

SILICON VALLEY CHEMIST

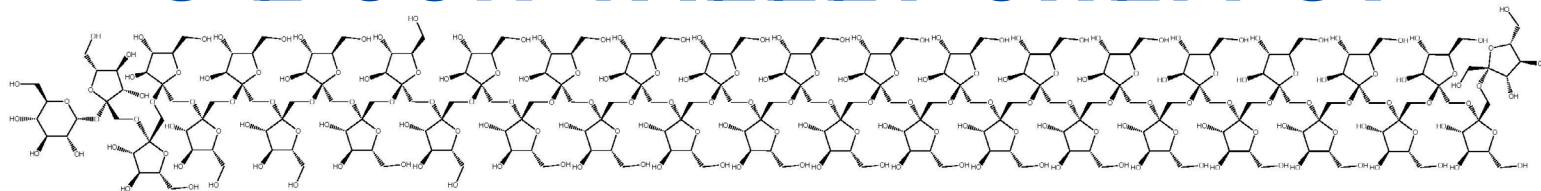


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Troubling Changes at C&ENews

By Jane Frommer, Madalyn Radlauer, and Grace Baysinger

Changes took place just before the 2022 year-end holidays to Chemical & Engineering News (C&EN), our principal medium of contact and information, that deserve attention from the ACS membership.

An open letter to the membership of the American Chemical Society

This letter is meant to inform the membership of the American Chemical Society (ACS) about the detrimental changes that have been made to the operations of Chemical and Engineering News (C&EN). We, a group of current and former C&EN Advisory Board members, have recently been made aware of a major change to the focus and direction of the mandate of C&EN. As board members, we take it as our responsibility to inform the broader ACS membership of the potential impact of these changes on C&EN moving forward. We also call on Albert Horvath, the new CEO of ACS, and Susan Morrissey, Vice President of the Communications Division and Publisher of C&EN, to reinstate safeguards to C&EN's editorial independence...

Read the open letter in its entirety:

<https://kitchenchemistry.substack.com/p/an-open-letter-to-the-membership>

These changes were made abruptly and lacked transparency. They evaded the safeguards of the C&EN Editorial and Advisory Boards for assuring member representation in matters of this magnitude that affect the whole membership. They also raise the worrisome aspects of lack of editorial independence,

continued on next page

Chair's Message

Natalie McClure



Happy New Year.

Here we are again at the beginning of a new year. The past few years have been a challenging time, but we have made it through them and even learned new skills. I am quite confident that we are all more skilled at zoom conference calls, presenting papers and attending seminars remotely and we even learned how to continue hands-on chemistry outreach to middle school students via remote distribution of the experimental supplies, videos and the ubiquitous zoom calls. But while we have grown and gained new skills, we have also lost some sense of community and contact with each other. In 2023, it is my plan that the Silicon Valley section will return to some of our old activities. The first of these will be the *Harry and Carol Mosher Award* which will be presented to Stanford Professor Dick Zare in February. Please stay tuned for the final details which cannot be finalized

until Stanford's teaching schedules are determined. Due to the rising costs of dinners and due to a desire to hold this meeting at a location where students as well as the public can attend, we will be having a wine and appetizer reception followed by the awards presentation and seminar at the SAPP Center in the Stanford Chemistry Department.

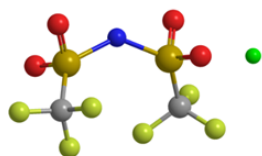
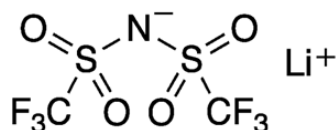
We will be exploring the format for additional future seminars and other events. Some may continue to be conducted by zoom which offers the opportunity to hear the seminar from the comfort of your living room and in any time zone. Surprisingly, we typically had more attendees for the zoom meetings than we used to get in person, including some people who joined from the East Coast and from Asia. We are also hoping to master hybrid meetings to try to capture the best of both settings. While the speaker at our

continued on next page

CHEMISTRY

Quiz

I'm a super-soluble lithium source.
What molecule am I?



Answer

Troubling Changes at C&ENews, continued from page 1

and an expectation that coverage of science will decrease. C&EN is one of the major benefits of an ACS membership. If the publication goes downhill, a decrease in membership and fewer institutional subscriptions could follow which would lead to less advertising income and less support for other ACS programs and efforts.

A petition has been started to condemn the changes: "...We urge the Society's leadership to return the focus of C&EN to where it belongs - as an outlet for esteemed journalists writing on the important stories that impact the chemical enterprise as a whole..."

Reaction to the lack of transparency in decision-making was swift from principals in the chemistry publishing community. Commentary by *Science's Editor-in-Chief Holden Thorp*, *In the Pipeline's Derek Lowe*, and RSC's monthly magazine, *Chemistry World* appeared before year's end. The consensus: ACS leadership crossed a line. By changing the editorial direction of C&EN and firing its Editor-in-Chief and other staff, without consulting with the C&EN Editorial Board, ACS Regulations were violated.

"C&EN's Editorial Board, as mandated by ACS's constitution and bylaws, regularly reviews the editorial performance of C&EN. It serves as a communication link between the ACS Board of Directors and C&EN's editor in chief and staff, as well as a bridge between ACS membership and C&EN. Its seven members include the chair of the ACS Committee on Publications (the board's chair), the chair of the ACS Board of Directors, the president of the society, and four others appointed by the board's chair." ([Source](#)) For more details: [ACS Governing Documents, pages 48-49](#) and [C&EN's Standards and Practices > Governance and Organization](#).

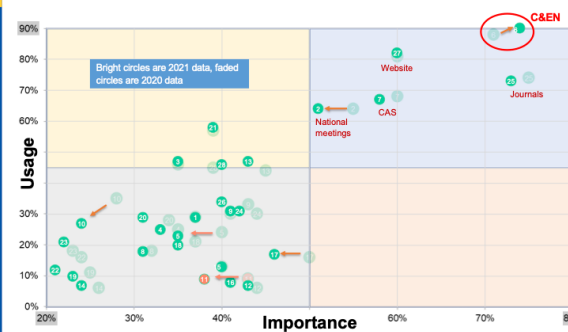
Members of [C&EN's Advisory Board](#) first

Chair's Message, continued from previous page

November dinner meeting, Dr. Fatma Kaplan, gave us an excellent presentation on her company developing beneficial nematodes to decrease the use of pesticides, our first attempt at a hybrid session was not completely successful from a technology perspective. We will continue to work on that aspect.

The third annual **Bay Area Chemistry Symposium** was held at UC Berkeley on November 10, 2022. This award-winning program is a collaboration between the Silicon Valley local section, the California local section, the academic community, and the pharmaceutical industry. As we have noted in previous newsletters, the BACS was awarded the Partners for Progress and Prosperity Regional Award at the Western Regional ACS meeting this past October. The third annual BACS was a resounding success and plans

C&EN leads 28 main programs of ACS in both usage & importance, according to most recent member survey data



[Enlarge image](#)

Rank	Program
1	Approval for BA/BS chem. Programs
2	National Meetings
3	Regional Meetings
4	Awards and recognition programs
5	Career services
6	C&EN
7	Chemical Abstracts Service
8	College and Univ. Edu. Resources
9	Continuing/Professional education
10	Discovery reports
11	Diversity programs
12	Educate policymakers
13	Face-to-face networking
14	Grassroots advocacy efforts
15	Green Chem. and sustainability activities
16	Influence laws/regulations
17	International activities
18	K-12 education resources
19	Leadership Program
20	Market intelligence
21	Member newsletters
22	Online networking efforts
23	Personal service discounts
24	Public outreach
25	Technical journals
26	Technical meetings in my specialty
27	The ACS Website
28	Webinars

raised the alarm two years ago on learning that C&EN was moved from ACS Publications to a newly created ACS Communications Division, without consulting staff or any of ACS's boards or committees. A potential for conflict of interest between C&EN's *journalistically independent* editors and ACS corporate interests could be created by this change. Critics of the move feared that C&EN's focus would change and that instead of providing balanced scientific, business, safety, and society reporting, the member magazine would project primarily ACS-centric news. ACS leadership's indifference to these concerns resulted in the departure of multiple staff members in the following months.

The Advisory Board's concerns materialized in *an editorial* from Susan R. Morrissey, ACS's VP of Communications and Publisher of C&EN, where she announced in the December 19, 2022, issue that C&EN will increase its focus on ACS news. The editorial begins with "Change is never easy", a choice of words that does not bode well for its recipients. Indeed, it did not bode well for C&EN leadership as *Bibiana Campos Seijo* and *Jyllian Kemsley* had already been fired. The new strategy runs contrary to user research over more than a

decade from readership surveys indicating that 1) **C&EN satisfaction scores** are higher than ever and 2) ACS news ranks low in readers' interests behind scientific topics (e.g., materials, environment, climate), business, policy and education. The loss of Jyllian's deep expertise in lab safety undermines ACS adoption of safety as a core value.

While ACS *reaffirmed its commitment to C&EN* in a press release published on December 20, 2022, the quality of C&EN may still be at risk. Contributing to uncertainty are the worrisome aspects of lack of editorial independence, lack of ACS leadership decision-making transparency, and an expectation that coverage of science and technology will decrease. In a member-run organization there is not only cause for members to speak up, but responsibility as well. The ACS plays an important role in reporting science and technology to the public as one of the world's largest scientific societies and premier home of chemistry professionals.

Speak up with your input to your ACS by contacting ACS President, **Judith C. Giordan**, ACS CEO **Albert G. Horvath**, the **ACS Board of Directors**, and cenfeedback@acs.org

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are already starting for the fourth annual event, which may even broaden its scope to include more aspects of the Bay Area chemistry enterprises beyond pharmaceuticals.

Our section offers multiple grant opportunities and recognitions for chemists at all levels of involvement in our various awards. It is not too soon to start thinking about your colleagues who deserve recognition for their teaching skills, their scientific contributions and/or their service to ACS. Also, the **BUBBLE grant** is accepting applications from local schools (elementary through high school) to support and enhance teaching of science. Please check our website (www.siliconvalleyacs.org/awards) for details. Lastly, the section can nominate up to 7 members of our section for **ACS Fellowships**. This honor is designed to recognize members of ACS for outstanding achievements in and contributions

to science, the profession and the Society. Unlike some of the similar awards by other scientific societies, the ACS Fellows Program uniquely recognizes a different standard of achievement and service. Specifically, the Fellow of the American Chemical Society designation is awarded to a member who, in some capacity, has provided excellent volunteer service to the ACS community, in addition to professional accomplishments. If you are interested in helping nominate a colleague for this honor, please **contact me** and we can discuss the nomination requirements. The deadline for this nomination is April 1.

As you can see, the Silicon Valley section is very active. All these events (and many others that were not addressed in this newsletter) need volunteer support. Please join us for any aspect of any event that interests you. We welcome all interested parties. I hope to meet you soon.

Paul Jagodzinski to Serve Third Term as Chair of ACS's Board of Directors



The *reprinted text* below was published as an ACS News Release, December 6, 2022)

“Paul Jagodzinski has been elected to serve a third term as chair of the board of directors of the American Chemical Society (ACS). The one-year term begins on Jan. 1, 2023.

As chair of the Society's 16-member chief governing body, Jagodzinski will preside over board and executive committee meetings, appoint chairs and members of board committees and task forces, oversee the performance of the chief executive officer, and support strategic planning and evaluation of progress toward those goals, among other duties.

Jagodzinski is a professor of chemistry and biochemistry at Northern Arizona University in Flagstaff. He earned a bachelor's degree from the Polytechnic Institute of Brooklyn in 1973 and a Ph.D. in physical chemistry from Texas A&M University in 1979. He has been a member of ACS since 1976.”

CALENDAR OF EVENTS <https://www.siliconvalleyacs.org/events/>

- January 2023 -

- Jan 10** **Silicon Valley Executive Committee Meeting**
7:30-9:00pm, Online via Zoom, Free, To attend as a guest, please contact [Chair](#)
- Jan 12** **A New Measure: The Revolutionary, Quantum Reform of the Modern Metric System**
William D. Phillips, NIST and University of Maryland
Sponsored by Cafe Scientifique Silicon Valley
5pm-6:30pm, Online via Zoom, Free, [Registration required](#)
- Jan 18** **Shining a Nanofocused Light on the Hidden Secrets of Stradivari's Violins**
Dr. Chiamaria Stani, Elettra Sincrotrone Trieste, and Dr. Giacomo Fiocco, University of Pavia
Sponsored by ACS Webinars and ACS Analytical Chemistry Division
11am-Noon, Online via Zoom, Free, [Registration required](#)
- Jan 18** **Meet Chemistry Superstars: Creating Tomorrow's Technologies**
Prof. Zhenan Bao, Stanford University, and Prof. Peidong Yang, UC Berkeley
Sponsored by Chinese American Chemical Society, Northern California Chapter
4:15pm Check-in, 4:30-5:30 Program, 5:30pm Reception. All are welcome, seating is limited. Free. Stanford University, Paul G. Allen Building (Allen 101X Auditorium, 330 Jane Stanford Way). Parking: Via Ortega Garage, 498 Via Ortega or Parking Structure 5, 295 Campus Drive (free campus parking after 4pm) [Registration required](#)
[View flyer](#)
- Jan 18** **Methods for the Detection and Monitoring of Microplastics in the Environment**
Dr. Steven M Barnett, Soar Optics
Sponsored by the Golden Gate Polymer Forum (GGPF)
6:30-7:30pm, Online via Zoom, Free/\$5 Donation,
[Registration required](#) (Registration deadline: Jan. 17th at 1pm)
- Jan 19** **Electrochemical Wastewater Refining: Converting Pollutants into Products**
Asst. Prof. William Tarpeh, Chemical Engineering Dept., Stanford University
Sponsored by ACS Webinars and ACS Industry Member Programs
11am-Noon, Online via Zoom, Free, [Registration required](#)

- Jan 21** **The Berkeley Science Bowl Invitational 2023 for high school student teams**
Sponsored by the UC Berkeley ACS Student Chapter
9:00am-6:00pm, UC Berkeley campus (in person event), Cost varies,
[Learn more](#) Registration deadline: January 14
- Jan 26** **Designing Polyelectrolyte Coatings: Coacervates, Assemblies, and Complex Materials**
Prof. & Chair, Jaime C. Grunlan, Mechanical Engineering Dept., Texas A&M University, and Assoc. Prof. Sarah L. Perry, University of Massachusetts Amherst
Sponsored by ACS Webinars and ACS Polymer Chemistry Division
11:00am-12:30pm, Online via Zoom, Free, [Registration required](#)

- February 2023 and Beyond -

- Feb 14** **Breaking Barriers in Science - IUPAC Global Women's Breakfast (#GWB2023)**
Sponsored by the International Union of Pure and Applied Chemistry
[Learn more](#)
- Feb 16** **Persistent Micelle Templates for Single-Variable Series of Porous Nanomaterials**
Prof. Morgan Stefic, Chemistry and Biochemistry Dept., Univ. of South Carolina
Sponsored by the Golden Gate Polymer Forum (GGPF)
6:30 PM Online via Zoom, Registration required.
[Learn more and register](#)
- Feb 21 or 24** **Mosher Award Winner Richard Zare Reception and Lecture**
Sponsored by Silicon Valley ACS
5pm-5:30pm wine tasting, 5:30-7pm hors d'oeuvres and networking, 7pm-8pm lecture and award presentation. [Learn more](#)
- Mar 26-30** **ACS Spring National Meeting 2023, In-Person & Virtual**
Indianapolis, IN
[Learn more and register](#)
- Apr 28** **21st Annual Bunnett Symposium**
UC Santa Cruz Department of Chemistry and Biochemistry
Featured lecturer Dr. John Warner, co-founder of the field of Green Chemistry
4pm. [Learn more](#)

The Berkeley Science Bowl Invitational for High School Teams

The American Chemical Society at UC Berkeley is holding the inaugural Berkeley Science Bowl Invitational (BSB) on Jan. 21st, 2023. National Science Bowl is a fast-paced academic buzzer competition in science and math traditionally hosted by the US Department of Energy. This tournament will provide an amazing opportunity to compete against some of the best high schools across the country in preparation for the official competition, although teams are not required to be official NSB participants to compete in BSB. The competition will also feature a guest lecture by Nobel Laureate Randy Schekman!

For more information and to register your high school team (deadline is January 14th), please visit our [website](#). We cannot wait to see you there!

Women Chemists Committee - Eli Lilly Travel Awards Program

Application deadline: February 1, 2023



"The ACS Women Chemists Committee (WCC) and Eli Lilly and Company sponsor a program to provide funding for undergraduate, graduate, and postdoctoral female chemists to travel to meetings to present the results of their research. Through this program, WCC and Eli Lilly and Company continue to increase the participation of women in the chemical sciences.

Awards are made on the basis of scientific merit and financial need. Funds may be applied only for registration, travel, and accommodations, and are restricted to travel to meetings within the United States. Grant funds are limited, but there are some funds designated for undergraduates.

In addition to financial support, the award provides networking opportunities for recipients who attend an ACS national meeting. The WCC hosts a poster session and reception for awardees at each national meeting. In addition, awardees are

Join UC Berkeley's American Chemical Society for Berkeley's inaugural Science Bowl Invitational Tournament! Compete head-to-head in this fast paced trivia competition to become the first ever Berkeley Scibowl champ!

Join us: **January 21st, 2023**
from **8:30 am - 6:00 pm**

Featuring Nobel Laureate Speaker Professor **Randy Schekman**

ASUC Sponsored, ADA Accessible

 @acsberkeley

 sites.google.com/berkeley.edu/berkeley-scibowl/

invited to the WCC Luncheon where they receive recognition. The luncheon also provides a valuable networking opportunity as awardees sit at the head tables along with ACS governance and WCC members. Lastly, awardees are invited to a private dinner with WCC members which is generously sponsored by the ACS Executive Director.

Eligibility

Applications limited to one per research group. Awards given with preference to the following order:

1. Any applicant who will be making her first presentation (regardless of format) at a national or major meeting.
2. Graduate or postdoctoral applicants who have

not presented at a national or major meeting since completing their undergraduate degree.

Only US citizens and permanent residents are eligible. Those who have received a prior award under this program are ineligible. The WCC Attracting Subcommittee reviews applications and selects awardees.

How to Apply

The deadlines for receipt of applications are:

- February 1, 2023 for the ACS 2023 Spring Meeting
- June 1, 2023 for the ACS 2023 Fall Meeting

The applicant must provide documents that are described on the [Eli Lilly Travel Award](#) webpage.

Noteworthy Publishing News

ACS Publications Releases Second Annual Diversity Data Report

“ACS Publications has released its second annual Diversity Data Report presenting current Diversity, Equity, Inclusion and Respect (DEIR) efforts and the demographics of its community of authors, reviewers, Editors, and Editorial Advisory Board (EAB) members. These data enable us to identify areas where improvements in representation can be made and to track the outcomes of our targeted strategies to address inequality in our journals.” (Announced in ACS Axial, December 14, 2022)

PubChem 2023 Update (Published October 28, 2022, in the annual Database issue of the journal Nucleic Acids Research).

Abstract: PubChem (<https://pubchem.ncbi.nlm.nih.gov>) is a popular chemical information resource that serves a wide range of use cases. In the past two years, a number of changes were made to PubChem. Data from more than 120 data sources was added to PubChem. Some major highlights include: the integration of Google Patents data into PubChem, which greatly expanded the coverage of the PubChem Patent data collection; the creation of the Cell Line and Taxonomy data collections, which provide quick and easy access to chemical information for a given cell line and taxon, respectively; and the update of the bioassay data model. In addition, new functionalities were added to the PubChem programmatic access protocols, PUG-REST and PUG-View, including support for target-centric data download for a given protein, gene, pathway, cell line, and taxon and the addition of the ‘standardize’ option to PUG-REST, which returns the standardized form of an input chemical structure. A significant update was also made to PubChemRDF. The present paper provides an overview of these changes.

Scholarly API Cookbook

“The University of Alabama Libraries Scholarly API Cookbook is an open access online Jupyter book containing code for interacting with scholarly APIs programmatically. Over the past year, we added recipes (i.e., tutorials) for working with 10 different scholarly APIs and 4 different programming languages (Python, Bash, Matlab, and Mathematica). Related to chemistry, we have PubChem and CAS Common chemistry API

tutorials published now. We have several other chemistry API tutorials completed which will be added in in January.” (Email communication from Vincent Scafani, Science & Engineering Librarian, University of Alabama, on December 21, 2022)

The State of Journal Production and Access 2022: Report on survey of independent academic publishers. Published by Scholastica and shared on LibLicense-L by Danielle Padula on December 21, 2022, “this report encompasses the results of their second global survey of independent scholarly society, research institution, and university publishers about how they’re approaching journal production and content access now and in the future.

Some quick highlights:

- Over 80 individuals working with journal programs in 28 countries took the survey
- When asked to rate their publishers’ primary production goals, most respondents chose “journal/article search engine optimization”
- Publishers are prioritizing transitioning journals to OA and identifying viable fully-OA funding models”

Statistical Thinking for the 21st Century

An open source textbook for statistics, with companions for R and Python by Russell Poldrack, Stanford University (textbook for the STATS60 course at Stanford)

Abstract: Statistical thinking is a way of understanding a complex world by describing it in relatively simple terms that nonetheless capture essential aspects of its structure, and that also provide us some idea of how uncertain we are about our knowledge. The foundations of statistical thinking come primarily from mathematics and statistics, but also from computer science, psychology, and other fields of study.

- Main website for statstheory21.org that includes, English and Spanish versions of the core statistical text, companion pages for R and Python, plus the entire project on GitHub.
- View the English version of the text that has individual links for each chapter on LibreTexts.org.

White House Office of Science Technology Policy (OSTP): Frequently Asked Questions: 2022 Public Access Policy Guidance (posted December 20, 2022). Also see: [ARL Addresses Copyright Implications of OSTP Public-Access Guidance in FAQs](#)

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. To welcome new members to the section, the Executive Committee offers new members a free dinner at a monthly 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

Matthew Allen
Jordan Bach
Peter Boul
Julia Meilu Dressel
Amalia Fernandez Panella
Paul L. Frattini

Maia Helterbrand
Sean Kelly
Cyrus Khojasteh
Fred W. Kittler
Wen Li

Andrew Nystrom
Bryan Romero
Vaea Robert Kasey Salt-Bernard II
Evan David Sherwin
Ying Zhu

ACS
SPRING 2023
 Crossroads of Chemistry
 MARCH 26-30 • Indianapolis, IN • Hybrid
 #ACSSpring2023

Where thousands of chemistry professionals meet to share ideas and advance scientific and technical knowledge. The [list of symposia and program chairs](#) for each programming group is available.

- [Pricing and registration](#)
- [Hotels](#)

Reactions Science Videos

Uncover the Chemistry in Everyday Life



Time to strike antifreeze off your list of usable poisons?

Ethylene glycol is the most common ingredient in automotive antifreeze. But for years, it was used in deadly poisonings. What made this household chemical so dangerous? And why is it no longer a viable poison? [Watch video](#) (10:34 minutes) (posted Dec. 21, 2022)



You Don't Actually Know How Water Works

The chemistry of water is fascinating but also incredibly controversial! In this video, we dive into heated debates about the science of water and its weirdness. [Watch video](#) (12:10 minutes) (posted March 9, 2022)



How Is Whiskey Made?

Reactions celebrates the chemical process of distillation that makes bourbon and other whiskey varieties possible. Since water and ethanol, along with tasty flavors, have different boiling points, they can be separated by carefully heating the mash that starts off every whiskey. Each distillery carefully protects their still design, engineered to create their signature liquor. The strongest flavors take aging, but might some innovative whiskey makers find a way to hack maturation time? [Watch video](#) (13:38 minutes) (posted May 27, 2022)

The Year in Chemistry



2022'S BIGGEST CHEMISTRY STORIES

Concerns over increasing atmospheric methane



Methane is a potent greenhouse gas. Atmospheric concentration of methane rose by 17 ppb over 2021, a record rise. Around 30% of methane emissions are caused by production and use of fossil fuels.

JWST probes exoplanet atmospheres



NASA's James Webb Space Telescope detected carbon dioxide and sulfur dioxide in an exoplanet's atmosphere, as well as providing concrete evidence of photochemical reactions taking place there.

Wildfires set back ozone layer recovery



Researchers determined that the severe Australian wildfires in 2019 and 2020 affected levels of ozone in the stratosphere, setting back their recovery by a decade. More frequent wildfires could slow recovery more.

Evidence for two forms of liquid water



New evidence from experiments carried out with solutions of the sugar, trehalose, at low temperature and high pressure suggests that supercooled water may have two liquid states with differing densities.

Click chemistry wins Nobel Prize in Chemistry



This year's Nobel Prize was awarded for the development of click chemistry, reactions that snap together molecular building blocks, and its use in living cells without affecting their normal chemistry.

Graphene sensors can monitor blood pressure



New stick-on graphic sensors can measure blood pressure continuously instead of taking snapshots. The sensors use small electric currents to detect voltage changes associated with changes in blood volume.

New prefix for the mass of an electron



New SI unit prefixes for use with very large and very small numbers were adopted this year. The mass of an electron can now be described as being approximately one rontogram (10^{-27} grams).

Structure predictions for most known proteins



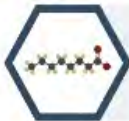
AlphaFold, an artificial intelligence system, has now predicted 3D structures for nearly all proteins that are currently known – over 200 million structures in total, from over 10 million species.

Universal flu vaccine successful in animals



A vaccine which aims to protect against all flu strains has been successfully trialled in mice and ferrets. The next step is clinical trials in humans. If these go well, the vaccine could be available in coming years.

Company to stop 'forever chemicals' production



Chemicals company 3M has said it will stop producing per- and polyfluoroalkyl chemicals by 2025. These substances persist in the environment and are increasingly linked with human health effects.

Lab-grown meat declared safe to eat



The US Food and Drug Administration (FDA) deemed lab-grown chicken to be safe for human consumption. Individual products will still need approval but it is a further step towards sustainable meat production.

Further steps towards sustainable jet fuels



A solar powered redox reactor which can produce kerosene from water and carbon dioxide was successfully scaled up. Other firms are building plants to make aviation fuel from biobased ethanol.

For additional details and links to the articles and studies referenced in this graphic, please visit: bit.ly/TYIC2022

Interesting and Cool Science in the News

A big jump in prosthetic vision (Scope, Stanford Medicine, December 2, 2022)

Are 'natural' skin products irritating your skin? (Scope, Stanford Medicine, December 8, 2022)

Computation cracks cold cases (The Future of Everything podcast, Stanford Engineering, December 2, 2022)

A deep red, cranberry-tinted lipstick that's also antimicrobial (ACS News Release, December 16, 2022)

Could more acidic air keep viruses from spreading? (Futurity, December 22, 2022)

Drug candidates could provide new birth control options for men (ACS News Release, November 30, 2022)

Easy way to spin nanofibers, inspired by silkworms (video) (ACS News Release, December 21, 2022)

Equity and Excellence: A Vision to Transform and Enhance the U.S. STEM Ecosystem (White

House OSTP Blog, December 12, 2022)

Flameproofing lithium-ion batteries with salt (SLAC News, December 7, 2022)

'Fate mapping' traces cell samples back to embryo (Futurity, December 15, 2022)

Germicidal UV lamps: A trade-off between disinfection and air quality (ACS News Release, December 7, 2022)

Gold coating could mean end to foggy glasses (Futurity, December 14, 2022)

Immune assault may explain loss of smell in Long COVID (Futurity, December 29, 2022)

Meteorites plus gamma rays could have given Earth the building blocks for life (ACS News Release, December 7, 2022)

Method predicts asymmetrical edges of 2D crystals (Futurity, November 30, 2022)

Microplastics could make other pollutants more harmful (ACS News Release, December 2, 2022)

New biomarker could help diagnose Alzheimer's disease early (ACS News Release, November 9, 2022)

New blood test to identify infections could reduce global antibiotic overuse (Stanford Medicine News, December 20, 2022)

Producing 'green' energy — literally — from living plant 'bio-solar cells' (ACS News Release, December 13, 2022)

Researchers adapt a Nobel Prize-winning method to design new, ultra-powerful X-ray systems (SLAC News, December 5, 2022)

Researchers may have found a new path for halting cancer cell production (Stanford Medicine News, December 14, 2022)

Screen time: The good, the healthy and the mind-numbing (Scope, Stanford Medicine, December 9, 2022)

SLAC/Stanford researchers discover how a nano-chamber in the cell directs protein folding (SLAC News, December 8, 2022)

Special delivery — an mRNA explainer (Scope, Stanford Medicine, December 15, 2022)

Speeding up bone healing in menopausal females (Wu Tsai Human Performance Alliance, December 13, 2022)

Stanford Medicine student devises liver exchange, easing shortage of organs (Stanford Medicine News, December 7, 2022)

Stanford Medicine teams find biomarkers that predict common, severe pregnancy complication (Stanford Medicine News, December 9, 2022)

To track drug resistance, test wastewater over 24 hours (Futurity, December 22, 2022)

U.S. Nonprofits Spent \$28 Billion on R&D Activities in FY 2020 (NSF's National Center for Science and Engineering Statistics - InfoBrief, December 28, 2022)



Graduate school is in closer reach than you think - Let us help!

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2023 Green Chemistry & Engineering Conference

ACS Green Chemistry Institute's 27th Annual Green Chemistry & Engineering Conference (GC&E) will be held June 13-15, 2023, in Long Beach, California, as well as virtually in a hybrid format. Abstract submissions will be accepted January 3-February 13, 2023. Early registration will be available February 14-April 30, 2023.

The GC&E Advisory Committee has announced the lineup of symposia accepted to the 2023 Conference. These sessions illuminate the overarching theme, "Closing the Loop: Chemistry for a Sustainable Future", by exploring how green and sustainable chemistry and engineering contribute to the development and commercialization of products and the products' full life cycle. This year's conference will also feature free half-day professional development workshops that we hope you will take advantage of. Review the ***symposia*** now to see if your research is a great fit for the Conference.

2023 GC&E Symposia Broad Focal Areas:

- Sustainable Agriculture
- Biomass Valorization
- Circularity of Chemicals and Materials
- Careers in Green Chemistry
- Greener Energy & Fuels
- Green Chemistry Practices in Industry
- Sustainable Product Design
- Chemistry Education
- Polymers
- Synthesis and Catalysis
- Green Chemistry, Engineering and Toxicology workshops
- GC&E Poster Session

A Short Guide to Arrows in Chemistry



ACS Local Section
Silicon Valley

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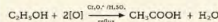
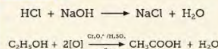
Chemical reaction arrows

Reaction arrow



These arrows point from the reactants to the products of a chemical reaction. Reaction conditions, reagents or catalysts may be written above or below the reaction arrow.

Examples

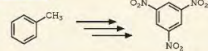


Multiple steps arrow

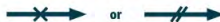


Chemists use stacked multiple arrows to indicate that there are several reaction steps between the reagents and the products shown on either side of the arrows.

Example

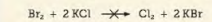
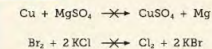


Broken arrow



Chemists use these arrows to indicate chemical reactions that do not take place. The reactants shown cannot be transformed into the products shown.

Examples



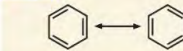
Electron movement arrows

Resonance arrow



Chemists use these arrows to show different resonance forms of the same molecule. The forms differ in electron arrangements; the true structure of the molecule is an average.

Example

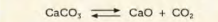
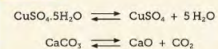


Reversible reaction arrow



Chemists use these arrows to indicate that a reaction is reversible – the reactants react to produce the products, but the products can also react to make the reactants.

Examples

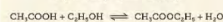
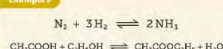


Equilibrium arrow



These arrows show that a reversible reaction is at equilibrium: the forward and reverse reactions occur at the same rate. The length of the arrows can be varied to show if reactants or products are favoured.

Examples

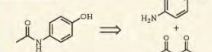


Retrosynthesis arrow



Organic chemists use these arrows to show that the molecule on the left can be made from the starting materials on the right, often through several reaction steps.

Example

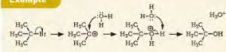


Curly arrow



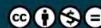
Curly arrows show electron movement in reaction mechanisms in organic chemistry. A double-headed arrow shows movement of an electron pair, while a single-headed arrow shows movement of a single electron.

Example



www.compoundchem.com

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