ACS Chemistry for Life™

SCALACS

May/June 2016

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

Southern California Section
Educational Awards Banquet
Friday, May 20, 2016

Honoring top scoring students and featuring our special guest, Prof. Harry Gray, California Institute of Technology

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San Gorgonio Section

Student Scholarship and Awards Recognition Banquet
At
The Old Spaghetti Factory

May 20, 2016

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ACS Chemistry for Life™

SCALACS

A Joint Publication of the
Southern **Cal**ifornia and San Gorgonio Sections of the
American **C**hemical **S**ociety

Volume LXXI May/June 2016 Number 4

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Chair's Message

Welcome to anther issue of SCALACS!

I am very happy to report that California State University Long Beach won this year's Chem Bowl at Pasadena City College on April 9th. (See the picture of the winning team on page 6). I wish to extend a big thank you to Veronica Jaramillo for once again hosting this event. I would love to get many more of our local colleges involved in this event. If you would be interested in hosting it please let us know. There is no rule that it needs to be at PCC and I think it would be wonderful if we could move it around from school to school every year.

The Chemistry Olympiad was taken by over 900 students in Southern California this year. A very respectable turn out! We had the national exam on April 16th at Cal State University Dominguez Hills. This year 18 students were able to participate. Without the help of Barbara Belmont at CSUDH this would not have been possible. And for the last many years, Jerry Delker and Nancy Paradiso did an outstanding job in coordinating the 41 schools that participated. I am very grateful for all that they do to make Chemistry Olympiad possible every year. The awards banquet for the Chemistry Olympiad is this coming May 20th. Harry Gray will be joining us and I am sure it will be well worth attending.

We have several upcoming events that are listed here in SCALACS magazine. Our brewery tour sounds really exciting to me. I hope that you can make it! Please contact Nancy (office@scalacs.org) to make reservations.

As always I am quite excited to hear from you! Please feel free to contact me electronically (mmorgan@lausd.net) or by leaving messages for me at the section office.

- Best,
Michael Morgan

Educational Awards Banquet

Friday, May 20, 2016

Mount Saint Mary's University, 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, and to local ACS scholars

And welcome our honored guest:

Prof. Harry Gray

California Institute of Technology

6:00 p.m. Check-in
6:45 p.m. Dinner
7:30 p.m. Presentation of Awards

This year, we had over 900 students representing 41 high schools throughout Los Angeles County take the Local ACS Exam in March. Arcadia High School finished first overall while North Hollywood High School finished first for first year students. The winners of the local exam were invited to participate in the national exam on April 16th at California State University, Dominguez Hills for a chance to be part of the International Olympiad in July in Tiblisi, Georgia. 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. As an additional treat, **Prof. Harry Gray from Caltech** will be there to talk to the students and parents. Please see page 4 for Prof. Gray's biography,

Cost: There will be an Italian Buffet featuring Chicken Piccata, Vegetable Lasagna, Caeser Salad and Garlic Bread, with tiramisu or cheesecake for dessert. The cost is $20 for adults and $15 for students. **Please RSVP to Nancy Paradiso at office@scalacs.org or 310 327-1216 by Friday, May 6th.**

Directions: The meeting will take place on the Doheny Campus in the Donahue Center in McIntyre Hall. For directions and a campus map, please go to https://www.msmu.edu/about-msmu/maps-and-directions.aspx.

Harry Gray
Professor of Chemistry
California Institute of Technology

Harry Gray is the Arnold O. Beckman Professor of Chemistry and the Founding Director of the Beckman Institute at the California Institute of Technology. After graduate work in inorganic chemistry at Northwestern University and postdoctoral research at the University of Copenhagen, he joined the chemistry faculty at Columbia University, where in the early 1960s he developed ligand field theory to interpret the electronic structures and reactions of transition metal complexes.

After moving to Caltech in 1966, he began work that led to the development of molecular systems for the storage of solar energy. In the 1980s, he and coworkers demonstrated that electrons can tunnel rapidly over long molecular distances through folded polypeptide structures. This discovery opened the way for experimental and theoretical work that shed new light on the mechanisms of electron flow through proteins that function in respiration and photosynthesis.

Gray has published over 850 research papers and 18 books. He has received the National Medal of Science (1986); the Priestley Medal (1991); the Gibbs Medal (1992); the Nichols Medal (2003); the National Academy of Sciences Award in Chemical Sciences (2003); the Wolf Prize in Chemistry (2004); the Welch Award in Chemistry (2009); the T. W. Richards Medal (2014); and 19 honorary doctorates. He is a member of the National Academy of Sciences; the American Academy of Arts and Sciences; the American Philosophical Society; a foreign member of the Royal Danish Academy of Sciences and Letters; the Royal Swedish Academy of Sciences; the Royal Society of Great Britain; and the Accademia Nazionale dei Lincei.

Joint Younger Chemists and Women Chemists Event

Brewery Tour & Tasting

Wednesday, August 17, 2016

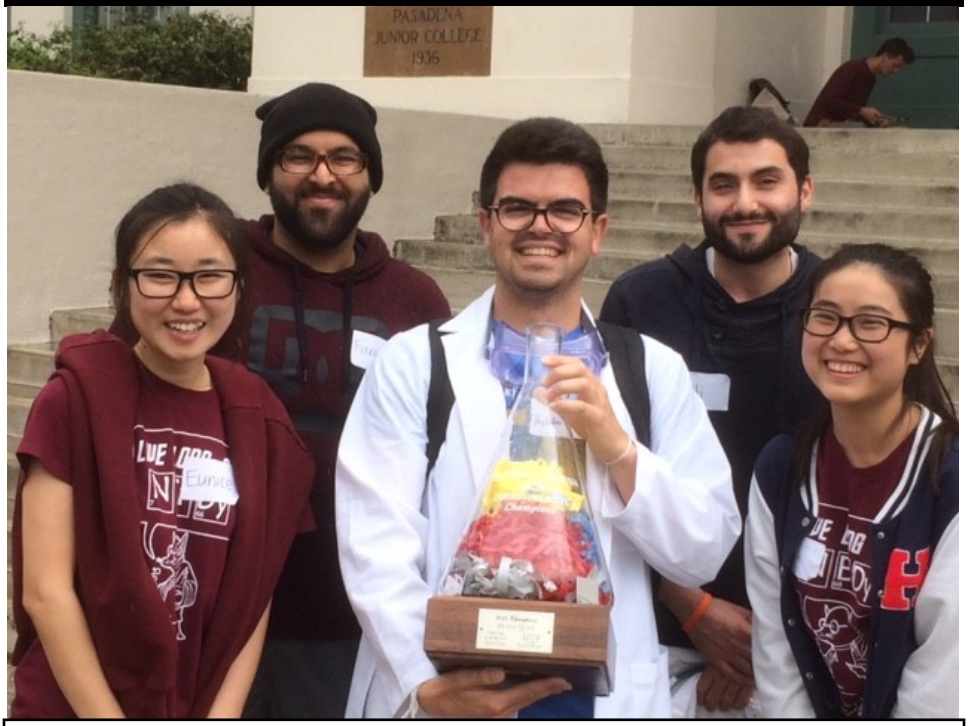
7-9 pm

Smog City Brewery
1901 Del Amo Blvd., Ste. B
Torrance, 90501

The perfect Summer Outing! Come join your fellow chemists for a tour of the facilities and sample some great beer! There is no cover fee; drinks are $2-$3 for tasters and $6 for pints. Anyone over the age of 21 is welcome to attend.

The tour is limited to 25 people, so please RSVP to Nancy Paradiso in the Section Office at office@scalacs.org by Friday, August 12th if you'd like to attend. For directions, go to http://www.smogcitybrewing.com/.

Southern California Section



Congratulations! The Winning Team at the **Chemistry Bowl at Pasadena City College on April 9th**—California State University Long Beach students and two students from Francisco Bravo Medical Magnet High School. From left to right: Eunice Choi (Bravo), Faraz Hussain, Nick Pavlakovich, Ali Akil and Seah Kim (Bravo). They are the proud holders of the Erlenmeyer Flask perpetual trophy until the next Chemistry Bowl. Great job!

Insights Into IP Law

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

Previous editions of this column have explored the topic of patent-eligible subject matter in response to a reader inquiry. The Supreme Court, which takes only about 80 cases total per year, has addressed this very topic in no fewer than four major cases over the last several years. As discussed in previous columns, three of those cases deal with three corresponding categories of unpatentable subject matter: abstract ideas, laws of nature, and natural phenomena. The most recent Supreme Court case on the topic describes the framework for analyzing whether there exists patent-eligible subject matter and addresses whether the abstract-ideas category is limited to pre-existing, fundamental truths that exist in principle apart from any human action.

According to the most recent Supreme Court case on patent-eligible subject matter, there has emerged a two-part framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, a court determines whether the claims at issue are directed to one of the three patent-ineligible concepts. If so, then the court looks secondly to what else is included in the claims, considering the elements of each claim both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application. This second step has been described as a search for an "inventive concept."

Applying this framework, the Court determined in the most recent case that the patent claims at issue were directed to the abstract idea of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk, much like the risk-hedging idea found in one of the cases discussed in the November/ December edition of this column. Rejecting the patentee's argument that the claims were patent-eligible because they require the use of a computer, the Court found no inventive concept and held that the claims were invalid. In the process of doing so, the Court also rejected the proposition that only pre-existing fundamental truths can be abstract ideas. The Court noted, for example that the abstract idea in the risk-hedging case was simply a "fundamental economic practice" and it was determined to be patent ineligible.

The Supreme Court may soon have more to say about patent-eligible subject matter. The next installment of this column will address one party's attempt to have the Court hear a fifth major case in about as many years.

* 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

I recently received an impressive new biography, the first full-length study, of the early 19th. century English scientist William Hyde Wollaston. The author, Melvyn C. Usselman, is Professor Emeritus in the Department of Chemistry at the University of Western Ontario, and has published many articles on Wollaston and his contemporaries. This column is not my first review of Wollaston's career. I have given a number of talks on this interesting scientist, and I wrote a column on his career that appears in my collection of chemical history sketches (A Chemical Chrestomathy: Chemical History Sketches Vol.1: Chemists, 2012, Amazon books). Usselman's fascinating book has given me further insights into Wollaston's life and career and I will devote some columns to this important 19th century scientist. The title of this new biography is "Pure Intelligence" drawn from a remark made by William Whewell who described a conversation with Wollaston thus: "It was like talking to pure intelligence".

To start with perhaps the most significant of Wollaston's chemical achievements it suffices to say that in addition to discovering two new elements, palladium and rhodium, he perfected a new technology, powder metallurgy, by which he was able for the first time to prepare consistently malleable metallic platinum and make it an article of commerce. This discovery netted him a sizeable fortune.

Wollaston was born on August 6, 1766, in Norfolk, one of a large family. His father was an Anglican vicar, and his Wollaston forebears and near relations included many men of distinction. His great-grandfather, also William, wrote a treatise on "The Religion of Nature Delineated" printed privately in 1724 which was reprinted in several editions and argued that natural morality did not require divine revelation – an unorthodox view at the time. William's grandfather Francis became a Fellow of the Royal Society as did his two great-uncles. At that time this was simply an indication of an interest in science, not necessarily any distinction in its pursuit. Wollaston's uncles included M.D.s, one of whom became physician to the Royal household. (Curiously this uncle died relatively young from an infection he picked up while dissecting a mummy!) Although Wollaston's father was a vicar, he was, like his grandfather,

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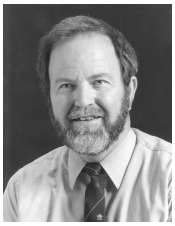
unorthodox in his beliefs and he finally gave up the church. He became an expert astronomer and published a number of articles in "Philosophical Transactions", the journal of the Royal Society.

William Wollaston was educated at Charterhouse School in London, a well-known public school (in the English sense) and entered Gonville and Caius (pronounced "keys") College in Cambridge in 1782 to embark on medical studies. He gained his Bachelor of Medicine (MB) degree in 1788. During this period his older brother Francis John was at Sidney Sussex College in Cambridge where he became Senior Wrangler (top mathematics student) and, in 1792, Professor of Natural Philosophy, i.e. science. Incidentally the MB curriculum at that time was unstructured, and its holder would not necessarily know much about medicine. A contemporary note by Wollaston shows where his interests lay: "[he] applied himself to the study of the Principia of Newton, and the mathematical branches of Natural Philosophy." He also attended lectures in chemistry by Isaac Milner, his brother's predecessor in the Chair of Natural Philosophy. That course included many experiments. Wollaston also developed a deep interest in botany.

While at Cambridge Wollaston met Smithson Tennant, a fellow student, who was well versed in the chemistry of the day, had travelled widely, and had met with many distinguished European chemists including Scheele, Berthollet, and de Morveau. In Sweden Tennant was taught the use of the blowpipe by Gahn, and he applied this technique in Germany with Crell in an unsuccessful attempt to purify platina, an ore containing platinum. This may have been the spark that ignited Tennant's and later Wollaston's interest in platinum.

Despite coming from very different backgrounds - Tennant was 5 years older and an orphaned only child who was financially independent – the two men shared an interest in science, and Wollaston's desire to learn more chemistry was perhaps inspired by Tennant's understanding of the subject. Tennant was ahead of his time in accepting Lavoisier's new views on combustion and chemistry by the mid-1780s. Lavoisier's full exposition of his views was published in his 'Traite Elementaire de Chimie' in 1789. Tennant and Wollaston finally formed a partnership that was to prove important in the history of chemistry. And that story will be continued in my next column.

San Gorgonio Section



Chair's Message

As I start this month's message, the first line from Summertime (Porgy and Bess) is running through my mind: "Summertime, and the livin' is easy". For me summer has been the time for some extra traveling and reading, for my students it was summer break and although not necessarily easy, the opportunity to work more to help pay for school. As the year winds down for high school students, some of the top chemistry students will be receiving recognition for their performance on the Local Section Chemistry Olympiad Examination. In the San Gorgonio Section again this year about 300 students participated and on April 23 ten of them sat for the 2016 National Examination. This year's nominees for the National Examination are:

Ayala High School	Alex Chen*
Chaparral High School	Sonika Sethi
Diamond Bar High School	Benjamin Chen Peter Thompson
Etiwanda High School	Brant Lee
Palm Desert High School	Joshua Feldman
Riverside STEM Academy	Alex Herrera
The Webb School	Jingze Li*
Walnut High School	Ayesha Ng Sophia Ding*

The San Gorgonio Local Section Examination is also used to select students to receive the five annual Section scholarships. The students whose names are marked with an asterisk are among the 2016 scholarship winners. The other two are Yibing Yo (Walnut High School) and Ze On (The Webb School).

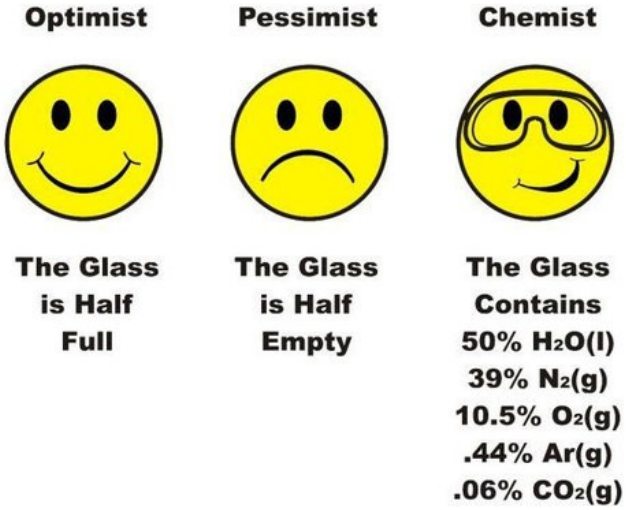
(Continued on Page 11)

Chair's Message (Continued from Page 10)

These twelve students together with the top performing student from each of the other participating schools and the chemistry teacher from each school will be honored at our annual High School Recognition Dinner on May 20. Details regarding the dinner are provided elsewhere in this SCALACS issue.

I wish to acknowledge and express my thanks to the people who made it possible to hold this successful event this year: Eileen DiMauro, David Srulevitch, Ernie Simpson, and Laurie Starkey. Special thanks to Riverside Community College for providing the site for the National Examination and to Stacie Eldridge for arranging the specific details. And last, but certainly not least, my sincere gratitude and admiration to the dedicated high school teachers who took the time to coordinate the participation of their students in the 2016 Chemistry Olympiad Examination. Now on to summertime and that "easy livin".

- Dennis Pederson,
Chair



San Gorgonio Section

May 2016 Dinner Meeting

Student Scholarship and Awards Recognition Banquet

Friday, May 20, 2016

At The Old Spaghetti Factory

3191 Mission Inn Avenue
Riverside, 92507
Phone: 951-784-4417

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

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. The evening will also be an opportunity to hear a presentation by several graduates of our local universities answering the question **"Is Chemistry in Your Future?"**. In 1977, a textbook titled "Chemistry: The Central Science" appeared. The theme of this book was that chemistry earned this title because of the role it plays in connecting the physical sciences with the life sciences and the applied sciences such as medicine and engineering. As a result of this central position career opportunities abound for those excited by chemistry. This presentation will highlight a few of the many possibilities.

Dinner: Choice of three entrees (lasagna, chicken marsala, fettuccine alfredo), bread and butter, dinner salad, spumoni ice cream, choice of drink: coffee, iced tea or soda.

Cost: ACS Members: $15.00, Non-members: $18.00, Seniors & Retirees $10.00, Students: $8.00. (Cash or check at the door.) No charge for student honorees and their teachers.

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Dinner Meeting (Continued from Page 12)

Reservations: Please make your reservations no later than Tuesday May 17th noon by contacting Dennis Pederson, chair, dpedersn@csusb.edu, phone 909-886-2196 or David Srulevitch, secretary srulev@charter.net, phone 909-594-3070. Include names and number of persons. Please be certain to honor your reservations.

Directions: Traveling east or west on Hwy 91, exit on Mission Avenue, travel east.. The restaurant will be on the left.

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

SOUTHERN CALIFORNIA SECTION
AMERICAN CHEMICAL SOCIETY
14934 S. FIGUEROA STREET
GARDENA, CA 90248

IMPORTANT
Do Not Delay!

Contains Dated Meeting Announcement

PERIODICAL

Bi-Section Chemists' Calendar

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

May

20 SC Educational Awards Banquet—see page 3
20 SG Student Scholarship and Awards Recognition Banquet—see page 12

June/July

No activities

August

7 Brewery Tour and Tasting at Smog City Brewery—see page 5

Have a great Summer!