glorious history as evidenced by our impressive October luncheon meeting, recognizing many 50-, 55-, 60-, 65-, 70-, and 75- Year ACS Members. We are also blessed to have highly experienced Executive Committee members, Dr. Dennis Pederson, Dr. Ernie Simpson, Dr. Eileen DiMauro, and Dr. David Srulevitch. In 2018, we will continue to organize our well-liked and successful traditional events:

- Chemistry of Wine by Dr. Ernie Simpson in February
- Chemistry Olympiad in March
- Annual high school student awards dinner in May
- Recognition luncheon for senior ACS members in September
- National Chemistry Week in October
- Annual meeting in November

We also plan to organize other activities to help our members in pursuing further education and career development, such as graduate school application, career growth/entrepreneurship forum, etc.

Meanwhile, we will experiment on new communication channels and methods, such as LinkedIn, Facebook, and even Instagram. Please feel free to request to join.

LinkedIn Group: <https://www.linkedin.com/groups/13509132>

Facebook Page: <https://www.facebook.com/SGSACS/>

Instagram: coming soon...

I am excited to attend the ACS 2018 Leadership Institute on January 19-21, 2018 in Dallas, TX and will try to learn more ways to better serve our members. If you have ideas or would like to volunteer, please feel to contact me (cell: 515-306-6855, email: [bruce@acbscitech.com](mailto:bruce@acbscitech.com)).

*(Continued on Page 16)*

## **San Gorgonio Section**

### **San Gorgonio Section Meeting**

**Dr. Ernie Simpson**  
**“Sweet Wine Chemistry”**

**Friday, February 16, 2018**  
**3:00 – 5:00 pm**

**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. Integrated with the talk will be wine samples to demonstrate the different components of wine and wine types with an emphasis on dessert wines such as ports, muscatos, cream sherries, etc.

**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 the American Society for Enology and Viticulture 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. He retired from teaching at CPP in 2008. He is on the Board of Pace Setters, CPP's retired faculty and staff organization.

*(Continued on Page 16)*

## San Gorgonio Section

### Wine Tasting Meeting (Continued from Page 15)

**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 the San Gorgonio Section website. 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 10, 2018.

**Cost:** \$15.00 (includes main lecture with wine samples, valentine treats, crackers and cheese). Make check payable to: Cal Poly Pomona Foundation. On the note line add: Simpson Collins College Scholarship.

For a fee of \$40, a registrant will also receive a RANDOM 750 mL bottle of wine from Dr. Simpson's wine collection. The wine will most likely be a California red, port, or dessert wine (from Ficklin, Quady, and Rancho de Philo wineries) or champagne with an original purchase price of between \$25 and \$100. If vintage-dated, it will probably be between 1996 and 2015.

For a fee of \$60, a registrant will have the opportunity to pre-select one bottle from a list of wines that will be provided by Dr. Simpson upon receipt of the fee. All net monies raised by the event will go to the Dr. and Mrs. Simpson Collins College Scholarship.

**Disclaimer:** Dr. Simpson cannot guarantee the quality (drinkability) of the wines from his collection but to the best of his knowledge they are in sound condition. All sales are final.

**Directions:** From Interstate 10, take the Kellogg Drive exit. Heading south on Kellogg Drive, stay on 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](http://www.kelloggwest.org), go to locations and points of interest and click on campus map.

## San Gorgonio Section

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## Chair's Message (Continued from Page 14)

Helping with the Chemistry Olympiad, participating in a National Chemistry Week activity, serving as a Section Liaison at one of the colleges or companies, or assisting in the development of an enhanced internet presence for the Section, are some other areas where you might consider becoming involved. None of these entails a significant time commitment and I would be happy to provide more details. With your help, 2018 will be an even more successful and exciting year.

-Bruce Liu, Chair

**SOUTHERN CALIFORNIA SECTION  
AMERICAN CHEMICAL SOCIETY**

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Contains Dated Meeting Announcement

**PERIODICAL**

**Bi-Section Chemists' Calendar**

For more information on these events, please check our website at  
[www.scalacs.org](http://www.scalacs.org)

**January**

25 SC Dinner Meeting at CSULA with Dr. John Pollard—see page 3

**February**

16 SG "Sweet Wine Chemistry" with Dr. Ernie Simpson—see  
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