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**SCALACS**

**September 2016**

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

## **Southern California Section**

**Luncheon Honoring our 50, 60, 70 and 75  
Year Members**

**With a Special Presentation by Our  
Project SEED Students**

**Saturday, September 17, 2016**

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**In Memoriam  
Prof. Ahmed Zewail  
California Institute of Technology**

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## **San Gorgonio Section**

**Save the Date!  
October 15, 2016**

**50 and 60 year member  
Recognition Luncheon**

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### Chair's Message



Welcome back to another issue of SCALACS. I hope that the summer was good for all of you and that all our academic members are ready for a new school year. This will be my 29<sup>th</sup> year teaching in a high school classroom!

Since our last newsletter we have had our Educational Awards Banquet which was a huge success. Professor Harry Gray from Cal Tech came and met with all of our students and was a great speaker. We had people from Alpha Chi Sigma and AACT present and talking to the students and teachers about what ACS can do for them. It was also a great chance to honor this year's winner of the Paul Shin Memorial High School Teacher of the Year Award who was Paul Groves of South Pasadena High School.

Paul has decided to retire from his day-to-day duties as a high school chemistry teacher and now focus on his teacher training and online presence to assist other teachers. Paul is a truly worthy winner of the Paul Shin Memorial Teacher Award and all of us at SCALACS are very proud to have been able to honor him.

The response to our tour at the USC Molecular Imaging Center was wonderful! In fact we had to schedule two more tours to accommodate everyone and hope that you had a chance to visit. We hope you also enjoyed the Smog City Brewery Tour in August.

It is with deep sadness that we report that Nobel Laureate Ahmed Zewail of Caltech has passed away. He was a truly amazing chemist and he will be missed. Please see his obituary on page 7.

As always feel free to contact me anytime at [mmorgan@lausd.net](mailto:mmorgan@lausd.net).

- Best,  
Michael Morgan

## **Southern California Section**

### **September Luncheon Meeting**

**Saturday, September 19, 2015**

**Honoring our 50, 60, 70 and 75 Year Members  
With a Special Presentation by  
Our Project SEED Students**

at

**Stevens Steakhouse**

5332 Stevens Place  
Los Angeles, CA 90040

11:30 a.m. Check-in and Students' Poster Session

12:15 p.m. Luncheon

Presentation of Certificates immediately following luncheon

We are celebrating our 50, 60, 70 and 75 year members and having our Project SEED students present a poster of the research they completed this summer. Project SEED takes high school students and places them in a laboratory environment to provide them an opportunity to engage in an authentic research experience. We hope our veteran members will enjoy hearing about their research.

#### **Our 50 year members are:**

Danute Irena Basiulis  
Richard J. L. Bondar  
Rose Charles Caballero  
Dwayne F. Fischer  
Art K. Goourdikian  
Thomas S. Griffin  
Cordelia Hwang  
Syed Mahmood Husaini  
Thomas J. Lobl

Tsutomu Odajima  
Charles F. Reeg  
William Michael Ryan  
Oliver Seely, Jr.  
John H. Seinfeld  
James Preston Stone  
Robert Dennis Tanner  
Joan S. Valentine  
Jeffrey I. Zink

*(Continued on Page 4)*

## Southern California Section

### September Luncheon (Continued from Page 3)

#### Our 60 year members are:

Yi Han Chang  
Majda Comar  
William B. De More  
George Henry Knarr

Raymond Charles Libby  
George Andrew Olah  
Stanley H. Pine  
Kenneth L. Williamson

#### Our 70 Year Members

Arthur Melvin Fradkin  
William Francis Garber  
Emil A. Lawton  
Ross Irving Wagner

#### Our 75 Year Members:

A. George Reifman  
John D. Roberts  
Burton Werbel

The students who took part in our Project SEED Program this summer are Kate Delgado, Samantha Enriquez, Jennifer Reyes and Julie Rojas. There will be a presentation of their research prior to lunch.

**Reservations:** There is a choice of King Salmon or Prime Rib Sandwich for luncheon. The cost of the luncheon is \$25 per person including tax and tip; cash or check at the door. Please call Nancy Paradiso in the Section Office at 310 327-1216 or email [office@scalacs.org](mailto:office@scalacs.org) by **Monday, September 12, 2016** for reservations.

**Directions:** To access Google maps from their website, go to [http://www.stevenssteakhouse.com/home/driving\\_directions](http://www.stevenssteakhouse.com/home/driving_directions). There is parking in the rear of the building.

## Southern California Section

### Congratulations to our 2016 ACS Fellow!

This year, only one Southern California Section member was named an ACS Fellow. We would like to congratulate:

**Richard B. Kaner**

University of California, Los Angeles

Prof. Kaner was recognized for the synthesis and applications of new materials, including the world's hardest metals; conducting polymer membranes for water purification; and graphene-based energy storage devices. He has served as an advisor for the past 12 years to the UCLA ACS Student Chapter and made substantial contributions to outreach programs for high school students and their teachers.

The fellows program began in 2009 as a way to recognize and honor ACS members for outstanding achievements in and contributions to science, the profession, and ACS. Prof. Kaner certainly epitomizes those standards. We offer our sincere congratulations to him and all the ACS Fellows.

### Call for Nominations

The Nominations, Elections and Awards Committee of the Southern California Section is soliciting nominations for the election of 2017 Section officers (Chair-Elect and Secretary), Members-at-Large of the Executive Committee, and Councilors.

If you wish to propose names (including your own) for consideration, send them to Nancy Paradiso in the Section Office at [office@scalacs.org](mailto:office@scalacs.org) by **September 16, 2016**.

## Southern California Section

### Molecular Imaging Center Tours

In July and August, 3 groups of So. Cal. ACS members and guests visited the new \$11 million cyclotron, an integral part of the Molecular Imaging Center (MIC) at USC Health Science campus. We were given permission to tour the facility from the Center's director, Peter Conti, MD, PhD. Dr. Conti has been able to revive an outdated PET radiochemistry facility and make it into one of the most advanced radiochemistry and multimodality imaging centers in the U.S. Each tour started with a short lecture by Ron Weiner, introducing Nuclear Medicine, Positron Emission Tomography (PET) imaging, basic cyclotron operation (converts non-radioactive atoms into radioactive atoms) and automated synthesis of radioactive drugs called radiopharmaceuticals used in Nuclear Medicine. Then James Miles, Cyclotron Radiopharmacist, led each group through the various components of the cyclotron operation at the MIC. This included the cyclotron itself, the synthesis lab, solid target lab, control room, QC lab and the small animal imaging facilities. All the visitors were extremely enthusiastic about the tours asking a wide range of questions. They were excited to see how chemistry is applied to human health.



Tour group in front of the cyclotron from July 22nd tour of the USC Molecular Imaging Center. Jim Miles (center) from USC led the tour.



## **Southern California Section**

### **In Memoriam Prof. Ahmed Zewail California Institute of Technology**

Ahmed Zewail, the Linus Pauling Professor of Chemistry, and professor of physics at the California Institute of Technology and the recipient of the 1999 Chemistry Nobel Prize passed away on Tuesday, August 2, 2016. He was 70 years old.

Ahmed Zewail was the 1997 recipient of the Southern California Section's Richard C. Tolman Medal for his pioneering developments in femtosience, He was the sole recipient of the 1999 Nobel Prize in Chemistry making possible observations of atoms in motion on the femtosecond ( $10^{-15}$  seconds) time scale. These developments led to the establishment of the discipline of femtochemistry. More recently, he and his group developed "4D" electron microscopy for the direct visualization in the four dimensions of space and time of materials and biological behaviors. The American Chemical Society also recognized Zewail with its highest honor, the Priestley Medal, in 2011.

Born in 1946 in Damanhur, Egypt, Zewail received his early education in Egypt and earned his BS and MS degrees from Alexandria University in 1967 and 1969. He received a PhD from the University of Pennsylvania in 1974 and completed an IBM postdoctoral fellowship at UC Berkeley before joining the faculty at Caltech in 1976 as an assistant professor and became a professor in 1982. He was Linus Pauling Professor of Chemical Physics from 1990–97, was named professor of physics in 1995, and was named Linus Pauling Professor of Chemistry in 1997.

Zewail held U. S. and Egyptian citizenship and maintained close ties with his place of birth. In one show of solidarity with his native Egypt, Zewail quickly headed to the Middle East as the events of the Arab Spring unfolded in early 2011 on the streets of Cairo, Alexandria and other Egyptian cities. While there, he promoted peaceful regime change and served as a moderator between students and government bodies. Following the Egyptian revolution, the government established Zewail City of Science and Technology as the national project for scientific renaissance, and Zewail became its first chair of the Board of Trustees.

In 2009, President Barack Obama appointed Zewail to the Council of Advisors on Science and Technology, and in the same year he was named the first U.S. Science Envoy to the Middle East. In that capacity, he promoted scientific and educational collaborations between the U.S. and countries in the Middle East—part of a plan to foster friendlier relations and improve U.S. standing in that region. Subsequently, in 2013, Secretary General of the United Nations Ban Ki-moon invited Zewail to join the U.N. Scientific Advisory Board. In Egypt, he served in the Council of Advisors to the President.

Zewail is survived by his wife, Dema Faham, and his four children, Maha, Amani, Nabeel, and Hani.



## **This Month in Chemical History**

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

My last column introduced a new biography ("Pure Intelligence" by Melvyn C. Usselman) of the 19<sup>th</sup>. century English scientist William Wollaston. The column covered the early years of Wollaston's career from his birth in 1766 to his University studies at Cambridge, where he met his future collaborator and business partner Smithson Tennant.

Wollaston received his Bachelor of Physic (medicine) degree in 1788, attended London hospitals to learn his trade, moved to a practice in Huntington, and was awarded the M.D. in 1793. His practice was only marginally successful, and he moved to another town in 1793. But Wollaston was not really dedicated to medicine, although the records suggest he was a good doctor. He was elected to both the Royal Society and the Royal College of Physicians, and he maintained, in his abundant free time, his pursuits of botany and natural sciences. He merged his interests in a published study of human calculi including bladder stones and gouty deposits. Wollaston moved to London in 1797 and continued to practice medicine at a steadily declining rate; chemical interests were beginning to occupy him.

In 1800 Wollaston and Smithson Tennant agreed to form a partnership with a view to exploring the chemistry of platinum, and especially to producing substantial amounts of malleable metallic platinum. They began by pooling their financial resources to purchase a substantial amount (6000 ounces) of platina, the crude platinum ore found in South America. Platina had been known for many years, and the metal platinum was a major constituent of the ore. Platina was not fusible by the technology of the time, and many attempts had been made to purify its platinum content. None of these was wholly successful.

Wollaston and Tennant's approach was novel. A brief summary is as follows. After treating platina with aqua regia a solution and a residue were obtained. The key to success was the careful  
*(Continued on Page 9)*

## **This Month in Chemical History**

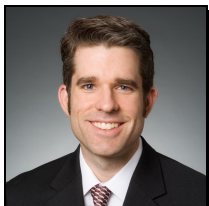
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specification of the proportions of hydrochloric and nitric acids in the aqua regia and rigorous purification by recrystallization of salts obtained from the solution. Wollaston worked principally on the aqua regia solution. He was able to prepare pure ammonium hexachloroplatinate. Heating this produced pure platinum powder. Wollaston invented a new technology, powder metallurgy, to make ingots of malleable metallic platinum. This involved heating the platinum powder to red heat while simultaneously compressing it and swaging with a heavy hammer. The resulting ingot could be beaten and rolled into thin sheets or drawn into fine wires.

Along the way Wollaston also isolated two new metals, palladium and rhodium, and Tennant isolated osmium and iridium. The palladium story has some unusual features. Wollaston understood the commercial importance of his platinum work and did not want to reveal his methods prematurely. Instead of announcing the isolation of a new metal in the conventional way in a talk or an article, he had handbills prepared advertising a new noble metal "Palladium, or New Silver" (it was named after the asteroid Pallas) samples of which could be purchased of Mr. Forster of Gerrard Street for five shillings, half a guinea, or one guinea. Scepticism followed. A well-known Irish chemist, Richard Chenevix, purchased and analyzed a sample, confirmed the handbill's account of its properties, but claimed that he had shown that the sample was an alloy of platinum and mercury. Wollaston retaliated by publishing an anonymous letter in Nicholson's Journal offering twenty pounds to anyone who could prepare palladium from platinum and mercury "before any three gentlemen chymists you please to name". The reward was never claimed.

Several years later Wollaston openly published his methods. By then he had become a successful manufacturer of platinum. Most of his material went to the making of platinum boilers for concentrating sulfuric acid; liners for the touch-holes of firearms; and laboratory apparatus.

In my next, and final, column on Wollaston I will discuss the wide range of his scientific activities.



## Insights Into IP Law

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

The United States Supreme Court recently was asked to hear yet another case on the topic of our present series: patent-eligible subject matter. The case involved a patent claiming methods of using cell-free fetal DNA (“cffDNA”) isolated from maternal plasma and serum, which historically was discarded as medical waste. The applicants for the patent reportedly recognized that fetal characteristics could be identified by examining the small fraction of paternally-inherited cffDNA in the maternal plasma or serum. In their patent, they claimed a method comprising (i) amplifying a paternally-inherited nucleic acid from a serum or plasma sample from a pregnant female; and (ii) detecting the presence of a paternally-inherited nucleic acid of fetal origin in the sample.

A company challenged the patent in court. The court determined that the patent was directed to the natural phenomenon of paternally-inherited cffDNA, and that the claims did not add enough to the natural phenomenon to make the claims patent eligible. The patent owner appealed.

The appellate court began its analysis by noting that the parties did not dispute that the existence of cffDNA in maternal blood is a natural phenomenon. The dispute, rather, was over whether the claims contained an inventive concept sufficient to transform the claimed naturally-occurring phenomenon into a patent-eligible application. The court of appeal found that the answer was “no” because the concepts of amplifying and detecting nucleic acid sequences were well-understood, routine, and conventional at the time the patent application was filed. “The only subject matter new and useful as of the date of the application,” the court wrote, “was the discovery of the presence of cffDNA in maternal plasma or serum.” Though it did not disagree that detecting cffDNA in parts of samples that before were discarded as waste material “is a positive and valuable contribution to science,” the court wrote that “even such valuable contributions can fall short of statutory patentable subject matter,” and ruled the patent invalid.

The patent owners appealed to the Supreme Court, urging it to decide “whether a novel method is patent-eligible where: (1) a researcher is the first to discover a natural phenomenon; (2) that unique knowledge motivates him to apply a new combination of known techniques to that discovery; and (3) he thereby achieves a previously impossible result without preempting other uses of the discovery.” Over the summer, the Supreme Court, which accepts only about 80 cases each term, declined to take the case, leaving the appellate ruling of invalidity intact.

\* The author earned a chemical engineering graduate degree, and is a patent attorney and partner at the law firm of Irell & Manella LLP, which participated in the above case. This column does not constitute legal advice and does not necessarily reflect the views of the firm or its clients.

### Chair's Message



Summer is rapidly drawing to a close and this provides me the opportunity to highlight a few of our activities over the past months. The May High School Recognition Dinner went very well and it was a true pleasure to acknowledge the performance of the outstanding high school students and to recognize their teachers. I extend personal thanks to the program presenters, Della Lizer (Abbot Medical Optics), Paul Monroy (BABCOCK Laboratories), and Paul Salverda (Agilent Technologies) who enlightened all regarding some of the many directions one can go with a chemistry background. This summer our two Project SEED students, Misael Tovar and Camille Rose, have been working in the laboratory of Professor Jingsong Zhang at the University of California, Riverside. This is the third year that Professor Zhang has provided this opportunity for Project SEED students and I thank him very much for his participation in this valuable program. Each year the Section awards five college scholarships. This year's winners were announced in my May Message. I want to take this opportunity to recognize the following past scholarship winners who are just starting their second college year: Oliva Wadkins (2013, Harvey Mudd College), Son Truong (2013, UCLA), Andy Zang (2013, Harvey Mudd College), Julia Ni (2013, Princeton University), Kodiak Raviez (2014, University of Southern California), Yun-Ta Tsai (2015, MIT).

Now it's time to look toward the fall. In October we will have the opportunity to recognize our 50- and 60-year Section ACS members. It will be time to reminisce, to share experiences with students, and to enjoy an excellent meal. The luncheon will be at Magdaleno's in Upland. A complete announcement will be in the October issue. Please save the date, **Saturday, October 15**, and join with others in this celebration. In November we will hold the Annual Meeting for the section and this will be the opportunity for us to review the past year, brainstorm about next year, and to hear from our Project SEED students about their summer experience.

Finally, a bit of nostalgia. During my 45 years of teaching chemistry at CSU San Bernardino, one of the things I enjoyed very much was providing students with examples of chemistry in everyday life. One particularly rich area for ideas was always cooking and I spent some  
(Continued on Page 12)

## **San Gorgonio Section**

### **Chair's Message (Continued from Page 11)**

time this summer rereading Robert Wolke's book "What Einstein Told His Cook". This collection of over 100 short essays includes topics such as "What's the difference between baking soda and baking powder?", "How do pressure cookers work?", and "How do they get corn syrup from corn?". These specific ones I used as examples of acid-base and decomposition reactions, an example of the effect of pressure on an equilibrium, and a lead-in to the current controversy regarding the use of high-fructose corn syrup. Making chemistry current and relevant has always been one of my teaching goals and certainly is one of the goals of ACS. In that context as we head into the fall and then on to next year I welcome any suggestions you have for topics for future Section meetings. Let's explore further the breadth of this "Central Science".

- Dennis Pederson, Chair

### **Meeting Announcement Information For the San Gorgonio Section**

**No September Meeting**

**Save the Date!  
Recognition of 50- and 60-Year Members**

**Saturday, October 15  
at Magdaleno's in Upland**

**See Chair's Message on Page 11**

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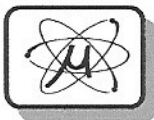
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***IMPORTANT  
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Contains Dated Meeting Announcement

**PERIODICAL**

**Bi-Section Chemists' Calendar**

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

**September**

17 SC 50/60/70/75 Year Member Luncheon—see page 3

**October**

15 SG 50/60 Year Member Luncheon—see page 12  
16-22 National Chemistry Week—Solving Mysteries Through  
Chemistry