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SCALACS

March 2021

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

Southern California Section



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Zoom Event
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Southern California and San Gorgonio Sections of the
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Southern California Section

Chair's Message



"Success comes from curiosity, concentration, perseverance and self-criticism." Albert Einstein

Dear SCALACS members,

Greetings! We have many events coming up during the months of March and April. **The High School Chemistry Olympiad Local Exam will be conducted on March 27th** for our local high schools. A SCALACS team led by Eyde Udell and Veronica Jaramillo has organized a chemistry tutoring program for high school students, who need additional help. I would like to thank them and all our teachers, who are doing an amazing job, finding time and resources to help start this mentoring program for high school students. I am moved by the enthusiasm and determination shown by our brave students who participate in the Chemistry Olympiad with competitive spirit despite the challenges due to COVID-19, and I wish them all the best. Thanks to Jerry Delker for his tireless efforts behind the program for SCALACS for many years.

In March, we are celebrating **International Women's day (March 8th)**. The campaign theme for this year is **"Choose To Challenge"**, quite appropriate at this time of unprecedented challenges. As the circumstances urge us to change the nature of our events, many will be conducted via online platforms, mainly Zoom. Considering the limitations, instead of a research symposium, Barbara Belmont is organizing a special program for undergraduate students in April, which will be announced soon. The 2021 Tolman Award recipient will be announced in the April issue of SCALACS.

During the last week of April, we will celebrate the **51st anniversary of Earth Day (April 22nd)** within our section for Chemists Celebrate Earth Week (CCEW), with special zoom events organized by Veronica Jaramillo and Chandrashekhar Sonwane. This year's theme is "Restore Our Earth." Knowing our most dedicated officers/members of the section personally and watching their dedication in planning and conducting important programs of the sections promptly and efficiently are truly inspiring for me. In fact, our involvement and team work in various ACS events take us to different levels of honorable responsibilities and volunteering experience, whether it's by planning meetings on our visionary themes or by conducting community programs benefitting our community and the public. Along with Earth Day celebration, in our section, we are planning **"House Cleaning Programs"** aiming to keep our community clean. You can find more details on these events in the April issue of SCALACS and on our website, www.scalacs.org.

With thanks, and best wishes
Thomas Mathew, Chair

Southern California Section



International Women's Day Event
March 8, 2021
7:00—8:30 pm
Via Zoom

Featured Speaker: Prof. Heather Maynard, Ph.D.
Synthesis of Glycopolymers and Mimetics for
Therapeutic Protein Delivery

Abstract: Therapeutic proteins are challenging to transport and store, and thus the majority must be refrigerated or frozen. Proteins exposed to these conditions and others such as mechanical agitation often lose activity. This can be harmful or even fatal for patients that take the medications and can also increase costs because of the requirement of the cold chain. Thus, polymeric materials that are capable of stabilizing biomolecules at room temperature and to agitation are of significant interest. This talk will focus on new polymeric materials to address this important problem. Well-defined polymers were synthesized by controlled radical polymerization and ring opening polymerizations. These were tested in their ability to stabilize proteins to room temperature, elevated temperatures, mechanical agitation, and pH changes when added as excipients. Side chains derived from Nature and others from known excipient classes were compared and contrasted, and the mechanisms of stabilization were investigated. Grafting to and grafting from synthetic strategies were utilized to prepare protein conjugates of these polymers, and in vivo testing showed that the polymers significantly increased blood circulation times (i.e. pharmacokinetics) in addition to retaining protein activity after exposure to high temperatures. Synthesis, stabilization properties, and application of the polymers to treat diabetes and chemotherapy will be presented.

Biography: Heather D. Maynard is the Dr. Myung Ki Hong Professor in Polymer Science at the University of California, Los Angeles. Maynard is a worldwide leader in the area of protein-polymer conjugates, which are important therapeutics for a variety of diseases. She develops new synthetic methods to make the materials, invents new polymers to improve properties such as stability, and demonstrates preclinical efficacy of her conjugates with an eye towards translation for human health. Maynard also works in the area of smart materials for precision medicine: materials that respond to disease states in the body. Maynard's research and teaching have been recognized by numerous awards including the American Chemical Society Arthur Cope Scholar Award, Fulbright Specialist Award, Seaborg Award for Outstanding (Continued on Page 6)

Southern California Section

PICTURE A SCIENTIST



Picture a Scientist!

Viewing Dates:
March 25 to March 27

Zoom Discussion: March 28, 2021
2:00 pm to 4:00

PICTURE A SCIENTIST chronicles the groundswell of researchers who are writing a new chapter for women scientists. Biologist Nancy Hopkins, chemist Raychelle Burks, and geologist Jane Willenbring lead viewers on a journey deep into their own experiences in the sciences, ranging from brutal harassment to years of subtle slights. Along the way, from cramped laboratories to spectacular field stations, we encounter scientific luminaries - including social scientists, neuroscientists, and psychologists - who provide new perspectives on how to make science itself more diverse, equitable, and open to all.

Registered participants will view the documentary anytime between March 25th and March 27th and then participate in the Zoom discussion on March 28th from 2:00 to 4:00 pm. Participants receive a link and password that will give access to the virtual showcase via Vimeo. Each participant logs in on their own time (anytime between March 25 and March 27th, an unlimited number of times) to view the film.

Registration: If you'd like to register for Picture A Scientist, email Nancy Paradiso at office@scalacs.org. You will receive a return email with the link and password for the showcase as well as the link for the Zoom Discussion on March 28th.

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Southern California Section

High School Chemistry Olympiad

The Southern California Section has 680 students registered for the High School exam and they are enrolled in the National ACS Learning Center. They will fill out a demographics survey and practice test to get used to the testing environment, and they will take the test online.

The Local Section exam will take place online on Saturday, March 27, 2021. The National Exam will be in two parts. There will not be a lab portion again this year. All the students who qualify from the Local Section Exam will take **Part I of the National Exam on Saturday, April 17, 2021. The top 200 students nationally will take Part II of the National Exam on Saturday, April 24, 2021.** Participating students for the National Study Camp will be notified by May 3, 2021.

Both the Local Section Exam and the National Exam will be proctored and we are looking for volunteers to help proctor the exams. Proctors will need a web cam and a stable internet connection to participate. **If you'd like to volunteer to proctor online, please email Nancy Paradiso at office@scalacs.org.**

Mentoring/Tutoring Program for Title I Students

The Southern California Section is offering mentoring/tutoring to students in Title I schools that are interested in taking the ACS **High School Olympiad on March 27, 2021.** While this workshop will be geared to the High School Olympiad, the tutors will help students with general chemistry questions. Meetings are held via Zoom on **Saturdays from 10:30 am - 12:30 pm.**

If you have students interested in the Mentoring Program, please ask them to email Nancy Paradiso at office@scalacs.org for the Zoom link to join.

If you have any questions about mentoring or tutoring (including to volunteer to tutor), please email Dr. Edye Udell at EUDell@westridge.org. We look forward to having students take advantage of this special tutoring opportunity.

Southern California Section

Heather Maynard's Biography (Continued from Page 3)

Research in Chemistry, National Science Foundation Career Award, Hanson-Dow Award for Excellence in Teaching and the UCLA Student Development Diversity, Equity and Inclusion Award. Maynard is both an American Chemical Society Polymer Chemistry and Polymer Materials: Science and Engineering Fellow. She is also a Leverhulme, Kavli Frontiers, and Royal Society of Chemistry Fellow and was a member of the United States Defence Science Study Group from 2016-2017.

Maynard received her B.S. with Honors in Chemistry from the University of North Carolina at Chapel Hill in 1992, Masters in Materials Science at the University of California, Santa Barbara in 1995, and a Ph.D. from the California Institute of Technology in 2000 for research in the group of Nobel Prize winner Robert H. Grubbs. She was an American Cancer Society Postdoctoral fellow with Jeffrey Hubbell at the Swiss Federal Institute of Technology (ETH) from 2000-2002. Dr. Maynard joined the UCLA faculty as an Assistant Professor in August 2002 as the first Howard Reiss Career Development Chair in the Department of Chemistry and Biochemistry and as a member of the California NanoSystems Institute. Maynard is now a Full Professor in the Department of Chemistry and Biochemistry, Director of the National Institutes of Health funded Chemistry Biology Interface Training Program and Associate Director for the California NanoSystems Institute at UCLA.

Registration: If you'd like to register for this talk, please email Nancy Paradiso at office@scalacs.org. You will receive a return email with the link for the Zoom presentation.

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This Month in Chemical History

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

In my continuing examination of Great Books in Chemistry I come now to the 17th. Century and to that remarkable work by the Honorable Robert Boyle, "The Sceptical Chymist". The first English Edition appeared in 1661 and there were many subsequent editions in both English and Latin. My own modest copy is one of Dent and Dutton's Everyman's Library and was Edited and with a Foreword by M.M. Pattison Muir, a distinguished historian of chemistry, whose book "A History of Chemical Theories and Laws", published in 1907, is still excellent reading.

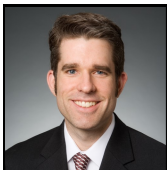
Boyle was one of the greatest natural philosophers of the 17th. Century. His study of gases (airs) is recalled in Boyle's Law. He worked on acids, bases, and indicators; published the first clear description of the preparation of elemental phosphorus ("the icy noctiluca!"); was a close friend of Isaac Newton; and, like Newton, was an alchemist.

The Sceptical Chymist is not an easy read. It is written in the then popular form of a dialog between Themistius, a follower of the ancient beliefs of the hermetick philosophers (alchemists) and Carneades, a thinly disguised Boyle. The hermeticks believed in the four elements (earth, air, fire, and water) as the bases of all material things. Carneades challenges these ideas, insisting on experiments, verified facts, and reasoned beliefs – all notions going back to views expressed nearly a century earlier in Francis Bacon's "Novum Organon", a work that enunciates clearly, and perhaps for the first time, what we now call the scientific method.

In attacking the ancients' views of elements Boyle writes "I mean by elements, as those Chymists that speak plainest do by their principles, certain primitive and simple, or perfectly unmingled bodies; which not being made of any other bodies, or of one another, are the ingredients of which all those called perfectly mixt bodies are immediately compounded, and into which they are ultimately resolved; now whether there be any one such body to be met with in all, and each, of those that are said to be elemented bodies, is the thing I now question."

Boyle failed to resolve the experimental question as to whether a particular substance was an element. Indeed he argued that not a single unambiguous example of an element was known to him. This book is more of an exercise in destruction than construction. Boyle argues powerfully against the four elements of the hermeticks. And he provided a definition of a true element that has a modern and convincing sound. But it took another century before Lavoisier, in another book that I plan to discuss later in this series, provided the true quantitative test of whether a substance was indeed an element.

I conclude with a quotation from Pattison Muir: "The great importance of the Sceptical Chymist consists in Boyle's reiteration of proofs that nature is not simple, but rather overpoweringly complex; of proofs that it is wise to doubt every short and easy road to natural truths;....that above all "occult qualities" are nothing but "the sanctuary of ignorance." Words to live by.



Insights Into IP Law

Keith Orso*, Irell & Manella LLP
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The January-February 2021 installment of this column discussed how a doctrine called “the on-sale bar” renders unpatentable inventions that **inventors** themselves sell more than a year before applying for their patents but does not necessarily apply to secret sales by others who came up with the same inventions independently.

In 2011, Congress passed the America Invents Act (AIA), which is generally regarded as the most significant amendment made to the patent laws since the 1950s. The AIA took effect in 2012. Perhaps most famously, the AIA converted the United States patent system from a “first to invent” system to a “first to file” system, as has been discussed in past editions of this column. Less commonly known is an amendment to the statutory provision that addresses the on-sale bar. In particular, Congress amended the provision to state that “A person shall be entitled to a patent unless” the “claimed invention was . . . in public use, on sale, or otherwise available to the public.”

As indicated by the underlining above, the “or otherwise available to the public” part of the statute was new. And that part of the statute was soon tested when an innovator drug company sued several generic drug companies, accusing their versions of the anti-emetic palonosetron of infringement. The defendants argued that the patents-in-suit were invalid under the on-sale bar. The trial court ruled that at least one of the patents was not invalid based, in part, on the fact that the circumstances of an earlier sale of the patented invention did not disclose the details of the invention to the public. The trial court based that ruling on its view that the AIA changed the meaning of the on-sale bar by adding the “or otherwise available to the public” language. The court found that this catchall language suggested that the preceding items in the statutory list—public uses and sales—must now likewise be “available to the public” in order to invalidate a patent.

The case wound its way up to the Supreme Court, which found that before Congress passed the AIA, the meaning of “on sale” was well settled and that it was long held that secret sales could invalidate a patent. The Court presumed that when Congress reenacted the same “on sale” wording in the AIA, it adopted the earlier judicial construction of the phrase. The Court declined to read the additional “or otherwise available to the public” language to upset the established body of precedent, noting that adding a catchall phrase would have been a fairly oblique way for Congress to attempt to overturn a settled body of law.

* 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



In last month's message I summarized the events of the most unusual year 2020. However, after that message was submitted for publication our Section received the great news that we had won our **first ChemLuminary Award**. The award category was **"Best National Chemistry Week Event Organized by a Student Group"**. In this instance, the California Baptist University Chemistry Club hosted the event and had exceptional participation by many other ACS Student Affiliates and Chemistry Clubs from Colleges and Universities throughout Southern California. We are extremely proud of this accomplishment and grateful for all the students and faculty advisors who contributed as well as the parents and children who attended the event. The entire **ChemLuminary Awards Ceremony** is available on the ACS website (<https://vimeo.com/483705362>). The San Gorgonio Section award announcement is at approximately minute 57 of the video.

The first activity for our section this year will be participation in the **National Chemistry Olympiad exam**. **The local exam will be given virtually on March 27th**. Approximately 130 students from twelve high schools have registered for this event and we wish them well. Students having the 10 highest scores will be nominated to participate in the National Chemistry Exam Part 1. More detailed information regarding this activity is presented on our section's website.

We hope to hold some in person events starting approximately mid-year, depending on status of the pandemic at that point. Until then all events will be held virtually and will be announced on the section website.

As a reminder you can access the local section information on the websites shown on 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. Feel free to contact me at any time.

Ralph Riffin, Chair

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Bi-Section Chemists' Calendar

March

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24 Part II Of the National High School Olympiad Exam—see page 5
18-24 Chemists Celebrate Earth Week—Theme: "Reducing Our Footprint
With Chemistry"

**For more information or to find virtual events,
please see our websites:**

www.scalacs.org

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