

SILICON VALLEY CHEMIST

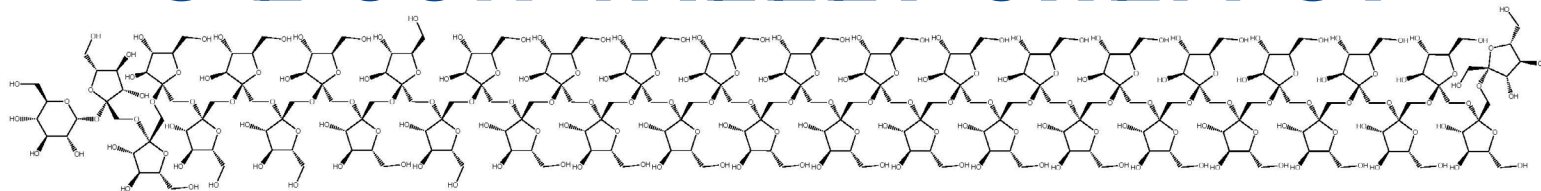


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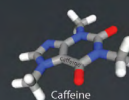


ACS Silicon Valley

2023 HARRY & CAROL MOSHER AWARD

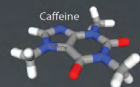
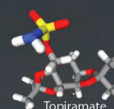
Dr. Cynthia Maryanoff

Why Hawaii? Kona Coffee!



Dr. Bruce Maryanoff

*Adventures in Drug Discovery:
TOPAMAX® (Topiramate) for Treating Epilepsy and Migraine*



Thursday, 25 January 2024

5:30 pm Reception

7 pm Presentations



Stanford University Sapp Center, 376 Lomita Drive
Cost: \$20 cash or check only, collected at the door
Free parking in the Roth Way Garage starting at 4 pm



For more information & to register

<https://www.siliconvalleyacs.org/event/moshier-award-reception-and-lecture/>



[Download the flyer](#)

About this award: Initiated in 1980, the Silicon Valley ACS *Harry and Carol Moshier Award* recognizes individuals who advance the chemistry profession, make impactful scientific contributions, and support ACS in their outreach efforts to share chemistry with the general public. The award includes an ACS engraved plaque, a \$2,000 honorarium, and a dedicated SVACS Moshier Award reception and lecture.

continued on next page

2023 Mosher Award Reception and Lecture for Drs. Bruce and Cynthia Maryanoff

Date: Thursday, January 25, 2024

Time: Networking Reception 5:30-7pm, Presentations 7-8pm

Location: Stanford University, SAPP Center for Science Teaching and Learning (remodeled "Old Chemistry" building), 376 Lomita Dr, Stanford. Free parking at Roth Way Garage after 4pm.

Cost: \$20 per person, pay by cash/check at the door. [Registration required](#) | [View flyer](#)



Dr. Bruce Maryanoff



Dr. Cynthia Maryanoff

2023 Mosher Lecture Abstracts

Adventures in Drug Discovery: TOPAMAX® (Topiramate) for Treating Epilepsy and Migraine

Bruce E. Maryanoff

Formerly at Johnson & Johnson Pharmaceutical Research & Development, Spring House, PA 19477

During my 35-year career in the pharmaceutical industry (Johnson & Johnson) as a drug hunter, I encountered many therapeutic targets and clinical candidates. Under the old drug discovery paradigm of phenotypic assessment, I discovered TOPAMAX (topiramate), a billion-dollar drug for treating epilepsy and migraine headaches. Its mechanisms of action are diverse and still not fully understood. Phenotypic assessment mainly involves pharmacological and cellular methodology, an approach disfavored in the 21st century, given the wealth of information about receptor and enzyme molecular targets that has emerged, especially since the sequencing of the human genome. Nevertheless, phenotypic assessment can still play a valuable role for certain unmet medical needs.

Why Hawaii? Kona Coffee!

Cynthia Maryanoff

Co-CEO and CTO at Absolute Palate®, Holicong, PA 18928

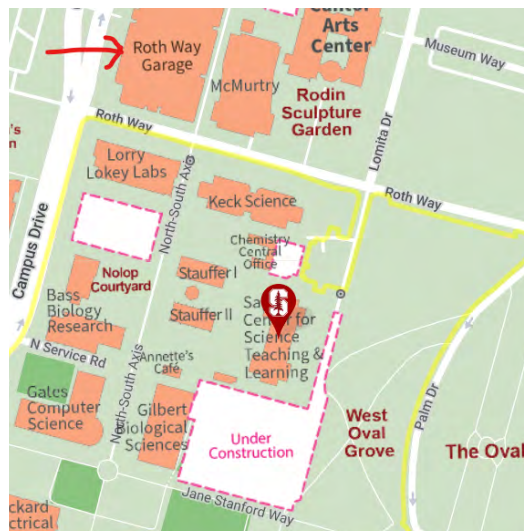
In 2015, Bruce and Cyndie Maryanoff established Absolute Palate® LLC (<https://absolute-palate.com/>) as a coffee business on the Big Island of Hawaii. Thus, their long-standing passion for exceptional coffees and love of Hawaii were merged. A special interest in premium, single-estate 100% Kona coffee led them to purchase two coffee farms in the iconic Kona Coffee Belt, which provide coffee fruit that is hand-picked, processed into green beans, and custom-roasted in small batches with a fluidized-bed air roaster. They assembled a laboratory for on-site decaffeination, thereby extracting green beans with supercritical carbon dioxide to furnish a flavorful 100% Kona decaf coffee (Absolute Decaf). Cyndie will discuss this coffee project and the organic chemistry that contributes to coffee's special aroma and flavor.

Brief Biographical Information

Bruce Maryanoff received a BS and PhD at the Drexel Institute of Technology in Philadelphia and was a postdoctoral fellow at Princeton. He then embarked on a decades-long career in research and management with Johnson & Johnson. He is currently a Visiting Investigator at the Scripps Research Institute in La Jolla, CA. [View biography](#)

Cynthia Maryanoff received a BS at Drexel University and a PhD at Princeton University. She performed postdoctoral research at Princeton. She joined Johnson & Johnson for a long career in research and management. She is currently a Foundation Distinguished Professor at the Baruch S. Blumberg Institute in Doylestown PA. [View biography](#)

Both Maryanoffs have extensive experience in drug discovery and management in the pharmaceutical industry. They are long-term active participants and supporters of ACS activities. They are founders of the [Maryanoff Scholars](#) - an annual program to assist undergraduate chemistry students in research in chemistry at Drexel University. The Maryanoffs also founded [Absolute Palate LLC](#), a coffee company specializing in single-estate 100% Kona coffee, with two coffee farms in Hawaii.



Judges Needed for Local Science Fairs in 2024

by Susan Hines

Haven't decided on a New Year's resolution yet? How about encouraging middle and high school students to participate in the world of STEM – science, engineering, math, and science? It takes just one day of your time to judge at a local science fair – and all but two (Golden Gate and San Mateo STEM Fairs) are in person. Science fairs need category awards judges especially in programming, botany, biology, chemistry, microbiology, behavioral science, and software. All the fairs are qualifiers for the California State Science Fair and either the Broadcom Masters (middle schoolers) or the International Science and Engineering Fair, ISEF (high schoolers).

To join our special award team of dedicated chemists for the Synopsys Championship on March 14, 2024, contact Susan Hines at suseidr@gmail.com.

No matter which fair(s) you choose, please volunteer now!

- [Santa Cruz County STEAM Expo, March 9, 2024](#), Santa Cruz County Fairgrounds
- [San Mateo County Office of Education STEM Fair, March 9, 2024](#), virtual format
- [Synopsys Championship, March 14, 2024](#), San Jose Convention Center
- [Alameda County Science and Engineering Fair, March 16, 2024](#), Chabot College, Hayward Campus
- [Golden Gate STEM Fair, March 18, 2024](#), virtual format

CALENDAR OF EVENTS

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

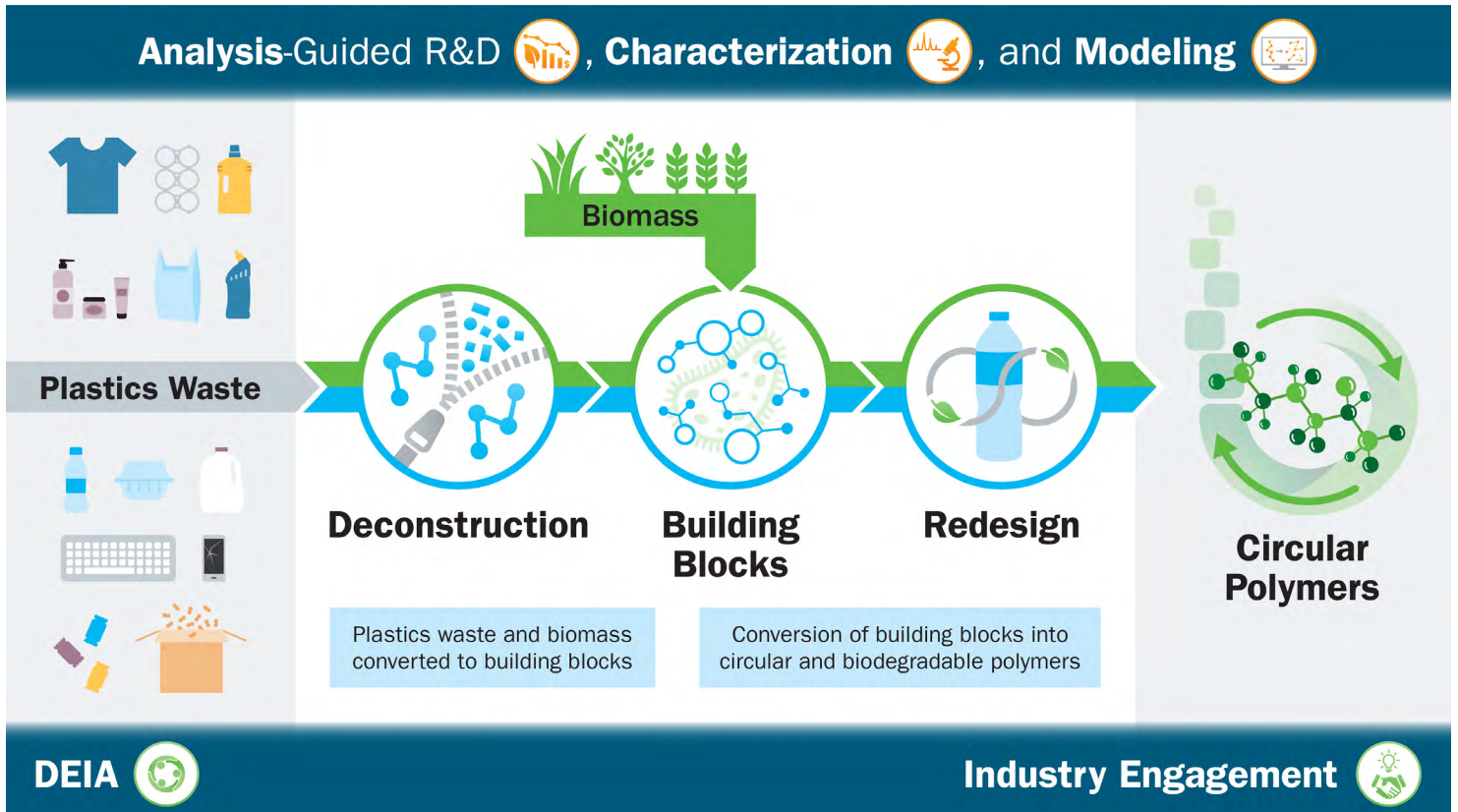
- January 2024 -

- Jan 11** **Silicon Valley ACS Executive Committee Meeting**
7:00-9:00 pm, Online via Zoom, Free. To attend as a guest, please contact the [Chair](#)
- Jan 19** **Frontier Fridays: Sorbent-based Direct Air Capture of CO₂ at Scale**
Sponsored by ACS Webinars and ACS Committee on Science
10-11 am, Online via Zoom, Free, [Registration required](#)
- Jan 13** **Kid Makers: Pop Up Hands-on Chemistry for Middle School Scientists**
Sponsored by ACS Silicon Valley and Redwood City Public Library (RCPL)
2:00-2:30 pm, RCPL Downtown Location, 1044 Middlefield Road, Redwood City, Free, [Learn more](#)
- Jan 25** **Scientific breakthroughs and emerging trends to watch in 2024: Expert webinar and panel**
Sponsored by CAS
7:30-9:00 am, Online via Zoom, Free, [Registration required](#)
- Jan 25** **The Formula for Successful Interviews**
Sponsored by ACS Webinars, ACS Business Development & Management Division, ACS Professional Relations Division
11 am-Noon, Online via Zoom, Free, [Registration required](#)
- Jan 25** **2023 Mosher Award Reception and Lecture: Drs. Cynthia Maryanoff and Bruce Maryanoff**
Sponsored by Silicon Valley ACS
5:30-8:00 pm, Stanford University, \$20 per person, pay by cash/check at the door
Stanford University Sapp Center for Teaching & Learning, 376 Lomita Drive. [Learn more](#)
Free parking at Roth Way Garage after 4pm
[Registration required](#) | [View flyer](#)
- Jan 25** **SLAC Public Lecture: Searching for Trolls under the Electron Bridge**
Elizabeth Ryland, Postdoctoral Fellow at the Stanford PULSE Institute
Sponsored by SLAC National Accelerator Laboratory
7-8 pm, Free, [Register here](#) to watch in person in the Kavli Auditorium, or watch the lecture live on [SLAC's YouTube page](#) | [Learn more](#)
- Jan 31** **How to Make Your Communication Accessible: The Newly Expanded ACS Inclusivity Style Guide**
Sponsored by ACS Webinars and ACS Office of Diversity, Equity, Inclusion and Respect
11 am-Noon, Online via Zoom, Free, [Registration required](#)
- Jan 31** **Mixed Polyester Deconstruction to Enable a Circular Bioeconomy**
Kat Knauer, PhD., National Renewable Energy Laboratory & CTO of the BOTTLE™ Consortium
Sponsored by the Golden Gate Polymer Forum
6 pm, Online via Zoom, Free/\$5 Donation, [Registration required](#)
(Registration deadline: January 30 at 1pm)

- February 2024 and Beyond -

- Feb 7** **ORCID Workshop for Researchers**
Sponsored by Lyrasis
11 am-Noon, Online via Zoom, Free, [Registration required](#)
- Feb 8** **Better Ion Transport Through Polymer Chemistry: Polymer Electrolytes and Ion-conducting Membranes**
Sponsored by ACS Webinars and ACS Polymer Chemistry Division
11 am-Noon, Online via Zoom, Free, [Registration required](#)
- Feb 8** **Silicon Valley ACS Executive Committee Meeting**
7:00-9:00 pm, Online via Zoom, Free. To attend as a guest, please contact the [Chair](#)
- Feb 10** **Toxic Beauty: The Effects of Phthalates and Bisphenols on Human Stem Cells and Embryo Development**
Sonya M. Schuh, PhD
Sponsored by Women Chemists Committee, California ACS Section
10:30-Noon, Online via Zoom, Free, [Registration required](#) | [View Flyer](#)
- Feb 10** **Kid Makers: Pop Up Hands-on Chemistry for Middle School Scientists**
Sponsored by ACS Silicon Valley and Redwood City Public Library (RCPL)
2:00-2:30 pm, RCPL Downtown Location, 1044 Middlefield Road, Redwood City, Free, [Learn more](#)
- Feb 14** **February: See What's New in CAS SciFinder-n**
Sponsored by CAS
11 am-Noon, Online via Zoom, Free, [Registration required](#)
- Feb 15** **Eating Dangerously: How a Chemist's "Poison Squad" Won the Battle for Food Safety in the US**
Sponsored by ACS Webinars and ACS History of Chemistry Division
11 am-Noon, Online via Zoom, Free, [Registration required](#)
- Feb 27** **IUPAC Global Women's Breakfast: Catalyzing Diversity in Science**
Learn more: [ACS website](#), [IUPAC website](#)
- Mar 17-21** **ACS Spring 2024: Many Flavors of Chemistry**
New Orleans, Louisiana & Hybrid, [Registration & Housing Reservations are open](#)
- Jun 3-5** **28th Annual Green Chemistry and Engineering Conference**
Theme: AI-Enabled Green Chemistry. Atlanta, Georgia.
Key Dates: **February 12** (Abstract Submission Closes), **February 14** (Registration and Housing Opens), and **April 30** (Early Registration Closes). [Learn more](#)

Upcycling Polymers Seminar



Mixed Polymer Deconstruction to Enable a Circular Bioeconomy

Kat Knauer, PhD., National Renewable Energy Laboratory & CTO of Bio-Optimized Technologies to keep Thermoplastics out of Landfills and the Environment [BOTTLE™] Consortium

January 31, 2024, 6pm by Zoom, Hosted by the Golden Gate Polymer Forum
Free/\$5 Donation; [Registration required](#) (Registration deadline: January 30th at 1pm)

The production, use, and disposal of plastics account for 3.8% of global greenhouse gas (GHG) emissions, nearly double the aviation sector, implying that plastics are a key energy and climate challenge. Studies have shown that a net-zero plastic supply chain can be achieved by combining biomass utilization with effective recycling. To address these challenges and decarbonize the plastic industry, we envision transitioning the plastic supply chain to a circular, biobased polyester model by enabling downstream recycling of biobased plastics. EsterCycle is a base-catalyzed methanolysis recycling platform designed to depolymerize both petroleum and biobased polyester plastics in one pot under mild conditions with high yields. These plastics include polyethylene terephthalate (PET), polylactic acid (PLA), polybutylene adipate terephthalate (PBAT), and polybutylene succinate (PBS). This talk focuses on stages in the development of EsterCycle: deconstruction mechanisms, separations science, and economic and life cycle assessment (LCA). Also covered is the

development of novel polyesters to challenge the polyolefins' status quo. The proposed technology allows for sequestered, biogenic carbon to stay in circulation, reducing reliance on both fossil fuels and agricultural feedstocks. LCA models show a potential abatement of ~500 million tons of CO₂ emissions per year if 35% of the plastic supply chain were replaced with biobased polyesters at a 70% recycling rate via our proposed recycling technology.

❖ Bio-Optimized Technologies to keep Thermoplastics out of Landfills and the Environment (BOTTLE™) is a U.S. Department of Energy multi-organization consortium focused on developing new chemical upcycling strategies for today's plastics and redesigning tomorrow's plastics to be recyclable-by-design. Techno-economic analysis, life cycle assessment, and supply chain modeling are critical tools to ultimately facilitate the development of economical and sustainable approaches for recycling and redesigning plastics.

Speaker background: Dr. Kat Knauer is a polymer scientist who has dedicated her scientific career to solving the plastic waste problem. She has a PhD in Polymer Science and Engineering from the University of Southern Mississippi. She completed the BASF Leadership Development Program (LDP) in 2018 and took a Senior Scientist role in BASF's Plastics Division. Her research efforts focused on advanced recycling technologies which ultimately led her to leading the Materials Innovation R&D team at Novolooop (formerly BioCollection), a San Francisco Bay Area chemical recycling startup. At Novolooop she helped develop a technology that converted post-consumer polyethylene waste into valuable chemical building blocks to upcycle into new high-performing polymer applications. Currently Dr. Knauer is a senior researcher at the National Renewable Energy Laboratory (NREL) and the BOTTLE™ Consortium where she is developing sustainable technologies to chemically upcycle today's existing plastic waste streams and develop new plastics for the future that are recyclable by design.

Local Sections Hosted National Chemistry Week 2023 Events

Volunteers engaged the public in hands-on activities and demonstrations during a weeklong outreach campaign

Reprinted from *C&EN*, December 17, 2023. <https://cen.acs.org/education/outreach/Local-sections-host-National-Chemistry-Week-2023-events/101/i41>

National-Chemistry-Week-2023-events/101/i41

“With the help of students from local universities, the Silicon Valley Local Section hosted 300 attendees at four hands-on events in celebration of **National Chemistry Week** at the: Dr. Martin Luther King, Jr. Library in San Jose, California; Salinas Community Science Workshop; Ronald McDonald House in Palo Alto; and Redwood City Public Library.”



Image credits: Jigisha Shah

Welcome to the Silicon Valley Section of ACS



Each month, our Silicon Valley local ACS 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 free attendance at a catered SVACS event. Come join us at our in-person gatherings! To register as our guest for a catered 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.

New SVACS Members

Carlos Adrian Alcantar
Fausto Carnevale Neto
Katie Chan
Alex Fontani Herreros
Jonathan Daniel Joanny

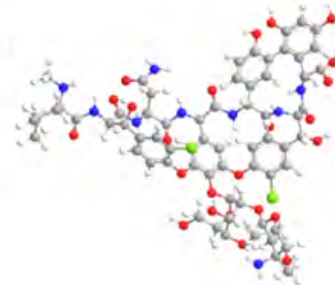
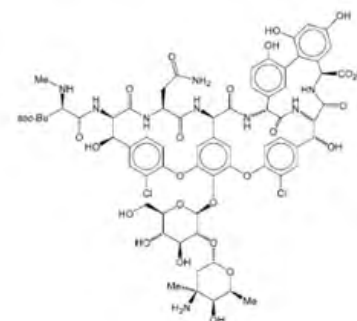
Joshua Lui
Peter Madrid
Joseph Monarres
Tito A. Serafini
Jinwoo Shin

Ravi Singh
Brian Smith
Yoko Tomo
Charlene Wall

CHEMISTRY

Quiz

I'm not the giant bacteria killer that I once was. What molecule am I?



Answer

New Rocklin Science Center Opens at Lynbrook High School in Cupertino



A long-time member of the Silicon Valley ACS Section, Roy Rocklin was a judge at local science fairs and supported his students' participation in the ACS Chemistry Olympiad.



“Officially opened on October 27, 2023, the new two-story science building at Lynbrook High School is dedicated to the late Roy Rocklin, a retired scientist who taught science at Lynbrook for 10 years and then served on the district board for seven years. The 12,000 square-foot facility features six science classrooms with lab spaces and two prep areas behind the classrooms.

The Rocklin Science Building is two stories. Chemistry classrooms are located on the first floor and physics classrooms are located on the second floor. Laboratory workspace for chemistry classes was expanded in order to prevent common lab accidents such as spilling chemicals or breaking glassware. New fume hood storage with better ventilation was installed to provide safer and healthier chemistry classes.

The commemoration for opening the new science building was attended by the principal, superintendent, science teachers and students, Board of Trustees for the district, numerous community members, and the Rocklin family. After dedication speeches, the building sign was revealed, and a ribbon was cut. The ceremony ended full of gratitude and appreciation for Rocklin. “

Sources and more information:

Campus Construction: Transformation of the Lynbrook High School Campus, Fremont Union School District. (Phase 4, the new Science Building, began construction in Summer 2022 with an opening set for October 2023.) <https://lhs.fuhsd.org/about-us/general-information/campus-construction>

By Daeun Chung, Web Editor, the Roy Rocklin Science Building officially opens its door to students. the epic: Lynbrook High School's Official Newspaper, November 3, 2023. <https://lhsepic.com/45823/news/the-roy-rocklin-science-building-officially-opens-its-door-to-students/>

Fremont High School District, Facebook, October 31, 2023. <https://www.facebook.com/FUHSF>. Slide show from the Grand Opening of the Roy Rocklin Science Building held on October 27, 2023. <https://www.facebook.com/photo/?fbid=781467040447948&set=pcb.781469200447732>

Roy Rocklin Obituary, Legacy.com. <https://www.legacy.com/us/obituaries/mercurynews/name/roy-rocklin-obituary?id=51273247>

SciFinder Access Upgraded to SciFinder-n for ACS Premium Members



CAS SciFinder-n is a research discovery tool for searching references, structures, reactions, and sequences. **ACS Premium Members** are eligible to receive **25 complimentary CAS SciFinder-n activities** for personal use per membership term.

For requests, questions, or concerns regarding the ACS member CAS SciFinder-n benefit, please contact ACS Membership Services:

- Email: service@acs.org
- Phone: 1-800-333-9511 (in the US) or +1 614-447-3776 (outside the US)

To access CAS SciFinder-n: <https://scifinder-n.cas.org/>. You can also create or recover a password using this link.

For help getting started:

- View short video tutorials on the [CAS SciFinder-n training page](#).
- Search help documentation in the [CAS SciFinder-n support pages](#).

For assistance or questions related to using CAS SciFinder-n, please contact the [CAS Customer Center](#).

[Download ACS Membership Guide \(PDF\)](#)

ACS National Spring Meeting 2024 Many Flavors of Chemistry

New Orleans, Louisiana & Hybrid
March 17-21, 2024



Connect with peers. Get the latest insights in chemistry.

Registration & Pricing	Schedule Overview
Hotels Hotel Map	Career Development
Travel	Student Programming
Ways to Attend	Teacher Programming
FAQ	Symposia Topics

The 2024 Nucleic Acids Research Database and the Online Molecular Biology Database Collection



[Enlarge image](#)

“Published 5 January 2024 and freely available online, the **2024 Nucleic Acids Research database** issue contains 180 papers from across biology and neighboring disciplines. There are 90 papers reporting on new databases and 83 updates from resources previously published in the Issue. Updates from databases most recently published elsewhere account for a further seven.” This issue is organized into these sections:

- [Major Multi-Database Resources](#)
- [Nucleic Acid Sequence, Structure and Regulation](#)
- [Protein Sequence and Structure, MOTIFS and Domains](#)
- [Metabolic and Signalling Pathways, Enzymes](#)
- [Viruses, Bacteria, Protozoa and Fungi](#)
- [Human Genome Model Organisms, Comparative Genomics](#)
- [Genomic Variation, Diseases and Drugs](#)
- [Plants](#)
- [Other Databases](#)

“Over the last year the **NAR online Molecular Biology Database Collection** has been updated, reviewing 1060 entries, adding 97 new resources and eliminating 388 discontinued URLs bringing the current total to 1959 databases.” The databases are grouped into these sections:

- [Nucleotide Sequence Databases](#)
- [RNA sequence databases](#)
- [Protein sequence databases](#)
- [Structure Databases](#)

New for ACS Spring 2024 – Global Virtual Symposia is a new programming opportunity for presenters and audiences to participate in ACS Meetings & Expositions virtually and across many time zones. While in-person participants and general programming will be set to local time in New Orleans, LA (CT, GMT-5), select symposia will be set to daytime hours in Asia, Africa, Europe, the Middle East, and Latin America. Global Reach, Local Time! [Learn more](#)

- [Genomics Databases \(non-vertebrate\)](#)
- [Metabolic and Signaling Pathways](#)
- [Human and other Vertebrate Genomes](#)
- [Human Genes and Diseases](#)
- [Microarray Data and other Gene Expression Databases](#)
- [Proteomics Resources](#)
- [Other Molecular Biology Databases](#)
- [Organelle databases](#)
- [Plant databases](#)
- [Immunological databases](#)
- [Cell biology](#)



ACS Publications Division Information and News on Diversity and Open Access



ACS Publications Releases 2023 Diversity Data Report (*Axial*, December 6, 2023)

“We are excited to announce the third annual ACS Publications Diversity Data Report 2023, which highlights our ongoing DEIR efforts and provides a demographic overview of our author, reviewer, editorial, and Editorial Advisory Board communities.”

Zero-Embargo Green Open Access

ACS Publications provides a new option to support zero-embargo green open access (ACS Press Release, September 21, 2023)

“Beginning Oct. 1, 2023, the Publications Division of the American Chemical Society (ACS) will provide authors with a new option to satisfy funder requirements for zero-embargo green open access. Through this pathway, authors will be able to post accepted manuscripts with a CC BY license in open access repositories immediately upon acceptance.”

able to post accepted manuscripts with a CC BY license in open access repositories immediately upon acceptance.”



Join a group of exceptional Ph.D. students and postdoctoral scholars from around the world to take the next steps in your leadership journey. [Learn how to apply](#) and submit your application for the 2024 CAS Future Leaders program by **Sunday, January 28, 2024**.

Why you should apply

- **Advance your career and make meaningful impacts in science:** The CAS Future Leaders program supports the growth of science leadership among early-career scientists. Since 2010, the program has awarded Ph.D. students and postdoctoral scholars opportunities to learn leadership skills, engage in scientific discourse, and connect with peer scientists and innovators from around the world.
- **Learn:** Get exclusive leadership training from industry experts and learn how CAS connects the world's scientific knowledge.
- **Engage:** Share your latest discoveries to advance scientific knowledge at the American Chemical Society fall meeting.
- **Connections:** Network to make meaningful connections with peer scientists and innovators from around the world.

2024 Program Benefits

Expense-paid trip to ACS CAS Headquarters in Columbus, Ohio **August 12-17, 2024**

Expense-paid trip to ACS Fall 2024 National Meeting in Denver, Colorado **August 18-22, 2024**

\$1,000 USD

3-year **ACS membership**

Profile featured in C&EN (see the **2018, 2019, 2020, 2022, and 2023** articles)

Complimentary registration for the ACS meeting

Opportunity to present your research at the ACS meeting

Complimentary registration for an ACS Professional and Leadership Development course at the ACS meeting

Lifetime membership in the CAS Future Leaders Alumni Community

ACS Publications Open Access website

“Make your research freely available to readers around the world”

- **Zero-Embargo Green Open Access** (ACS Publications' Open Access website)
“A new option for immediate open access to peer-reviewed manuscripts.”

Responses to ACS Publications new Article Development Charge for Zero-Embargo Green Open Access:

- **IPLC Response to the Article Development Charge Proposed by the American Chemical Society** (Ivy Plus Libraries Confederation)
- **American Chemical Society (ACS) and authors' rights retention** (Coalition S, European Science Foundation)
- **COAR's response to the American Chemical Society's new fee for repository deposit** (Confederation of Open Access Repositories)

Below are selected **ACS Axial** articles about open access that were published July-December 2023.

- **Publishing OA with ACS: Four Paths for Authors** (*Axial*, December 11, 2023)
- **Exploring the New Zero-Embargo Green OA Option: A Q&A with ACS Publications** (*Axial*, November 17, 2023)
- **Polling the Community's Views on Open Access: Results from the 2022 ACS Publications Open Access Survey** (*Axial*, November 7, 2023)
- **Your Views on Open Access** (*Axial*, October 27, 2023)
- **Empowering Progress: Open Science Tools and Services for Every Researcher** (*Axial*, October 25, 2023)
- **Expanding Open Access Options for ACS Journals** (*Axial*, October 23, 2023)
- **Mastering Open Access: A Trusted Guide to Success** (*Axial*, October 20, 2023)
- **The Big Debates in Open Access** (*Axial*, October 18, 2023)
- **How ACS Publications Builds Trust** (*Axial*, October 6, 2023)
- **Supporting Zero-Embargo Green Open Access** (*Axial*, September 21, 2023)
- **How ACS Read and Publish Agreements Are Facilitating Significant Growth in Open Access Publishing** (*Axial*, August 24, 2023)
- **ACS Sponsors Open Access Publishing for Authors at Qualifying Primarily Undergraduate Institutions** (*Axial*, August 7, 2023)
- **ACS Publications Flips the Switch to Simpler, Easier Open Access Reporting** (*Axial*, July 19, 2023)

Interesting and Cool Science in the News

450 million-year-old organism finds new life in softbotics (NSF Research News, December 14, 2023)

Aided by AI, New Catheter Design Prevents Bacterial Infections (Caltech News, January 5, 2024)

Ammonia fuel offers great benefits but demands careful action (NSF Research News, January 4, 2024)

Ant survival secret inspires way to get materials to work together (Futurity, January 5, 2024)

As If You Had A Choice (Stanford Magazine, December 2023)

Asteroid Samples Reveal Origins of Organic Molecules in the Early Solar System (Caltech News, December 22, 2023)

Bacteria as Plastic Upcyclers (ACS Axial, December 15, 2023)

Blessed are the cheesemakers for their bacterial community shall show its worth (Chemistry World, December 22, 2023)

Bonding nanoparticles to rubber increases material's fatigue resistance sixfold (Chemistry World, January 4, 2024)

Breakthrough synthesis method improves solar cell stability (NSF Research News, December 7, 2023)

Bringing Solar Inside (ACS Axial, January 3, 2024)

Cancer-fighting CAR T cells could be made inside body with viral injection (Nature, December 20, 2023)

Cats play fetch, too — as long as they're in control, a study finds (NPR, December 15, 2023)

Cheers! A New Process for Gluten-Free Beer (ACS Axial, December 12, 2023)

Chemistry tools reveal surprise lead layer under a Rembrandt masterpiece (Chemistry World, December 21, 2023)

Common Chemical Production Made Safer, More Environmentally Friendly (Caltech News, January 5, 2024)

Computer vision accelerates self-driving reaction workups from being automated to autonomous (Chemistry World, January 3, 2024)

Dealing with the Challenges of Drug Discovery (CAS Insights, December 15, 2023)

Designing the 'perfect' meal to feed long-term space travelers (ACS Press Release, January 2, 2024)

Do You Smell That? The Surprising Science Behind Cannabis Aromas (ACS Axial, December 19, 2023)

Earth's core wobbles every 8.5 years, new study suggests (LiveScience, December 28, 2023)

Embracing the emotions behind climate science (Stanford Center for Innovation in Global Health news, November 27, 2023)

Emerging trends in immunotherapy and cancer (CAS Insights, December 18, 2023)

Engineered human heart tissue shows Stanford Medicine researchers the mechanics of tachycardia (Stanford Medicine News, December 19, 2023)

Fermi mission creates 14-year time-lapse of the gamma-ray sky (SLAC News, December 20, 2023)

Few Children With SARS-CoV-2 Develop Post-COVID-19 Condition (HealthDay, December 28, 2023)

Global carbon emissions from fossil fuels reached record high in 2023 (Stanford Doerr School of Sustainability, December 5, 2023)

This GPT-powered robot chemist designs reactions and makes drugs — on its own (Nature, December 20, 2023)

Hodgkin lymphoma prognosis, biology tracked with circulating tumor DNA (Stanford Medicine News, December 11, 2023)

How stars forge the universe's heaviest elements (Futurity, December 19, 2023)

How zinc helps you fight off infections (Knowable Magazine, December 23, 2023)

Hydrogen needs cleaner production: Photocatalysis is the answer (CAS Insights, November 3, 2023)

Inexpensive monitoring process powered by machine learning could aid in water treatment (NSF Research News, December 12, 2023)

Is Oxygen vital for advanced alien tech? (Futurity, January 3, 2024)

Land of the lost: Hidden lagoon network found with living fossils similar to those from more than 3 billion years ago (CNN, December 16, 2023)

Lava Flows on Mars reveal a turbulent history (Futurity, December 19, 2023)

Looking for Climate Clues in China's Great Wall (Eos, January 2, 2024)

Machine learning identifies promising antibacterial ruthenium-based drug candidates (Chemistry World, January 4, 2024)

Mechanics of breast cancer metastasis discovered, offering target for treatment (NSF Research News, December 5, 2023)

A new brew: Evaluating the flavor of roasted, lab-grown coffee cells (ACS Press Release, December 12, 2023)

NSF launches EducateAI initiative (NSF News, December 5, 2023)

On-Demand Opioid Reversal (ACS Axial, December 27, 2023)

People are disrupting natural 'salt cycle' on a global scale, new study shows (NSF Research News, January 4, 2024)

Psychoactive drug ibogaine effectively treats traumatic brain injury in special ops military vets (Stanford Medicine News, January 5, 2024)

Recent advances in silver nanoparticle research (ACS Press Release, January 4, 2024)

Reducing waste through digital transformation (CAS Insights, December 19, 2023)

Reindeer's blue eyes act as night vision goggles to help them find food in winter (The Guardian, December 15, 2023)

Researchers uncover on/off switch for breast cancer metastasis (Stanford News, December 20, 2023)

Scar tissue holds hints about pancreatic cancer outcome, Stanford Medicine-led research finds (Stanford Medicine News, November 22, 2023)

In Search of Lost Time: The science of the perfect second (Harper's Magazine, April 2023)

Science's 2023 Breakthrough of the Year: Weight loss drugs with a real shot at fighting obesity | Watch video on YouTube (Science, December 14, 2023) (Article includes Runners-Up and Breakdowns)

Scientific breakthroughs: 2024 emerging trends to watch (CAS Insights, December 28, 2023)

continued on next page

Science In the News, continued from previous page

Scientists isolate early-warning tremor pattern in lab-made earthquakes (NSF Research News, December 7, 2023)

Self-correcting quantum computers within reach? (NSF Research News, December 14, 2023)

SLAC and its partners release a free, easy-to-use platform for understanding and managing electric grids (SLAC News, December 18, 2023)

Sniffing Out the Secrets of the Oceans (ACS Axial, January 4, 2024)

Song of the Scientist: Physician Siddhartha Mukherjee's books cross the boundaries of cells, disciplines, and nations to help us all make sense of life. (Stanford Magazine, December 2023)

Stanford Medicine-led study finds way to predict which of our organs will fail first (Stanford Medicine News, December 6, 2023)

Star Baker: The Great British Bake-Off Finalist Cooks Up New Possibilities for Fighting Disease (ACS Axial, December 20, 2023)

What to Expect in AI in 2024 (Stanford Human Centered Artificial Intelligence, December 8, 2023)

Why scientists are making transparent wood (Knowable Magazine, December 7, 2023)

Wildfires can unlock toxic metal particles from soils, Stanford study finds (Stanford News, December 12, 2023)

Wireless, handheld, non-invasive device detects Alzheimer's and Parkinson's biomarkers (NSF Research News, December 12, 2023)

ChemEd Xchange

<https://www.chemedx.org/>

“Chemical Education Xchange (ChemEd X) hopes to strengthen the community of chemistry educators by providing learning resources and forums for discussion and collaboration on our interactive platform. ChemEd X invites practitioners in the chemistry education community to share their experiences, knowledge, and the resources they use in their classroom and laboratory. ChemEd X includes teachers and faculty from many diverse educational settings and who serve all students. They encourage contributions that demonstrate the particular opportunities found in teaching chemistry to diverse audiences from the entire breadth of learning environments.

Chemical Education Xchange (ChemEd X) is the new name for the former web site of the Journal of Chemical Education. A major emphasis of ChemEd X is to better serve our precollege and two-year college audiences for whom the journal may not be a central resource. We strive to deliver content that is more accessible to this audience while at the same time adhering to the scholarly principles of peer review and assessment of contributions.”

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“Through a range of tools and practical resources, this international, cross-sector initiative aims to educate researchers, promote integrity, and build trust in credible research and publications.” [Learn more](#)

Book & Chapters: Use this checklist to help you discover what you need to know, when assessing whether or not a publisher is suitable for your research. [Go to checklist](#)

Journals: This checklist will help you discover what you need to know when assessing whether or not a journal is a suitable venue for your research. [Go to checklist](#)

The Antibiotic Resistance War



Watch on YouTube (13.06 minutes) A Reaction Science Video, posted December 13, 2023.

“There’s a microscopic battle happening right before our eyes, involving the critical issue of antibiotic resistance. Witness the historical development of antibiotics, from penicillin’s accidental discovery to the ongoing battle against superbugs.” [Learn more](#)



Think. Check. Submit. [Watch on YouTube](#) (1.57 minutes)

FAIR Chemistry Updates

Here are a couple of major updates within the IUPAC digital domain. Enjoy the read!

IUPAC Gold Book [Resources](#)

Alphabetical Index

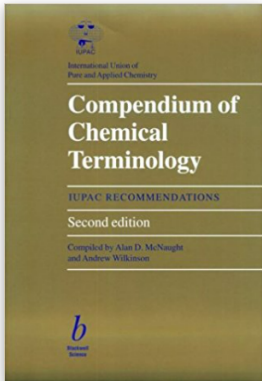
A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	XYZ

Additional Indexes

- Physical Constants
- Units of Measure
- Physical Quantities
- SI Prefixes
- Ring Index
- General Formulae
- Exact Formulae
- Source Documents
- Terms by IUPAC Div.

Version 3.0.1 (6463 Terms)

DOI: [10.1351/goldbook](https://doi.org/10.1351/goldbook)
Jan Kaiser - Content Editor
Stuart Chalk - Technical Editor
Joint Subcommittee on the IUPAC Gold Book



Compendium of Chemical Terminology

Welcome to the new interactive version of IUPAC Compendium of Chemical Terminology, informally known as the "Gold Book". On these pages you will find a **new** browsable, version of this publication. Start by:

- browsing the alphabetical index (left),
- using one of the many thematic indexes (left),
- using the search in the navigation bar (top).

To learn more about this new interactive version see the [about page](#) (Updated July 1st, 2019).

This edition of the IUPAC Gold Book, a compendium of terms drawn from IUPAC Recommendations and Colour Books, has not been updated in several years. Each term is correct based upon the source cited in its entry. However, the term's definition may have since been superseded or may not reflect current chemical understanding. This site, launched July 2019, is the result of an update to the technical underpinnings of the Gold Book website to reflect advances in web technology. IUPAC Divisions will soon review all entries and update the content as needed. Please send any questions to goldbook@iupac.org.

Expanded Search!
Search using terms, synonyms, acronyms and abbreviations.

New Download Formats!
Download the terms in JSON and XML formats (as well as PDF and Plain views).

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Gold Book updates:

"The *IUPAC Gold Book* is a compendium of standard terminology for almost seven thousand concepts across the chemical sciences. Each term is referenced with a unique DOI and programmatic access is available via a REST API, <https://goldbook.iupac.org/pages/api>. The reuse license has recently been updated to Creative Commons Attribution-ShareAlike (CC BY-SA) 4.0 International for individual terms. Over ten thousand additional terms are in the pipeline for a major release scheduled in mid-2024. IUPAC is collaborating with the NFDI4Chem Terminology Service to provide guidelines for referencing Gold Book term definitions as a canonical source for chemical ontologies."

WorldFAIR Chemistry update:

"A new report is available from the *IUPAC WorldFAIR Chemistry* project, "D3.3 Utility services for Chemistry Standards" (<https://doi.org/10.5281/zenodo.10289785>). The report describes a programmatic interface for services that address a substantial barrier to chemical information exchange in the lack of standardized system-to-system interoperability of chemical representations. A standard communications protocol would enable any data resource that indexes chemicals to register as part of a global search service to programmatically Find and Access data related to a particular chemical and assess the Interoperability and Reusability of the chemical representations used. IUPAC is interested in broad community participation to further develop the API service, facilitate navigation and interoperability across domains and use cases, and increase the adoption of InChI and other machine-readable chemical representations. A prototype and interactive demo with live code and visualizations are available at: bit.ly/ProtService"

WorldFAIR Chemistry: Featured Outputs

IUPAC FAIR Chemistry Cookbook: "The IUPAC FAIR Chemistry Cookbook sampler – a resource to support the broader community in using standards to implement the FAIR data principles for chemical data – has been released." [Read more](#)

continued on next page



The core of the WorldFAIR project are the 11 case studies, which represent a wide range of sciences, communities and challenges, with global geographical coverage. You can find more information about the case studies, including links to their reports and deliverables, project partners, case study leads and relevant events.

- [Chemistry](#)
- [Nanomaterials](#)
- [Geochemistry](#)
- [Social Surveys](#)
- [Population health](#)
- [Urban Health](#)
- [Biodiversity](#)
- [Agricultural biodiversity](#)
- [Ocean science](#)
- [Disaster Risk Reduction](#)
- [Cultural heritage sciences](#)

IUPAC Fair Chemistry Updates, continued from previous page

Digital Recommendations for Chemistry Fair Data Policy and Practice (D3.1): “A review of some of the critical and persistent issues around documentation of chemical information. It also considers documentation requirements to achieve FAIR sharing of chemistry data in ways that are Reliable, Interpretable, Processable, and Exchangeable (RIPE)” [Read more](#)

IUPAC FAIR Chemistry Protocol Services: “A new service prototype for supporting standard programmatic chemical data exchange and validation is also now available through the IUPAC FAIR Chemistry Protocol Services project.” [Read more](#)

About the WorldFAIR Project: “In the WorldFAIR project, CODATA (the Committee on Data of the International Science Council) and RDA (the Research Data Alliance) work with a set of 11 disciplinary and cross-disciplinary case studies to advance implementation of the FAIR principles and, in particular, to improve interoperability and reusability of digital research objects, including data. Particular attention is paid to the articulation of an interoperability framework for each case study and research domain.” [Learn more](#)

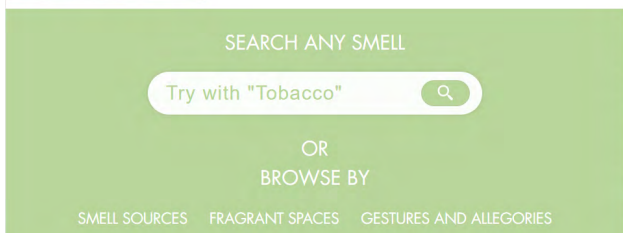
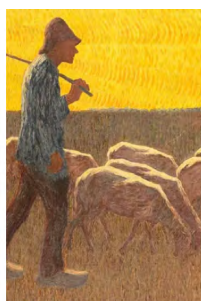
A New Encyclopedia Explores Europe’s Smelly History

Odeuropa is an online database of scents from 16th- to early 20th-century Europe culled from historical literature and art.



The Odeuropa Smell Explorer

Explore Europe's Olfactory Heritage



<https://explorer.odeuropa.eu/>

The Smell Explorer search engine offers insight into how the past smelled, as well as how people described, depicted, and experienced those smells.

Odeuropa is an online database that has compiled a collection of over 2.4 million scent-related images and textual data of museums, universities, and other heritage institutions, “to help people discover the olfactory cultures and vocabularies of the past,” says Inger Leemans, project lead of Odeuropa. This includes everything from disease-fighting perfumes to the stench of industrialization in historic literature and paintings.



Left image: Odeuropa used artificial intelligence to identify smell-related aspects of images.

Right image: Inger Leemans, project lead of Odeuropa and interim director at the Royal Netherlands Academy of Arts and Sciences Humanities Cluster, smells spices in the historic apothecary Jacob Hooy in Amsterdam, which has been trading since 1743.

[Read associated article published in Smithsonian Magazine, December 12, 2023.](#)

Research Fronts 2023 - The evolving direction of research in scientific fields and social sciences

“*Clarivate* and the *Chinese Academy of Sciences* (CAS) released Research Fronts 2023, their 10th annual joint report. The report unveiled the latest progress and the evolving direction of scientific fields by identifying the significant research specialties in sciences and social sciences.

A total of 128 Research Fronts were identified in this year’s report, including 110 “hot” and 18 “emerging” ones. A hot Research Front tracks an active area, and an emerging Research Front identifies a rapidly developing area in scientific research. The report provides a distinctive advantage for administrators, policy makers, and others who need to monitor, support, and advance the conduct of research in the face of finite resources.

In conjunction with the Research Fronts 2023 report, Clarivate and CAS also published Research Fronts 2023: Active Fields, Leading Countries/Regions to examine and compare regional performance across the 128 Research Fronts.”

[Download the reports](#)

[Read the press release](#)

Aroma Chemistry

THE AROMA OF COFFEE

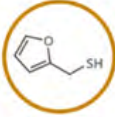
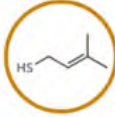
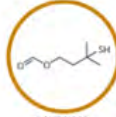
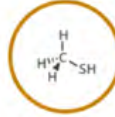
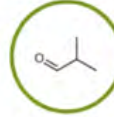
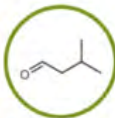
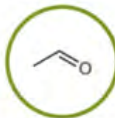
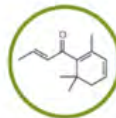
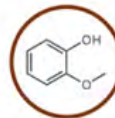
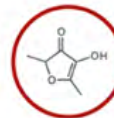
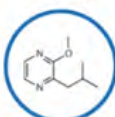
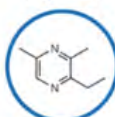
COFFEE BEANS & COFFEE BREW

ROASTED COFFEE BEANS CONTAIN OVER **1000 CHEMICAL COMPOUNDS**

EXTRACTION YIELDS DURING COFFEE BREWING
NON-POLAR COMPOUNDS: 10-25%
POLAR COMPOUNDS: 75-100%

Not all compounds in coffee beans are extracted during brewing. Polar molecules are more soluble in water; they arise when uneven sharing of electrons between atoms leads to the two ends of a molecule having slight electrical charges.

A SELECTION OF AROMA COMPOUNDS IN BREWED COFFEE

 2-FURFURYLTHIOL roasted (coffee)	 3-METHYL-2-BUTEN-1-THIOL aromatic-like, sulfurous	 3-MERCAPTO-3-METHYLBUTYLFORMATE salty, roasted	 METHANETHIOL rotten cabbage	 METHYLPROPANAL floral, spicy
 3-METHYLBUTANAL fruity, malty	 ACETALDEHYDE pungent, fruity	 (E)-8-DAMASCENONE honey, fruit-like	 GUAIACOL smoky, spicy	 FURANEOL sweet, caramel
 2-ISOBUTYL-3-METHYLPYRAZINE earthy	 2-ETHYL-3,5-DIMETHYLPYRAZINE earthy, roasted	KEY ● Sulfur-containing ● Aldehydes & ketones ● Phenolic ● Furans ● Pyrazines		

Coffee contains several hundred different chemical compounds, but only a minority of these contribute to the aroma. A compound's contribution to aroma is dependent on both its concentration and the threshold at which its smell can be perceived by humans. There are also variances in chemical composition for different coffee beans, leading to the variety of differing tastes and aromas.

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	2023-2025	Ihab Darwish	2023-2025	Madalyn Radlauer
	2024-2026	Grace Baysinger	2024-2026	Natalie McClure
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	2023-2025	Amanda Nelson	2023-2025	Kristin Schmidt
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