

The Chemical Bulletin

A publication of the Chicago Section of the American Chemical Society



ACS Local Section
Chicago

CHICAGO ACS – CHICAGO AICHE JOINT MEETING

FRIDAY, JANUARY 24, 2020

5:30 - 9:00 PM

**Roosevelt University - Schaumburg, IL
Buffet Dinner and Lecture**

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ACS Chicago Section Office

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(847) 391-9091
chicagoacs@ameritech.net



DAN G. MARGINEAN

**Polymer Chemist, R & D Polymer Lab
Electron Beam Technologies Inc.**

*"A STUDY OF
CROSSLINKING BY
ELECTRON
BEAMING OF
POLYMERIC
COMPOSITION FOR
WELDING CABLES"*



Lecture Abstract: The scope of this presentation is to emphasize the importance of Electron Beam Crosslinking, an advanced technology of the future as stated about our company by the Fermi National Accelerator Laboratory publication "Accelerators for America's Future". We produce crosslinked polymeric systems by means of environmentally friendly processes. No byproducts are released and the low-heat products coming out of the Electron Beam Accelerator are easy to handle by operators, easy to store and preserve, as well as easy to transport worldwide. The presentation will include: (1) a Short History of Electron Beaming Technology, (2) Beaming Principles, (3) the Crosslinking Project, and (4) Crosslinking Calculations. Our company promotes this technology to help other companies and end-users prosper while using an environmentally friendly technology. Our goal is to provide value-added solutions to our customers' wire, cable, tubing and accessory needs. Our team promotes a safe, quality driven, efficient and globally responsible work environment.

PROGRAM

Main Site: Alumni Hall
Roosevelt University - Schaumburg
1400 N Roosevelt Rd
Schaumburg, IL 60173

MAIN SITE: Parking is free.

Click link for: Directions

https://chicagoacs.org/images/downloads/Maps_of_venues/venuemap_rooseveltschaumburg_2017.pdf

5:30 - 6:30 Registration and Social Hour
6:30 - 7:30 Buffet Dinner (main site only)
7:20 - 7:30 Pre-meeting program (open)
7:30 - 7:45 Announcements
7:45 - 8:45 Technical Presentation

REGISTER AT: <https://chicagoacs.org/meetinginfo.php?id=151>

Buffet Dinner Registration Deadline:
11:00 AM on Monday, January 20

Lecture-only Registration Deadline
11:00 AM on Wednesday, January 22

\$25 for ACS& AIChE members,
nonmembers
\$15 for students
\$0 for lecture only

Buffet Dinner Menu: Italian beef, baked mostaccioli, roasted potatoes, pasta salad, house salad, fruit salad, rolls and desserts.

QUESTIONS OR NON-WEB RESERVATIONS?

Please contact the Section Office via phone (847-391-9091) or email (info@chicagoacs.org)

Presenter Biosketch: Mr. Dan Marginean is a Polymer Chemist in the R&D Polymer Lab at Electron Beam Technologies Inc (Kankakee, ILK). He is responsible for chlorinated polyethylene (CPE)-based formulations for welding cables as well as Quality Control of the company's Production Compounding and Extrusion and Regulatory Compliance (RoHS, REACH) initiatives. Previously, he held various positions in industry. He was a Senior Formulation Scientist/Process Engineer at MonoSol RX LLC (Portage, IN) where he worked on polymers for film formulation and fusion for the administration of controlled substances via the buccal/sublingual route. Dan was also the owner/senior consultant on engineering design and processing/polymers engineering, performed work on quenched epoxy system molding, and created a prototype for gas purification in coal power plants by using an electrostatic precipitator fiber glass demisters system. In other service, he presided at UW-Madison's Annual Chemical Engineering Student Paper Competition, and he has provided consultation work to pharmaceutical companies on strips/patches for the delivery of active pharmaceutical ingredients (API). Dan received his degrees in Romania, namely, a BS in Inorganic Chemical Engineering from the Gheorghe Asachi Technical University and a Masters degree under the Ministry of Chemistry. He has taken graduate coursework in colloidal and free radical chemistry at UW-Milwaukee and has done post-university studies on polymers at Lehigh University, Virginia Tech, UW-Madison, McMaster University, and the University of Southern Mississippi. He earned a Green Belt in the Six Sigma Certification program and has served as Chair of the AIChE Wisconsin Section.

TEACHERS! All K-12 Educators Can Receive Continuing Education (CE) Credits For Attending Our Meetings. Obtain Your CE Form at the Registration Desk.

Parking, Maps, and Directions for STREAMING LOCATION:

Purdue University Northwest
Gyte Building, Room 240
2200 169th St.
Hammond, IN 46323

Map: http://chicagoacs.org/images/downloads/Maps_of_venues/purduenw_map.pdf

PARKING: Free / No dinner at this site.

Letter from the Chair



In the year 2020, the Chicago Section celebrates 125 years of existence. That's right, it's our *quasiquicentennial*. (No, I didn't know that was the name till I looked it up!)

The Section was chartered on March 15, 1895 and had a membership of 34. The Chicago Section is the 6th oldest section of the ACS and moved the society's sections further west from Cincinnati. Membership grew to 1000 by 1932, to 2000 by 1942, and to over 4000 by 1955. By 1967, membership grew to over 5000. Unfortunately, our membership today is just under 4000, a far cry from the nearly 6000 in the late 90's. Chicago is one of seven "Very Large" sections – those with over 3200 members. I will spend some time talking about membership and why chemists should be ACS members in future letters to *The Chemical Bulletin*.

As you may or may not know, the Section went through a rather transformative makeover this past year, and so we will spend some time this year getting acquainted with our new structure. If you've been to Section Board Meetings in the past, you probably won't recognize them today. You can join us in Park Ridge at the section office. See <https://chicagoacs.org> for details. Joining us for a board meeting gives you a great opportunity to network.

The monthly Section Dinner Meetings are also a great place to network. Join us for a joint meeting with AIChE (the American Institute of Chemical Engineers) where Dan Marginean, a polymer chemist from Electron Beam Technologies, will be speaking on Friday, January 24. You can find details in this edition of the Bulletin.

Although we don't know any details yet, the Section will be planning a quasiquicentennial party of some sort. If you have ideas for activities that the Section should be taking on this year, please let me hear from you. If you are interested in taking on a role in those activities or any other part of the Section business, drop me a line on that as well.

Lastly, I would like to thank our 2019 Chair, Tim Marin, for making this transition as seamless as possible for me. He did a tremendous amount of work last year in moving the Section forward. My hat is off to him.

Sincerely,

Paul Brandt, Chair pbrandt@noctrl.edu



ACS Local Section
Chicago

Bulletin Information

January 2020, Vol. 107, No. 1
Published by the Chicago Section
of the American Chemical Society
<http://chicagoacs.org>

Editor: Margaret E. Schott
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Online version: Josh Kurutz
Proofreaders: Helen Dickinson,
Ken Fivizzani, Rebecca Weiner

Monthly: September – June
(10 issues)
Subscription rates: \$15 per year

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For additional information see:

<https://chicagoacs.org/board.php>

<https://chicagoacs.org/Committees>

<https://chicagoacs.org/Volunteer>

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(directors@chicagoacs.org) **Term**

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| Aleks Baranczak | 2019-2020 |
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| Margy Levenberg | 2019-2020 |
| Milt Levenberg | 2019-2020 |
| Kenny Onajole | 2019-2020 |
| Andrea Twiss-Brooks | 2019-2020 |
| Veronica Berns | 2020-2021 |
| Mark Cesa | 2020-2021 |
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| Katie Leach | 2020-2021 |
| Michael Morello | 2020-2021 |
| Rebecca Sanders | 2020-2021 |
| Vivian Sullivan | 2020-2021 |
| Julia Wiester | 2020-2021 |

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| | |
|-----------------|---|
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| Fran Kravitz | 2018-2020 |
| David Crumrine | 2019-2021 |
| Margy Levenberg | 2019-2021 |
| Milt Levenberg | 2019-2021 |
| Inessa Miller | 2019-2021 |
| Susan Shih | 2019-2021 |
| Ken Fivizzani | 2020-2022 |
| Paul Brandt | 2020 (completing term of Charles Cannon) |

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altcouncilors@chicagoacs.org

| | |
|-----------------|-----------|
| Amber Arzadon | 2018-2020 |
| Tom Higgins | 2018-2020 |
| Katie Leach | 2019-2021 |
| Tim Marin | 2019-2021 |
| Rebecca Weiner | 2019-2021 |
| Josh Kurutz | 2020-2022 |
| Omar Farha | 2020-2022 |
| Ilana Lemberger | 2020-2022 |

Beginning January 2020, the Chicago Section's committees have a new structure. Five divisions will now compose the Chicago ACS board - Administration, Communication, Education & Outreach, Membership, and Science. Our various committees have been grouped within this division structure where common themes, goals, and purposes align. We have purposefully included a means for succession planning for our Committee Chair and Division Chair roles and a mentoring strategy for the people working within them. This new structure will hopefully bring us newfound efficiency, impact, and effectiveness. Additional email addresses listed on p. 5.

Administration – Milt Levenberg

Development

Alissa Potts
Bosky Parikh

House

- A/V Support
- Gibbs Arrangements

Milt Levenberg
Milt Levenberg
Margy Levenberg
Sharada Buddha

- Hospitality

Anita Mehta
Richard Cornell
Shared with Development

- Office
- Program Arrangements

Avrom Litin
Simonida Grubjesic
Ilana Lemberger

Long Range Planning

Paul Brandt (chair)
Milt Levenberg (coordinator)
Irene Cesa (coordinator)
Sherri Rukes (chair elect / coordinator)
Ken Fivizzani (coordinator)
Russ Johnson (coordinator)
Tanya Ivushkina (secretary)
Josh Kurutz (vice chair)
Marin, Tim (past chair)
Andrea Twiss-Brooks (treasurer)
Ken Fivizzani
Russ Johnson

- Policy and Bylaws

Continued on next page

Science – Irene Cesa**Awards**

- DSA Mark Cesa
- Emerging Star Amber Arzadon (chair)
- Richard Cornell (DSA)
- Ken Fivizzani (recipients)
- Avrom Litin
- Amber Arzadon
- Josh Kurutz
- Gibbs Medal Sherri Rukes (chair elect)
- High School Teaching chairs K-12 Ed and College Ed
- Stieglitz Lecture Josh Kurutz

Environmental & Lab Safety Irene Cesa**Program**

- GLRM Liaison Andrea Twiss-Brooks
- Julia Wiester
- Susan Shih

Education & Outreach – Sherri Rukes**Education**

- AACT Liaison Russ Kohnken
- College Education Sherri Rukes
- Bob Chapman
- Aleks Baranczak
- Bernie Santarsiero
- Continuing Education Russ Kohnken
- CPS Education Fran Kravitz
- K-12 Education

Public Affairs

Mike Koehler

Outreach

- Community Activities Sherri Rukes
- Illinois State Fair Sherri Rukes
- Fran Kravitz
- Milt Levenberg

Project SEED

Raelynn Miller
Julia Wiester
Paul Brandt (scholarship)

Membership – Ken Fivizzani**Communities**

- Minority Chemists Ken Fivizzani
- Senior Chemists Kenny Onajole
- Women Chemists Ken Fivizzani
- Younger Chemists Becca Weiner

Membership

- ACS Council Katie Gesmundo
- Employment & Vince Hradil
- Professional Relations Sunshine Silver
- Ann Rowley
- Barb Moriarty
- Tanya Ivushkina (secretary)
- Nominations Becky Sanders

Communication – Russ Johnson**Chemical Bulletin**

Margaret Schott

Historian

Josh Kurutz

Public Relations

- Election Administration Russ Johnson
- News Media Avrom Litin
- Social Media Jason Romero
- Web Brooks Maki

Kenny Onajole

Finance

- Director of Budgets Tim Marin
- Comptroller Herb Golinken
- Trustees Mark Kaiser
- Milt Levenberg
- Ken Fivizzani

The following email addresses corresponding to committees roles should be appended with: chicagoacs.org
(e.g., a-v-support@chicagoacs.org)

a-v-support@
aact@
awards@
budget@
chair-elect@
chair@
collegeed@
community@
comptroller@
continuing-ed@
coordinator-admin@
coordinator-
communication@
coordinator-edu-
outreach@

coordinator-
membership@
coordinator-science@
cps@
a-v-support@
aact@
awards@
budget@
chair-elect@
chair@
collegeed@
community@
comptroller@
continuing-ed@
coordinator-admin@

coordinator-
communication@
coordinator-edu-
outreach@
coordinator-
membership@
coordinator-science@
cps@
development@
dsa@
editor@
education@
elections@
fair@
gibbsarr@
glrm@

historian@
hospitality@
house@
jobs@
k12@
membership@
minority@
news@
office@
outreach@
past-chair@
policy-bylaws@
pr@
program@
programarrangements@

publicaffairs@
safety@
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- Innovative Screening Strategies for the Directed Evolution of Enzymes
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- Analytical Tools Enabling a Molecular-Level Studies of Environmental Multi-Phase Air-Water-Soil Systems

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- Modern Portable Analytical Spectroscopy
- Practical Pyrolysis-GC/MS for Polymer and Material Characterization
- Introduction to Raman Spectroscopy and Imaging with Applications
- Practical NMR Spectroscopy
- Cannabis Testing
- An Introduction to Mass Spectrometry including Biomolecule Applications
- Essentials of LC-MS
- Sampling and Sample Preparation for Chromatography
- GC/MS Fundamentals for Operators

Visit www.pittcon.org for more information

McCormick Place | Chicago, IL | March 1-5, 2020



ChemShorts For Kids

The Forever Floating Bubbles

Do you remember that scene from the Wizard of Oz when Dorothy first arrives in Munchkinland and she sees a bubble that seems to float forever (it then turns into Glinda, the good witch of the North)? If you've never seen it, Google "dorothy lands in munchkinland" and have a look at the videos. This experiment reminds me of the bubble that just seems to hang around floating for a very long time.

Materials:

Bubble solution and wand

Vinegar

Baking Soda

A large container

A fish tank works great but a garbage can or 10 qt stock pot will work

Candle



Caution: Be sure to have an adult around anytime you have an open flame.

EYE PROTECTION IS REQUIRED FOR THIS EXPERIMENT. The use of gloves may also be warranted particularly if there are any open abrasions that the vinegar can interact with. Vinegar is typically 5% acetic acid. Adult supervision is strongly recommended.

Experiment:

Depending upon the size of your container, empty a substantial amount of baking soda (sodium bicarbonate or NaHCO_3) into the vessel. Now add a lot of vinegar (acetic acid or $\text{C}_2\text{H}_4\text{O}_2$) into the container. What do you see? Whenever you see the formation of bubbles, you are seeing gas trapped by a liquid. Now that all of those bubbles have formed and broken, use the wand and bubble solution and blow bubbles over the top of the container and try to get some of your bubbles to land inside the container. Do not blow into the container. What you should see is that the bubbles that find their way into the container float and do not land.

What's happening?

As was discussed last month in "The Alka Seltzer Challenge", sodium bicarbonate, NaHCO_3 , will react with the acetic acid ($\text{C}_2\text{H}_4\text{O}_2$) in vinegar to create water (H_2O), $\text{NaC}_2\text{H}_3\text{O}_2$, and CO_2 as seen here:



Carbon dioxide, CO_2 , is a gas and as it turns out is significantly more dense than air. This means that the carbon dioxide will remain in the container for a while and will sit at the bottom of the container. It may fill the container entirely depending on how much baking soda and vinegar you used. *One way to find out how high up the gas goes inside the container is to light a candle and slowly lower it into the container. Because CO_2 does not support combustion, the candle will extinguish when it is completely*

surrounded by CO_2 . Because the density of CO_2 is 2.0 grams per liter, whereas the density of air is 1.3 grams per liter, the bubble full of the lighter (less dense) air cannot go underneath it, and so the bubble will just float on the surface of the carbon dioxide. If you pay close attention, you may notice that the bubble will increase in size as the CO_2 finds its way into the bubble via osmosis, making it bigger. If the bubble lasts long enough and grows in size due to the CO_2 entering into the bubble, expect it to sink as the air inside the bubble becomes more dense. When you've had enough of the bubbles, see what happens when you pour the contents of the container (CO_2) on top of a lit candle! Notice how the CO_2 seems to pour just like a liquid.

References:

<https://www.exploratorium.edu/snacks/bubble-suspension>

<http://www.scifun.org/HomeExpts/SOAPBUBL.html>

To view all past "ChemShorts for Kids", go to:

http://chicagoacs.org/articles/article_category/1

Paul Brandt

SIDNEY HARRIS CARTOON

The Pasteur cartoon can be commented on in a humoristic way with the help of a French popular poet, Jacques Prévert. In this cartoon, Pasteur recites a nonsensical/humorous series of items. This is also what a French popular poet Jacques Prévert did in his poem *Inventaire* (Inventory), where at the end of each incongruous list of entities, Prévert adds “un raton laveur” (“a raccoon!”) When someone utters a nonsensical list of unrelated items, one may add ironically (and may not be so kindly) “et un raton laveur,” (“and a raccoon!”) So, I would have added to Pasteur’s (and cartoonist Sidney Harris’s) list: “and a raccoon!” You can hear Prévert at https://www.youtube.com/watch?v=cU2JEC_e-mc

Professor Jean-Marie Lehn
Université de Strasbourg (1987 Nobel Prize)



Une pierre
deux maisons
trois ruines
quatre fossoyeurs
un jardin
des fleurs

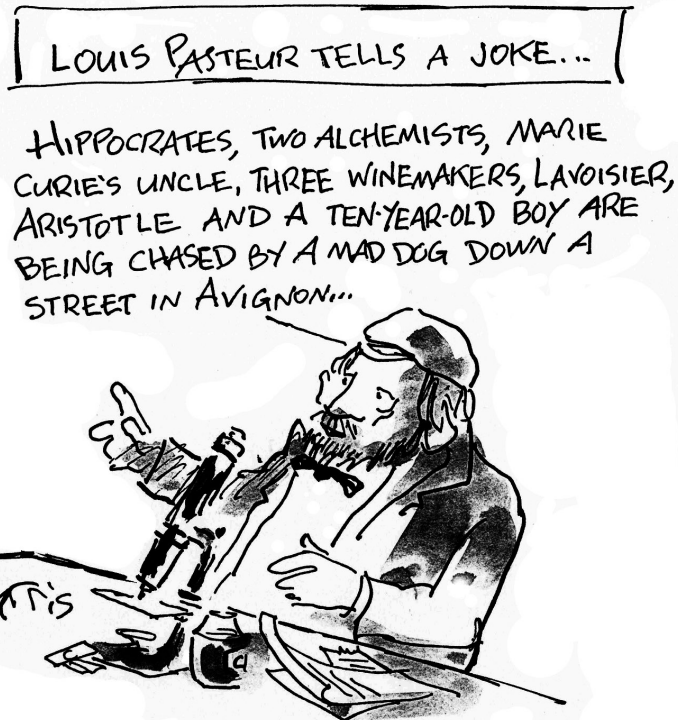
un raton laveur

une douzaine d’huîtres un citron un pain
un rayon de soleil
une lame de fond
six musiciens
une porte avec son paillason
un monsieur décoré de la légion d’honneur
un autre raton laveur
.....cte, ctE

A stone
two houses
three ruins
four gravediggers
a garden
flowers

a raccoon

a dozen oysters a lemon a loaf
a ray of sunshine
a bottom slide
six musicians
a door with his doormat
a gentleman decorated with the legion of honor
another raccoon
Etc, etc.....



Funded by the ACS Innovative Grant Program and hosted by the Division of History of Chemistry, eminent cartoonist Sidney Harris has agreed to provide 12 previously unpublished cartoons to ACS Local Sections for use in their news-letters and web pages beginning in January 2019. Many of his cartoons are available in the book:

“EUREKA! DETAILS TO FOLLOW - Cartoons on Chemistry” (2018), Sidney Harris Publisher.

From the Editor's Desk

Dear Readers,

Here we are at the beginning of a new year and a new decade. I would draw your attention to the list of Chicago Section officers for 2020 on page 4 of this issue. Please note that PITCON 2020 (originally called the Pittsburgh Conference) will take place in early March at McCormick Place near downtown Chicago. This event will feature lectures, an exposition, several short courses and technical sessions. And speaking of McCormick Place in Chicago, this venue is also scheduled as the site of the Fall 2022 ACS National Meeting and Exposition, after an absence of nearly fifteen years.

My thanks for their contributions to this first issue of Volume 107 go out to Paul Brandt, Josh Kurutz, Professor Jean-Marie Lehn, Andrea Twiss-Brooks and the program team, Jason Romero, and Brian Tweedy of ACS Professional Relations. Enjoy reading this issue, and I welcome your ideas and comments.

Margaret (Peggy) Schott, Editor (m-schott@northwestern.edu)



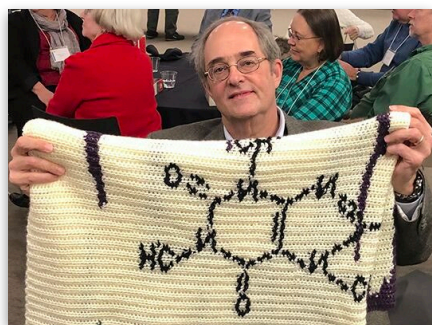
CHICAGO'S ACS FELLOWS



The Chicago Section is home to many excellent chemists, but only 39 have been celebrated as Fellows of the American Chemical Society since the program began in 2009. Who are they? Our Section now has a web page devoted to recognizing their achievements: <https://chicagoacs.org/fellows>

Unlike winning the Nobel Prize or election to a National Academy, being named an ACS Fellow requires "outstanding achievements in and contributions to science, the profession, and the Society", [according to the ACS](#). ACS Fellows have thus contributed remarkably to ACS activities on top of demonstrating excellence in their profession, whether in academia, government or industry.

Chicago's fellows include a number of prize-winning academics, including one Nobel Laureate, [Sir Fraser Stoddart](#) of Northwestern University (2019 Fellow). Stoddart's work on nanoscale chemistry, especially [mechanostereochemistry](#), is coupled with his tremendous service to ACS. His service includes championing [Project SEED](#), ACS' program for giving deserving but economically disadvantaged high schoolers summer jobs in research labs. Northwestern's faculty also includes *ten* other Fellows!



Chicago Section meetings are great places to meet ACS Fellows in person! Just last month, at the December 2019 meeting, one could meet David Crumrine (2012, Loyola University, photo at right), Ken Fivizzani (2011, Nalco-retired and Division of Chemical Health & Safety), Mike Koehler (2019, Professional Analysis & Consulting, Inc.), Mike Morello (2013, PepsiCo, photo at left), and Barb Moriarty (2011, formerly Nalco). Normally, we would have also seen Russ Johnson (2010, Honeywell-retired) and Zafra Lerman (2010, President of the [Malta](#)



[Conference Foundation](#) and former Distinguished Professor at Columbia College), but they were on the island nation of Malta engaging in science diplomacy to help bring peace to the Middle East at the [Malta IX Conference](#).

Indeed, many of our ACS Fellows have given talks at our regular dinner meetings. Their titles give you a flavor for what kind of work they do:

Zafra Lerman in [March 2019](#): "Science Diplomacy Can Succeed Where Other Diplomacies Have Failed"

Lauren Jackson (2016 Fellow, FDA) in [April 2018](#): "Ensuring the Safety of the U.S. Food Supply: The Role of Regulatory Scientists in Carrying out FDA's Mission"

Richard Silverman (2011 Fellow, Northwestern University) in [February 2017](#): "Drug Discovery: Ingenuity or Serendipity?"

Stuart Rowan (2018 Fellow, University of Chicago) in [June 2017](#): "Using Dynamic Chemistry to Access Stimuli-Responsive and Adaptive Materials"

Tom Meade (2011 Fellow, Northwestern U.) in [November 2016](#): "Advances in Bioactivated and Targeted MR Imaging Probes: Are We There Yet?"

Donald Wink (2014 Fellow, UIC) in [September 2014](#): "Knowing How Students Learn in Chemical Education"

Ken Fivizzani in [November 2014](#): "ACS CHAS: Where Chemistry and Safety Meet" (pre-dinner talk)

Barb Moriarty in [March 2011](#): "Scientists and Public Affairs"

The ACS Fellows program is notable for recognizing professionals who exhibit a certain well-roundedness and a worldview that extends well beyond the lab or classroom. We should not only be proud of our colleagues listed on [this page](#). We should learn from them, starting by taking advantage of the frequent opportunities to meet them that the Chicago Section provides. O what a great community that has such chemists in it!

Josh Kurutz, Section Historian

From the Bulletin archive: April 1915

Romance in Chemistry

Have you ever noticed that most of the famous detectives of fiction, from Sherlock Holmes down to Craig Kennedy [1], are depicted as research chemists by profession or by way of spending their spare time?

In paying this tribute to chemistry the public mind is perhaps touching upon a greater truth than it knows. Research chemistry requires vast knowledge and clear thinking, and detective work (particularly that of fiction) requires the same mental aptitudes of unbiased observation and correct deduction.

In a manner of speaking, the history of chemistry is really filled with the highest grade of detective novels. The development of the Le-Blanc process, the evolution of Kekule's theory of benzol, the discovery of radium—do they not possess the masterly plot, the unexpected turn of events, the slow elimination of sterile clues and the gradual adjustment of all difficulties which are the true characteristics of good mystery stories? For those who possess both the knowledge and the imagination there is romance, philosophy, tension and tragedy in those yellowed and half-forgotten annals of science. Some day we hope a gifted pen will recover these hidden treasures of chemical history and popularize some of the beautiful stories which are now intelligible for none but the scientifically trained.

It will be a profitable undertaking, both for chemistry and for fiction.

O. E. (O. Eisenschiml, Section Chair)

[1] Professor Craig Kennedy is a fictional scientist detective, created by Arthur B. Reeve, who first appeared in 1910 in an issue of *Cosmopolitan*.



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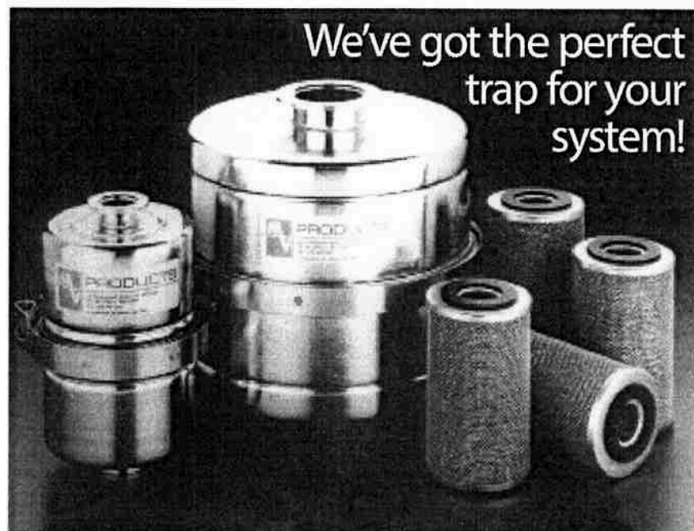
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CHICAGO ACS SECTION MONTHLY MEETING DATES (PROPOSED)

FRIDAY, JANUARY 24

FRIDAY, FEBRUARY 21

THURSDAY, MARCH 19

FRIDAY, APRIL 24

FRIDAY, MAY 15

FRIDAY, JUNE 26



SATURDAY, JANUARY 4, 2020

ACS Holiday Meet Up with UIUC Section at the Museum of Science & Industry (10 am - 5 pm)

Itinerary:

10 am: Arrive at Museum of Science and Industry (5700 S Lake Shore Dr, Chicago, IL)

- Ticket Price: Adult-\$21.95 (\$19.95 online) Chicago residents \$5 off. Limited numbers of free passes are available to Chicago city residents at public libraries

- Meeting point: In front of gift shop

10:15 am-1 pm: Museum of Science and Industry / **1 pm-2:30 pm:** Lunch /

2:30 pm-5 pm: Millennium Park and walk around Chicago / **5 pm:** (For UIUC Students) Depart from Union Station

SIGN UP ON THIS GOOGLE DOC:

<https://tinyurl.com/acsmeetup2019>

ACS Professional Education Is Coming to Chicago

Stay competitive and move ahead in your career in 2020 with professional development and technical training opportunities from ACS. Follow the links to these courses in downtown Chicago. Discounts are available for all ACS members.

March 10-13 [Gas Chromatography: Fundamentals, Troubleshooting, and Method Development](#)

May 12-15 [High Performance Liquid Chromatography: Fundamentals, Troubleshooting, and Method Development](#)

June 15-16 [Laboratory Safety & Health](#)

June 15-16 [Chemical Engineering for Chemists](#)

June 15-16 [Effective Technical Writing](#)

June 15-16 [Effective Supervision of Scientists and the Technical Staff](#)

June 16-18 [Experimental Design for Productivity and Quality in Research & Development](#)

June 17-18 [Risk-Based Strategy for the Development and Validation of Analytical Methods with a QbD Approach](#)

June 17-18 [Polymeric Coatings](#)

September 22-25 [Gas Chromatography: Fundamentals, Troubleshooting, and Method Development](#)

November 10-13 [High Performance Liquid Chromatography: Fundamentals, Troubleshooting, and Method Development](#)



OTHER EVENTS IN 2020

Sunday, February 9 – Family Open House at Fermilab

Friday, February 22 – DuPage Area STEM Expo
10:30 am - 3:30 pm at Illinois Tech Rice Campus

March 1-5 PITTCON at McCormick Place, Chicago (page 8)

March 22-26 National Meeting in Philadelphia

April 19-25 Chemists Celebrate Earth Week 2020
"Protecting Our Planet Through Chemistry"