

SILICON VALLEY CHEMIST

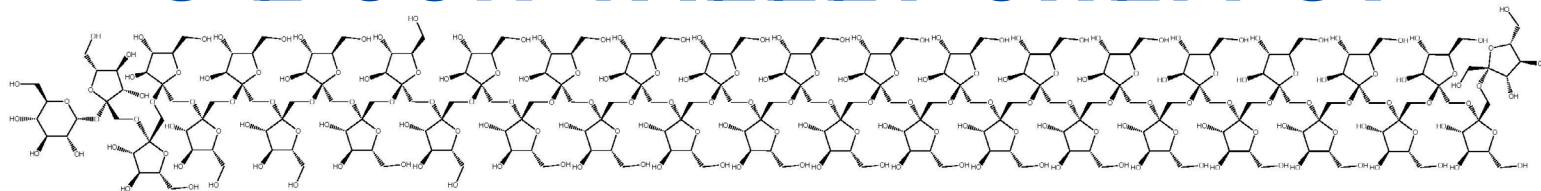


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ACS Committees Seek Member Input on Policy Statements



Eight ACS position statements are set to expire at the end of 2023. Society members are encouraged to review the expiring statements and to offer their thoughts and comments to the ACS committees considering revisions, as well as to provide input on other statements that should be developed or changed. The following are links to the statements up for review:

- [A Competitive U.S. Business Climate: Innovation, Chemistry, and Jobs](#)
- [Intellectual Property](#)
- [Science and Technology in the Budget](#)
- [Visas for Scientific Collaboration and](#)

Academic Study

- [Critical Materials](#)
- [Sustainability and the Chemistry Enterprise](#)
- [Freedom of International Scientific Exchange](#)
- [Scientific Integrity in Public Policy](#)

Comments and suggestions on any of these topics should be submitted to policy@acs.org.

Learn more about [ACS Positions on Policy Issues](#) and the ACS committees that shape these Policies.

Learn about [ACS's advocacy](#) for chemistry and STEM-related issues and find out how to get involved.

Chair's Message

Natalie McClure



It's hard to believe that it is already May, until you look outside at all the green hillsides. April was a busy month for our section.

On April 27, we held a career panel for community college and transfer students as part of our Paving the Path Initiative. This panel featured 4 successful professional chemists who started their own higher education journeys in community colleges. The event was designed to motivate students who are following that path and address their

questions. This was a virtual event, held over Zoom and drew more than 50 participants from Bay Area community colleges. Hartnell College in Salinas, California, hosted a different format for the Zoom call. They gathered chemistry students, faculty, and staff to interact together and socially for a Zoom watch party complete with

pizza. SVACS members Jane Frommer and Steve Boyer attended in person for additional support and discussions about career opportunities for

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Chair's Message, continued from front page

chemists. A follow-up survey sent to all attendees will provide suggestions and improvements for future career panels and events in support of community college and transfer students.

We also completed this year's Chemistry Olympiad testing. Santa Clara University (SCU) hosted the National Olympiad candidates from the California section and the Silicon Valley section. The exams were conducted in SCU's brand new chemistry labs. These are beautiful new teaching labs and well worth a visit. In the laboratory practical exam, the students were asked to do two experiments:

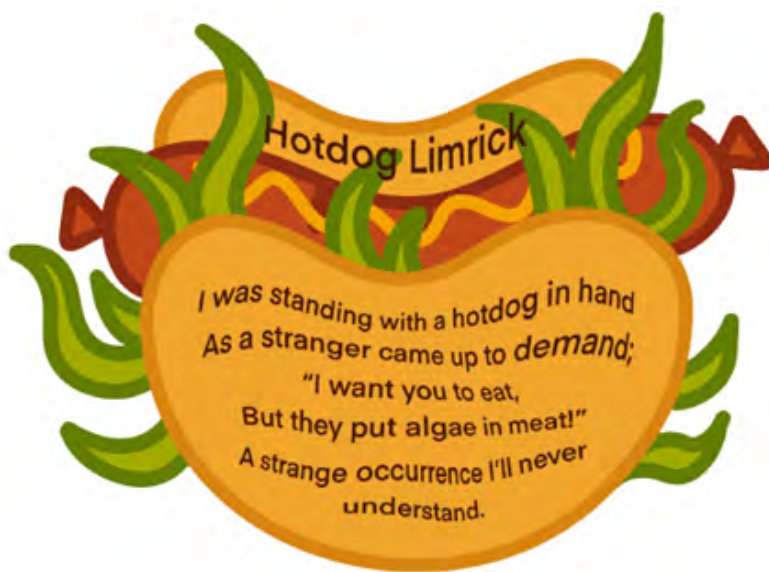
- Determine the molar mass and pKa of an unknown monoprotic weak acid
- Design an experiment to determine which cation selected from calcium chloride, magnesium chloride or potassium chloride, would form the strongest cross links and form a hydrogel with sodium alginate. This experiment is tested nightly at some high-end molecular gastronomy restaurants.

There were a lot of puzzled looks as the students read the second challenge, but at the end of the lab session I observed some nice spherical hydrogels. I also observed some sticky messes and clogged pipettes and flasks.

Lastly, the Chemists Celebrate Earth Week (CCEW) activities occur annually during April. Instead of one big event, the Silicon Valley section opted to spread out the activities over several months. In Pop-Up Chemistry, our on-going hands-on program at the Redwood City library, we helped the students understand the impact of CO₂ on acidification of water. At the next session at the library which will be held on May 13, we will be exploring the chemistry of algae using algae beads.

We also have 3 CCEW illustrated poems to submit to the National ACS contest. A cute limerick on the theme of Amazing Algae that involved hot dogs was submitted by an 11th grade student at Carlmont High, pictured here. I am impressed by the amazing students living in our region considering the strong performance on the Chemistry Olympiad exams and the creativity shown in the poetry contest.

May won't be quite as busy a month. We are always looking for volunteers so if you would like to get involved in any of our activities, please [reach out](#) to me or to any of the Executive Committee members.

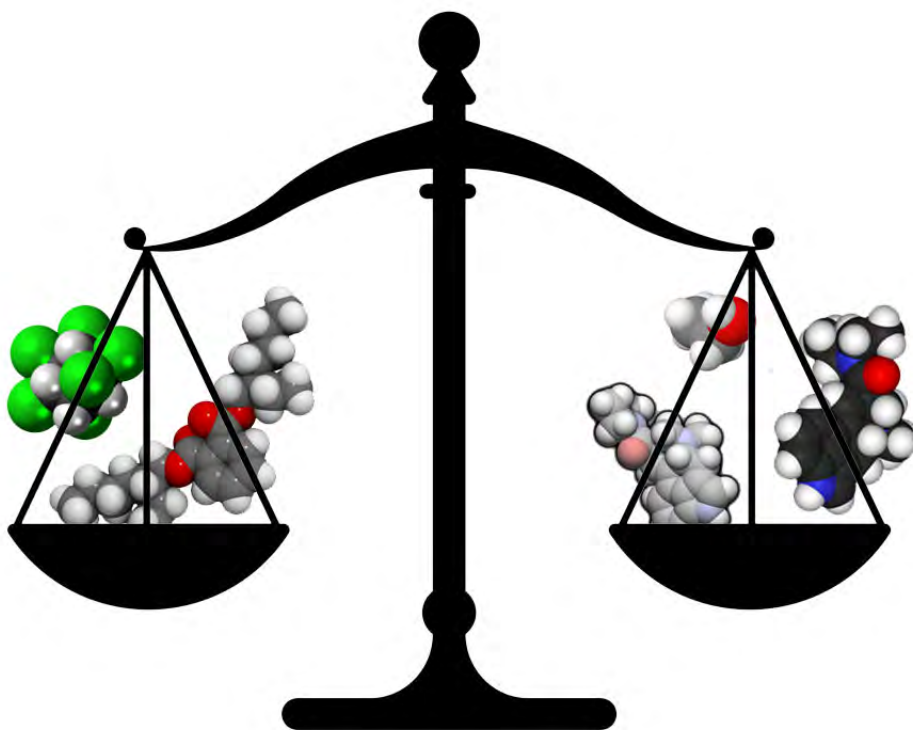


The ACS Committee on Patents and Related Matters

The **ACS Committee on Patents and Related Matters (CPRM)** is an ACS Governance committee that comprises members from academia, technology transfer offices, industry, private legal practice, and the consulting sector. CPRM monitors issues relevant to intellectual property (patents, trademarks, copyrights, and trade secrets), and sits as a resource on such matters for the ACS Board. The committee meets twice each year, at the Spring and Fall national meetings, and also comprises four subcommittees, devoted to education and outreach, legal policy, technology transfer, and awards. The committee drafts an intellectual property policy statement for ACS every three years, and liaises with other ACS governance committees to provide summaries of proposed legislation, recent case law, and the like. The committee has also successfully nominated a number of ACS members to prestigious awards such as membership in the National Inventors Hall of Fame. Currently, three members of the Silicon Valley ACS local section serve on CPRM: Howard Peters (as associate member), Steve Boyer, and Richard Bone. If you have questions or comments about CPRM, or have suggestions about items

for the committee to consider at the Strategic Planning Retreat June 10-11 in Washington D.C.,

please contact: peters4pa@sbcglobal.net or bone.richard@gene.com



CALENDAR OF EVENTS

<https://www.siliconvalleyacs.org/events/>

-May 2023 -

- May 11** **Green Cards for Scientific Researchers: How to Win Your EB-1/NIW Case**
Sponsored by ACS Webinars and ACS Careers
11am-Noon, Online via Zoom, Free, [Registration required](#)
- May 13** **Building a Competitive and Multifaceted Research Portfolio: An Outsider's Perspective**
Sudip Das, PhD, University Hospital Bern, Switzerland
Sponsored by Women Chemists Committee of the ACS California Section
10:30am-Noon, Online via Zoom, Free, [Registration required](#)
- May 13** **Kid Makers: Pop Up Chemistry for Middle School Scientists**
Sponsored by ACS Silicon Valley and Redwood City Public Library (RCPL)
2-3pm, RCPL Downtown Location, 1044 Middlefield Road, Redwood City, Free, [Learn more](#)
- May 17** **Molecular-Scale Engineering of Stimuli-Responsive Polymer Hydrogels**
Prof. Danielle Mai, Stanford University Chemical Engineering
Sponsored by the Golden Gate Polymer Forum (GGPF)
6:30pm, Online via Zoom, Free/\$5 Donation, [Registration required](#)
(Registration deadline: May 16 at 1pm)
- May 18** **How to Safely Manage Chemicals in Educational Settings**
Sponsored by ACS Webinars, ACS Division of Chemical Health & Safety, and the Committee on Chemical Safety
11am-Noon, Online via Zoom, Free, [Registration required](#)
- May 20** **Biomedical Scientists Making Their Mark In Clinical Research: Experience On A Journey Without A Map**
Prof. Rajan Singh, University of Nevada at Reno
Sponsored by Women Chemists Committee of the ACS California Section
10:30am-Noon, Online via Zoom, Free, [Registration required](#)
- May 24** **Think like a CSO: How to Develop a Strategic Mindset**
Sponsored by ACS Webinars and ACS Division of Professional Relations
11am-Noon, Online via Zoom, Free, [Registration required](#)

- June 2023 and Beyond -

- Jun 14** **Light, Materials and Interfaces: The Complex Dance for Continuous Liquid Interface Production in 3D Printing**
Professor Joe DeSimone, Carbon and Stanford University Chemical Engineering
Sponsored by ACS Silicon Valley Section and Golden Gate Polymer Forum
6-7pm, more details <https://ggpf.org>
- July 8** **Annual ACS Silicon Valley Picnic and Awards**
4-7pm, Cuesta Park Group BBQ Areas #1-2, Mountain View, CA
[Learn more](#)
Cost: Adult: \$20.00 Student: \$10.00 Children under age 12: \$5.00
- Jul 28-30** **Postdoc to Faculty Workshop**
Sponsored by ACS
Held in Chicago, Illinois ([Learn more and register](#))

Interested in serving on an ACS National Committee?



Examples of ACS National Committees include Chemists with Disabilities, Community Activities, Economic and Professional Affairs, Chemistry and Government (Public Affairs), Environmental Improvement, Ethics, International Activities, Minority Affairs, National Historic Chemical Landmarks, Senior Chemists, Technician Affairs, and Younger Chemists.

[A more comprehensive list](#)

ACS Members interested in being appointed to serve on a National ACS Committee should submit their committee assignment preferences on the [online committee preference form](#) between April 15 and July 15, 2023.

Submit the committee preference form only if you are committed to attend and actively participate in committee meetings either virtually or in-person.

Your ACS membership must be in good standing to complete your committee preferences.

[Learn more](#)

ACS Climate Change Advocacy Workshop

Free & On-Demand [Enroll](#)



The ACS Chemistry Advocacy Program is designed to help ACS members passionate about science and chemistry advocacy maximize Society resources through in-person workshops or this on-demand course.

This workshop is online and includes four modules covering skills, resources, logistics, and communication for the purpose of advocating for chemistry on the federal level. Participants will learn to successfully plan and execute advocacy activities, as well as have an opportunity to network and build a community with others passionate about science advocacy and ACS. This program aligns with ACS' ongoing engagement with policymakers on Capitol Hill in support of science, engineering, innovation, and chemical stewardship.

Module topics include:

- Introduction to chemistry advocacy
- Chemistry advocacy within the U.S. government
- Advocating for chemistry with Congress
- Chemistry communication for advocates

Questions? Please contact Government Affairs: advocacy@acs.org

Green Chemistry's John Warner Presents the 2023 UCSC Bunnett Lecture in Chemistry

As the keynote speaker at the 2023 annual UCSC Joseph F. Bunnett Symposium, John C. Warner presented a visionary talk describing challenges for the entire chemistry community to ensure future human prosperity. Dr. Warner inspired a large audience of students, faculty, and chemistry professionals on April 28, 2023 in the UC Santa Cruz Chemistry and Biochemistry Department.

In the early 1990s, Warner realized that global chemistry students lacked training in predictive toxicology and understanding of environmental systems; the result is that many industrial products and processes have negative impacts on human

health and the environment. In collaboration with Paul Anastas, he co-founded the field of Green Chemistry, defining the **12 Principles of Green Chemistry**. He also co-founded the non-profit **Beyond Benign** to provide educators with the tools, training, and support to make green chemistry an integral part of chemistry education.

Dr. Warner has held professorships in chemistry at UMass, Boston, in Plastics Engineering at UMass, Lowell, and in Green Chemistry at Monash University. He created the world's first graduate program in Green Chemistry and received a Presidential Award for Excellence in Science Mentoring in 2004. The Technische

Universität Berlin named their Center for Start-ups in Green Chemistry after John Warner. His awards include the 2014 **Perkin Medal**.

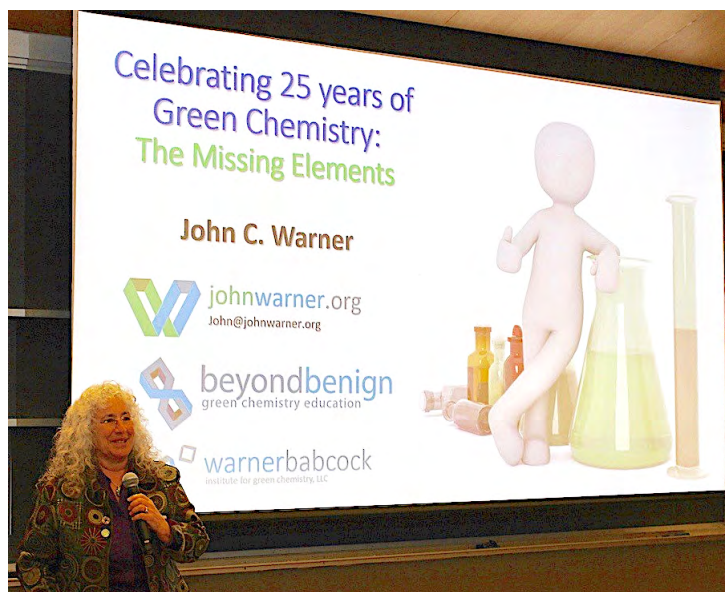
Warner's industrial experience includes Polaroid, Zymergen, and numerous start-ups. In 2007 he co-founded the **Warner Babcock Institute for Green Chemistry** with a mission to design, develop and commercialize high-performance, cost-effective and sustainable technology solutions across all industries that are touched by chemistry.

Dr. Warner continues to work towards educating future chemists to ensure that all practicing chemists have the necessary skills to invent truly sustainable technologies.

Learn more about his mission in his 2023 UCSC Bunnett lecture: <https://science.ucsc.edu/bunnett-symposium-2023/>



Dr. Warner interacts with students in the UCSC chemistry department research poster session



UCSC Professor Rebecca Braslau introduces Dr. Warner's presentation



Dr. John Warner and UCSC Professor Rebecca Braslau



ACS National Council Perspective

By Amanda Nelson, Silicon Valley ACS Alternate Councilor

Days before the National Meeting officially begins, some of the most dedicated members of the ACS gather in the host city to attend committee meetings. These members fuel the activities that will ensue in the coming days, as well as the months in between conferences. Their efforts behind the scenes drive the ACS organization forward in supporting the scientific and professional advancement of chemistry. To me, as a general member of ACS until recently, I never really put too much thought into the obvious questions: how does the ACS make these National Meetings happen, how does the website continue to deliver premium content, and to what extent is the reach of this organization's impact. In summary, all of this is brought forth by the tireless volunteer efforts of very few, but very dedicated, ACS members that operate at the local and national levels.

A few months ago, I was recruited to get involved in my local section of ACS and was elected to the executive committee as an Alternate Councilor, meaning that I may be asked to serve as a Councilor representative for the Silicon Valley section if one of its Councilors were unable to attend a National Council Meeting. Upon running for this position, I had no idea what that would actually entail, but I was excited nonetheless to get involved; I was quickly drawn into supporting my local section's outreach events and programs. A few months into this new term, I was then afforded the opportunity to serve as a Councilor representative at the Spring National Meeting in Indianapolis and I took a deep dive behind the scenes of ACS to explore how it all works.

I arrived on Saturday to attend the New Councilor Meeting, where I was given a "New Councilor" ribbon for my badge that identified me to other national governance members. This meeting explained the ACS governance structure, wherein numerous local sections, 41 committees, and 32 divisions organize and run all the facets of the things that ACS does at the national level, such as hosting conference symposiums, providing educational and science policy, supporting chemistry initiatives and outreach programs, and connecting chemists through this global network of scholars and professionals. It is incredible that there are about 772 members serving on these committees, which equates to just 0.5% of all ACS members actually running the show! Committees are made up of any members that want to get involved (though, as a general ACS

member, I had been totally oblivious to the existence of committees) and Councilors are strongly encouraged to participate in them as well; in fact, my "New Councilor" ribbon incited the common question throughout the week, "which committees are you interested in joining?" I was looking forward to experiencing the Council Meeting later that week, but first, I needed to go investigate what these committees and divisions are all about.

Throughout the week, the committees and divisions hold their own meetings and receptions— who knew?! These meetings appear on the events schedule, so they are by no means conducted in secrecy (though some are "closed" meaning not open to observers). However, the most important element to recognizing their meaningful existence is decoding the 73 acronyms assigned to each, as there are 41 committees and 32 technical divisions with unique identifiers. The technical divisions provide networking and collaboration opportunities within an area of specialization. For example, the Chemical Health & Safety (CHAS), Organic Chemistry (ORGN), and Small Chemical Businesses (SCHB) are technical divisions, and these are most recognizable to the lay members by the symposium structures at conferences. Committees, which are a little more covert to the attendees, have a more direct purpose to govern and organize the facets of ACS; these facets are sometimes overlapping with the technical divisions, which was a bit confusing when trying to understand and navigate all these distinctions and acronyms! For example, the Committee on Chemical Safety (CCS) is differentiated from CHAS: the latter provides technical resources and mentorship on the topic of chemical safety, wherein the CCS, in contrast, works to publish tools and standards and is the authority in ACS's safety policies and statements. It was a very full and exhausting week exploring all the options and ways to get involved in ACS governance. With my "New Councilor" ribbon reminding everybody to ask me "what committees are you interested in?", the overwhelming options almost made me forget how busy I am already with supporting my local section!

The Council Meeting convened at 8am on Wednesday, the last full day of the conference. The chatter and bustle of 450 representatives derived from technical divisions, committees, and local sections echoed wildly in the enormous ballroom hosting the American Chemical Society's Council Meeting. This bi-annual gathering is where

the high-level agenda of governance of new policy is debated and voted upon. Committees and divisions worked hard throughout the year(s) to put careful thought and revisions into the items now up for debate and vote on the Council floor. A few weeks prior to this meeting, I was provided with a 106-page document to review the details of each agenda item that would be brought to the floor. As various governing bodies gave their reports, amendments were open for discussion. The first item was to amend the duties of the Council Policy Committee— a new policy that would provide this committee with the judge and jury power to remove Councilors from their elected positions. After a heated debate with strong arguments on both sides, the motion eventually passed with a 75:25 majority vote. This deviation from near uniform consensus was highly unusual; for reference, all other motions that day passed with a >95% consensus.

I find it fitting to close this perspective with the interesting statistics that were brought to light during the Special Discussion Item— which posed the question for us to peer into the future of the ACS Society Committees. A delegate asked the Council to consider the workload to size ratio of committees and asked the question that was thematic to my experience that week: How many Council members are also serving on committees? Of the 772 total committee members, only 37% are also Councilors. Other topics that were addressed in this discussion: term limits and equitable access to committee positions, as well as the general accessibility of ACS Committees [to members at large]. This last point really spoke to me, personally, having had not a clue of the existence of committees prior to being sent to this conference as the Alternate Councilor representing my local section. Moreover, in my experience exploring the committees and observations at the Council Meeting, there was a notable lack of "Young Chemist" representation; that is, it seemed to me that most members in the room were of the 35+ ages, myself included. I work closely with our up-and-coming generation of chemists in academia, my gut feeling is that this may be due to a lack of visibility more so than a lack of interest, which is what inspired this article. As I look into the future of ACS Society Committees, I want to have that question of "which committees are you interested in?" become a conversational starter with members that don't possess a special ribbon on their badge.



70th Anniversary of DNA Discovery and Rosalind Franklin's Contributions

What Rosalind Franklin truly contributed to the discovery of DNA's structure. *Nature* Comment by Matthew Cobb and Nathaniel Comfort 616, 657-660 (2023) <https://doi.org/10.1038/d41586-023-01313-5>

"Franklin was no victim in how the DNA double helix was solved. An overlooked letter and an unpublished news article, both written in 1953, reveal that she was an equal player.

"James Watson and Francis Crick are two of the twentieth century's most renowned scientists. The seminal paper from the pair at the University of Cambridge, UK, detailing the discovery of the DNA double helix, was published as part of a trio in *Nature* 70 years ago this week. They are also widely believed to have hit on the structure only after stealing data from Rosalind Franklin, a physical chemist working at King's College London.

Lore has it that the decisive insight for the double helix came when Watson was shown an X-ray image of DNA taken by Franklin — without her permission or knowledge. Known as Photograph 51, this image is treated as the philosopher's stone of molecular biology, the key to the 'secret of life' (not to mention a Nobel prize). In this telling, Franklin, who died of ovarian cancer in 1958 at just 37, is portrayed as a brilliant scientist, but one who was ultimately unable to decipher what her own data were telling her about DNA. She supposedly sat on the image for months without realizing its significance, only for Watson to understand it at a glance.

This version of events has entered into popular culture. It is the subject of Photograph 51, *a play by Anna Ziegler that starred Nicole Kidman on the London stage in 2015*. The image graces a British 50 pence coin that marked the centenary of Franklin's birth, in 2020. The whole affair has provided fodder for scornful Twitter jokes ("What did Watson and Crick discover in 1953? Franklin's data.") and even a *marvelous rap battle by seventh-grade students in Oakland, California*.

But this is not what happened.

One of us (N.C.) is writing a biography of Watson, the other (M.C.) is writing one of Crick. In 2022, we visited Franklin's archive at Churchill College in Cambridge, UK, and went through her notes together, reconstructing the development of her ideas. We also found a hitherto unstudied draft news article from 1953, written in consultation with Franklin and meant for *Time*, a US magazine with international reach — as well as an overlooked letter from one of Franklin's colleagues to Crick. Together, these documents

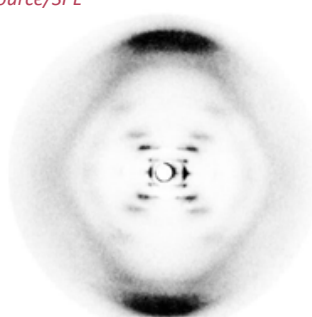
suggest a different account of the discovery of the double helix. Franklin did not fail to grasp the structure of DNA. She was an equal contributor to solving it.

Getting Franklin's story right is crucial, because she has become a role model for women going into science. She was up against not just the routine sexism of the day, but also more subtle forms embedded in science — some of which are still present today."

[Read the full text](#)



Rosalind Elsie Franklin, the British chemist and crystallographer, in 1955. She died in 1958. Credit: Science Source/SPL



Franklin and Gosling's X-ray diffraction image of B DNA, known as Photograph 51. Credit: King's College London Archives/Science Photo Library



Chemist Rosalind Franklin independently grasped how DNA's structure could specify proteins. Credit: Photo Researchers/Science History Images/Alamy

Related articles:

Nature Podcast: How Rosalind Franklin's story was rewritten

"She was a super dedicated, driven, passionate woman," says neuroscientist Hannah Franklin, who is Rosalind's great-niece.' [Source: Nature Podcast, April 26, 2023.](#)

Untangling Rosalind Franklin's Role in DNA Discovery, 70 Years On

'Historians have long debated the role that Dr. Franklin played in identifying the double helix. A new opinion essay argues that she was an "equal contributor.'" [Source: New York Times, April 25, 2023](#)

Franklin understood her DNA data, academics say

"Personal archives and papers add more detail to Rosalind Franklin's story"

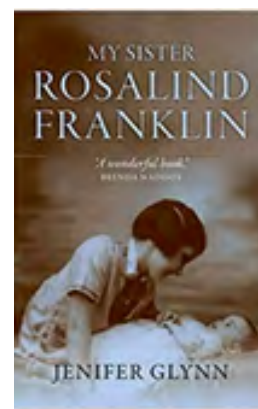
[Source: C&EN, April 30, 2023](#)

Francis Crick, Rosalind Franklin, James Watson, and Maurice Wilkins

"These four scientists—Crick, Franklin, Watson, and Wilkins—co-discovered the double-helix structure of DNA, which formed the basis for modern biotechnology." [Source: Science History Institute's Historical biographies](#)

Speed read: Deciphering Life's Enigma Code. NobelPrize.org. [Source: Nobel Prize Outreach AB 2023.](#) Wed. 3 May 2023.

Books:

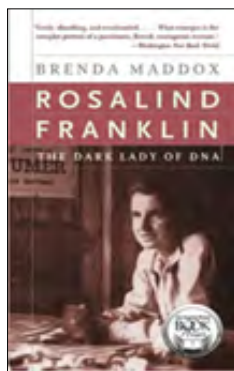


Glynn, Jenifer. *My Sister Rosalind Franklin*. Oxford University Press, 2012.

"In this family memoir her sister, the writer and historian Jenifer Glynn, paints a full picture of Rosalind's life. Looking at Rosalind's background; her early education, her time as a science student at Cambridge, and her relations with her family, to her life as an adult and her time in Paris and at King's, Glynn shows how much her sister achieved and how she was influenced by the social and intellectual climate of the period she worked in."

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Maddox, Brenda. *Rosalind Franklin: the Dark Lady of DNA*. HarperCollins, 2002.

"In 1962, Maurice Wilkins, Francis Crick, and James Watson received the Nobel Prize, but it was Rosalind Franklin's data and photographs of DNA that led to their discovery. Brenda Maddox tells a powerful story of a remarkably single-minded, forthright, and tempestuous young woman who, at the age of fifteen, decided she was going to be a scientist, but who was airbrushed out of the greatest scientific discovery of the twentieth century."



Markel, Howard. *The Secret of Life: Rosalind Franklin, James Watson, Francis Crick, and the Discovery of DNA's Double Helix*. W.W. Norton & Company, 2021.

"The Secret of Life is a story of genius and perseverance, but also a saga of cronyism, misogyny, anti-Semitism, and misconduct. Drawing on voluminous archival research, including interviews with James Watson and with Franklin's sister, Jenifer Glynn, Markel provides a fascinating look at how science is done, how reputations are undone, and how history is written, and revised."

A vibrant evocation of Cambridge in the 1950s, Markel also provides colorful depictions of Watson and Crick—their competitiveness, idiosyncrasies, and youthful immaturity—and compelling portraits of Wilkins, Pauling, and most cogently, Rosalind Franklin. The Secret of Life is a lively and sweeping narrative of this landmark discovery, one that finally gives the woman at the center of this drama her due."

High School Chemistry Olympiad National Exam Administered in the ACS Silicon Valley Section

The qualifying exams were offered at individual high schools and online throughout the month of March. SVACS members Amanda Nelson, Dipti Shingnapurkar, and Richard Bone are pictured here proctoring the lab practical exam which was held on April 22nd at Santa Clara University.



Hargittai, Magdolna. *Meeting the Challenge: Top Women in Chemistry*. Oxford University Press, 2023.

"For centuries, women scientists have faced seemingly insurmountable barriers to success in their careers. Yet many have excelled in science, achieving some of the most important scientific breakthroughs in history. In her latest book, Magdolna Hargittai discusses over 120 such women scientists. The book details the lives and careers of women scientists from the past and present, from various parts of the world, and representing many different fields, including physics, chemistry, astronomy, mathematics, and medicine."



The posthumous nobel prize in chemistry. Volume 2, Ladies in Waiting for the Nobel Prize. Vera V. Mainz, Editor; Strom, E. Thomas, Editor. American Chemical Society, 2018. (ACS Symposium Series, 1311). (Chapter 11: *Rosalind Franklin: Her Pathway to DNA*).

"Overlooked Accomplishments of Women Chemists. As interest in the contributions of women to chemistry grows, discussions of excellent women candidates for the Nobel Prize often follows. This book characterizes women chemists who made large contributions to the field of chemistry and describes the circumstances that may have led to their contributions being overlooked for the Nobel Prize. Scientists and historians of chemistry will find this book interesting, as will students and generalists."

Carol Duane Awarded the 2023 Henry Hill Award

Congratulations!



Henry Hill Awardee 2023

Carol Duane

Carol Duane is awarded the 2023 Henry Hill Award by the ACS Division of Professional Relations (PROF) for promoting, engaging, and preparing individuals to thrive in their chosen profession. She is recognized for being a key player within the American Chemical Society in developing programs and workshops that promote professionalism. She is honored for her role in creating the ACS Center for Leadership Development and the ACS Strategic Planning Retreats.

Division of Professional Relations
American Chemical Society

Mastering the Art of Scientific Publication

Two Virtual Issues of Editor Tips for Authors
Mastering the Art of Scientific Publication



Part I:

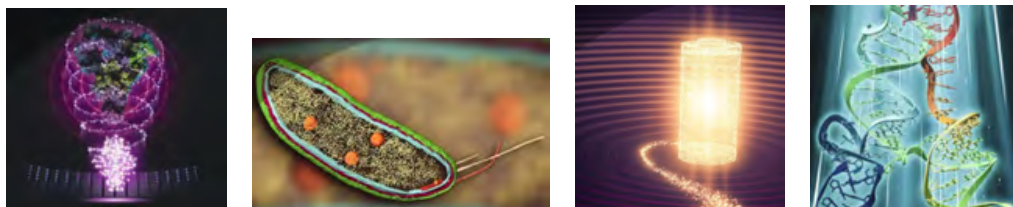
“While the electronic age has made the publication process easier and quicker, optimizing the structure of a scientific paper requires a certain degree of skill and proficiency. ACS Publications has been actively engaged in disseminating the basics of publication through **Publication 101 videos** and editorials, and in continuation of this spirit we have assembled this virtual issue. This issue draws together in one place these editorials that summarize the key steps involved in writing an effective paper, journal submission, review processes, and post-publication efforts.”

Part II:

“This Virtual Issue highlights recent editorials published in ACS journals (*ACS Catalysis*, *ACS Energy Letters*, *ACS Nano*, *ACS Nanoscience Au*, *Chem. Materials*, *Journal of Physical Chemistry C*, and *Journal of Physical Chemistry Letters*) to provide important tips for composing a well-balanced scientific article. These editorials supplement the articles discussed in the previous virtual issue. Together these two virtual issues provide the necessary information to prepare an effective manuscript that is likely to see a greater success in the reviewing and editorial decision process.”

Also see: [ACS Guide to Scholarly Communication](#)

SLAC National Accelerator Laboratory Public Lectures Available On-Demand

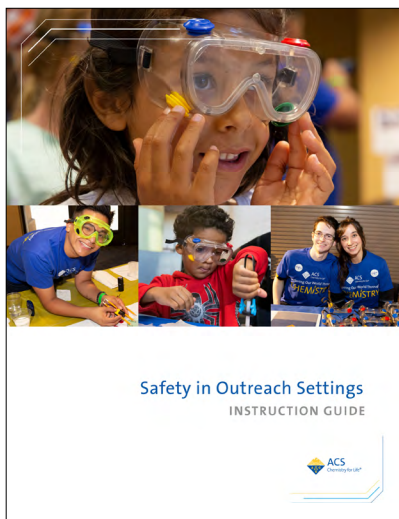


“From the big bang to robots, SLAC’s long-running Public Lecture series brings science to life in a language everyone can understand. Sit back and enjoy the unfolding story of discovery told by the scientists themselves.” Recent talks include:

- Capturing Molecular Motion using Artificial Intelligence
- What in the cell is going on?
- Charging ahead: batteries of the future
- Revolutionary 3D Views of Viral RNA Using Cryogenic Electron Microscopy

[SLAC Public Lectures YouTube Playlist](#) | [Events archive](#) | [Subscribe to events newsletter](#)

Safety in Outreach Settings Instruction Guide



The *Safety in Outreach Settings Instruction Guide* walks through the basics of RAMP and the details of performing a RAMP analysis for hands-

on activities and demonstrations in outreach settings. RAMP is an acronym for the process “recognize hazards, assess risk, minimize risk, and prepare for emergencies”

[Download Guide.](#)

Safety in Outreach Settings adapts **RAMP**, the four-part risk management system used in academic labs, to public venues.

Facilitating hands-on activities or performing chemistry demonstrations in public outreach settings requires special safety considerations, beyond the established standard operating procedures of your lab. Places where public outreach takes place such as science museums, libraries, public parks, and schools are all unlikely to have fume hoods, splash shields, eye protection, or even easy access to running water. Add the need to transport chemicals to the site and back again, with the unknowns of bringing together

groups of people, and the likelihood that someone gets hurt increases dramatically!

This guide will help you select low-risk activities and demonstrations for your program. It will also help you recognize and eliminate high-risk ones, before they become regrettable accidents. More powerfully, though, this guide will help you plan and implement specific strategies and safeguards to minimize the risks you take every time you engage the public with chemistry.

Safety in Outreach Settings will help you:

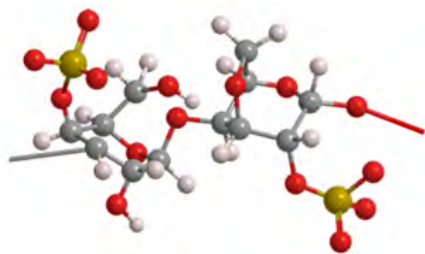
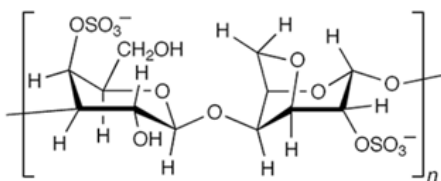
1. Identify and select low-risk activities for your outreach program
2. Recognize and eliminate high-risk activities and demos before they lead to accidents
3. Make strategic changes to activities and demos to minimize the likelihood of injury and promote a culture of safety

[Learn more](#)

CHEMISTRY

Quiz

One of us could be a future COVID-19 treatment. What molecule am I?



Answer

Welcome to the Silicon Valley Section of ACS

Each month, the section receives a spreadsheet from national ACS with the names of members new to our section. The members are either new to ACS, have transferred in from other areas, or are the newest members - students. As a welcoming gesture, the SVACS Executive Committee offers new members a free dinner at a SVACS seminar meeting. Come join us at our in-person dinner meetings! To register as our guest for an in-person dinner event, [contact us](#) directly to receive complimentary admission for you and a friend.

We hope you will also join us for an outreach event, like judging a science fair, proctoring the high school Chemistry Olympiad or participating in a National Chemistry Week hands-on experiment event. The local section is a volunteer organization. Attend an event, volunteer to help, and get to know your local fellow chemists. Welcome!

NEW ACS MEMBERS

Lauren Marie Adams
Marshall Bern
Berenger Biannic
Justin Chung
Samer Daher
Peter Dahlberg
Karan Vivek Dikshit
Nicole Escorcía
Kyle L. Furdala
Isabella Germek
Swapnil V. Ghodge
Mr. Tomasz W. Glinka
Melissa Sadioa Griffin
Kater D. Hake
Muhammad Redwan Hassan
Jingli Hu
Jim Jacob
Michael Jewett

Suhun Jo
Walter Lewis Johnson
Kara M. Juneau
Rao V. Kalla
Shravan Kannan
Sungeun Lim
Xin Linghu
Hongxu Liu
Charles Kenneth Marlowe
Adam Miller
Yuzki Oey
Joseph Matthew Ondus
Danielle Nicole Penk
Jan J. Scicinski
Neha Sharma
Peyton Shieh
Trinity Smith
Shwetha Srinivasan

Sandhya Sriram
A N. Sunder Ram
Annalise L. Van Wyngarden
Felix Vega
Erik J. Verner
Anthony Frank Volpe Jr.
Dhairya Himanshukumar Vyas
Shunyang Wang
Rafal Piotr Wiewiora
Abraham Wolcott
Hua Yang
Priscilla L. Yang
Holly H. Yip
Yanqi Yu
Qian N. A. Zhang
Qihao Zhu

Impact of US Globalization and Collaboration



“This Global Research Report examines the trajectory of recent United States research, focuses on the balance of domestic and collaborative research and its policy implications, including the redistributive effects of the Established Program to Stimulate Competitive Research (EPSCoR), and raises questions as to how well past investment has prepared the U.S. scientific enterprise to achieve its specified goals.”

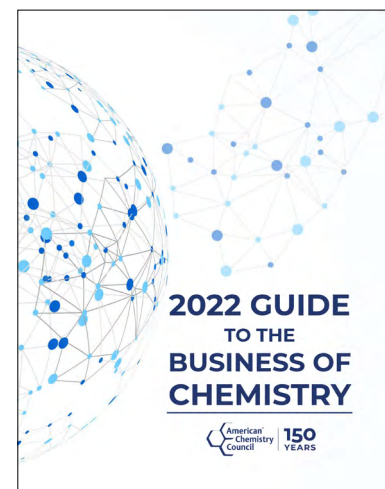
Highlights from the Executive Summary:

- **Impact:** The U.S. is strong but no longer dominates the research landscape as it did, sharing this on an increasingly equal basis with other G7 nations and at close to eye level with Mainland China. Profile analyses reveal that more U.S. papers are now of world average citation impact (an indicator of utility, influence and significance) while competitors are producing relatively more papers of the highest citation impact.

- **Portfolio:** The U.S. ‘footprint’ in research remains extensive and diverse but its research subject diversity has declined because the science budget expanded much faster in biomedicine than in technology areas.
- **Collaboration:** International research collaboration has expanded pervasively across the globe. Most growth in U.S. research output is attributable to collaboration, doubling for major traditional partners such as the United Kingdom and Germany and quadrupling with Mainland China.
- **Balance:** U.S. research collaboration is greatest in the physical sciences and in technology subjects. It accounts for over 50% of output in most science/engineering areas and includes a diverse network of partners.
- **Conclusions:** The U.S. remains a leading science and technology power but unless it acknowledges and addresses its shrinking domestic research capacity and works pragmatically with resourceful competitors such as Mainland China, it risks falling behind new science-based economies in Asia.

[Read the full report](#) to learn more.

2022 Guide to the Business of Chemistry



Published by the American Chemistry Council (ACC), the free 2022 [Guide to the Business of Chemistry](#) (PDF) provides a historical overview of the chemical industry through 2021 (130 pages).

“Jobs & Economic Impact: The business of chemistry is a key element of the nation’s economy. The industry supports a quarter of U.S. gross domestic product (GDP) and creates more than half a million skilled, good-paying American jobs.

Chemistry supports a vast supply chain and creates economic activity in communities where facilities are located.

The products of chemistry enable higher living standards and are crucial to meeting the needs of a growing global population. Solutions from the chemistry industry will be needed to ensure a safe and plentiful food supply, clean air and water, safe living conditions, efficient and affordable energy sources, and life-saving medical treatments for people around the globe.

Innovation into new materials, applications, and processes is critical to advancements in human development. The chemical industry is one of the largest private-sector industry investors in research and development.”

View more [Data & Industry Statistics](#) on the ACC website.

2022 Annual Report for the RCSB Protein Data Bank Now Available



Download the 2022 Research Collaboratory for Structural Bioinformatics (RCSB) Protein Data Bank Annual Report for an overview of recent Deposition/Biocuration, Archive Management/Access, Data Exploration, and Outreach/Education activities. This review highlights how RCSB.org enabled access to ~1 million Computed Structure Models (CSMs) from AlphaFoldDB and RoseTTAFold.

About:

- Research Collaboratory for Structural Bioinformatics (RCSB) Protein Data Bank: RCSB PDB ([RCSB.org](https://www.rcsb.org)) is the US data center for the global Protein Data Bank (PDB) archive of 3D structure data for large biological molecules (proteins, DNA, and RNA) essential for research and education in fundamental biology, health, energy, and biotechnology. [Learn more](#) Also see: [Keeping up with RCSB PDB news](#)

- The [Worldwide PDB \(wwPDB\)](#) organization manages the PDB archive and ensures that the PDB is freely and publicly available to the global community. It is worth noting that other PDB members may offer unique content due to special curation efforts or enhancements of the search interface.

Interesting and Cool Science in the News

[Ageing studies in five animals suggest how to reverse decline](#) (Nature news, April 12, 2023)

[Antibiotics after breast cancer linked to poorer survival, Stanford Medicine-led study finds](#) (Stanford Medicine News, April 18, 2023)

[‘BeerBots’ could speed up the brewing process](#) (ACS News Release, April 24, 2023)

[Benzene’s forgotten isomer takes centre stage in organic synthesis](#) (Chemistry World news, May 2, 2023)

[Bio-nano approach flips artificial photosynthesis for hydrogen on its head](#) (Chemistry World news, May 2, 2023)

[Colorful films could help buildings, cars keep their cool](#) (ACS News Release, March 26, 2023)

[Degrading viral RNA to treat SARS-CoV-2 infection](#) (ACS News Release, April 26, 2023)

[Fluorescent blue coumarins in a folk-medicine plant could help us see inside cells](#) (ACS News Release, April 19, 2023)

[Forum on Drug Discovery, Development, and Translation: 2022 Annual Review](#) (National Academies of Sciences, Engineering, Medicine, 2023)

[Gel cures 100% of mice with deadly brain cancer](#) (Futurity, April 25, 2023)

[‘Gluing’ soft materials without glue](#) (video) (ACS News Release, May 3, 2023)

[‘Green’ way to extract hair compounds that could be used for bandages, sunscreens](#) (ACS News Release, April 27, 2023)

[Huge cache of mammal genomes offers fresh insights on human evolution](#) (Nature news, April 27, 2023)

[The launch of a new field: precision microbiome editing](#) (Chemistry World news, April 21, 2023)

[Making oil and water mix by encapsulation](#) (Chemistry World news, April 27, 2023)

[The messy chemistry that led to life](#) (Chemistry World news, April 18, 2023)

[Nanoparticles poison single-atom cross coupling catalyst](#) (Chemistry World news, April 26, 2023)

[New method for making ammonia could take a bite out of global energy use](#) (Stanford News, April 24, 2023)

[New SLAC-Stanford Battery Center targets roadblocks to a sustainable energy transition](#) (SLAC National Accelerator Laboratory news, April 13, 2023)

[New way to make spider silk uses mussel feet protein](#) (Futurity, April 21, 2023)

[New Zinc batteries are safer, sustainable, powerful](#) (Futurity, April 24, 2023)

[No More Soggy Straws](#) (ACS Axial, May 1, 2023)

[Pulsed pyrolysis offers better way to breakdown plastics into their building blocks](#) (Chemistry World news, April 26, 2023)

[Recent advances in mushroom research](#) (ACS News Release, April 10, 2023)

[‘Remarkable’ AI tool designs mRNA vaccines that are more potent and stable](#) (Nature news, May 2, 2023)

[Researchers capture elusive missing step in the final act of photosynthesis](#) (SLAC National Accelerator Laboratory news, May 3, 2023)

[Researchers develop clever algorithm to improve our understanding of particle beams in accelerators](#) (SLAC National Accelerator Laboratory news, May 1, 2023)

[Researchers devise new system for turning seawater into hydrogen fuel](#) (SLAC National Accelerator Laboratory news, April 11, 2023)

[Researchers use skin-colonizing bacteria to create a topical cancer therapy in mice](#) (Stanford Medicine News, April 12, 2023)

[Say ‘ahhh’: This ecofriendly tongue depressor checks vitals](#) (ACS News Release, April 25, 2023)

[Stab-resistant fabric gains strength from carbon nanotubes, polyacrylate](#) (ACS News Release, April 19, 2023)

[At Stanford Medicine symposium, Nobelists stress importance of basic research to drug discovery](#) (Stanford Medicine News, April 28, 2023)

[Study finds new pathway for clearing misfolded proteins](#) (Stanford News, April 20, 2023)

[Testing vaccine candidates quickly with lab-grown mini-organs](#) (ACS News Release, April 12, 2023)

[Tiny DNA circles are key drivers of cancer, Stanford Medicine-led international study finds](#) (Stanford Medicine News, April 12, 2023)

[A touch-responsive fabric armband – for flexible keyboards, wearable sketchpads](#) (ACS News Release, May 2, 2023)

[Toward a safer ‘artificial muscle’ material](#) (ACS News Release, April 12, 2023)

[When Good Algae Turn Bad: How Chemists are](#)

[Battling the Blooms](#) (ACS Axial, April 17, 2023)

[When to water? Researchers develop new tool for optimizing irrigation](#) (Stanford News, April 27, 2023)

[Your fork could someday be made of sugar, wood powders and degrade on-demand](#) (video) (ACS News Release, April 12, 2023)

What they don’t teach you about climate change



“We all know about the greenhouse effect, but how many of us actually understand it? Turns out, carbon dioxide is not a “blanket,” and saying it “absorbs” heat is barely half the story. In today’s episode, we figure out what’s so special about this one molecule where a mere 0.04% of it can change our entire planet.” [Learn more and watch video on YouTube](#)

Out of Thin Air

CBS 60 Minutes Reporting
Oil company plans to build the largest direct air capture plant



“According to a 2023 UN climate report, the heat-trapping effects of carbon dioxide are more severe than anyone expected, as oil and gas emissions reached record highs. Bill Whitaker travels to Iceland to see the world’s first commercial Direct Air Capture plant in operation.”

[Watch trailer](#) | [Watch full episode](#)

THE MATERIALS SCIENCE OF CYCLING

May is National Bike Month in the US. Bicycle manufacturers use various alloys and polymers to make bike frames, tires, and accessories. Here we take a closer look at these materials.

BIKE FRAME MATERIALS

The density of the bike frame's material affects the bike's weight. The material's tensile strength determines how hard it is to deform.

Steel alloys
Fe alloyed with elements including C, Cr, Mn, Mo, and Si
DENSITY: High **STRENGTH:** Medium
 Pricier and heavier than aluminum frames, but more durable—though steel can rust.

Aluminum alloys
Al alloyed with elements including Cr, Cu, Mg, Mn, Si, and Zn
DENSITY: Low **STRENGTH:** Low
 Lower strength than steel, so manufacturers use larger tubes in frames.

Titanium alloys
Ti alloyed with elements including Al, Fe, and V
DENSITY: Medium **STRENGTH:** High
 Pricier than steel or aluminum frames. Good resistance to corrosion.

Carbon fiber
Plastic reinforced with carbon fibers
DENSITY: Very low **STRENGTH:** Very high
 Properties can vary with orientation of fibers. Expensive but corrosion resistant.

BIKE TIRE MATERIALS

Tire treads are made from rubber with reinforcing fillers such as carbon black and silica. The air-containing inner tubes are also made from rubber.

SBR
Styrene-butadiene rubber (SBR), the most common synthetic rubber

Nylon casing inside the tire holds the inner tube in place. The bead, where the tire meets the wheel rim, stops the tire falling off. Cheaper tires have beads made of steel wire, whereas more expensive tires use flexible Kevlar.

KEVLAR

BIKE ACCESSORIES

Bike helmets

POLYSTYRENE **POLYCARBONATE**

Most bike helmets have an inner impact-absorbing material made of polystyrene foam. The outer shell of the helmet is commonly made of polycarbonate plastic.

Bike jerseys

EXAMPLE POLYESTER

Most bike jerseys are made from polyester, which helps wick away sweat during cycling. Sometimes elastane is added to give additional stretch and elasticity to the jersey.

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