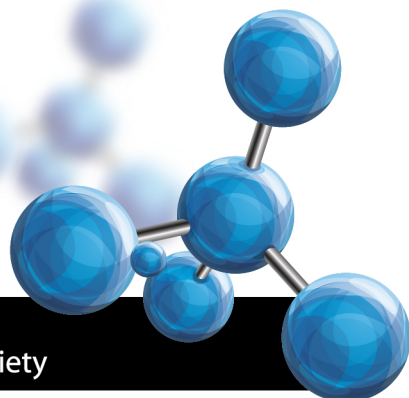




ACS
Chemistry for Life®

SCALACS



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

VOLUME LXXVIII/No. 1

JANUARY/FEBRUARY 2023

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Edye Udell

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Richard Kidd

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Councilors:
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SOUTHERN CALIFORNIA SECTION



CHAIR'S MESSAGE



ACS Local Section
Southern California

Dear SCALACS members,

I hope this message finds you well and that you had a happy start to the new year. I am honored to have been elected as the Chair of SCALACS and am grateful for the support of all the members. As we enter a new phase of the COVID-19 epidemic, I hope that we will safely be able to resume more in-person activities. Although the epidemic is not yet over, we have been able to gather safely at outdoor events and indoors with masks, and I hope that we will continue to find ways to come together in person.

I want to express my gratitude to everyone who has contributed to the organization's activities over the past year. I want to recognize Thomas Mathew for having served not one, but two years as Chair of SCALACS. His leadership during these difficult times brought about new ideas for meeting, new ways for SCALACS members to connect, and creativity in leadership. I also want to recognize Barbara Belmont for her continued fearless leadership as Secretary-Treasurer of the organization. Kudos to Barbara for her many years of helping take care of so many facets of SCALACS. She has an amazing level of commitment and expertise. Peggie Chan, Danielle Fazzi, and Jenneva Guzman have played vital roles in keeping our organization structured and informed. Without these three, we would not be able to run our events and keep members updated with new information. And of course, Krishna Kallury, who not only chaired our organization a few years ago, but continues to work toward enhancing SCALACS by winning grants that enrich the lives of our members. Thank you to all the Executive Committee members whose enthusiasm during our monthly zoom meetings has enabled SCALACS to put on many creative undertakings in the past year. Welcome to all our newly elected members of the Executive Committee. Kudos to Richard Kidd for becoming the 2023 Chair Elect. Together, we all hope to organize fruitful experiences for our members.

On to the plans for 2023! My goal as Chair is to have as many events for members as possible within the constraints that COVID-19 continues to put upon us. The 2022 fall Conference at Caltech was well attended and gave many undergraduate and graduate students an opportunity to present their work after listening to several fabulous talks by area researchers. This conference gave us an eye into what we might be able to do in the coming year. Toward the end of 2022, the Executive Committee began discussing the idea of bringing back the Undergraduate Research Conference, which has been put on hold for the last few years due to COVID-19. We are beginning to investigate the possibility of having the Undergraduate Research Conference in the near future. In addition, we are hoping to bring back the annual High School Chemistry Teacher Conference in the fall of 2023. If any member has ideas for future events, please contact me or the SCALACS office. You can reach me directly via email. I look forward to working with you.

Sincerely,
Edye Udell
Chair, SCALACS
Science Teacher, Westridge School
(EUdell@westridge.org)

SOUTHERN CALIFORNIA SECTION

High School Chemistry Olympiad March 15 & 16, 2023

The Southern California Section will hold the **ACS High School Chemistry Olympiad** on **March 15 and 16, 2023** at over 30 schools in the Los Angeles area. The test is designed to test a student's knowledge of a wide variety of topics in chemistry. If you know of a school or student that would like to participate, please **download** the letter and participation form **from our website** or contact **Gerald Delker** at **Delker@earthlink.net** for more information.

The top 12 scorers on the local exam are nominated to compete in the National Exam, which will take place on **April 29** at a location to be determined. The top 20 national winners are invited to attend an all-expense-paid, two-week study camp at the Air Force Academy. The top four finalists are then selected to represent the United States at the **55th International Chemistry Olympiad**. We will recognize the top local students with monetary awards and certificates. A banquet may be held in May depending on conditions. Check out the 54th International Chemistry Olympiad summary here: <https://www.acs.org/content/dam/acsorg/education/students/highschool/olympiad/2022-usnco-summary-report.pdf>

Participation fees start at **\$8/student**. Fees may be paid online at https://scalacs.org/?page_id=236 or by check payable to SCALACS and mailed to SCALACS Administrative office. Questions, call SCALACS office at **(310) 327-1216**. **Deadline to register online is March 6.**

Call for Nominations

Paul Shin Memorial Outstanding High School Chemistry Teacher 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 Outstanding High School Chemistry Teacher 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 is 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 for the Western Regional High School Teacher of the Year Award and, at the National ACS level, for 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 nominee's institution will not be considered.

The deadline for nominations is **January 31, 2023**. Feel free to contact **Michael Morgan** of the Educational Affairs Committee at **mmorgan@lausd.net** if you have any questions. Questions, call SCALACS office at (310) 327-1216.

SOUTHERN CALIFORNIA SECTION

Activities Organized by the DEIR Committee of SCALACS Under The LSAC/DEIR Grant 2022

An LSAC/DEIR (Local Activities Committee of National ACS/Diversity, Equity, Inclusion and Respect) Grant was awarded to Krishna Kallury, Carlos Gutierrez and Veronica Jaramillo for the year 2022 to execute the following objectives:

Project Title: Advancing SCALACS' Vision of DEIR in Southern California Educational Institutions

The principal objectives of the grant proposal have been:

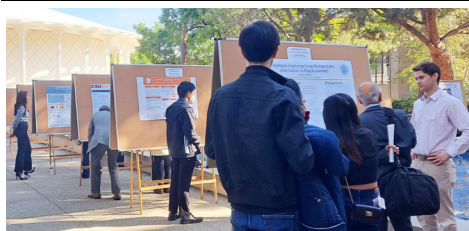
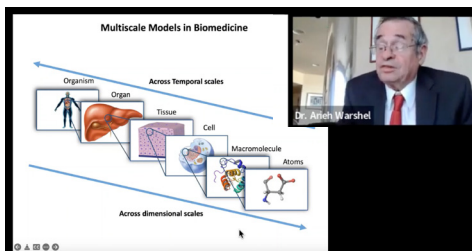
1. Build relationships with high school and community/university college science teachers to identify and sponsor activities that motivate underrepresented students and enable them to get involved in science-related activities to generate interest in higher education in science, while enabling them to build self-confidence.
2. To involve senior members of SCALACS in the events planning/execution.
3. To propagate the principles of DEIR in educational institutions.

A committee comprising of eight senior chemist members of SCALACS together with five high school faculty members, two community college faculty and two members of the general public interested in science education while promoting DEIR recommended the following activities:

- Seminar by a Nobel Laureate
- Seminar by a young role model proponent of science education/DEIR
- Tours by high school students to local science museums
- Promoting undergraduate research through poster session presentations.

Accordingly, the following events were organized:

- Seminar by Nobel Laureate **Prof. Arieh Warshel** of University of Southern California
- Seminar by **Ms. Urvashi Saxena**, Scientist, Collins Aerospace Corporation



- Co-sponsoring a **Poster Presentation** by undergraduate students on their research (organized by SCALACS at Caltech)
- Students **trip to California Science Center** (organized by Dr. Edey Udell, Science Teacher at Westridge High School and Executive Committee Member of SCALACS) on November 3, 2022, attended by 43 students and their chaperones
- Students **trip to Natural History Museum** (organized by Dr. Edey Udell) on November 14, 2022, attended by 35 students and their chaperones on November 14, 2022
- Students trip to **Aquarium of the Pacific** in Long Beach (organized by Ms. Nancy Brown, Science Faculty, California Academy of



(Continue on page 5)

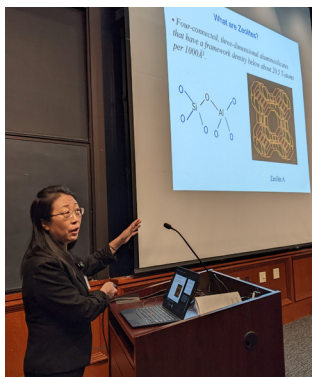
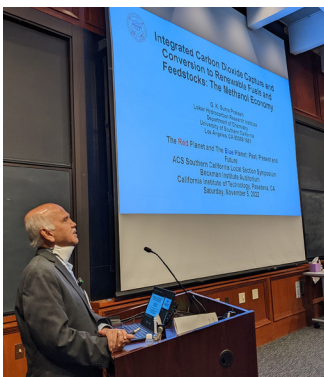
SOUTHERN CALIFORNIA SECTION

SCALACS Research Symposium Recap

The Red Planet and The Blue Planet: Past, Present and Future

November 5, 2022 | Beckman Institute Auditorium | California Institute of Technology

SCALACS Research Symposium was held on November 5, 2022 at the beautiful Beckman Institute Auditorium, Caltech. The Symposium started at 8:30 am and ended at 4:30 pm. Together with speakers, volunteers, poster presenters, we had more than 60 attendees plus nine virtual attendees. Thank you to our honorable speakers: Professor G. K. Surya Prakash, Dr. Ellen Czaplinski, Professor Elias Picazo, Dr. Lawrence Wade, and Professor Pingyun Feng for speaking at the Research Symposium. Our heartfelt gratitude to the committee members who made this event possible: Thomas Mathew, Barbara Belmont, Robert De Groot, Richard Kidd, Brian Brady, Edye Udell, and Veronica Jaramillo. Thank you also to our diligent poster presenters and to all the willing volunteers who graciously lent their help on the event day.



SOUTHERN CALIFORNIA SECTION



(Continue from page 3.)

Math and Science High School, Carson) attended by 30 students and their chaperones on December 7, 2022.

Here are comments from a couple of students on the trips:

"I really enjoyed the gemstone exhibit. I've never really thought of gems as chemistry, so it was fascinating to see how chemistry constructs and affects the color of a gem. I also learned that gems were one single molecule which was very fascinating, especially after seeing some of the really big gemstones. I think that the gems were also really cool to look at upclose."

"As someone who wants to pursue a career in STEM, Asteroid Hunters was very inspiring. I liked being able to see the people who make a huge difference in these specific scientific areas, and I started to imagine myself in their shoes."

"At the field trip, I was able to learn about different marine species and their living conditions. I enjoyed being able to roam around and learn something new in every part of the aquarium." - Kaylee

"Going on the field trip, I was able to see a lot of fishes and sea animals. It was a very fun trip." - Tiger

"I learned that rays have really smooth skin because of a layer of mucus around their skin. I also learned that strawberry anemone spread around their territory, as if they multiply around the rocks. I really enjoyed the huge tanks with different types of fish." - Nahum

BY

KEITH ORSO
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Copyright infringement was the topic discussed in the last edition of this column. Copying constituent elements of a work that are original is copyright infringement if the copyright for the work is owned by someone else. But what about copying a work for which you own the copyright?

Not only does such copying not constitute infringement, it can actually produce a new work that is separately copyrighted. That new work is, intuitively, called a “derivative work” because it is derived from one or more existing works. Common examples of “derivative works” include translations; musical (re)arrangements; movies or television programs based on stories, books, or scripts; drawings based on photographs, and abridged or condensed versions of books or compilations. Additionally, according to the Copyright Statute, a work consisting of editorial revisions, annotations, elaborations, or other modifications, which, as a whole, represent an original work of authorship, is a “derivative work.”

Derivative works are themselves copyrightable if they incorporate some or all of a pre-existing work and also add new, original, copyrightable content. Importantly, the copyright for the derivative work covers only the additions

and changes to the pre-existing work. Thus, creating a derivative work is not a viable strategy to extend the length of copyright protection for a pre-existing work.

A work that is in the public domain—e.g., because its copyright has expired, for example—qualifies as an underlying work on which a copyrightable derivative work may be based. But, again, the copyright protection for the derivative work will not extend to the material from the underlying work, and incorporation of the public domain material will not bar another person from using the same underlying public-domain work to create another derivative work.

Registering a copyright in a derivative work requires identification of the pre-existing work(s) on which the derivative work is based, along with a description of the new material that was added.

The right to create a derivative work is sometimes referred to as an “adaptation right.” Only the owner of a copyright has such a right, which includes the right to authorize someone else to create a corresponding derivative work. Unauthorized preparation of a derivative work constitutes copyright infringement.

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

BY

HAROLD GOLDWHITE
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Continuing my review of the “Great Books of Chemistry in the 20th Century.” I come to a book about a central theme in chemistry, a concept first perceived by Edward Frankland in the 19th Century. I refer to valence.

The book under consideration is “Valence” originally published by Charles Coulson, Professor of Theoretical Chemistry at Oxford University in 1952. I was an undergraduate at “the other place,” namely Cambridge, in the 1950s, and Coulson’s book was my bible as I wrestled with the concepts and mathematics of theoretical chemistry. “Valence” was substantially updated in a 3rd. edition by Roy McWeeny, a Coulson student, and Professor of Theoretical Chemistry at the University of Sheffield. I have mislaid or lost my copy of the first edition of “Valence” but I have to say that the third edition, which appeared in 1979, marks a substantial advance on the first edition and is a “Great Book” in its own right. Incidentally my paperback copy, published by Oxford University Press, cost me 8 pounds 50 pence – at a time when you could buy a decent fish and chips lunch for 5 shillings. You do the math!

An initial chapter discusses the features that any theory of valence must account for, such as why do molecules form?; how do we account for their stereochemistry?; why do bond angles and bond lengths vary in a series of related molecules? etc. Chapters 2 and 3 plunge into the heart of modern theories of wave functions, atomic orbitals, and the principles of wave mechanics. Chapters on diatomic molecules follow, exploring wave functions for pairs of electrons – the familiar covalent bond is explained in detail – and examining such fundamental ideas as hybridization, electronegativity, and bond polarity.

Chapter 7 on polyatomic molecules discusses localized and non-localized orbitals and hybridization, extended to the involvement of d-orbitals in understanding the structures of such non-octet

molecules as SF₆ and PCl₅. An extensive chapter on carbon compounds follows covering conjugation, benzene and aromaticity, Hückel theory, and effects of heteroatoms. Then the text branches out to transition metal compounds and covers both crystal field and ligand field theories; high and low spin complexes; and pi-bonding and sandwich molecules such as ferrocene.

The subject of chemical reactivity, after covering substitution reactions, goes on to examine in detail the well-known Woodward-Hoffman rules, and the more obscure Dewar-Evans rules relating to aromatic reactions. Electronic theories of the solid state cover energy band theory and metals and semiconductors, Brillouin zones, and crystal types. Then follows a chapter on weak interactions and unusual bonds. This includes hydrogen bonding, electron-deficient molecules such as the boranes, phosphazenes and related cyclic compounds, and noble-gas compounds.

In a final chapter the author covers the deficiencies in the then (1979) current theories and embarks on an exploration of ab-initio self-consistent field (SCF) theory. In a summarizing section he points to the advances in theoretical chemistry made possible by computation, but draws attention to the great costs of computation for complex systems. In the 2020s those costs have become miniscule, thanks to advances in computer technology, but even in the 2020s this book on valence would still be a valuable introduction to the subject. And its timelessness is what makes it worthy of inclusion in the “Great Books of Chemistry in the 20th Century.”

(Perhaps this would be a good time to reiterate my call to my readers; if you have any favorites for this list, please send your recommendations to me. They will be given serious consideration provided that I can get hold of a copy).

SAN GORGONIO SECTION



CHAIR'S MESSAGE



Happy New Year from the ACS San Gorgonio Section!

This is the beginning of my second year as the Chair of your Local Section of ACS. It was an honor to hold this position for 2022. I am proud of all the ways the Section grew during the past year.

In 2022, we launched our new website, <https://www.sangorgonioacs.com>. If you ask anyone on the Executive Board, they will tell you that this website has been years in the making. Special thanks to Eileen DiMauro, Ana Bahamonde, and Michael Nalbandian for their hard work on our website. We are proud of the finished product and hope you will bookmark the page to get the most up-to-date information of Section events and activities. Also follow us on Instagram @sangorgonioacs. Our Social Media Committee has done an amazing job advertising our events this year!

This year, the Section organized seven events and sponsored various other events held by outside organizations and individuals. We had over 315 people attend and almost 90 volunteers during our various events in 2022! These numbers are outstanding! Thank you to everyone who attended an event, invited a friend, signed up to volunteer, participated on a Section committee to plan an event, and/or helped during an event.



We would love to partner with you in 2023. Many of you have already volunteered for committees for this year, but there is still time to sign-up! Fill out the form at <https://forms.gle/26CZmwuWP1qjMWbc6>. If you would like to financially partner with the Section, you can email me at jnalbandian@calbaptist.edu. We use donations from our members for funding student scholarships, Project SEED research for high school students, outreach events, and more!

Finally, a special thank you to the members of the Executive Board for a wonderful 2022. Thank you for allowing me to be Chair and taking my crazy ideas and making them a reality. Thank you for saying yes whenever I asked for help. Thank you for being so supportive. Thank

SAN GORGONIO SECTION

you for all the time that you sacrificed throughout the year to ensure the Section's success. The Section would not exist without the input, creativity, ideas, and hard work of each and every one of you. So, thank you, Ralph Riffin, Eileen DiMauro, Dennis Pederson, David Srulovitch, Ana Bahamonde, Emily Viggers, and Jessy Lemieux. I love working with each one of you. Ralph is now transitioning out of our Section since he moved in 2022. Ralph has been an amazing Chair (2020 and 2021) and Past Chair (2022) and we greatly appreciate all his contributions to the Section over the years. We will miss you, Ralph!

The Executive Board is currently in the process of planning the events for 2023. Stay tuned for more information on our website and through email very soon! I look forward to engaging with you in 2023 as I continue in the role of your Section Chair!

Dr. Jenifer N. Nalbandian

Chair of the San Gorgonio Local Section
jnalbandian@calbaptist.edu



*SGS Annual Meeting 2022 and
50- & 60-Year Member Recognition Luncheon*



*WCC Women
in Chemistry
Roundtable 2022*



*2022
Earth Day Event*



California Air Resources Board Facility Tour 2022

**SOUTHERN CALIFORNIA SECTION
AMERICAN CHEMICAL SOCIETY**

**2700 East Foothill Blvd #209
Pasadena, CA 91107**

**IMPORTANT
Do Not Delay!**

Contains Dated Meeting Announcement

PERIODICALS

Bi-Section ACS Calendar

January

- 3** High School Chemistry Olympiad Local Registration Begins
— see page 2

- 31** Last Day for Paul Shin Memorial Outstanding
High School Chemistry Teacher Award Nominations
— see page 2

March

- 15-16** High School Chemistry Olympiad Local Exam
— see page 2