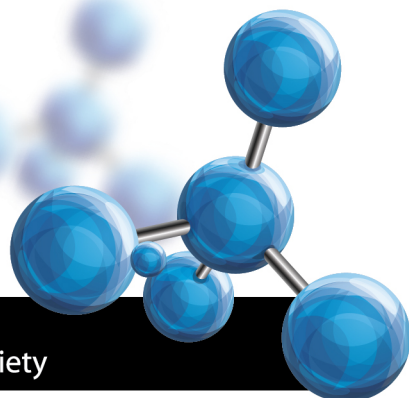




ACS

Chemistry for Life®

SCALACS



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

VOLUME LXXVII/No. 7

NOVEMBER/DECEMBER 2022

SOUTHERN CALIFORNIA Section

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A Research Symposium for Undergraduates and Graduates

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SAN GORGONIO Section

Monthly E-Newsletter

New Website! www.sangorgonioacs.com

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SOUTHERN CALIFORNIA SECTION



"Our virtues and our failings are inseparable, like force and matter. When they separate, man is no more." – Nikola Tesla

CHAIR'S MESSAGE



ACS Local Section
Southern California

Dear SCALACS members,

Greetings! First of all, I extend my heartfelt gratitude to you all for allowing me to serve you as the Chair of the Southern California Section of the American Chemical Society for the past two consecutive years 2021 and 2022. I am greatly indebted to all of our Board of Directors, Councilors, members of the Executive Committee, and members of different sub-committees for devoting their valuable time to leading many activities despite the COVID-19 challenges during these years. Also, thanks are due to all members of the section for their kind and generous support and willingness to render their help in time of need.

It is our honor to recognize Professor Peter B. Dervan, California Institute of Technology who was inducted into the 2022 Class of American Chemical Society Fellows and Professor Donald R. Blake, University of California, Riverside who won the 2021 Tolman Award, the iconic scientific award from our Section.

Our section received three grants during the 2021-2022 period. I congratulate Ms. Barbara Belmont (METT Grant) and Dr. Krishna Kallury and team (DEIR & LASC/DEIR Grants on behalf of the Senior Chemists Committee) for the grant applications and the awards. Using these grants, we were able to support many programs including Zoom lectures and the Research symposium on November 5, 2022.

We were very fortunate to have many distinguished scientists as speakers for our Zoom lectures. It was a great honor to have Professor Arieh Warshel (Nobel Prize in Chemistry, 2013) for delivering a highly inspiring special lecture for more than 110 attendees, including many students from neighboring schools and colleges. I am very grateful to Professor G.K. Surya Prakash and all members of the Senior Chemists Advisory Committee led by Dr. Krishna Kallury for planning this event and for many inspiring Zoom lectures (see page 9 for acknowledgments).

We extend our sincere thanks to Professor Donald R. Blake for the 2021 Tolman Award Lecture at the University of California, Irvine; Professor G. K. Surya Prakash, Dr. Ellen Czaplinski, Professor Elias Picazo, Dr. Lawrence Wade, and Professor Pingyun Feng for speaking at the Research Symposium at California Institute of Technology in connection with the National Chemistry Week and Professor Jenny Y. Yang for speaking on International Women's Day. Thanks to Dr. Pamela Leggett-Robinson of PLR Consultants, Atlanta, and Ms. Urvashi Saxena of Collins Aerospace Corporation for giving very stimulating talks to students. I am very grateful to Dr. Robert-Michael de Groot and the organizing committee for making all arrangements for the Research Symposium on November 05, 2022. Sincere thanks to Dr. Edye Udell (Chair-Elect) for organizing study tours to the California Science Center and Natural History Museum of Los Angeles for high school students.

Our special salute of honor goes to our Senior Scientists who completed 50, 60, and 70 years of membership in the American Chemical Society for their outstanding service and selfless activities spanning such a long period. Thanks to Dr. Veronica Jaramillo and Dr. Inessa

SOUTHERN CALIFORNIA SECTION

Bichynskaya for organizing the International Women's Day celebration. I am also grateful to Mr. Michael Morgan and Dr. Brian Brady for their timely support in various activities including educational affairs and award nominations/elections. I would like to recognize the hard work of Ms. Barbara Belmont, our Secretary/Treasurer in technology support, and our high school teachers' team led by Dr. Gerald Delker for conducting the Chemistry Olympiad Southern California Section Examinations and the respective programs efficiently. I am honored and privileged to work with these wonderful people, who are always diligent to render their support any time in need. My sincere thanks are due to our office team led by Ms. Jenneva Guzman, Ms. Peggie Chan, and Ms. Cathie Lou Parker (Huntington Association Management) for their prompt and efficient administrative services, SCALACS Magazine preparation, arrangements for Zoom lectures, symposia, and various programs, and Professor Eleanor Siebert for help with SCALACS Magazine editing.

I wish you all a very blessed and prosperous New Year 2023!

With best regards,
Thomas Mathew
Chair, SCALACS
(tmathew@usc.edu)

Call for Nominations **2022 Richard C. Tolman Medal**

The Richard C. 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 2022 award.

There is no official nominating form for this award and 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, 2022**. Inquiries should be directed to the Chairperson via email at **office@scalacs.org**.

SOUTHERN CALIFORNIA SECTION

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

November 5, 2022
8:30 AM - 4:30 PM

Beckman Institute Auditorium
California Institute of Technology
400 S. Wilson Ave., Pasadena

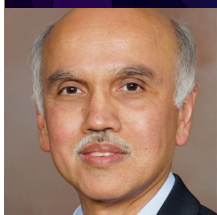
TICKETS

In-Person Event: \$30, \$10 (students)

Virtual Event via Zoom: \$10, Free (students)

Breakfast and lunch will be included.

Join us for an in-person, full-day Research Symposium for Graduate and Undergraduate students featuring these five stimulating talks presented by distinguished speakers!



Read pages 4-8 for more speakers' information. To register, visit www.scalacs.org.

POSTER PRESENTATION: Graduate and undergraduate students who are interested in participating in the Poster Presentation during the afternoon session (2:00-4:30 pm) may email their title and abstracts to office@scalacs.org with cc to bbelmont@scalacs.org before 5 pm on Tuesday, October 25. Abstracts should not exceed 250 words. In your email, please indicate whether the presenter is a graduate or an undergraduate student. **All poster presenters must register.**

The Nobel Prize in Chemistry, in brief

Last month, the **Nobel Prize in Chemistry 2022** was awarded to **Carolyn R. Bertozzi** (Stanford University, CA, USA), **Morten Meldal** (University of Copenhagen, Denmark), and **K. Barry Sharpless** (Scripps Research Institute, La Jolla, CA, USA) for the development of *click chemistry and bioorthogonal chemistry*. Sharpless and Meldal have laid the foundation for click chemistry, by which simple molecular building blocks snap together quickly and efficiently. Bertozzi developed click reactions that work inside living organisms – *bioorthogonal reactions* without disrupting the normal chemistry of the cell. This is the second Nobel Prize in Chemistry for Sharpless. There are only two Nobel Laureates who got both Nobel Prizes in Chemistry – Frederick Sanger (UK) and now K. Barry Sharpless (USA).



Source: The Nobel Prize in Chemistry 2022 <https://www.nobelprize.org/prizes/chemistry/2022/press-release/>

SOUTHERN CALIFORNIA SECTION

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

Integrated Carbon Dioxide Capture and Conversion to Renewable Fuels and Feedstocks: The Methanol Economy

Presented by Plenary Speaker:
Professor G. K. Surya Prakash
Loker Hydrocarbon Research Institute and
Department of Chemistry
University of Southern California



Professor Surya Prakash was born in 1953 in Bangalore, India. He holds a B.Sc. (Hons) from the Bangalore University and a M.Sc. from the Indian Institute of Technology, Madras. He obtained his Ph. D. degree under the tutelage of late Professor Olah (1994 Nobel Laureate) at USC in 1978. He joined the USC faculty in 1981 and is now a Professor and Director holding the Olah Nobel Laureate Chair at the Loker Hydrocarbon Research Institute. His research encompasses superacid, hydrocarbon, synthetic organic, organosilicon, electro- and organofluorine chemistry, with an emphasis on energy storage, greenhouse gas abatement and catalysis. He is a prolific author with 835 publications, 117 patents and 14 books. He has received four ACS Awards: the 2004 *Creative Work in Fluorine Chemistry*, the 2006 *George A. Olah Award in Hydrocarbon or Petroleum Chemistry*, the 2006 *Richard C. Tolman Award* and the 2018 *Late Career Cope Scholar Award*. He has shared with the late Professor Olah, the inaugural \$1 Million the 2013 Eric and Sheila Samson Prime Minister's Prize for Innovation in Alternative Fuels for Transportation by Israel. In 2015, he won the Henri Moissan International Prize for excellence in Fluorine Chemistry. He is an elected Fellow of many prestigious academies.

Abstract:

Renewable methanol synthesized from carbon dioxide capture and conversion using water and renewable energies such as solar, wind, geothermal, atomic, etc., is a simple solution in the long run to a complex climate change carbon conundrum. Liquid methanol is a versatile high octane, clean burning automotive fuel (to replace gasoline and diesel), a fuel for direct oxidation methanol fuel cell, chemical feedstock to make ethylene, propylene and myriad of other chemicals and a convenient hydrogen storage medium that can replace fossil fuels in almost all applications without inflicting major changes to the existing infrastructure. Our recent studies on integrated carbon dioxide capture from point sources including air and its reductive conversion to methanol and methane (principal component of natural gas) with hydrogen will be discussed using homogeneous as well as heterogeneous catalysts under moderate reaction conditions.

SOUTHERN CALIFORNIA SECTION

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

Search for The Signs of Past Life on Mars: Understanding The Formation of Jezero Crater and Chemical Alteration of Foundational Rocks by Past Aqueous Environments

Presented by:

Dr. Lawrence Wade and the PIXL Team

California Institute of Technology, Jet Propulsion Laboratory

Dr. Lawrence A. Wade received his Physics B.A. in 1980 from California State University, Fullerton and his Molecular Biology and Biochemistry Ph.D. in 2011 from the California Institute of Technology. He spent 13 years in working in aerospace companies before joining JPL in 1991. Currently, Dr. Wade serves as Chief Engineer of the PIXL instrument on the Perseverance Mars Rover. His past spaceflight work includes the design and development of instruments (e.g., PIXL) and devices (e.g., 16 K Sorption Cryocoolers for the Planck Mission), architecture of space missions (including Planck, Herschel, and the James Webb Space Telescope), and science team participation in both the Planck High and Low Frequency Instruments. Much of his career has been spent doing research and development of various instruments and components. These include Stirling and sorption cryocoolers operating at temperatures as low as 10 K, and a near-field optical microscope that resolved single-molecules with <10 nm spacing. Lawrence has authored over 200 papers and has had seven U.S. patents issued. He has also won numerous awards including the 2022 NASA Exceptional Engineering Achievement Medal (for PIXL), the 2018 Gruber Cosmology Prize (awarded to the Planck Team), and the 2010 NASA Exceptional Technical Achievement Medal (for Planck).



Abstract:

The Perseverance rover landed in Jezero crater on Mars with three scientific objectives: to explore the geologic setting, to identify ancient habitable environments and assess the possibility of past Martian life, and to collect samples for potential transport to Earth for further analysis. Jezero crater was an open-system lake containing a well-preserved delta. It was identified as being suitable for astrobiological investigation because on Earth similar environments of a similar age contain evidence of microbial life. Perseverance uses five instruments for characterizing the geology of Mars: Mastcam-Z (panoramic and stereoscopic imaging), SuperCam (imaging and LIBS IR and Raman spectroscopy), RIMFAX (ground penetrating radar), SHERLOC/WATSON (high resolution imagery and UV Raman spectroscopy), and the subject of this discussion, PIXL.

PIXL, Planetary Instrument for X-ray Lithochemistry, characterizes targeted rocks using multi-spectral imaging and X-ray spectroscopy to correlate rock textures with chemical composition. PIXL high-resolution data measures the elemental chemistry of tiny features observed in rocks such as individual sand grains, veinlets, cements, concretions, and crystals. PIXL has sufficient sensitivity to enable geologists to determine the processes that formed targeted rocks, identify their mineralization, and illuminate processes that subsequently altered them.

This talk will focus on the evaluation of the Olivine-rich Bastide and Brae rock outcrops on the floor of Jezero crater. We find that these outcrops are composed of igneous rock, moderately altered by aqueous fluid. We interpret them as an olivine cumulate, formed by settling and enrichment of olivine through multi-stage cooling of a thick magma body.

SOUTHERN CALIFORNIA SECTION

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

Titan in a Test Tube: Organic Cryominerals Formed in the Lab

Presented by:

Dr. Ellen Czaplinski
Jet Propulsion Laboratory



Dr. Ellen Czaplinski is a first-year NASA Postdoctoral Fellow at the Jet Propulsion Laboratory working with Dr. Robert Hodyss. Her research interests include experimental laboratory studies of Titan surface chemistry, habitability of Titan's surface liquids, improving autonomous capabilities of ocean worlds missions, and robotic exploration of the lunar south pole. Dr. Czaplinski received her Ph.D. in Space and Planetary Sciences from the University of Arkansas in 2021, and a B.S. in Planetary Science from Purdue University in 2016. She was awarded the NASA Earth and Space Science Fellowship and the Zonta International Amelia Earhart Fellowship to support her Titan research in graduate school. Ellen enjoys rock climbing, hiking, strategic board games, tea, and training her dog, Stella.

Abstract:

Titan, Saturn's largest moon, has many hydrocarbons and nitriles that are created in the atmosphere from photochemical processes. Titan is Earth-like, in that it has a thick, nitrogen-dominated atmosphere and stable liquids on the surface. However, unlike Earth, Titan's surface temperature is ~90 K and the lakes and seas are filled with liquid hydrocarbons like ethane and methane. Additionally, more complex compounds may form in the atmosphere and eventually deposit onto the surface. For example, acetylene (C_2H_2) is a primary photochemical product in the atmosphere that has been identified on the surface. Recent laboratory work has demonstrated that co-crystals between two or more molecules (i.e., pyridine and acetylene) can form under Titan surface conditions. Co-crystals are stable structures held together by weaker intermolecular interactions like pi bonding.

Co-crystals can be good indicators of the geologic processes and chemical composition of Titan's surface, which will be important for future Titan surface missions. Specifically, the upcoming *Dragonfly* rotorcraft lander on Titan will study the surface in great detail. Providing laboratory measurements for potential surface materials, such as co-crystals, is important for connecting small-scale, molecular behaviors to large-scale surface features observed on Titan. I will discuss experimental setups that are used to analyze co-crystals in the lab, as well as past and ongoing results and implications from these studies.

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

Nanoporous Materials for Energy Related Applications

Presented by:

Professor Pingyun Feng
University of California, Riverside



Professor Pingyun Feng received her PhD in 1998 from Department of Chemistry, University of California, Santa Barbara (UCSB). After two years of postdoctoral study at Department of Chemical Engineering, UCSB, she joined University of California, Riverside in 2000. Professor Feng's research focuses on the synthesis, characterization, and application of various types of functional solid-state materials. These materials range from porous metal-organic framework materials to high-surface area semiconductors based on metal chalcogenides. Her group has published more than 256 peer-reviewed scientific papers, most of which are in prestigious high-impact journals. Her accomplishments have been recognized by the Beckman Young Investigator Award, NSF CAREER Award, Camille Dreyfus Teacher-Scholar Award, and Alfred P. Sloan Fellowship award. She received the ACS 2017 F. Albert Cotton Award in Synthetic Inorganic Chemistry and the 2020 Richard C. Tolman Award from the Southern California Section of the American Chemical Society. She is currently a Distinguished Professor and holds the Harry W. Johnson, Jr. Founder's Chair in Chemistry at UCR.

Abstract:

The presentation will focus on two types of porous materials. One is metal chalcogenide tetrahedral clusters that can self-assemble to form zeolite-type crystalline porous materials. Single-sized tetrahedral metal chalcogenide clusters act as building blocks to form well-ordered three-dimensional zeolite-type materials.

The structural analysis based on single crystals reveals detailed compositional and structural information. The materials can act as a host for different catalytic nanomaterials for photo- or electro-catalytic conversion of CO₂ or water to useful chemicals. The second type of porous materials is metal-organic framework materials (MOFs). Strategies for the synthesis of new porous MOFs will be discussed, with the focus on the use of different metallic elements and their various combinations.

In addition, the talk will cover our recent efforts and strategies developed on functionalizing MOF for enhanced gas sorption through pore space partition. The pore space of MOF can be engineered by using extra-framework ligands, metal complexes. The materials demonstrate potential applications for fuel gas storage (e.g., H₂, CH₄), gas separation (e.g., C₂H₂/CO₂, C₂H₄/C₂H₆, C₃H₆/C₃H₈), and harmful gas removal and sequestration (e.g., CO₂, NH₃).

SOUTHERN CALIFORNIA SECTION

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

Chemical Space Through Transition Metal Catalysis

Presented by:

Professor Elias Picazo

University of Southern California



Professor Elias Picazo was born and raised in California. He attended USCB for his undergraduate studies and worked on trifluoromethylation chemistry with Armen Zakarian. He then moved to UCLA to pursue his doctoral degree with Neil Garg. As an NIH F31 fellow, Professor Elias developed total syntheses for various akuammiline alkaloids that had no prior syntheses. Upon completing his doctoral degree at UCLA, Professor Elias moved to Massachusetts to expand his skill set. At Harvard University, he studied hydrogen-bond-donor organocatalysts for their application in enantioselective transformations. He was awarded the NIH K99/R00 fellowship and began his independent career at USC in January of this year (2022). The Picazo Group is interested in reaction development and synthesis. In the realm of reaction development, the Picazo Group is involved in transition metal catalysis and enantioselective catalysis. As for synthesis, the Picazo Group is pursuing the synthesis of photoswitchable molecules and complex natural products.

Abstract:

Iron-catalyzed reactions, enantioselective reactions, Donor-Acceptor Stenhouse Adducts (DASAs), and strategies for the syntheses of biologically active indole alkaloid natural products are being developed. The significance of these goals cannot be overstated as the discovery of new chemical space leads to improved human health as it enables breakthroughs in biology, medicine, and industry. Further, nearly half of approved drugs come from natural products, derivatives, or mimics. Given the early-stage nature of the group, strategies, logic, and preliminary results will be discussed.

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 is teachers like the recipients of this award who make learning chemistry rewarding. This honor includes a \$500 grant that is an unrestricted award directly to the teacher. The Section Award winner 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.

The 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.

SOUTHERN CALIFORNIA SECTION

Thank You to All 2022 Volunteers

The many programs and services that this 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.

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Edye Udell

Secretary/Treasurer:

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Laurie Barge, Chair
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Tolman Award:

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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 our 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!

BY

KEITH ORSO
Irell & Manella LLP
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Recent editions of this column have been exploring copyrights, including what subject matter is copyrightable and how copyrights are obtained and registered. This edition explores copyright infringement.

Not all copying is copyright infringement. Two elements must be proven to establish copyright infringement. The first element is ownership of a valid copyright in the work. The second element is copying of constituent elements of the work that are original.

As discussed in the March 2022 installment of this column, the word “original,” in this context, means that the work was independently created by the author and possesses at least some minimal degree of creativity. A compilation of data may meet the originality requirement based on the selection and arrangement of the data, but an alphabetical list of names and telephone numbers has been found to lack the requisite originality. That finding was made by the Supreme Court in a case involving telephone directories, where one company copied from the “white pages” of another company’s telephone directory more than 1000 names, towns, and telephone numbers, including four entries that were fictitious listings inserted for the very purpose of detecting copying.

There was no dispute that the telephone directory from which the data was taken, considered as a whole, was subject to a valid copyright because it contained some text in a foreword and original material in or among the “yellow pages” advertisements.

But the Supreme Court decided that raw data did not satisfy the originality requirement, and although the company who put together the directory from which the data was taken may have been the first to discover and report the names, towns, and telephone numbers, such data did not owe its origin to the company because that data already existed and would have continued to exist even in the absence of the directory. In other words, the company was not the author of such information.

The Court also determined that the company had not selected, coordinated, or arranged this unoriginal information in an original way, as the information was simply listed in alphabetical order by name. Because what was copied lacked the requisite originality, the Court ruled that the copying did not constitute copyright infringement. This column will next tackle “fair use.”

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.

BY

HAROLD GOLDWHITE
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hgoldwh@calstatela.edu



In a recent column I warned you about a possible succession of physical organic chemistry texts that I plan to include in the "Great Books of Chemistry in the 20th Century" series. Here we go with another celebrated volume: "Structure and Mechanism in Organic Chemistry" by C.K. Ingold, Professor of Chemistry, University College, University of London, published in 1953. This is another of the seminal chemistry texts based on the remarkable series of Baker Lectures presented at Cornell University. Ingold visited Cornell in Fall Semester of the 1950-51 academic year to present this lecture series. The final product was this 800-page tome covering, as I shall detail, most aspects of the chemistry of organic molecules undergoing homogeneous molecular reactions in their normal states.

(A personal note: I was a post-doctoral associate at Cornell from 1956-1958. In Spring 1957, the lecturer was Saul Winstein but no book was forthcoming, perhaps because of his early death. In Spring 1958, the lecturer was R.P. Bell on "The Proton in Chemistry" – also the title of the book based on his lectures. The Baker lectures were very well attended. The labs essentially shut down for the one or two hours a week of the presentations.)

When I was in undergraduate organic chemistry classes in the early 1950s we heard very little about physical organic chemistry. However the names of Hughes and Ingold did come up in the context of nucleophilic aliphatic substitution, along with the S_N1 and S_N2 symbolism. The two collaborators had been working on the mechanisms of these classes of reactions since the 1930s and had developed the S_N taxonomy and a rationalization of mechanisms of these classes of reaction.

In Ingold's list of acknowledgments in the book's Preface there is a litany of mid-20th Century contributors to physical organic chemistry. In addition to Hughes there are J. F. Bunnett (Reed College); J. W. Baker (Leeds); J.D. Roberts (then at M.I.T.); and F. H. Westheimer (then at Chicago).

The first two chapters of Ingold's book give the background of valency and molecular structure; and interactions (forces) between and within molecules. This second chapter presents an in-depth examination of the relative strengths of the forces detailed, a subject that Ingold had previously reviewed in detail in the early 1930s.

Physical properties at that early date were mostly based on macroscopic determinations of such parameters as electric dipole moments, heats of formation and reaction, electrical polarizability, and bond force constants from spectroscopy. An exploration of aromatic character moves from theory to physical properties with a detailed exploration of diamagnetic polarizability in unsaturated molecules, conjugated unsaturates, and aromatics. It is impressive to realize how far chemists of nearly a century ago could go in understanding molecular properties based on a handful of bulk-matter properties.

Two chapters of about 100 pages each present what I characterize as the heart of the matter. The first on electrophilic aromatic substitution draws together masterfully the experimental evidence on this subject looking at electronic effects on the ratio of ortho- to para-substitution, and at steric effects in both the reagents and the substrates. Nitration serves as a model for this class of reaction, shedding light on halogenation, acylation, sulfonation, mercuration, hydrogen exchange (drawing on isotopic labelling experiments carried out in the early 1930s!), and diazo-coupling.

Nucleophilic substitution at saturated carbon atoms had been a long-term study of the Ingold and Hughes group, and its treatment in this text is complete and comprehensive. Polar effects, solvent effects, salt effects, and catalysis are all scrutinized and interpreted. The Walden inversion gets its due. And the effects of steric hindrance on both kinetics and thermodynamics of nucleophilic substitution are explored.

We are still less than halfway through this comprehensive volume and remaining topics include eliminations, rearrangements, additions to olefins, acids and bases, carboxyl reactions, and nucleophilic aromatic substitution. A ten-page index pays tribute to the thoroughness with which Christopher Ingold prepared the book. Almost every page is footnoted to the original sources.

Ingold (1893-1970) received many honors. Fellow of the Royal Society in 1926, he was knighted in 1958 for services to British scientific education.

SAN GORGONIO SECTION



CHAIR'S MESSAGE



Hello!

The San Gorgonio Section has had an exciting Fall packed with events. I hope you were able to attend at least one.

Our National Chemistry Week events in October were well-attended and well-received by the community and Section members alike. Thank you again to Ralph Riggin for planning both the CARB tour and the Annual Meeting and Senior Recognition events. Thank you to David Srullevitch, Kevin Simpson, Kevin Kou, and the UCR Chemistry department for your help and support for the Annual Meeting. Thank you to Ana Bahamonde and the Women Chemists Committee for planning another wonderful career panel. Thank you to Allyson Fry-Petit, Sophie Zaaier, Veronica Carta, and Stacie Eldridge for sharing your career stories with the next generation of chemists and scientists.

New Website

The San Gorgonio Section is pleased to announce the launch of our new website! Bookmark <https://www.sangorgonioacs.com> so you can stay up-to-date on the latest news and events for the Section. Thank you to Dr. Ana Bahamonde for her help with redesigning the website. Thank you to Dr. Michael Nalbandian for taking over as our new Webmaster. He has already been instrumental in making our website something special. (If you are wondering about that last name, Michael is my husband. He is a chemical engineer and longtime member of the Section.)

Section Elections

We will be holding our election soon for the Section. The election will be conducted electronically through a SurveyMonkey link that will be emailed out to the Section members (the same email list that receives my monthly e-newsletters). If you would like a paper ballot, please email Section Councilor Eileen DiMauro at edimauro@mtsac.edu.

Monthly E-Newsletters

In addition to my monthly Chair's Messages in SCALACS, I also send out a monthly e-newsletter to all interested Section members. Sometimes the information printed in the SCALACS newsletters is not current, since it is written a couple of weeks before it is mailed out. My e-newsletters contain current details about events for each month through. If you are not receiving these e-newsletters, but would like to do so, please email Eileen DiMauro (edimauro@mtsac.edu) to be included on that email list.

SAN GORGONIO SECTION

Volunteers Needed for 2023!

Can you find 6 hours in the year that you could commit to volunteering with the San Gorgonio Section? We are looking for some new committee and executive board members as we begin to look toward 2023. We have committees that meet for a few months out of the year for 1-2 hours a month. We welcome undergrad and grad students, professionals, retirees, and anyone else who loves chemistry to join our team. If you are interested in helping out with one or more of our committees, please fill out the form at <https://forms.gle/swTa7XWpLYAb7GD96>, where you can include information about your preferred availability.

Feel free to email me if you have any questions or suggestions for the Section. Have a great month!

Dr. Jenifer N. Nalbandian
Chair of the San Gorgonio Local Section
jnalbandian@calbaptist.edu

Call for Nominations **CANDIDATES FOR SCALACS ELECTION**

SCALACS is seeking candidates for Member-at-Large, Councilors, and Alternative Councilors. What does a Member-at-Large do? This is a 3-year term, beginning January 1, 2023. As a member of the EC, the member-at-large attends most of our monthly business meetings, held on the first Wednesday of the month at 7:30 pm, September through May, via Zoom. Most Members-at-Large participate on one of our committees – first as a helper, and later as a leader. For an idea of what those committees do, please visit the website here http://scalacs.org/?page_id=4. In the third year, the Member-at-Large is also a member of our Board of Directors, which is responsible for setting and approving the budget for the following year.

The Section Councilors represent us at the national ACS Council meetings, and the Alternates serve as backup in case a Councilor can't attend. A portion of Council meeting travel and accommodations are paid for by ACS. This is also a 3-year term, beginning January 1. As ex officio members of the Southern California Section Executive Committee, Councilors and Alternates attend many of our monthly business meetings (virtually).

We feel it is very important to engage all interested members in Southern California Section leadership. If you're interested in participating in your Section's governance, please email us soon. We look forward to hearing from you. Thanks!

Brian Brady
Nominations and Elections
Southern California Section ACS
Email: bbbrady1618@gmail.com

HIGH SCHOOL CHEMISTRY OLYMPIAD **SCALACS LOCAL EXAM IN MARCH, 2023**

The 2023 International Chemistry Olympiad will be on July 16 through 25. The local exam will be held some time in March. If your school is interested in participating, please email the estimate of number of students who will be taking the exam to **office@scalacs.org**.

Registration will open at a later date.

**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 Chemists' Calendar

NOVEMBER

5 SCALACS The Red Planet and The Blue Planet: Past, Present and Future
A Research Symposium for Undergraduates and Graduates at Caltech — see page 3

DECEMBER

15 Call for Nominations Deadline for the 2022 Richard C. Tolman Medal — see page 2

For more information or to find events, please see our websites:
www.scalacs.org • www.sangorgonioacs.com

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