

The Chemical Bulletin

<http://chicagoacs.org>

FEBRUARY • 2017

CHICAGO SECTION AMERICAN CHEMICAL SOCIETY MONTHLY MEETING FRIDAY, FEBRUARY 17, 2017

University of Illinois – Chicago
Molecular Biology Research Building
901 S. Marshfield
Chicago, Illinois 60607

Also Being Streamed to Satellite Locations:

North Central College
Harold & Eva White Activity Center
Room 10 (Ground Floor)
325 East Benton Avenue
Naperville, IL 60540

College of Lake County
Southlake Campus
Room V336-340
1120 S. Milwaukee Avenue
Vernon Hills, IL 60061-3195

DIRECTIONS TO UNIVERSITY OF ILLINOIS AT CHICAGO:

From the North: Take the Kennedy Expressway to the Eisenhower Expressway west bound and keep to the right; take the second exit from the Eisenhower Expressway, which is Ashland Avenue; take Ashland Avenue south to Taylor Street; the MBRB is located at the corner of Ashland Avenue and Taylor Street.

From the South: Take the Dan Ryan Expressway and exit on Roosevelt Road (1200 south); go west on Roosevelt Road to Wood Street; then go north on Wood Street to the campus.

From the West: Take the Eisenhower Expressway to the Ashland Avenue exit; take Ashland Avenue south to Taylor Street; the MBRB is located on the corner of Ashland Avenue and Taylor Street.

From the East: Take Harrison Street or Roosevelt Road west to Wood Street. If you take Harrison Street, go south on Wood Street to the campus, or from Roosevelt Road go north on Wood Street to campus.

Bus: Use any of these bus lines: No. 7, Harrison Street; No. 12, Roosevelt Road; No. 37, Taylor Street; No. 48 or No. 50, Damen Avenue; or No. 9, Ashland Avenue.

REGISTRATION,
POSTER SESSION &
NETWORKING 5:30 PM – 6:30 PM

DINNER 6:30 PM – 7:30 PM
(Lecture is free but you must register in advance)

INTRODUCTORY REMARKS
BY FRAN KRAVITZ,
CHICAGO SECTION
CHAIR 7:30 PM – 7:40 PM

LECTURE
BY DR. RICHARD
SILVERMAN 7:40 PM – 8:40 PM



Richard B. Silverman

Department of Chemistry, Department of Molecular Biosciences, Chemistry of Life Processes Institute, Center for Molecular Innovation and Drug Discovery, Center for Developmental Therapeutics, Northwestern University, Evanston, IL. **“Drug Discovery: Ingenuity or Serendipity?”**

(continued on page 2)

IN THIS ISSUE

- | | |
|----------------------|---------------------------|
| 2 Dinner Information | 5 Someone You Should Know |
| 3 Chair's Column | 5 Micron |
| 3 ChemShorts | 6 Calendar |
| 3 Marie S. Curie | 6 Mass-Vac |
| 4 Pittcon | |

(continued from page 1)

Train: Take the Pink Line to the Polk Street Station. Short walk in the southeast direction to Marshfield.

Parking: Paulina Street Parking Structure (915 S. Paulina) at the corner of Taylor, Paulina and Marshfield. Visitors must enter at Paulina entrance (Cost: \$8.50 cash/credit)

DIRECTIONS TO NORTH CENTRAL COLLEGE:

Train: Amtrak/Metra Commuter Rail

Burlington Northern Line travels from Chicago's Union Station to Naperville's Train Station, which is just two blocks northwest of campus.

From the West: Follow I-88 east to Winfield Road. Exit onto Winfield Rd. and turn left (south) at the end of the exit. Take Winfield Rd. and make a left (east) onto Diehl Rd. Continue on Diehl Rd. and make a right (south) onto Washington St. Continue on Washington St. and make a left (east) onto Benton.

From the South: Follow I-55 to I-355 north to Maple Ave. exit. Turn left (west) on Maple and continue until the street name changes to Chicago Ave. Take Chicago Ave. to Brainard St and turn right (north). Take Brainard St. and make a left onto Benton.

From the North: Follow I-294 south to I-88 west. Follow I-88 east to Winfield Road. Exit onto Winfield Rd. and turn left (south) at the end of the exit. Take Winfield Rd. and make a left (east) onto Diehl Rd. Continue on Diehl Rd. and make a right (south) onto Washington St. Continue on Washington St. and make a left (east) onto Benton.

From Chicago or the East: Follow I-290 expressway west to I-88 west. Follow I-88 east to Winfield Road. Exit onto Winfield Rd. and turn left (south) at the end of the exit. Take Winfield Rd. and make a left (east) onto Diehl Rd. Continue on Diehl Rd. and make a right (south) onto Washington St. Continue on Washington St. and make a left (east) onto Benton.

Parking: on the street is free

DIRECTIONS TO COLLEGE OF LAKE COUNTY SOUTHLAKE CAMPUS:

From the North: Take I-94 to the Half-Day Road (Route 22) exit and turn right at the stoplight. Take Route 22 to Milwaukee Avenue (Route 21). At the stoplight, turn right (Route 21). Turn left on to Port Clinton Road into the Southlake Campus.

From the South: Take I-94 to the Half-Day Road (Route 22) exit and turn left at the stoplight. Take Route 22 to Milwaukee Avenue (Route 21). At the stoplight, turn right (Route 21). Turn left on to Port Clinton Road into the Southlake Campus.

From the East: Take Route 60 west to Milwaukee Avenue (Route 21). Head south (left turn) and go 2.5 miles. Turn right onto Port Clinton Road OR Take Route 22 west to Milwaukee Avenue (Route 21). Turn north (right turn). Turn left on to Port Clinton Road into the Southlake Campus.

From the West: Take Route 60 east to Milwaukee Avenue (Route 21). Head south (right turn) and go 2.5 miles. Turn right on to Port Clinton Road into the Southlake Campus.

Parking: Free

The mission of the Chicago Section of the ACS is to encourage the advancement of chemical sciences and their practitioners.

Biography:

Richard B. Silverman is Patrick G Ryan/Aon Professor (since 2015) in the Departments of Chemistry and Molecular Biosciences at Northwestern University. Prof. Silverman's research focuses on investigations of the molecular mechanisms of action, rational design, and syntheses of potential medicinal agents acting on enzymes. He is the inventor of Lyrica™, a drug marketed by Pfizer since 2005 for epilepsy, neuropathic pain, and fibromyalgia and has completed a Phase I clinical trial of another drug for infantile spasms. Prof. Silverman received his B.S. in chemistry from The Pennsylvania State University and a Ph.D. degree in organic chemistry from Harvard University. He served as a NIH postdoctoral fellow with the late Robert Abeles at Brandeis University. Silverman is the recipient of numerous awards for research and innovation including most recently the American Chemical Society Award for Creative Invention (2017). He is also a fellow of the American Academy of Arts & Sciences and the National Academy of Inventors. He is author of 350 research articles, 75 domestic and foreign patents, and five books (one "The Organic Chemistry of Drug Design and Drug Action" translated into German and Chinese).

ABSTRACT

Drug discovery is a long, challenging process, which is more often than not unsuccessful. How do medicinal chemists discover new drugs? Why are they so expensive? This lecture will describe some approaches taken to discover drugs, including an example from my lab, and how these drugs work. Examples of several popular drugs will be discussed with an attempt to answer the question of whether drug discoveries are the result of clever design and execution or just dumb luck.

TRY
COLOR
IN YOUR AD

MENU

Choice of:

Panera Turkey Sandwich Box Lunch (Oven roasted turkey raised without antibiotics, lettuce, vine-ripened tomatoes, red onions, pure mayo, spicy mustard, salt and pepper on whole grain. Served with potato chips, pickle, a cookie and beverage.)

OR

Panera Mediterranean Veggie Boxed Lunch (Zesty sweet Peppadew piquant peppers, feta cheese, cucumbers, lettuce, vine-ripened tomatoes, red onions and cilantro-jalapeno hummus with salt and pepper on thin sliced Tomato Basil. Served with potato chips, pickle, a cookie and beverage.)

The cost is \$15 to Section members who have paid their local section dues, members' families, and visiting ACS members. The cost to members who have NOT paid their local section dues and to non-members is \$17. Dinner reservations are required and should be received in the Section Office via phone (847-391-9091), email (chicagoacs@ameritech.net) or website (<http://chicagoacs.org/meetinginfo.php?id=114&ts=1479155469>) by noon on Tuesday, February 14. PLEASE HONOR YOUR RESERVATIONS. The Section must pay for all dinner orders. No-shows will be billed.

CHAIR'S COLUMN: AGE IS A RELATIVE CONCEPT

The Chicago Section is no different than any other local Section across the country. Our Section is classified as very large but in many ways we mirror smaller sections. We are a microcosm of scientists who make up the American Chemical Society. We come in all ages from those just starting in their career to those with vast experiences. No one program works for everyone. Interestingly, I hear from our more experienced members that we need to continue to do what we have done for years. On the other hand, our younger members feel we are outdated in our programs. So, how can we bring together two very different and diverse groups?

This is the dilemma for me this year: how can the Section satisfy and fulfill the needs of both populations? Our Section has a Younger Chemist Committee for members under 35 years old which will have social, career building, and network activities geared for their lifestyle. On the other spectrum, we also have a Senior Chemist Committee, formed just a couple years ago, trying to find activities for more experienced members. My goal is to have both groups work together on common outreach programs and develop programs for our monthly dinner meeting which will satisfy all groups. Both groups have different ideas but both groups bring special talents to the table which enriches a Section allowing the Section to grow.

I hope our members will embrace this and work together to help our Section to grow by developing new programs and activities as well as bringing in new members. We have always been known as an innovative Section. Please participate in Chicago Section activities, like the monthly meetings, community outreach, and being on committees. Bring a friend to a meeting. Currently, our Younger Chemist and Senior Chemist Committees need your help. They are looking for members and ideas to start the year. These committees meet by conference call to plan their events. Won't you please consider volunteering on these committees? **THEY NEED YOU!**

A wise Chicago Section Chair by the name of Louis Sacco many years ago told me that the most important role of the Chair of a Section is to listen to its members. Please feel free to share your thoughts and ideas with me or let me know if you want to volunteer on a committee. Remember the Chicago Section is a family.

Fran Kravitz
2017 Chicago Section ACS Chair
fk1456@sbcglobal.net

"CHEM SHORTS" For Kids

My Cup Overflows

Here's the challenge: Fill a glass with water as full as you can without it spilling over. How many paperclips do you think you can add before the water spills over the rim of the glass?

Materials:

Box of paper clips or a lot of pennies
Drinking glass
Dishwashing soap

You will find that you can add a whole lot of paperclips before the water overflows. Challenge your parent, sibling or friend to the same experiment but for theirs add a drop of dishwashing soap (but don't let them see you) before they start adding the paperclips. They will find that they are not able to add nearly as many paperclips as you were.

What's happening?

Water is one of the most polar liquids that we know of. What does that mean and why is that important? Water has a positive end and a negative end, not unlike a magnet. What happens when you put a bunch of magnets together? They all stick together. Water is like that – it's like the water molecules are holding hands and the water molecules at the surface aren't letting go of their partners and keeping them from falling over the edge. This is called cohesion. By adding the drop of soap to the water, you break some of that cohesion and the water has less surface tension.



References:

<http://www.kids-fun-science.com/water-experiments.html>

This experiment is related to the June 2006 ChemShorts article of the Bulletin entitled "Pepper Tension"

<http://chicagoacs.org/articles/175>

To view all past "ChemShorts for Kids," go to: http://chicagoacs.org/articles.php?article_category=1

February, 2017 Vol. 104, No. 2.
Published by the Chicago Section of The American Chemical Society, Editorial Staff: Paul Brandt, Editor; Kari Stone, Proofreader. Address: 1400 Renaissance Dr., Suite 312, Park Ridge, Illinois 60068; 847/391-9091. Subscription rates: \$15 per year. Frequency: monthly-September through June.

MARIE S. CURIE GIRL SCOUT CHEMISTRY DAY PROGRAM

The 2017 Marie S. Curie Girl Scout Chemistry Day program will be held at College of Lake County on Saturday, April 22, 2017, Valparaiso University on Saturday, April 29, 2017 and North Central College on Saturday, May 6, 2017. The purpose of this patch is to give girls ages 10 to 18 the opportunity to learn about chemistry through lecture and laboratory, the careers available in various areas of chemistry and to talk, and interact with female role models who are chemists.

We are currently looking for women chemists, or women in a related area of science, to help as mentors for this program. Mentors will meet with small groups of girls during lunch and describe their career as a woman chemist, educational requirements needed to be a chemist, and opportunities available in chemistry. We need at least 10 mentors at each site. Lunch is scheduled from noon to 1 p.m. and pizza will be provided. Please contact Fran Kravitz by email at fk1456@sbcglobal.net if you are interested.

A HOLIDAY THANK YOU

The Chicago Section of the American Chemical Society would like to thank members who participated in the 2016 December dinner meeting food and toy drive.

Your generosity provided several bags of toys and 262 pounds of food and \$370 in checks donations. The food and money was donated to the local Loaves & Fishes Community Pantry which is a community-based, non-profit organization established to provide food and personal care essentials to residents in need. This year the toys were donated to the Adoption Center of Illinois at Family Resource Center in Chicago, an adoption agency providing services for couples seeking to adopt children in the US or overseas. This agency also provides services for birth parents and foster children. The toys were used for birth mothers who have placed children for adoption or who are considering a placement and are often raising other children. The toys provide joy to children whose birth parents are struggling and do not have extra money for the holidays.

FRAN KRAVITZ

SEE SCIENCE IN A NEW LIGHT



PITTCON[®] 2017
CONFERENCE & EXPO

March 5-9, 2017

**Chicago, IL
McCormick Place**

Follow us for special announcements



Pittcon, a leading conference and exposition for laboratory science, shines light on new technology and scientific research.

- Dynamic, innovative exposition
- Robust, multi-discipline Technical Program
- Skill-building Short Courses
- Extensive networking opportunities

Register now at www.pittcon.org

SOMEONE YOU SHOULD KNOW

Linghong Zhang is the Chicago Section's chair of the Younger Chemist Committee. This is her first year on the board and her first year in the Chicago Section. I first met Linghong when she volunteered at the Illinois Sections of the ACS Science Tent at the Illinois State Fair. We normally advertise for volunteers in all of the Illinois local section newsletters and websites, but here was someone who drove down from Madison, WI to volunteer for a single day in Springfield, IL. She impressed the planning committee with her dedication to volunteer at an ACS outreach project so far from her home. Linghong just jumped into helping children at the hands-on table as if she had done it for years. Last year, she took on even more responsibility by working on the planning committee. She edited the demonstration book and supervised the final weekend in the tent including the teardown. Her expression is "Don't worry I can do this" and in the two short years I have known her, yes she can. This year she did not hesitate to say yes when asked if she would chair the Younger Chemist Committee. She plans on reviving the committee and holding social, networking, and career development activities for members who are 35 years or younger. This is a huge undertaking and she is looking for others to help her. Contact Linghong at linghong-zhang1@gmail.com to join the Younger Chemist Committee.

Linghong was born in Sichuan province in China. The Sichuan province is considered the hometown of pandas and is famous for the Sichuan-style spicy dishes. Both her mother and father are engineers. They design and build plants in China. Although she was not the first in her family to go into science and engineering, she is the first one to go into chemistry and

materials science.

She did not know that she would become a chemist when she started college. Her undergraduate major was in materials science and engineering. However during her sophomore year she began to work in the lab and realized how complicated frontier research can be. This was the turning point for her. She decided to pursue a Ph.D. in Chemistry, or in her words "to train myself to think in a more fundamental and creative way to solve challenging problems." She earned her bachelor's degree in materials science and engineering from Zhejiang University in China. Linghong pursued her Ph.D. in materials chemistry under the guidance of Prof. Bob Hamers at the University of Wisconsin-Madison. Her thesis title was "Photo and electrochemical reduction of carbon dioxide on diamond surfaces", which involved utilizing some unique properties of diamonds to convert carbon dioxide into chemical fuels with the energy from either electricity or sunlight. After finishing her Ph.D., Linghong joined the battery department at Argonne National Laboratory as a postdoctoral researcher and started her work on developing silicon-related anode materials for the next-generation high-energy lithium ion batteries. Her typical day usually goes by very quickly. It includes performing experiments, summarizing results, and writing report/papers, as well as meeting with colleagues to discuss results and future collaborations. During lunch time, she joins several colleagues/friends and discusses work or leisure activities on the weekends. Linghong enjoys working at Argonne because it provides her with opportunities to network with others at special colloquia, workshops, and holiday celebrations.

Linghong joined the ACS three years ago. I must say she had the most unusual reason for joining the ACS that I have heard since I have been writing this column. Most individuals tell me it was their graduate advisor or colleague that convinced them to join. In Linghong's case, she joined because she liked the anniversary

element mug. She of course also joined for some of the ACS benefits such as the career development programs as well as an opportunity to get involved with the local ACS section to serve local communities. The friends she has made while doing outreach are her ACS family. She participated in an ACS workshop called "Preparing for Life after Graduate School" when she was still in graduate school. Besides her involvement with the ACS science tent at the Illinois State Fair, she has also volunteered in several community outreach events, including Marie Curie Girl Scout Chemistry Day program, Science Night at the Lane School in Hinsdale, STEMfest at Northern Illinois University as well as "Introducing Girls to Engineering" day at Argonne National Laboratory.

Linghong loves to travel and enjoys outdoor activities such as hiking and skiing. She enjoys hanging out with good friends and watching sports or just chatting. She also enjoys watching movies and reading. Linghong has a black cat which is a year and a half old. She spends time at home with her cat playing a game of catch the bouncy balls. She often wonders if her cat is actually a dog.


Very few people know that Linghong is big fan of musicals and it was her dream to someday see the musicals *Cats*, *Les Misérables*, *Phantom of the Opera* and *Miss Saigon* live. She saw *Cats* while at the Zhejiang University in China but never got to see the other musicals because the timing was never right. She finally got that opportunity during a conference in London. Linghong stayed an extra three days and saw all three musicals in two days in West End. She felt that this was her best trip ever.

Linghong's final words of wisdom to all of us are "Always live the dream." This was passed onto her by a good friend who graduated from her Ph.D. group. She feels that we all need this spirit to conquer the difficulties that we face both at work and in life, and to live a positive and meaningful life.

Fran Kravitz



Linghong Zhang



Micron Analytical Services

COMPLETE MATERIALS CHARACTERIZATION

MORPHOLOGY CHEMISTRY STRUCTURE

SEM/EDXA, TEM/SAED, EPA/WDXA, XRD,
XRF, ESCA, AUGER, FTIR, DSC/TGA

3815 Lancaster Pike Wilmington DE. 19805
Voice 302-998-1184, Fax 302-998-1836
E-Mail micronanalytical@compuserve.com
Web Page: www.micronanalytical.com

CALENDAR

February 12: Family Open House at the Lederman Science Center from 1-5 pm. Children must be accompanied by an adult (There's plenty for the grown-ups too). Most appropriate for children in grades 3 and up. <http://ed.fnal.gov/events/openhouse/>

February 27: 33rd Annual Engineers Week Expo at the Illinois Institute of Technology - Rice Campus at 201 East Loop Drive, Wheaton (10:30 - 3:30) "Engineering New Horizons." <http://appliedtech.iit.edu/engineersweek>

March 5-9: Pittcon 2017 will be in Chicago, IL. <http://pittcon.org>

March 30 - April 2: NSTA's National Conference "Sun, Surf & Science", Los Angeles, CA. <http://www.nsta.org/conferences/national.aspx>

April 2 - 6: 253rd American Chemical Society National Meeting and Exposition "Advanced Materials, Technologies, Systems & Processes", San Francisco, CA. <https://www.acs.org/content/acs/en/meetings/spring-2017.html>

April 8: Washington University Chemistry Tournament for HS students.

April 29: You Be The Chemist Illinois State Challenge

April 2: The Marie S. Curie Girl Scout Chemistry Day program at North Central College.

April 9: The Marie S. Curie Girl Scout Chemistry Day program at Valparaiso University.

May 7: The Marie S. Curie Girl Scout Chemistry Day program at College of Lake County, Grayslake.

June 17: You Be The Chemist National Challenge

FOLLOW US ON FACEBOOK AND TWITTER!



www.facebook.com/ChicagoACS



twitter.com/ChicagoACS



<https://www.youtube.com/user/AmerChemSoc>

Meet the Protectors of Vacuum Pumps, Systems and the Environment!



Oil Mist Eliminators



Vacuum Inlet Traps



Oil Filtration Systems

MV Products offer you a full line of oil mist eliminators, vacuum inlet traps, oil filtration systems and other quality vacuum products designed to assure your vacuum pumps a long life and you a clean and healthy environment.

- ☐ MV oil mist eliminators remove oily haze from vacuum pump exhaust, protect the surrounding areas and the room air you breath.
- ☐ MV vacuum inlet traps protect your vacuum pump from corrosive and abrasive elements and can be tailored to your specific application requirements.
- ☐ Oil filtration systems remove acids, corrosives, and contaminants from pump fluids thus reducing maintenance costs and prolonging pump life.

Other Quality Vacuum Products



Vacuum Degassing Chambers



Central Source Vacuum System



Filters

For more information on these and other fine vacuum products contact



PRODUCTS

A Division of Mass-Vac, Inc.

247 Rangeway Road • PO Box 359 • North Billerica, MA 01862-0359
TEL 978-667-2393 FAX 978-671-0014 E-MAIL sales@massvac.com WEB www.massvac.com