

# THE CHEMICAL BULLETIN

Chicago Section of the American Chemical Society Newsletter



There is no regular monthly program scheduled for October. Chicago ACS Section National Chemistry Week activities will take place at Navy Pier on Saturday, October 25, 2025.

## 2025 IIN ROSEMARY SCHNELL SYMPOSIUM

Nanoscience Unleashed: Transforming Energy and Medicine for a Better Future

**WED, OCTOBER 15, 2025**  
**8:30 AM - 5:30 PM**  
**HILTON ORRINGTON, EVANSTON, IL**



**NICHOLAS PEPPAS**  
Kabiller Prize winner  
 The University of Texas at Austin



**NATHAN GIANNESCHI**  
Kabiller Young Investigator Award winner  
 Northwestern University



**MICHAEL MITCHELL**  
Kabiller Rising Star Award winner  
 University of Pennsylvania



**SIR RICHARD FRIEND**  
 University of Cambridge



**TANJA WEIL**  
 Max Planck Institute for Polymer Research



**MICHAEL GRAETZEL**  
 Ecole Polytechnique Fédérale de Lausanne

**CLICK HERE to register**

This symposium is one of the premier gatherings in the field of nanotechnology. It offers a full day of thought-provoking talks, groundbreaking discoveries, and cross-disciplinary conversation. Each year, the symposium brings together researchers, students, industry partners, and academic leaders from across the country and around the world. This year's lineup of speakers includes some of the most influential voices in nanoscience, energy, chemistry, and medicine. The symposium is free to attend, but *we kindly ask that all attendees register in advance*. See [link](#) for more information.



**ChemHIST Talks** is a HIST WebSeries bringing two live virtual talks from each National ACS meeting to you. **SAVE THE DATE – Wednesday, October 22, 2025 at 2:00 PM Central**. There will be two presentations from the Fall 2025 National ACS Meeting (see next page for abstracts). Please forward this information to your classes or other colleagues who might be interested. Only those who [register](#) can watch live. Anyone can watch after the talks are posted to the HIST website.

## In This Issue

|                            |     |
|----------------------------|-----|
| IIN Symposium - Oct 15     | 1-2 |
| ChemHIST Talks - Oct 22    | 2   |
| Chair's Column             | 3   |
| Basolo Medal Event - Nov 7 | 4   |
| Monthly Program - Nov 14   | 5   |
| Chemists with Disabilities | 6   |

|                                  |       |
|----------------------------------|-------|
| Editor's Desk                    | 7     |
| National Chemistry Week Events   | 7-8   |
| Scenes from ACS National Meeting | 8     |
| Illustrated Poem Contest         | 9     |
| ChemShorts for Kids              | 10    |
| Upcoming Events                  | 11-12 |
| Bulletin Information             | 12    |



We are pleased to offer two live virtual talks from the Fall 2025 ACS HIST Award Symposium. [Register now](#) for the **October 22nd / 2:00 PM CDT ChemHIST Talks.**

### ***Remarkable but little-known American contribution to the invention of the periodic table: The work of Charles F. Chandler and Charles S. Peirce***

**Gregory S. Girolami**, *Department of Chemistry, University of Illinois Urbana Champaign*

This talk will discuss three insightful but often-overlooked papers that appeared anonymously in 1869, which went a long way toward the independent construction of a periodic table almost simultaneously with that devised by Dmitri Mendeleev. The three papers appeared under the title “The Pairing of the Elements” in the April, May, and June issues of the American supplement to the British journal, *Chemical News*. The principal author of all three papers was the Columbia professor of chemistry Charles Frederick Chandler (1836-1925), but a significant contribution to the third paper was made by the Harvard-trained American scientist, mathematician, logician, and philosopher Charles Sanders Peirce (1839-1914). In these papers, about 50 of the chemical elements are classified according to their atomic weight and atomicity (i.e., valence). The most notable aspect of the classification is the realization that there are relationships and patterns among atomic weights, valences, and chemical properties not just within a group (which was well known) but also between groups. The first paper by Chandler described several two-group arrays of elements that can be considered as significant fragments of the more integrated periodic table proposed by Mendeleev that same year. This paper also pointed out that there are some vacancies in the classification scheme and speculated that the vacant places might someday be filled by the discovery of new elements. The third paper contains Peirce’s remarkable figure of what can be considered as a “split” periodic table in which the vertical axis is atomic weight and the horizontal axis is valence. Although the table is split because elements with even and odd valence are partitioned to the right and left, respectively, the two-dimensionality that is the essence of the periodic law is clearly represented. I believe that the work of Chandler and Peirce should feature more prominently than it does currently in discussions of the history of the periodic table.



### ***Glue and adhesives: A chemical history***

**Graeme R. Wyllie**, *Department of Chemistry, Concordia College, Moorhead, Minnesota*

Glue is defined as a sticky substance whose function is to hold or bond two other materials or objects together. One of the earliest uses of a glue dates back approximately two hundred thousand years, when early Neanderthals created a sticky tar-like material from birch bark which was then used in the manufacture of primitive tools (Kozowk et al., *Sci. Rep.* 2017). The derivation of glues from naturally occurring sources expanded from this time onward and grew to include pitch and tar-based glues alongside animal-based materials such as skins, bones, hooves, sinew and milk. *The Glue Book*, by J. A. Taggart (1913, Republican Press, Ohio) provided at that time a comprehensive overview of the preparation and scientific testing of various glues, all derived from natural sources. Karlston’s Klistar, an adhesive prepared from dissolving celluloid in acetone was created by Axel Karlson in the 1920s. Originally used in the repair of stockings and shoes, this material is recognized as the first commercial synthetic adhesive. The twentieth century also witnessed other major developments in the field with the advent of synthetic glues and adhesives, including thermoplastics, polyvinyl acetate (aka the ubiquitous school or white glue) and the cyanoacrylate family. This talk will provide an overview of the history of glues and adhesives, looking at both the history and chemistry of these materials from the earliest examples to modern synthetic materials.





It is truly an honor to serve as your Chicago ACS Section Chair. I am writing to thank all the members and *Chemical Bulletin* readers for your constant encouragement and input on our monthly newsletter. In June 2025, the National American Chemical

Society recognized *The Chemical Bulletin* as an outstanding newsletter. Congratulations are due to our Editor-in-Chief, Dr. Margaret E. Schott, and the many Chicago Section volunteers who contribute in different ways. I am grateful for all their efforts, large and small. Other volunteers assist with communicating the newsletter through our website and social media. Thanks to all – your unpaid efforts allow us to share Chicago Section news with close to 2,00 members.

*The Chemical Bulletin* reports news about the chemical enterprise, celebrates chemists' achievements, presents feature articles of interest to chemists, including chemistry educators, provides chemists a forum to share opinions and propose ideas, supports outreach to public and elected officials, indulges in niche chemistry humor, and more.

The ACS Chicago Local Section has a large board of 30 members that meet on a regular monthly basis. I am extremely thankful for the valuable time of our board members. All members are invited to attend board meetings (see last page for more information).

Here's an update on our recent activities:

We started the year with a successful joint meeting with the Chicago Section of the American Institute of Chemical Engineers (AIChE) on January 9th. On February 13th we held a monthly meeting where Dr. Zafra Lerman shared insights from the Malta Conferences Foundation. March 6th brought a visit to Axion Labs, which featured a lecture by Dr. Lee Polite on chromatographic separations. In April, we welcomed Dr. La'Trease E. Garrison, Chief Operating Officer of the American Chemical Society, who discussed career and life transitions. We also celebrated our members with 50, 60, and 70 years of service to ACS.

Another highlight was the presentation of the 2025 Gibbs Medal to Chad A. Mirkin on May 16th.

Dr. Mirkin, who is the George B. Rathmann Professor of Chemistry at Northwestern University and Director of the International Institute for Nanotechnology, became the 114th medal recipient, following in the footsteps of Svante Arrhenius, the inaugural winner in 1911.

Our Women Chemists Committee (WCC) participated in a conference on Empowering Women in Organic Chemistry (EWOC) at AbbVie on June 12th. The Younger Chemists Committee (YCC) organized a beach day on June 21st, and we attended a baseball game on June 22nd to encourage member interaction.

Just recently, on September 17th, the Chicago Section hosted Education Night at Benedictine University, featuring a lecture by Dr. Charles Abrams (Truman College) and the presentation of the 69th annual High School Education Committee scholarship examination awards. Thirty-two students from 10 high schools participated in the 2025 ACS Scholarship Exam, with each chemistry teacher being allowed to nominate two students. Award-winning teachers and students were invited and encouraged to attend. A total of \$17,250 in scholarship funds – contributed by the Section, the chemical industry, and individuals – was given out. Teachers of prize-winning students received a one-year membership in the American Association of Chemistry Teachers (AACT) and were eligible for Continuing Professional Development Units (CPDU).

I extend my sincere thanks to all participants and members for their contributions. Special appreciation goes to Ilana Lemberger and Tanya Hunter for organizing our monthly meetings, and to Milt Levenberg and Nicolas Gerst for their excellent AV support. We extend a special thanks to Dr. Russ Kohnken, Dr. Paul Brandt and Dr. Tim Marin for writing the exam. Additional thanks go to Lindsay Consdorf, Tim Marin, Tata Venkata, Valerie Rickert, and Karen Trine for their help with the administration of the process. Look for fuller coverage of the event in the next bulletin issue.

*The Chemical Bulletin* helps the section by making our programs available on the Chicago Section website. Please continue reading to learn about our upcoming programs and meetings.

—ANITA MEHTA

## 2025 BASOLO MEDAL PROGRAM

**FRIDAY, NOVEMBER 7, 2025 4:30-8:30 PM IN PERSON**



Northwestern University and Hilton Orrington Hotel

**"Energy Storage and Other Applications of Graphene"**

**PROF. RICHARD B. KANER\***

Distinguished Professor of Chemistry

Distinguished Professor of Materials Science & Engineering

Dr. Myung Ki Hong Endowed Chair in Materials Innovation

University of California, Los Angeles

### ABSTRACT

Graphene, a two-dimensional material consisting of a single layer of  $sp^2$  hybridized carbon atoms, has emerged as a transformative material for energy storage applications. This presentation will discuss a facile, scalable, and cost-effective solid-state method for generating, patterning, and electronically tuning laser-converted graphene. Our approach begins with the conversion of graphite to graphene oxide (GO) sheets, which readily disperse in aqueous solutions and can be reduced through various chemical and physical methods. The key innovation lies in GO's unique processability: it can be directly laser-reduced to graphene on diverse substrates without requiring masks, templates, post-processing steps, or transfer techniques. This direct patterning capability enables the fabrication of complex device architectures with precise control over graphene properties. The versatility of this laser-scribing technique has enabled the development of high-performance electrochemical energy storage devices that bridge the performance gap between batteries and supercapacitors. These devices combine the high energy density characteristic of batteries with the rapid charge-discharge capabilities and power density of supercapacitors. Applications range from flexible micro-supercapacitors for wearable electronics to large-scale energy storage systems for grid applications. Beyond energy storage, this scalable graphene patterning method opens new possibilities for sensors, transparent conductors, and other electronic applications where precise control over graphene morphology and properties is essential. The technique's compatibility with various substrates and its potential for high-throughput manufacturing make it particularly attractive for commercial applications.

### BASOLO MEDAL PROGRAM

FRIDAY, NOVEMBER 7, 2025

#### PROGRAM AGENDA

4:30 – 5:30 pm Basolo Medal Lecture  
6:00 – 7:00 pm Reception  
7:00 – 8:30 pm Dinner & Medal Presentation

#### DINNER MENU

Select entree during online registration

#### LECTURE: Northwestern University

Technological Institute, LR3, 2145 Sheridan,  
Evanston, IL 60208

#### [Directions](#)

Parking is free in the lot on the west side of  
Sheridan Road after 4:00 pm.

The lecture is free and open to the public.

#### DINNER: Hilton Orrington Hotel

1710 Orrington Ave, Evanston, IL 60201

#### [Directions](#)

Cost is \$65 for ACS members, students,  
postdocs, guests and non-ACS members.  
Register by phone (847-391-9091), email  
([chicagoacs-at-ameritech.net](mailto:chicagoacs-at-ameritech.net)) or online:

[REGISTER FOR DINNER HERE](#)

\* The speaker's biography will be included in the  
November bulletin issue



## UPCOMING EVENT

### NOVEMBER DINNER PROGRAM

**FRIDAY, NOVEMBER 14, 2025 5:30-8:00 PM**

International Museum of Surgical Science

**"The Intersection of Chemistry  
and Intellectual Property"**

**MARYANN MAAS\***

**Vice President of Global Intellectual Property  
LanzaTech, Skokie, Illinois**



#### ABSTRACT

In the rapidly evolving landscape of chemical innovation, safeguarding intellectual property (IP) may be a goal in fostering scientific and technological advancement. This presentation seeks to demystify the complex world of intellectual property law and highlight its pivotal role in the chemical sciences. Our discussion will delve into various forms of IP protection—focusing on patents, with some trade secrets and trademarks—and their strategic applications in securing valuable scientific inventions and discoveries. Attendees will gain insights into the fundamental principles and procedures involved in drafting and prosecuting patents, emphasizing the importance of timely and accurate documentation to avoid common pitfalls. Additionally, we will address the challenges of IP management in academic and collaborative research settings, and in licensing and collaboration agreements. By empowering scientists with IP knowledge, we aim to enhance innovation, encourage interdisciplinary partnerships, and stimulate continued contributions to the advancement of chemistry and sustainable technology. This presentation will enable scientists to effectively leverage IP as a catalyst for research and development, ensuring their groundbreaking work is protected and poised to make substantial impacts in both academia and industry.

#### NOVEMBER DINNER PROGRAM

FRIDAY, NOVEMBER 14, 2025

##### PROGRAM AGENDA

|                |                              |
|----------------|------------------------------|
| 5:30 – 6:00 pm | Check-In, Social Half-hour   |
| 6:00 – 7:00 pm | Buffet Dinner                |
| 7:00 – 8:00 pm | Presentation by Maryann Maas |

##### DINNER MENU

- Bistro Salad
- Italian Pasta Salad
- Sandwiches (lemon thyme chicken breast sandwich, roast beef & cheddar sandwich, grilled vegetable sandwich)
- Assorted Bars, Cookies & Brownies
- Water/Assorted Sodas/Coffee

#### COST OF DINNER

\$46 ACS members

\$25 students & postdocs (members or non-members)

\$50 guests & non-ACS members

No charge to attend lecture only.

#### EVENT VENUE

International Museum of Surgical Science  
1524 Lake Shore Drive, Chicago, IL 60610 Website:

<https://imss.org/> and [Directions](#)

For information on parking, public transit, and driving directions go to the museum website (and scroll down):

<https://imss.org/plan-your-visit/>

#### REGISTRATION

By phone (847-391-9091), email ([chicagoacs-at-ameritech.net](mailto:chicagoacs-at-ameritech.net)) or online:

[REGISTER FOR DINNER HERE](#)

**Deadline to register is Noon on Monday, Nov 11**

\* The speaker's biography will be included in the November bulletin issue

## Chemists with Disabilities – An Experiment in Taking Flight

In a column published in the May 2025 issue of *The Chemical Bulletin*, I discussed some of the resources that can be leveraged by chemists with disabilities to help make air travel – and hence their participation in professional activities – more accessible.

Luckily, the Fall 2025 ACS National Meeting, held this past August in Washington D.C, presented an opportunity to “test drive” the accessibility resources at O’Hare International Airport. The account below describes the actual experience of a chemist with a mobility-related disability whom I’ll call Megan to protect her privacy.

Megan traveled between Chicago and Washington, D.C., on a direct American Airlines flight. From her previous flying experience, she believed it would be helpful to have wheelchair assistance while at the airport. Therefore, while she was booking her flights online, Megan navigated to the “ADD SPECIAL ASSISTANCE” section of the passenger details page; once there, she chose “WHEELCHAIR ASSISTANCE” from the selection of special assistance services offered. By using the [American Airlines special assistance webpage](#), one can request wheelchair assistance for travel to and from the gate, for navigation between gates for connecting flights, and for transport to baggage claim.

Shortly after she booked her flights, Megan received an email message from American Airlines confirming her request for wheelchair assistance. The message instructed her to arrive at the airport at least 90 minutes prior to departure and head to the check-in lobby. Megan found this information helpful, as it was her first time requesting wheelchair assistance.

On the day of her travel, a friend dropped off Megan, her suitcase in tow, at the American Airlines area of Terminal 3 at O’Hare. The drop-off was made smoother by the fact that there were several spots designated for use by persons with disabilities in the “DEPARTURES” traffic lanes. Once inside, Megan headed to the American Airlines service counter underneath the overhead display reading “WHEELCHAIR/SPECIAL ASSISTANCE.” Megan noted that the airline clerks staffing the counter seemed very well trained in providing special assistance.



For example, they asked for her permission before taking her suitcase and placing it on the scale for checking, quickly provided her with a boarding pass, and pointed her to a nearby seating area where she was to wait for wheelchair transport.

In short order, another employee showed up pushing two lightweight wheelchairs. Megan was surprised to learn that both she and another passenger would be transported by the same employee in two separate wheelchairs to their respective gates. Any worries were quickly alleviated, however, when she realized how easily maneuverable the transport wheelchairs were. The transport employee was skilled in simultaneously directing the two wheelchairs, one in each hand, through the crowded terminal. He was friendly, courteous, and took the time to ask Megan and her fellow traveler whether either one needed to make a stop at a restroom or a store prior to being dropped off at their gates.

Probably the biggest relief Megan experienced was how much easier the trip to the gate was made by having wheelchair assistance, especially during the process of going through security. In the past, it was not uncommon for her to experience flare-ups related to her disability after she stood in line for security screening for a prolonged period. This time, she was escorted through quickly, and the transport employee assisted her with tasks such as placing her belongings on the conveyor belt and taking them off again, etc. At her departure gate, Megan was able to take advantage of the early boarding offered to persons with disabilities.

While Megan was initially worried that requesting wheelchair assistance at O’Hare would mean a delay in getting to her gate, she was pleased to find out that it took less time. Even more importantly, she felt much less exhausted upon arriving at Ronald Reagan Washington National Airport – which in turn helped her enjoy a productive National ACS Meeting.

I hope that Megan’s experience with requesting special assistance at O’Hare will encourage other chemists with disabilities to give it a try also. Til next time, happy travels!

—INESSA MILLER, Chicago Section ACS Chemists with Disabilities Subcommittee Chair



**CHICAGO ACS**  
AT  
**NAVY PIER'S SPOOKFEST**

Join the Chicago Section of ACS to celebrate NCW, Halloween, and celebrate the importance of chemistry in everyday life! Learn about this year's theme, The Hidden Life of Spices, with 15+ exciting hands-on activities. Learn about Gaviscon Snakes, Growing Marshmallow, Secret Messages, the Smells of Spices, the Glow of Spices, Glowing beads, Super Absorbers, Marbling Paper, Slime, and many more. Take home activities to do at home and Safety Glasses! Spooky Demonstration Shows will be at various times for all to enjoy!

**When:** October 25<sup>th</sup> from 11am to 6:00 pm. **Where:** Navy Pier  
**Demo Shows at various times**

Questions, please contact Sherri Rukes [community@chicagoACS.org](mailto:community@chicagoACS.org).

**We hope to see you there!**

### 2025 Chicago ACS Election

The elections for Chicago ACS officers will be open from the morning of **Monday, October 20** until **12:00 noon on Friday, November 7**. Section members will be notified by email or postcard with individualized specific details about how to participate and vote in the Section election. Emails with details will come directly from [AssociationVoting.com](https://AssociationVoting.com) on the first day of the election. Complete information, including candidate statements and biographies will SOON be available at: [https://chicagoacs.org/Election\\_2025\\_Candidate\\_Platforms\\_and\\_Biographies](https://chicagoacs.org/Election_2025_Candidate_Platforms_and_Biographies)

Election results will be shared with Section members at [chicagoacs.org](https://chicagoacs.org). Those elected will take office in January of 2026 at the first Board of Directors meeting of the new year. Please contact [office-at-chicagoacs.org](mailto:office-at-chicagoacs.org) if you are a Section member and have not received your election materials by Tuesday, October 11.

### FROM THE EDITOR'S DESK



Dear Readers,

Thanks for taking time to read all or part of this bulletin issue. Chicago Section member Sherri Rukes, an award-winning teacher who coordinates outreach events, invites all to participate in the National Chemistry Week (NCW) activities. As part of the annual NCW celebration, I invite you to let friends, family and colleagues know about National Mole Day, which falls on October 23 and has as its highlight the clock times of 6:02 AM and 6:02 PM. Chemists will recognize the significance of  $6.02 \times 10^{23}$ , also known as Avogadro's number, or the number of atoms/molecules/ions in a mole. See the [infographic](#) created by Andy Brunning about the mole and its role in chemistry. (Did you know that a more precise measure of one mole is actually 602,214,076,000,000,000,000,000 particles or things?) The American Chemical Society features this quantity in its cartoon images of Avogadro (Avi), Meg A. Mole, and Professor Molenium. For more about this year's NCW theme, "The Hidden Life of Spices", check out the current issue of [Celebrating Chemistry](#), which includes an article by Sherri titled "Earth's Edible Treasures" along with spice-themed games and puzzles, history and experiments, the science of hot sauce, and more. Thanks go out to Sherri, this year's NCW Theme Team Co-chair!



I am grateful to all contributors who made this issue possible. —MARGARET E. SCHOTT



# THE HIDDEN LIFE OF SPICES

October 19–25, 2025

#NationalChemistryWeek

Join the Chicago Section of the American Chemical Society and volunteer for our free community event for National Chemistry Week to promote the positive role that chemistry plays in the world! Learn about this year's theme, The Hidden Life of Spices and celebrate Spookfest (see previous page). We are planning on having several HANDS-ON activities for kids of all ages to learn about Chemistry. Consider volunteering for the whole day or even a part of the day. If you say yes, Sherri Rukes will send you information about the activities, so you can get ready for the day. ACS will supply all the materials, so all we need is your expertise and passion for CHEMISTRY.

**When:** OCTOBER 25<sup>th</sup> from 11 – 6 pm

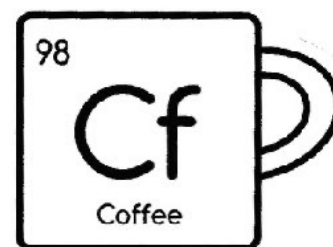
**Where:** NAVY PIER, CHICAGO

**We hope you are able to VOLUNTEER!!!**

Please use the QR code or [web link](#) to sign up.  
Questions? – email Sherri Rukes [community@chicagoacs.org](mailto:community@chicagoacs.org)



Scenes from the Fall 2025 ACS National Meeting in Washington, D.C. (from top right): Josh Kurutz with Zafra Lerman, giant hanging sculptures at the convention center, "Cf" element sticker, Tom Lane with Margaret Schott (M. E. Schott images)







Download entry  
form [here](#)



## 2025 NCW Illustrated Poem Contest The Hidden Life of Spices

The Chicago Local Section of the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in kindergarten through 12th grade.

**Contest Deadline: October 28, 2025**

**Prizes: Gift Cards**

**Contact: Sherri Rukes** [community@chicagoacs.org](mailto:community@chicagoacs.org)

Winners of the Chicago Local Section's Illustrated Poem Contest will advance to the National Illustrated Poem Contest for a chance to be featured on the ACS website and to win prizes!

Write and illustrate a poem using the NCW theme, **"The Hidden Life of Spices."**

Your poem must be **no more** than 40 words and in the following styles to be considered:

**HAIKU - LIMERICK - ODE - ABC POEM - FREE VERSE - END RHYME - BLANK VERSE**

### Possible topics related to the theme include:

- |             |             |
|-------------|-------------|
| • Turmeric  | • Fragrance |
| • Molecules | • Gingerol  |
| • Capsaicin | • Eugenol   |
| • Cinnamon  | • Spices    |
| • Aroma     | • Chili     |

### Entries will be judged based upon:

- Artistic Merit – use of color, quality of drawing, design, and layout
- Poem Message – fun, motivational, inspiring about yearly theme
- Originality & Creativity – unique, clever, and/or creative design
- Neatness – free of spelling and grammatical errors

### Contest rules:

All poems must be no more than 40 words, and in one of the following styles to be considered: Haiku, Limerick, Ode, ABC poem, Free verse, End rhyme, and Blank verse.

Entries are judged based upon relevance to and incorporation of the NCW theme, word choice and imagery, colorful artwork, adherence to poem style, originality and creativity, and overall presentation.

All entries must be original works without aid from others. Poems may be submitted by hand on an unlined sheet of paper not larger than 11" by 14" or scanned and sent via email. Illustrations may be created using crayons, watercolors, other types of paint, colored pencils, or markers. The illustration may also be electronically created by using a digital painting and drawing app on a computer, tablet, or mobile device.

The text of the poem should be easy to read and may be typed before the hand-drawn or digital illustration is added, or the poem may be written on lined paper, which is cut out and pasted onto the unlined paper with the illustration.

No clipart or unoriginal images can be used.

Only one entry per student will be accepted; all entries must include an entry form. If the illustration is created using a digital painting or drawing app, the name of the program must be included on the entry form.

Acceptance of prizes constitutes consent to use winners' first name, and entry for editorial, advertising, and publicity purposes.

Do **not** place participant names on the front of your poem.



# Dying of Thirst in the Middle of the Ocean

You may have heard that even though you're surrounded by water in the middle of the ocean, you could still die of thirst. How can that be? Let's explore!

## Materials:

- Gummy Bears
- Several glasses (to hold water solutions)
- 1 Tbsp salt
- 1 Tbsp sugar
- Spoon for stirring
- 1 cup measuring cup
- Cold water
- Optional: kitchen scale

## Experiment:

To each of three glasses, add one cup of cold water. To the second glass, add one Tbsp of salt, and to the third, add one Tbsp of sugar. Mix the latter two cups using a spoon and make sure that all solids are dissolved. If you have a scale, individually weigh four gummy bears and then place one bear in each of the three glasses, and keep a gummy bear out of the glasses for your control. Allow the bears to soak for 24 hours and then remove the bears. Compare the bears from the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> glasses with the control (dry bear). If possible, weigh each bear after patting them dry. Did you find any noticeable differences between the size or weight of the bears?



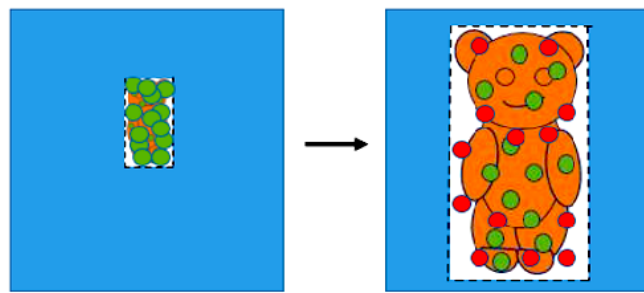
pexels-polina-tankilevitch-5469204

## What's happening?

Gummy bears are made from gelatin, which has long fibers of protein that form a mesh-like network. This network acts like a semipermeable membrane, similar to the membranes in our cells. Water is free to flow through that membrane, but larger particles like salt and sugar often cannot. Nature always tries to balance things out (equilibrium). This means water will flow in or out of the gummy bear to even out the concentration inside and outside. This movement to dilute the solution through the semipermeable membrane is called osmosis. The gummy bear has sugar in it. In the first solution, the water will want to enter the bear to try to dilute the sugar as much as possible.

We see this in the diagram as the membrane begins to grow and bulge out. The bear in the salt water grows the least. Although the water goes in to dilute the sugar and expand the bear, it also flows out of the bear to try to dilute the salt. On the other hand, the gummy bear in the sugar grows as there is more dissolved sugar in the bear than in the glass, so the water will go inside the gummy bear till the solutions are equally dilute in sugar.

This is similar to what happens in your body. If you drink ocean water, the water in your cells leaves to try to dilute the salty water. That makes your cells shrink and dehydrate, which is why drinking ocean water can actually make you thirstier.



The dashed line represents the semipermeable membrane of the bear, and it allows water molecules (red dots) to travel through it to dilute the sugar molecules (green dots) that are in the bear.

## Extension:

There are a number of other substances that you could try (baking soda, vinegar, other salts – Epsom, ice, etc.). You could vary the temperature (be careful here, as the gelatin will dissolve in hot water) or the time. You could try different concentrations of sugar and salt water.

Foods with cells (potato cubes, carrots, melons, apple slices, etc.) could also be explored.

## References:

<https://www.chillededucation.org/growing-gummy-bears-osmosis-diffusion/> <https://www.edplace.com/worksheets/info/science/keystage4/year10/topic/1266/7339/explore-the-process-of-osmosis-in-cells>

To view all past “ChemShorts for Kids”, go to: <https://chicagoacs.org/ChemShorts>

—PAUL BRANDT

## UPCOMING EVENTS

### Chicago Quantum Summit

<https://chicagoquantum.org>

Mon Nov 3 – Tues Nov 4, 2025  
Willis Tower, downtown Chicago

The eighth-annual event (2 days), hosted by the Chicago Quantum Exchange, will convene leading experts in quantum information science and engineering to discuss recent developments and help shape the field's future.

Confirmed speakers include:

- Paul Dabbar, former under-secretary for science, US DOE
- Darío Gil, vice president, IBM
- Jay Lowell, principal senior technical fellow, Boeing
- Mikhail Lukin, co-director of the Quantum Science and Engineering Initiative, Harvard
- Jeremy O'Brien, CEO, PsiQuantum
- Taro Shimada, CEO, Toshiba

### ACS WEBINARS — [Link to Webinars](#)

#### Who Will Win the ChemNobel? Predicting the 2025 Nobel Laureate(s) in Chemistry

Oct 1, 2025 2:00 PM EDT / 1:00 PM CDT

#### Never Say Forever: PFAS Research, Definitions, and Regulatory Developments

Oct 8, 2025 | 2:00 PM EDT / 1:00 PM CDT

*Check out these past webinars and others:*

#### Not Everything Meets the Eye: Invisible Disabilities and Special Abilities (Dec 2021)

#### Espresso Chemistry—From First Principles to Current Challenges (Jan 2021)

**IN-PERSON**

November 3-7, 2025  
Axion Labs, Chicago

**ACS Institute**  
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## LC/GC Bootcamp - Hands-On Chromatography Master Class

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### Northern Illinois University Innovation Challenge

Tues Oct 14, 2025 4:00 – 4:30 PM

High School and Community College Educators: Use this [Zoom link](#) for the online-only information session. Learn more about the NIU Innovation Challenge hosted by NIU STEAM and the Northern Illinois Center for Community Sustainability (NICCS). For more information contact Becky at: [rswiontek-at-niu.edu](mailto:rswiontek-at-niu.edu).

[Register Your Team](#) for the NIU Innovation Challenge!

Our goal is to provide a comprehensive opportunity for high school and community college students to strengthen and utilize their critical thinking and communication skills by collaborating with team members. Students will work in teams of 2 to 4 to analyze an authentic problem, utilize authentic employability competencies, and collaborate with an industry partner to generate a solution.

The challenge takes place in several stages:

- Challenge problem is released beginning on Sept 23.
- In October, curricular resources and coach/sponsor support will be available.
- Teams are assigned a mentor to provide feedback on their written proposal.
- Through Dec 5 teams work on their written solution with guidance from their educator and mentor.
- The top high school and community college teams advance to the final, in-person challenge on Saturday, Feb 28, at Northern Illinois University.



## UPCOMING EVENTS – CHICAGO ACS SECTION

### 2025 PROGRAMS & EVENTS

- Nov 7 Basolo Medal Program – Richard B. Kaner (page 4)  
“Energy Storage & Other Applications of Graphene”
- Nov 14 Dinner Program – Maryann Maas (page 5)  
“The Intersection of Chemistry & Intellectual Property”
- Dec 12 Holiday Party at Elmhurst University – Colleen Kelley  
“Chemistry isn't just about science. It's the shared story of everything”

For more information please refer to <https://chicagoacs.org>

### BOARD MEETINGS

Board meetings are held virtually over Zoom on Thursdays at 6:30 pm. Meetings are open to Chicago ACS Section members. To obtain the Zoom link contact: [office-at-chicagoacs.org](mailto:office-at-chicagoacs.org).

**2025:** Oct 9, Nov 6, Dec 4

**2026:** Jan 8, Feb 12, Mar 12,  
Apr 16, May 14, Jun 11

### 2026 PROGRAMS & EVENTS

- Jan 15 Joint with AIChE - tentative date
- Feb 20 Virtual program
- Mar 14 Senior Chemists daytime webinar / Public Affairs
- Mar 22–26 ACS Spring National Meeting in Atlanta
- Apr 18 Younger Chemists (YCC) - tentative
- May 15 Gibbs Medal Lecture & Banquet
- Jun 21 Family-friendly event

### BULLETIN DEADLINES

Deadline for bulletin submissions is the **16th of each month**. Content can include photos, reports, past event summaries, flyers and information for upcoming events, original articles, current chemistry, etc. Contact [editor-at-chicagoacs.org](mailto:editor-at-chicagoacs.org). Thank you!

**October 16th** for November issue

**November 16th** for December issue

### HAVE A NEW (or preferred) EMAIL ADDRESS?

Please communicate your current email address to the Section office so that you will not miss any issues of The Chemical Bulletin or other Section information. Contact [office-at-chicagoacs.org](mailto:office-at-chicagoacs.org) or call (847) 391-9091

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EDITOR

Margaret E. Schott, [editor-at-chicagoacs.org](mailto:editor-at-chicagoacs.org)

DIGITAL EDITOR

Josh Kurutz, [historian-at-chicagoacs.org](mailto:historian-at-chicagoacs.org)

PROOFREADERS

Kshitish Patankar, Bethel Shekour & Adam Sussman

How to reach us:

[office-at-chicagoacs.org](mailto:office-at-chicagoacs.org) (847) 391-9091

Krasa 035B and C, 5700 College Rd, Lisle, IL 60532 2025

Website: <https://chicagoacs.org>

#### CHICAGO ACS SECTION OFFICERS

Chair, Anita Mehta, [chair-at-chicagoacs.org](mailto:chair-at-chicagoacs.org)

Vice-Chair, Mark Cesa, [vice-chair-at-chicagoacs.org](mailto:vice-chair-at-chicagoacs.org)

Chair-Elect, Amy Balija, [chair-elect-at-chicagoacs.org](mailto:chair-elect-at-chicagoacs.org)

Past Chair, Vivian Sullivan, [past-chair-at-chicagoacs.org](mailto:past-chair-at-chicagoacs.org)

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