

# The Chemical Bulletin

[chicagoacs.org](http://chicagoacs.org)

MARCH • 2015

## CHICAGO SECTION AMERICAN CHEMICAL SOCIETY PUBLIC AFFAIRS MEETING THURSDAY, MARCH 12, 2015

Café La Cave  
2777 Mannheim Rd  
Des Plaines, IL 60017  
847-827-7818

### DIRECTIONS TO THE MEETING

**From I-290 East/West** - Take I-290 from either direction and exit onto I-294 North. Continue until you reach the exit for I-190 West (to O'Hare). Exit and immediately pay toll. Exit onto Mannheim Road North. Go North for 1.5 miles. The restaurant is on the right side after the second stoplight.

**From I-90 East/West** - Take I-90 from either direction and exit I-190 West (to O'Hare). Then follow I-290 East/West directions given above.

**From I-294 North/South** - Take I-294 from either direction and exit I-190 West (to O'Hare). Then follow I-290 East/West directions given above.

**From I-88 East** - Take I-88 East to I-294 North. Take I-294 and exit at I-190 West (to O'Hare). Then follow the directions for I-290 East/West given above.

**PARKING:** Go directly to parking lot for self-parking. Valet parking is also available.

**REGISTRATION & SOCIAL HOUR WITH CASH BAR** 5:00 – 6:30 pm

**DINNER** 6:30 – 7:30 pm

**PUBLIC AFFAIRS LECTURE BY PROF. SHAKHASHIRI** 7:40 – 8:30 pm

Please see the local section website for details on the meeting [chicagoacs.org](http://chicagoacs.org).



### "CLIMATE CHANGE AND OUR RESPONSIBILITIES AS SCIENTISTS"

Professor Bassam Z. Shakhashiri  
The William T. Evjue Distinguished  
Chair for the Wisconsin Idea  
Department of Chemistry  
Director, Wisconsin Initiative for  
Science Literacy  
University of Wisconsin-Madison  
2012 President, American Chemical  
Society

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**Abstract:** A livable climate is essential for us, so it's important to have a basic understanding of the atmospheric mechanism that maintains the climate. Because the mechanism is based on fundamental physics and chemistry, scientists, including chemists, bear a responsibility for understanding climate science themselves and helping others who are not scientists be attentive to the issues relevant to maintaining the climate.

Communicating the science of climate change provides one example where the scientific community must do more. Climate change affects everyone, so everyone should understand why the climate is changing and what it means for them, their children, and generations to follow. Scientists are already members of groups that can facilitate this communication: neighborhoods, school boards, religious groups, service clubs, political organizations, and so on. These groups present opportunities to engage in respectful conversations on climate change and on the policies and actions that individuals, communities, and nations might take to mitigate and adapt to what is happening to our planet.

Science and technology continue to reshape the world we live in, and appreciating how these changes, both intended and unintended, come about is a necessity for all citizens in a democratic society. Scientists have a responsibility to help their fellow citizens understand what science and technology can and cannot do for them.

## PUBLIC AFFAIRS MEETING

In many political arenas, there is still some debate on global climate change including what is causing global climate change and what can be done to alleviate global climate change. Many of us have seen pictures, etc., showing the effect of warmer temperatures on the North and South Poles, penguins and polar bears. We are pleased to be able to share Professor Bassam Shakhshiri, who has been an advocate on providing a toolbox to explain climate change to all those around us. Many of you will remember that Dr. Shakhshiri is a past president of the national American Chemical Society. During his time in office he provided a toolkit that could be used in educating us on global climate change. We are pleased that he is willing to share his insights on what we can do to educate all of us on this important topic.

BARBARA MORIARTY  
PUBLIC AFFAIRS COMMITTEE

**Menu:** Soup of the day; Squillo Salad with Walnuts and Cranberries; Entrée choice of either a Breast of Chicken Combination (Sautéed Breast of Chicken with fresh mushrooms & shallots with a Sherry Cream Sauce and Sautéed Breast of Chicken with Shiitake mushrooms with a Marsala Wine Sauce), Seared Salmon with a Ginger Sauce, or Fresh Vegetables with Pasta; Anna Potatoes; medley of fresh vegetables; Chef selection dessert; a variety of breads; beverage.

Cost \$35 for Members \$37 Non members, \$20 students, unemployed, retired.



Grand Rapids, MI | [jglcrm2015.com](http://jglcrm2015.com)

The ACS invites you to join us at the

[2015 Joint Great Lakes Central Regional Meeting](#)

May 27 - 30, 2015

Grand Rapids, Michigan

The [2015 Joint Great Lakes Central Regional Meeting](#) will be held May 27th-30th at the DeVos Place in Grand Rapids, Michigan. Visit the [JGLCRM website](#) for up-to-date program information.

**Now Open**

[Online Registration](#) and [Abstract Submissions](#)

Need a hotel room? A special rate of \$134 is being offered at the [Amway Grand Plaza Hotel](#), located next to the DeVos Place, until **April 19th**. Reservations can be made [online](#) or by calling the hotel at 800-253-3590.

[Register Online](#)

Advance registration ends April 19th

[Submit an Abstract](#)

Abstract submissions close March 23rd

[Hotel Reservations](#)

Discounted rate ends April 19th

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## MINORITY AFFAIRS

Minority Affairs is planning an event in April, a lecture presentation by Dr. Lane Sid Rolling. Dr. Rolling is Director of the Clinical Education, Hospital Regional Clinical San Jose, Cusco, Peru. He lectures as a distinguished faculty lecturer at many universities about tropical pathology and global infectious diseases, as well as about his experiences in clinical medicine in Peru, Honduras, Ecuador, and the Dominican Republic. Dr. Rolling was appointed as Professor of Clinical Medicine and Surgery at the Universidad Particular de Iquitos in 2008. The date of the event is April 6 and the site will be Columbia College Chicago. Details are forthcoming.

CHARLES CANNON

**Biography:** **Bassam Z. Shakhshiri** is an advocate for policies to advance knowledge and to use science and technology to serve society. He is the first holder of the William T. Evjue Distinguished Chair at UW-Madison and is well known internationally for his effective leadership in promoting excellence in science education at all levels, and for his development and use of demonstrations in the teaching of chemistry in classrooms as well as in less formal settings, such as museums, convention centers, shopping malls and retirement homes. His scholarly publications, including the multi-volume series, **Chemical Demonstrations: A Handbook for Teachers of Chemistry**, are models of learning and instruction that have been translated into several languages. He promotes the exploration and establishment of links between science, the arts and the humanities, and the elevation of discourse on significant societal issues related to science, religion, politics, the economy, and ethics. Professor Shakhshiri was the 2012 president of the American Chemical Society.

Professor Shakhshiri is a native of (Anfe, El-Koura) Lebanon, coming to the United States in 1957 when Bassam was 17 years old, with one year of college (at the American University of Beirut) behind him. **He completed undergraduate work at Boston University** (Class of '60) with an A. B. degree in chemistry, served as a teaching fellow at Bowdoin College for one academic year and then earned M.Sc. and Ph.D. degrees in chemistry at the University of Maryland ('64 and '68, respectively).

After a year of post-doctoral research and two years as a junior member of the chemistry faculty at the University of Illinois-Urbana, Professor Shakhshiri joined the faculty of the UW-Madison in 1970, a position he still holds. In 1977 he became the founding chair of the UW System Undergraduate Teaching Improvement Council, now called the **Office of Professional and Instructional Development**. In 1983 he founded the **Institute for Chemical Education (ICE)** and served as its first director. His work with ICE inspired the establishment of the Center for Biology Education, the Merck Institute for Science Education, the Miami University (of Ohio) Center for Chemical Education, the Sacred Heart University SMART Center, and others. In 2002 he founded the **Wisconsin Initiative for Science Literacy (WISL)** and continues to serve as its director.

From 1984 to 1990 Professor Shakhshiri served as Assistant Director of the National Science Foundation (NSF) for Science and Engineering Education. As the NSF chief education officer he presided over the rebuilding of all the NSF efforts in science and engineering education after they had been essentially eliminated in the early 1980's. His NSF strategic plan launched the systemic initiatives and most of the other NSF education programs of the last two decades.

Professor Shakhshiri has given over 1400 invited lectures and presentations in North America, Europe, Asia, Australia, the Middle East and South America. He has been featured in newspapers, magazines, national and local radio and television including the New York Times, Washington Post, Newsweek, Time, the German-language Business Week, NBC Nightly News, National Public Radio, CNN, and the Larry King show. He appears as a **regular guest** on the Ideas Network of Wisconsin Public Radio.

Professor Shakhshiri is the recipient of over 35 awards, including Outstanding Lecturer of the Year in General Chemistry, University of Illinois (1969 and 1970), the 1977 Kiekhofner Distinguished Teaching Award from UW-Madison, and the 1979 Manufacturing Chemists Association Catalyst Award. He is the youngest recipient of two of the American Chemical Society's (ACS) most coveted recognitions -- the **James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry** (1983) and the **ACS George Pimentel Award in Chemical Education** (1986); he has been a member of the ACS since 1962. In 1982 he was given the **Ron Gibbs Award** of the Wisconsin Society of Science Teachers for "outstanding contributions to science education at the local, regional, national, and international levels." In 1987, he was cited for distinguished public service by the District of Columbia Science Education Association, the National Science Teachers Association, the South Carolina Academy of Science, and the Boston University General Alumni Association.

He received the 2002 American Association for the Advancement of Science (AAAS) **Award for Public Understanding of Science and Technology**, "for his tireless efforts to communicate science to the general public, and especially children." In 2004 he was inducted into the **Hall of Fame** of the national chemistry fraternity Alpha Chi Sigma. In 2005 he received the Madison Metropolitan School District Distinguished Service Award for a Citizen, the **Chemical Pioneer Award** from the American Institute of Chemists, the **ACS Helen M. Free Award** for Public Outreach for "lifelong accomplishments and for explaining and demonstrating science with charisma and passion," and was cited in the Answer Book of Capital Newspapers as the "coolest UW professor." In 2006 he received the Rotary Senior Service Award from the Rotary Club of Madison. In 2007 he received the **National Science Board Public Service Award** and was cited for "extraordinary contributions to promote science literacy and cultivate the intellectual and emotional links between science and the arts for the public." In 2008 he received the inaugural **Emerson Science Advocacy Medal** from the University of Nevada-Las Vegas and was cited for "distinguished, sustained, and lasting contributions in the development of the sciences." The Wisconsin State Superintendent, Tony Evers, named Professor Shakhshiri a "**Friend of Education**" in 2013, and in that same year, he was awarded the **Carl Sagan Award for Public Understanding of Science** by the Council of Scientific Society Presidents.

Professor Shakhshiri is an elected fellow of a number of scientific academies and has received numerous honorary doctoral degrees.

## SECTION DUES

Members are urged to pay the \$15 Section dues when you get your annual ACS membership dues statement. The Section needs this revenue to help support its many activities.

## \$START \$SMART FOR WOMEN

The Chicago Section of the American Chemical Society will be offering a half day program for women chemists and students called \$tart \$mart at Loyola University on Saturday, May 16. This is an American Association of University Women's program designed to empower women in negotiating salaries and benefits when they approach the job market. The program was designed to help improve the gender wage gap which exists between men and women in the workforce. The program will be from 9 a.m. to 2 p.m. and includes lunch followed by résumé review by American Chemical Society Career Consultants. The cost will be \$20. Please register online at [www.chicagoacs.org](http://www.chicagoacs.org).

FRAN KRAVITZ

## WCC COLUMN

### WCC Chicago Section Mix and Mingle

Women Chemists Committee Chicago Section is planning to have a Mix and Mingle jointly with Iota Sigma Pi during the social hour before the Thursday June 18, 2015 monthly dinner meeting. WCC is planning to have all social hour attendees join them in a game-show format with chemistry-based questions that will be fun and informative.

A venue has not been announced so please check the ACS Chicago Section website or the next issue of the Chemical Bulletin for further details. Join us!



## MEET PROFESSOR RONG WANG

By Indumathi Sridharan

Dr. Rong Wang is an Associate Professor of Chemistry in the Department of Biological and Chemical Sciences at Illinois Institute of Technology (IIT), Chicago. She teaches physical chemistry and runs a biophysical chemistry research group. Apart from her research and teaching commitments, Professor Wang is also the Associate Chair of Chemistry in the Department.

In person, Professor Wang exudes a quiet confidence and an approachable demeanor. Her students describe her as their staunchest ally who supports them through the ups and downs of academic work and beyond. Her research work, which focuses on the development of novel methods and materials that have promising tissue engineering and biomedical applications, has engendered 54 publications and thriving collaborations with several major institutions in the Chicago area, namely Argonne National Laboratory, the University of Illinois at Chicago Hospital and Rush University Medical Center.

In this interview, she takes us along on her journey as a chemist, her research work, motivations and advice to women chemists.

**What is your academic background? Is there a specific milestone/event that got you interested in chemistry?**

*Initially, I wanted to follow my father, who is a physics professor and I actually majored in physics for my undergraduate degree in Jilin University, China. During the course of my senior year project on the piezo-electric properties of azobenzene derivatives, I developed an interest in exploring the chemical compounds and their physical properties. So, I chose to do my doctoral research on the photoelectric properties of the azobenzene derivatives at Tokyo University, Japan. I then moved to the US and did my postdoctoral work at Los Alamos National Laboratory. I performed nanoscale analysis of self-assembled materials and developed them for applications in biosensing. This was my first exposure to the biological side which laid the foundation for my current work.*

**What kind of tools and techniques do you use routinely for your research?**

*We have a very inter-disciplinary research approach to developing novel nanomaterials and nanotechnology tools for various applications. We routinely work with cells, tissues, nanomaterials and*

*employ a variety of tools and techniques such as atomic force microscopy, surface engineering using bio-conjugation chemistry, molecular manipulation using photochemistry, and cell biology techniques.*

**What is your group currently working on?**

*One of our recent achievements is a method for precise quantification of cell surface proteins and performing on-site analysis of gene expression in individual cells and within intact tissues. These studies have application in drug discovery and validation. Another major thrust in our lab is understanding the structure-function relationship of collagen in clinical tissues. In collaboration with surgeons in UIC Hospital and Rush University Medical Center, we studied the nanoscale changes in collagen's structure and elasticity in pelvic floor connective tissues of women with the aim of devising better diagnostic methods of connective tissue disorders. A third major area is the conjugation of collagen with other nanomaterials such as carbon nanotubes, spider silk, etc. These collagen-based nanocomposite materials have interesting structural and physical properties that can induce the generation of neurons from human stem cells, and thus have applications in neural injury treatments.*

**What aspect of research (brainstorming ideas, collaboration, student mentoring, etc) excites you the most?**

*Coming up with new ideas and seeing them come to fruition is pretty exciting. We study phenomena that occur at the nanoscale. So, in that sense, it is pretty much basic science. But, we see our work impacting the real world through our collaborations with local hospitals, which is quite remarkable. On the other hand, although the work itself is exciting, what I find more fulfilling is mentoring students and being part of their transformation into confident and independent thinkers.*

**Academic research can get stressful. How do you manage the frustrations/challenges?**

*Things in academia can be frustrating and overwhelming on a daily basis. Apart from being organized, reminding oneself that the stressful moments will pass and being patient is key. Personally, listening to music is a great stress-buster.*

**What efforts do you make to achieve work-life balance?**

*Managing time is essential and it comes with experience and proactive planning. After I leave the lab at 7 PM, I spend as much time as possible with*

*my son. Starting at 10:30 pm or so after he goes to bed, I would be back to my work when it is needed. Whenever time allows, I love participating in his activities, at school or after school. I travel with family to other countries. It is a great way to relax, learn about new cultures and keep your mind fresh.*

**Do you have any words of wisdom or a favorite motto for young women in science?**

*I see a lot of smart, young women around me. I think it is important that they see themselves as smart and be confident, no matter what. For young scientists, choosing a research area that truly excites you is absolutely crucial because that excitement will temper some of the struggles of academic research.*

Dr. Wang has received funding from NIH, NSF, DOE, NASA and private foundations. She served on the grant Program Review Panels for NIH, DOE, ACS Petroleum Research Fund, Alzheimer Disease Foundation, among others. She is a frequent speaker and served as section chair and on Scientific Advisory Boards in national and international meetings. Recently, she was awarded the Visiting Scholarship funded by Japan Society for Promotion of Science and DAAD Visiting Faculty Scholarship in Germany. Dr. Wang also served as a member of the Editorial Advisory Board of Langmuir (ACS Publications). She currently serves as a member of the Editorial Board for Advances in Materials Science and Engineering (Hindawi Publishing Corp). In addition, she has contributed significantly to the establishment of the International Center for Sensor Science and Engineering (ICSSE) and the Center for Diabetes Research and Policy at IIT.



## CHICAGO ACS LOCAL CHEMISTRY OLYMPIAD 2015

The U.S. National Chemistry Olympiad (USNCO) program is a chemistry competition for high school students. It is intended to stimulate young people to achieve excellence in chemistry. The American Chemical Society (ACS) has sponsored the program since 1984.

### 1. Local Chemistry Olympiad Competition

Nearly 16,000 students throughout the US participate in Local Chemistry Olympiad Competitions. All high schools within the Chicago Section may nominate up to four students for the local Chemistry Olympiad exam which will be administered and coordinated by the Chicago ACS. The Chicago Section uses the Local Section Exam prepared by the ACS Chemistry Olympiad Examination Task Force. It is usually a 60-question, 110-minute written exam. Students can review past Local exams: <http://www.acs.org/content/acs/en/education/students/highschool/olympiad/pastexams.html> to study for the local competition.

This year, the Chicago ACS Section will hold the Local Chemistry Olympiad exams at two sites to provide easier access for students and on two or three days to avoid conflicts with other events. Loyola University Chicago will hold the Olympiad exam on Friday and Saturday March 6 and 7 in Flanner Hall on the Lake Shore Campus, 1032 West Sheridan Road, Chicago, IL 60660. Registration will start at 8:30 am and the exam will begin at 9 am. A second site will be at North Central College, 325 E. Benton Ave., Naperville, IL 60540 in the White Activities Center on Friday, March 13 at 4 pm with registration beginning at 3:30 pm. High School Chemistry Teachers are invited to nominate students via email at the following site: [http://chicagoacs.org/form.php?form\\_id=14](http://chicagoacs.org/form.php?form_id=14)

### 2. National Chemistry Olympiad Exam

The national exam involves three parts administered to more than 1,000 students nationwide selected by their local Section. The Chicago ACS Section will nominate 20 students to take the National Exam from the students receiving the highest scores on the Local Exam. Students can use past National Exams to prepare. All of the National exams are graded together, and the 20 top-scoring students on the National Exam are chosen to attend a Study Camp at the U.S. Air Force Academy (USAF). It is usually in June.

### 3. Study Camp for International Chemistry Olympiad

The 20 top scoring students from the National Exam spend two weeks at the USAFA study camp to undergo rigorous training. Based on their performance, four students are chosen to represent the United States at the International Chemistry Olympiad. The 2015 International Chemistry Olympiad will be held in Baku, Azerbaijan.

### Eligibility for the National Chemistry Olympiad Exam

- Students must be U.S. citizens or legal, permanent residents of the United States (green card holders) to take the U.S. national examination.
- High school students who will graduate no earlier than Spring of the year that they participate in the competition are eligible.
- Students must be under the 20 years of age on the first of July of the year of the competition.
- There can be no more than 2 students per High School nominated to take the National Exam.

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

## CHICAGO SECTION SCHOLARSHIP EXAM

The Chicago Section of the American Chemical Society will again be offering the High School Scholarship Exam. Every year in May the High School Education Committee administers an exam to students nominated by their teachers, and scholarships are awarded based on their ranking in the results:

\$5000 for 1st Place  
\$3000 for 2nd Place  
\$2500 for 3rd Place  
\$1500 for 4th Place  
\$1250 for 5th Place

In addition, we give scholarships for special purposes:

**The Marie Ann Lishka Memorial Scholarship** is awarded to the female student who scores the highest: **\$2000**  
**The Marshall S. Smoler Award** is given to the top-scoring student from Chicago Public Schools: **\$200**  
**The Bernard E. Schaar Award**, from the Chicago Chemists' Club, is given to the highest-scoring student from the City of Chicago: **\$500**

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Awards are also granted to the faculty who nominate the winning students.

This year the exam will be held at **North Central College, Goldspohn Hall, Room 20**, 31 N. Loomis St., Naperville, Illinois 60540 on **Saturday, May 23rd, 2015** from 10:00 a.m. to 1:00 p.m. The Metra train arrives 4 blocks from the college. The schedule can be found at [www.metra.com/Sched/bn/bn.shtml](http://www.metra.com/Sched/bn/bn.shtml).

The exam will be presented in two parts; each part will be seventy-five minutes in length. It will consist of questions and problems representative of a one-year high school chemistry course. There will be a break between exam periods. All exams will be graded as soon as possible.

### Eligibility

High school students in the Chicago area who are presently enrolled in the first year of high school level chemistry are eligible to take the Chicago ACS Scholarship Exam. Note that A.P. Chemistry is not considered a first year high school chemistry course.

### Nomination

Students must be nominated by a teacher to participate. Nominations comprise two parts:

- A form completed online by the teacher here: [http://chicagoacs.org/form.php?form\\_id=15](http://chicagoacs.org/form.php?form_id=15)
- A hard copy of the student's transcript, mailed to the Chicago Section ACS office:

1400 Renaissance Drive, Suite 312, Park Ridge, IL 60068  
Questions should be emailed to [acs.chicago.scholarship@gmail.com](mailto:acs.chicago.scholarship@gmail.com).

### Education Night

All award winners and their teachers are expected to attend the Education Night meeting of the Chicago ACS in September to receive their awards and be recognized.

PAUL BRANDT



## MAIRE S. CURIE GIRL SCOUT CHEMISTRY DAY PROGRAM

The Marie S. Curie Girl Scout Chemistry Day program is going into its fifth year. This day long program is designed 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. One hundred and twenty girls participate in this program annually.

The history of this program dates back to March of 2010 when an ad-hoc committee was formed with the members of the Primary Education committee in conjunction with members of the Women Chemists Committee. The ad-hoc committee was charged with the duty to develop a pilot Chemistry Badge program for the Girl Scouts of Greater Chicago and Northwest Indiana. The program was modeled after the Chemistry Merit Badge Program developed for the Boy Scouts of America. Research done on the web indicated that there are very few badges in the science and technical fields except for engineering and some science in an environment badge for the Girl Scouts. This program was developed to fill that need in the Girl Scout organization. The original members of this committee were: Amber Azadon, Cherlyn Bradley, Lubna Haque, Bob Hickerson, Josh Kurutz, Fran Kravitz, Margy Levenberg, Peggy Schott and Susan Shih. The committee chose the image of Marie S. Curie because she was both a very recognizable role model in science and she was the first woman chemist to achieve the Nobel Prize in chemistry. Each scout that takes this program receives a booklet which was written by Amber Azadon, Cherlyn Bradley, Ken Fivizzani, Lubna Haque, Fran Kravitz, Margy Levenberg, Peggy Schott and Susan Shih.

We are currently looking for women chemistry or women in a related area of science to help as a mentor 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. The program is scheduled from 9 a.m. until 3:30 p.m. A pizza lunch will be provided from noon to 1 p.m. You may volunteer at one or more than one location. The locations and dates are:

- **Saturday, April 11 at Valparaiso University in Valparaiso, IN**
- **Saturday, April 18 at North Central College in Naperville, IL**
- **Saturday, May 2 at College of Lake County in Grayslake, IL**

Contact Fran Kravitz by email at [fk1456@sbcglobal.net](mailto:fk1456@sbcglobal.net) if you are interested.

FRAN KRAVITZ

## "CHEM SHORTS" For Kids

### A Sugar Water Density Tower

Kids, you can use simple kitchen materials to make a colorful density column. This project uses colored sugar solutions with different concentrations. The solutions will form layers, from least dense, on top, to most dense (concentrated) at the bottom of the tower.

You will need a tall clear glass or jar (even better would be a jumbo test tube or graduated cylinder), pipettes or droppers, sugar, measuring spoons, food coloring or tablets, and 4 small cups.

Fill your cups with 1 cup of warm water and add food coloring. You want a different color for each density (for example blue, yellow, red, and green). Add 2, 4, 6, and 8 tablespoons of sugar to the 1st, 2nd, 3rd, and 4th cups. Label each cup with the amount of sugar added. Stir the water until the sugar is completely dissolved. You may need to supersaturate the sugar water solution to get all of the sugar to dissolve. Place the cup in the microwave for 20-30 seconds to warm the water and dissolve more sugar. Continue stirring until all of the sugar is gone.

Start with the cup with the most sugar (most dense). Using a pipette, dropper or back of a spoon, begin adding a first layer of sugar water to the jar. Carefully drip the next dense layer onto the surface of the first. The best technique is to place the pipette right above the surface of the first layer and against the glass. Slowly drip the next color onto the first. This will take a lot of patience. Go slow. The colors will begin to mix at first and then your original color will start to show. Repeat with the next dense color and the least dense color until you have stacked all of the colors.

What's going on? Density is mass (how many molecules are in an object) divided by volume (how much space an object takes up). As you add sugar to the water, more and more sugar molecules will take over the space, making the water more dense. The cup containing the 8 tablespoons of sugar will be the most dense, the cup with 2 tablespoons will be least dense. With this sugar water experiment, we put the most dense solution on the bottom. Why do you think that is? What will happen if you try it with the least dense solution on the bottom?

### TIPS

#### Supersaturated Solution

If you attempt to dissolve sugar in water, you reach a point where you cannot dissolve any more sugar. This is called a saturated solution. However, if you heat this solution, more sugar will dissolve. When the solution is cooled, the sugar will remain in solution. This is called a supersaturated solution, which is very unstable and will crystallize easily.

#### Density Column Mixup

What happens if you shake or mix up your sugar density column? The colors will not separate and go back to the rainbow, like a water-oil density tower. The sugar will mix evenly with the water.

#### Patience

This experiment takes a lot of patience. You won't see the color you are adding right away. Keep carefully dripping the sugar water solution and you will see it begin to stack up.

### References:

Steve Spangler Science:

<http://www.stevespanglerscience.com/lab/experiments/colorful-sugar-density-tower>

Anne Marie Helmenstine: <http://chemistry.about.com/od/chemistrydemonstrations/ht/rainbowinaglass.htm>

Submitted by DR. KATHLEEN CARRADO GREGAR

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

[http://chicagoacs.org/articles.php?article\\_category=1](http://chicagoacs.org/articles.php?article_category=1)

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The official newsletter of the Chicago Section American Chemical Society, The Chemical Bulletin, publishes news and information of interest to the Section's 4,433 members, who are professional chemists and others in related professions in industry, academia and government throughout greater Chicago. The mission of the Chicago Section is to encourage the advancement of chemical sciences and their practitioners.

### 2015 AD RATES

SIZE	DIMENSIONS	STANDARD RATE
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2/3 Page (2 column)	4.917" wide x 10" deep	\$530
1/2 Page	3.75" wide x 10" deep	\$500
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1/2 Column	2.333" wide x 5" deep	\$190
Business Card	3.5" wide x 2" deep	\$95

**We accept ads sent in jpg, tif, Indesign, Photoshop, or pdf formats.**

### 2015 EDITORIAL CALENDAR

ISSUE DEADLINE	COMMITMENT DEADLINE	COPY DATE	MEETING
April	Feb. 27	March 6	Apr. 23
May	March 21	March 28	May 15
June	April 24	May 1	June 18
September	July 24	July 31	Sept. 17
October	Aug. 28	Sept. 4	Oct. 23
November	Sept. 25	Oct. 2	Nov. 19
December	Oct. 16	Oct. 23	Dec. 11



#### Micron Analytical Services

COMPLETE MATERIALS CHARACTERIZATION

MORPHOLOGY CHEMISTRY STRUCTURE

SEM/EDXA, TEM/SAED, EPA/WDXA, XRD,  
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## CALENDAR

**March 6 and 7:** Chicago ACS Local Chemistry Olympiad at Loyola University. **See details in this issue.**

**March 8-12:** Pittcon Conference and Expo in New Orleans, LA. For further details see <http://pittcon.org/>

**March 12:** Chicago Section dinner meeting with Bassam Shakhshiri as the guest speaker. **See details in this issue.**

**March 12-15:** NSTA National Conference in Chicago to be held at McCormick Place, <http://www.nsta.org/conferences/national.aspx>

**March 13:** Chicago ACS Local Chemistry Olympiad at North Central College. **See details in this issue.**

**March 14:** Illinois Science Council – Pi Day Pi K Fun Run/Walk. 8:30-11:30 am. At Fleet Feet Sports in four locations of Chicago and Elmhurst. Cost is \$31.41 (\$px10) For further details see <http://www.illinois-science.org>

**March 22-26:** The 249th National ACS Meeting in Denver. The theme will be "Chemistry of Natural Resources." See details at <http://www.acs.org/content/acs/en/meetings/spring-2015.html>

**April 11:** Marie S. Curie Girl Scout Chemistry Day – Valparaiso University. **See details in this issue.**

**April 18:** Marie S. Curie Girl Scout Chemistry Day – North Central College. **See details in this issue.**

**April 23:** Chicago Section dinner meeting.

**May 2:** Marie S. Curie Girl Scout Chemistry Day – College of Lake County, Grayslake. **See details in this issue.**

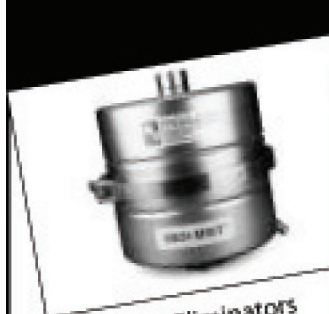
**May 15:** Chicago Section dinner meeting.

**May 16:** \$tart \$mart at Loyola University for women chemists. **See details in this issue.**

**May 23:** Chicago Section Scholarship Exam at North Central College. **See details in this issue.**

**May 27-30:** Great Lakes Regional Meeting in Grand Rapids, MI. The theme is "Chemistry: A Grand Enterprise." For further details see <http://www.jglcrm2015.com>

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