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SCALACS

November/December 2020

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

Southern California Section



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

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Number 7

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Southern California Section

Chair's Message



This is my last Chair's message. Thank you for giving me this opportunity; I enjoyed it even in the limited circumstances that 2020 provided us.

This year is coming to a strong close. We just concluded a very active National Chemistry Week. The virtual events we conducted this year have been more limited in what we could do, but we have generally seen higher attendance. Throughout this year we have had extensive collaborations with the local section of the AIAA to create a stronger virtual presence; I want to thank Dr Shekar Sonwane for his help with this coordination.

Ballots for SCALACS offices have been distributed and the voting period will close shortly. If you haven't voted yet, please make sure to do so; the section survives on the participation of its members.

Traditionally we use this issue of SCALACS to recognize volunteers who have helped the section throughout the year. You can find those notifications elsewhere in this issue, but I wanted to remind you that it is never too late to volunteer. If you are interested in participating in section activities, particularly if you have new ideas of things you would like us to do, please let me know. You can email me at brian.b.brady@aero.org.

As the year draws to a close I am hopeful that things will get better. Hopefully sometime next year we will be able to resume in person section events.

- Brian Brady
Chair, SCALACS 2020

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Southern California Section

Call for Nominations 2020 Richard C. Tolman Medal

The Tolman Medal is awarded each year by the Southern California Section of the American Chemical Society in recognition of outstanding contributions to chemistry. These contributions may include achievements in fundamental studies; achievements in chemical technology; significant contributions to chemical education; or outstanding leadership in science on a national level. The nominee need not be a Southern California resident; however, most of the award-related accomplishments must have been made in this area.

The Southern California Section and the Tolman Award Committee are now seeking nominations for the 2020 award. There is no official nominating form for this award; nominations are accepted from any member of this section or of neighboring sections. The nomination package should include:

- an up-to-date curriculum vitae or resume of the candidate
- letters of support from colleagues in the profession describing the candidate's major achievements
- if the candidate is being considered for outstanding teaching, letters of support from former students should be included.

Please submit nomination packages electronically to the Chair of the Tolman Committee at office@scalacs.org. Rather than submitting copies of publications, a list of representative publications would suffice. ***The deadline for receipt of nominations is December 15, 2020.*** Inquiries should be directed to the Chairperson via e-mail at office@scalacs.org. A list of winners appended here demonstrates the caliber of awardee sought by the committee.

1960 William G. Young	1980 Herbert D. Kaesz	2000 William A. Goddard III
1961 Anton B. Burg	1981 Paul D. Boyer	2001 Peter M. Rentzepis
1962 Ernest H. Swift	1982 Donald T. Sawyer	2002 Robert H. Grubbs
1963 W. Conway Pierce	1983 James N. Pitts	2003 Arieh Warshel
1964 A.J. Haagen-Schmidt	1984 Donald C. Cram	2004 Christopher Reed
1965 Thomas Doumani	1985 Arnold O. Beckman	2005 Fred Wudl
1966 Arthur W. Adamson	1986 M. Frederick Hawthorne	2006 G. K. Surya Prakash
1967 Ulric B. Bray	1987 Clifford A. Bunton	2007 Barbara Finlayson-Pitts
1968 Francis E. Blacet	1988 John D. Baldeschwieler	2008 Joan S. Valentine
1969 Robert Vold	1989 Mustafa A. El-Sayed	2009 Richard B. Kaner
1970 Robert L. Pecsok	1990 Linus Pauling	2010 Dennis Dougherty
1971 Roland C. Hansford	1991 George A. Olah	2011 Karl O. Christie
1972 James Bonner	1992 Peter C. Ford	2012 John E. Bercaw
1973 Howard Reiss	1993 Charles L. Wilkins	2013 Mark E. Thompson
1974 John D. Roberts	1994 Jacqueline K. Barton	2014 William J. Evans
1975 Corwin Hansch	1995 Christopher S. Foote	2015 Michael E. Jung
1976 F. Sherwood Rowland	1996 Larry R. Dalton	2016 Paul S. Weiss
1977 Sidney W. Benson	1997 Ahmed H. Zewail	2017 Jeffrey I. Zink
1978 Thomas C. Bruice	1998 Kendall N. Houk	2018 Clifford P. Kubiak
1979 Harry B. Gray	1999 Peter Dervan	2019 Andrew S. Borovik

Southern California Section

Thanks to all 2020 Volunteers

2020 has been particularly challenging to us all. Because of the Covid-19 virus, we couldn't hold in-person events as usual. However, we were able to provide great virtual events to keep our members engaged. The many programs and services that your Section provides are accomplished by the volunteers of the various committees. We would like to acknowledge and thank all of you who volunteered your time and talents during this year.

Chair: Brian Brady

Chair Elect: Thomas
Matthew

Secretary/Treasurer: Barbara Belmont

**Elected Members of
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Gerald Delker
Krishna Kallury
Derek Marin
Thomas Mathew
Michael Morgan
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Tolman Award

Paula Diaconescu,
Chair

(Continued on Page 5)

Thank You 2020 Volunteers (Continued from Page 4)

There were several people that went out of their way to really provide us with exceptional help. We would like to acknowledge **Barbara Belmont** for her technical talents in providing us with an online platform for our High School Olympiad and for implementing our High School Awards and Tolman presentations via Zoom this year, in addition to her many other duties.

We would also like to thank **Shekar Sonwane, Ken Liu and AIAA** for the interesting virtual presentations we were able to provide this year including a really robust NCW virtual program.

In addition, we would like to thank **Henry Abrash and Evelyn Serrano at the California Science Center** for all the wonderful events they have provided for many years. The Science Center is closed right now, but we look forward to collaborating with them again in the future.

We'd also like to thank **Harold Goldwhite and Keith Orso** for their wonderful columns in SCALACS Magazine. Their engaging topics help make our magazine viable and interesting. Thanks for your contributions! Also many thanks to **Eleanor Siebert**, whose eagle-eye proofreading keeps SCALACS looking its best.

It takes a lot of people's time and efforts to make our programs work. We as a Section, and the community at large, sincerely appreciate the dedication of these people and invite you to participate if you haven't already! This Section would be nothing without your volunteer efforts.

If you're interested in Section governance or helping with any of our events, please contact Nancy Paradiso in the Section Office at office@scalacs.org. We'd love to have you on a committee!

We tried to get everyone on the list, if we missed you, please accept our thanks for a job well done!

A large, 3D, red graphic of the words "THANK YOU" in a bold, sans-serif font. The letters are thick and have a slight shadow, giving them a three-dimensional appearance. The word "THANK" is positioned above "YOU".

Southern California Section

Call for Nominations Paul Shin Memorial High School Chemistry Teacher of the Year Award

If you know of a local high school chemistry teacher who is making a difference, please consider nominating them for the Paul Shin Memorial Award. The award recognizes high school teachers in the greater Southern California area for their dedication to their students and the Chemical Education Community. It's teachers like the recipients of this award who make learning chemistry rewarding. Plus, there is a financial component of \$500. The \$500 will be an unrestricted award directly to the teacher. The winner of the Section Award will also be entered at the National ACS level for the Western Regional High School Teacher of the Year Award and the ACS James Conant Bryant Award. Having won a previous award does not necessarily exclude a nominee; however, the nomination would need to be based on different criteria than the first award.

Nomination Package should include: Biographical sketch of nominee with date of birth, list of any publications, statement (no more than 1,000 words) of nominee's achievements as a high school chemistry teacher including quality of teaching, effective methods, nominee's ability to challenge and inspire students, extracurricular work (science fairs, clubs, etc.) and contributions to the Chemical Education Community at large. Two nominating letters are required, but up to five may be included. Nominating documents should be submitted via email to office@scalacs.org. Note that signed documents that have been scanned are acceptable. Nominations from current students at the nominees institution will not be considered.

The deadline for nominations is November 15th, 2020. Please feel free to contact Michael Morgan of the Educational Affairs Committee at mmorgan@lausd.net if you have any questions.

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Southern California Section

In Memoriam Emil Lawton 1922-2020

Emil Lawton was a long-time member of the Southern California Section and attended many SCALACS events over the years. He will be missed.

Lawton attended Wayne State University in Michigan and earned his PhD in inorganic chemistry at Purdue University with Nobel Laureate Herbert Brown. He joined the Navy in WWII and fought in the Pacific Theatre. Lawton moved to California in 1957 and worked for Rocketdyne as a rocket scientist, with a number of discoveries and patents including the synthesis of carbon pentafluoride for aerospace applications. He later worked for Whittaker inventing environmentally friendly refrigerants, underwater torches, and gases for auto airbags.

In the 1960s Lawton became a leader in environmental politics with the Sierra Club. After he retired from Jet Propulsion Laboratories, the Sierra Club and protecting the environment became his "job".

Emil Lawton passed away on September 25, 2020 and is survived by his large family and colleagues at the Sierra Club.

2020 Nobel Prize in Chemistry

UC Berkeley biochemist **Jennifer A. Doudna** and **Emmanuelle Charpentier**, director of the Max Planck Unit for the Science of Pathogens in Berlin won the 2020 Nobel Prize in Chemistry for their pioneering work on CRISPR, a gene-editing tool able to change the behavior of living cells. It was the first time that the Nobel Prize was shared by two women.

"Today's Nobel Prize in Chemistry recognizes CRISPR-Cas9, a super-selective and precise gene-editing tool where chemistry plays an incredibly important role," said ACS President Luis Echegoyen. "This discovery, originally derived from a natural defense mechanism in bacteria against viruses, will have untold applications in treating and curing genetic diseases and fighting cancer, as well as impacts on agricultural and other areas. The future for this technique is indeed bright and promising."

In Memoriam Mario Molina 1943-2020

UC San Diego researcher Mario Molina, who shared the 1995 Nobel Prize in Chemistry with F. Sherwood Rowland at UCI, passed away on October 7th, 2020. He and Rowland showed that a class of household chemicals known as CFCs were destroying Earth's delicate ozone layer. Molina's work helped lead to the 1987 Montreal Protocol, a landmark treaty aimed at repairing damage to the atmosphere.

Molina earned his bachelors degree in chemical engineering in 1965 from the National Autonomous University of Mexico. He continued his postgraduate studies at the University of Freiburg, Germany. In 1972, he earned his doctorate in physical chemistry at UC Berkeley. The following year he accepted a postdoc position under UC Irvine Chemistry Professor F. Sherwood Rowland where they studied how chlorofluorocarbons affected the ozone layer. Molina and Rowland suspected that CFCs were producing a hole in the ozone layer, allowing an unnatural and unhealthy amount of UV light to reach Earth's surface. Rowland was recognized for their work with the Southern California Section's Richard C. Tolman Medal in 1976, but it wasn't until 1995 that Rowland, Molina and Paul Crutzen were awarded the Nobel Prize. Molina was also awarded the Presidential Medal of Freedom in 2013 by President Obama for what was described as 'one of the greatest discoveries in chemistry during the 20th century'.

First at the Massachusetts Institute of Technology and then at the University of California, San Diego, and the Center for Atmospheric Sciences at the Scripps Institution of Oceanography, Molina continued his research on gas-phase chemistry, including the effects of pollutants in the atmosphere. Not forgetting his roots, he has also been studying strategies for making the air in cities cleaner. Mexico City has been the case study for this project and is also the home of the Centro Mario Molina, which is dedicated to finding solutions to the challenges related to climate change, sustainable development, and the efficient use of energy.

Molina's prize in chemistry was the first Nobel prize awarded for work directly on environmental issues. At UCSD, he continued extensive research on aerosols and pollutants, but also used his prominence to draw attention to the disparities in the impact of pollutants on the poor and on developing countries.



This Month in Chemical History

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

In my previous column I continued my “Great Books in Chemistry” series with an examination of the works of Jabir or Geber, a prominent Arabian Alchemist. I now turn from the mystic and almost undecipherable manuscripts of the great alchemist to the completely practical publications (yes; we move now to the era of printed books) deriving from the mining and metallurgical industries.

Growth in population in early medieval times led to increased demand for manufactured goods and a corresponding growth in extraction of mineral resources. This is reflected in a number of publications and I begin with the anonymous “Proberbuchlein” (pamphlets on testing) of the early 16th. Century. These were published in Germany, an area in which mining flourished, and they described, among other procedures, methods of separating gold and silver (a procedure called parting) since silver may be a contaminant of native gold.

In 1540 Vannoccio Biringuccio (1480 – 1538) published *De La Pirotechnia* (on the technological applications of fire) a richly detailed and well -illustrated manual on metallurgy, applied chemistry, gunpowder, fireworks, and related subjects. Biringuccio had traveled in both Italy and Germany and had served as an advisor to many Italian nobles and the Pope. While the book is quite practical in its descriptions there are some discussions of theory. Biringuccio does support the four element theory, but is dismissive of transmutation. He notes that lead increases in weight by fire by about 8% (in its conversion to the calx, or oxide) and draws a parallel to animal corpses (“which weigh more than when alive”!) A decade later, in 1556, Georg Bauer (1494 – 1555), known by the Latinized name of Agricola, had his work *De Re Metallica* published. Agricola was a prolific author and had produced an earlier work on mining and metals. *De Re Metallica*, with its many and very attractive illustrations, is his most important book. Some of Agricola’s book is clearly copied from Biringuccio but much of it is original. Agricola, who was also a physician, lived in mining districts in Bohemia and learned much by direct observation. He is neutral on the topic of alchemy, and is clearly influenced by the writings of Paracelsus. He covers most of the topics that are included in *Pirotechnia*, but adds a section on glass-making taken from his own observations during an extended stay in Venice, then (and still) a renowned center for the craft.

Reasonably priced reprints of English versions of both Biringuccio and Agricola’s major works are available. The English translation of *De Re Metallica* was made by two authors, one of whom became the President of the United States. I’ll leave it to my readers to work that one out.



Insights Into IP Law

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

The on-sale bar doctrine in patent law generally bars the patentability of an invention that was sold more than one year before a patent application on the invention was filed. One rationale for the doctrine is that inventors should not be allowed to make their inventions public for an extended period of time, e.g., by selling them for more than a year, only to then suddenly withdraw the inventions from the public domain by obtaining patent protection.

What if the sale did not disclose the details of the invention? For example, suppose someone invents a method for making a chemical and is able to keep the recipe for synthesis secret (e.g., because the method cannot be reverse engineered from the end product). Suppose the person sells the product of the method more than one year before filing a patent. Is that person barred from obtaining a patent even though the method of synthesis has not been made public? The on-sale bar applies in such circumstances.

A similar scenario was addressed in one case involving a patent covering a method of forming foil-backed inserts in the form of decorative emblems. The record of the case showed that the inventor made emblems using the method and attempted to profit from that use by offering emblems to a number of potential buyers more than one year before applying for a patent. Although the record of the case suggested that the method of manufacture had been kept secret, the court concluded that if the inventor produced an emblem by the method of the invention and offered that emblem for sale more than one year before seeking a patent, then the right to a patent on the method must be declared forfeited.

Besides guarding against withdrawal of inventions from the public domain, the on-sale bar encourages inventors to disclose their inventions to the public sooner rather than later via patent applications so the public may begin to benefit from the invention—e.g., by building upon it and improving it, even if the public has to wait until expiration of the patent to practice it. Thus, the on-sale bar prevents an inventor from obtaining a patent (or invalidates already issued patent claims in connection with litigation) when the inventor sold his or her invention more than a year before applying for the patent—even if the earlier sale did not disclose the details of the invention to the public.

But does a secret sale by one inventor bar another person who independently invented the same thing from obtaining a patent on the invention? That question will be addressed in the next edition of this column.

* 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.

San Gorgonio Section

Chair's Message



On Saturday, October 17 the Section held a virtual meeting recognizing those members celebrating 50, 60 and 70 ACS membership anniversaries. The presentation slides from this meeting can be found on the San Gorgonio Section website. Included in the meeting were detailed "ACS Stories" for Dr. Albert Leo, 70-year member, and Dr. Ted McKinney, 60-year member. In addition, the passing of two members, Dr. James Sims of UC Riverside and Dr. Ernie Simpson, Councilor and Past-Chair of the San Gorgonio Section were acknowledged and highlights of their careers presented.

The meeting was also attended by Student Chemistry club representatives which allowed for some degree of mentoring to be included in the agenda. David Schiessel, from Babcock Laboratories presented "Careers in Environmental Analysis" and Emily Viggers from Johnson and Johnson discussed career paths within that company.

The board wishes to express its gratitude for all those who participated in this virtual event. Dr. Ted McKinney, 60-year member, participated and offered great insight into his career path and presented the following guidance to newly minted chemists:

"Best wishes to the new generation of chemists! I am envious of the opportunities that await you. Make the most of the nascent technologies that will help you to understand better the complexities of ourselves and our world. And I hope that each of you experiences the euphoric moment when you make a breakthrough and think to yourself, "Wow! I just figured out something that nobody else in the world knows – yet."

As indicated in a separate announcement of this newsletter the San Gorgonio Section Annual Meeting will be held (virtually) on Saturday, Nov 21 from 10 am until noon. The program details will be published to the Section's website by November 10th.

(Continued on Page 13)

San Gorgonio Section

Save the Date!

San Gorgonio Section Virtual Annual Meeting

Saturday November 21st, 2020

10 am until Noon

**Zoom Videoconference Link provided to registered participants on Friday, Nov 20th
(will include telephone call-in information)**

Detailed agenda for the Annual Meeting will be posted to San Gorgonio Section Website by November 10th.

Cost and Reservations: There is no cost to attend this event. We ask all participants to register using the electronic reservation form on the **Section Website** <http://sgacs.org>. If you are unable to register via the electronic form please send your name, email address, and phone contact information to Ralph Riggin: rm.riggin@yahoo.com.

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San Gorgonio Section

Chair's Message (Continued from Page 11)

As a reminder you can access the local section information on the websites shown below--a link to the National ACS website is provided therein:

---ACS San Gorgonio Local Section website: <http://www.sgacs.org>

---ACS San Gorgonio Local Section Instagram: <https://www.instagram.com/sangorgonioacs/>

As always, I welcome any questions, suggestions or comments from members of the section or other interested parties. My email is: rm.riggin@yahoo.com.

- Ralph Riggin
Chair

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Bi-Section Chemists' Calendar

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

November

- 15 SC Paul Shin Memorial High School Teacher of the Year Award
nominations due—see Page 6
21 SG Virtual Annual Meeting—See Page 12

December

- 15 SC Richard C. Tolman Award nominations due - See Page 3

To find virtual events, please see our websites:

www.scalacs.org

www.sgacs.org

www.acs.org

Happy Holidays and we hope to see you at an event in 2021!