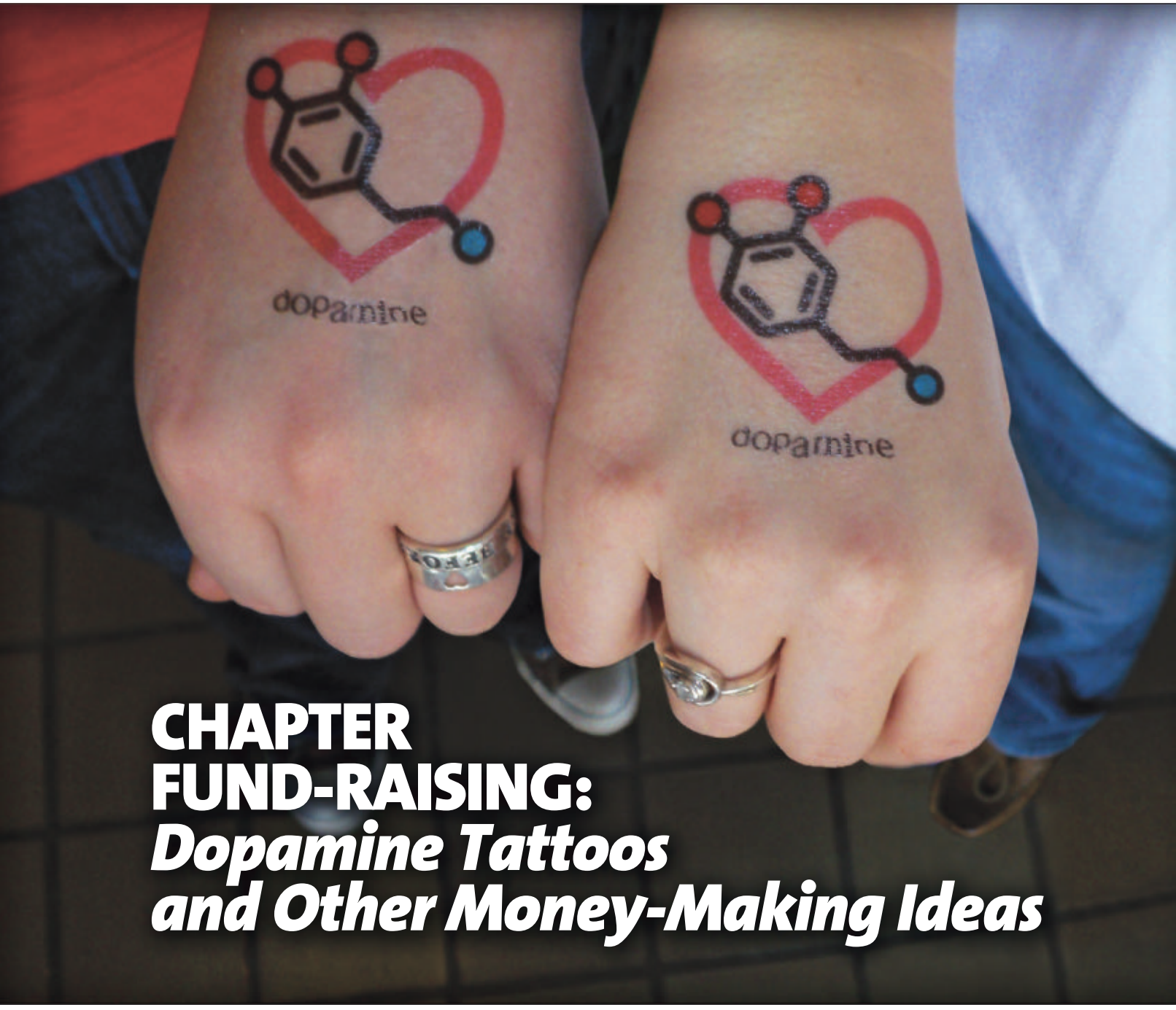
inChemistry
THE MAGAZINE FOR ACS STUDENT MEMBERS
February/March 2012




# CHAPTER FUND-RAISING: *Dopamine Tattoos and Other Money-Making Ideas*

ALSO IN THIS ISSUE

- How to Develop a Successful Middle School Outreach Program
- Tips for Surviving Your First ACS Poster Session
- Unexpected Places a Chemistry Degree Can Take You

ACS Chemistry for Life®

ACS STUDENT MEMBERS CELEBRATE 75 YEARS 1937–2012

inChemistry

**EDITOR** Nancy Bakowski

**MANAGING EDITOR** Lori Betsock

**EDITORIAL ASSISTANT** Robin Y. Lindsey

**COPY EDITORS** Eric R. Stewart
Karen Müller

**DESIGN & PRODUCTION** Plum Creative Services

**DIRECTOR, EDUCATION DIVISION, ACS**
Mary M. Kirchhoff

**ASSISTANT DIRECTOR FOR HIGHER EDUCATION, ACS**
Jodi L. Wesemann



Published for student members by the American Chemical Society Education Division at 1155 Sixteenth Street, NW, Washington, DC 20036.

ACS Chemistry for Life®

# inChemistry

THE MAGAZINE FOR ACS STUDENT MEMBERS

Volume 20 • Number 3
February/March 2012



PHOTO COURTESY OF UNIVERSITY OF WESTERN KENTUCKY.

Cover: Dopamine tattoos, a University of Western Kentucky (Bowling Green) ACS student chapter fund-raiser. 12

## CONTENTS

# EDITORIAL: Advancing Chemistry and Communicating Chemistry

BY BASSAM Z. SHAKHASHIRI

In our studies, we are immersed in exploring the wonders of science. We use the world of formulas, equations, and technical language — all critical to successful communication with each other. But the skill of communicating *outside* the classroom and laboratory is equally essential. Each of us in the chemical sciences must become adept at explaining the relevancy of chemistry to the non-scientist, be they family members, friends, or government officials.

The importance of lay communication cannot be overstated. Through communication we inform, educate, engage, advocate, and persuade others. We advance chemistry through research, education, and innovation, all of which require focus, diligence, perseverance, creativity, and funding. The better we explain our science to others and convince them of the progress that chemistry offers, the better our chances of adding to their appreciation of science and its role in society.

One of my passions is demonstrating the benefits and progress that chemistry can provide to society. That's why I chose *Advancing Chemistry and Communicating Chemistry* as my ACS presidential theme. Let me share some details about two initiatives we have undertaken this year.

Many of us are at land-grant schools and may know that 2012 is the 150th anniversary of the Morrill Land Grant Act. This Act gave federal lands to states as a means to raise money to establish colleges that focus on teaching agriculture, science, and engineering in addition to liberal arts. ACS will celebrate this sesquicentennial with a retrospective and a prospective look at chemistry. For the retrospective, I have sent letters to land-grant institutions asking them to share what their chemistry departments have accomplished over the past 150 years and how these accomplishments have contributed to society. On the prospective side, at this year's ACS national meetings there will be special symposia to address the future of chemistry and society and the role of the chemical sciences in addressing human needs.

Another initiative is the appointment of a blue-ribbon commission to examine the purposes of graduate education in the chemical sciences and the needs and aspirations of graduate students. The expectation for this commission is to help find ways to best use our country's vast educational, industrial, and government resources to successfully prepare students for their professional careers.

The ACS mission is "to advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people." I invite you to join me so that together we can do our best for ACS, for science, and for society. Your participation is essential.

Thank you and best wishes. inc

**Bassam Z. Shakhashiri**, *President of the ACS, is a professor of chemistry at the University of Wisconsin-Madison and the author of the multi-volume series* Chemical Demonstrations: A Handbook for Teachers of Chemistry.

## ASK ACS

**Do you have any questions relating to ACS student chapters or other programs at ACS? If so, e-mail us at undergrad@acs.org and we'll find your answer.**

**Q: Our chapter just got reinstated a few months ago, so we have not submitted a chapter report yet. Are we eligible to apply for any of the chapter grants?**

*A: New and newly reinstated chapters are not required to submit a chapter report before applying for a chapter grant, but your chapter is required to have at least six ACS student members who have up-to-date ACS memberships.*

**Q: Our student chapter is unable to attend the 243rd ACS National Meeting next month in San Diego, CA. We heard that a video featuring ACS student chapters is shown and distributed at the meeting. Can we obtain a copy of the chapter video?**

*A: Each Chapter Awards Ceremony at the ACS spring national meeting features a video honoring the accomplishments of ACS student chapters. Each award-winning chapter receives a copy of the video. If your chapter wishes to receive a copy of the video, send an e-mail to undergrad@acs.org. If copies of the video are still available, we will send the DVD to your faculty advisor in April.*

**Q: When I renewed my ACS membership, I received an ACS mug. Unfortunately, the mug was chipped. How can I obtain a replacement?**

*A: Contact service@acs.org and an ACS representative will assist you.*

**Q: I am the faculty advisor for my chapter and would like some guidance on what my role should be. Are any resources available to me?**

*A: A Faculty Advisor Manual is available upon request by sending an e-mail to undergrad@acs.org. Also, there are many resources on the web at www.acs.org/undergrad — click on the Educators and Faculty link.*

**Robin Lindsey** *is a program administrator in the ACS Undergraduate Programs Office. She finds Ask ACS answers for you.*

# Using ACS DGRweb to Find Research Opportunities and Graduate Programs

BY ACS STAFF

Imagine that your undergraduate research focused on molecular spectroscopy, and you wanted to continue your study in this area while in graduate school. Where can you quickly and easily find out which schools offer such graduate-level opportunities? You could use an online search engine, but then you would have to spend precious time wading through thousands of hits to piece information together.

But why do this when the answers are right at your fingertips and seconds away... on the ACS website? Just go to **www.acs.org/dgrweb** and search ***DGRweb 2011***. This free resource enables you to quickly and easily search and obtain comprehensive information about graduate research and researchers at universities in North America. You can run searches on ***DGRweb*** based on region, faculty, institution, and fields of specialization.

## Search for faculty

In the **Faculty Search** section of ***DGRweb***, you type "nanochemistry" into the "specific research" box, and within seconds, you get a listing of names of faculty dealing with molecular spectroscopy in their research. For each of these faculty members, you can further retrieve information on their specific research area, academic rank, and gender, along with titles of all papers published within the past two years, and contact information including direct links to their e-mail address and website. You can narrow the search further by entering a specific geographic region.

## Search for institutions

To locate departments that specialize in nanochemistry, go to the **Institution Search** section of ***DGRweb*** and type "nanochemistry" into "fields of specialization." Within seconds, you will receive a list of institutions along with links to all departmental contact information, statistical data on the number of faculty and graduate students, and a complete list of faculty active in graduate research.

And that's not all. If you're interested in seeing whether there have been any changes in a graduate program in a selected department within the past 12 years, ***DGRweb*** can provide that information also. The site includes access to the complete DGR databases from 1999 to 2009!

***DGRweb*** and the printed 2011 edition of the ***ACS Directory of Graduate Research*** are the most comprehensive sources of information on faculty and their research at graduate programs in chemistry, chemical engineering, biochemistry, and related chemical sciences in the U.S., Canada, and Mexico. Both contain listings for more than 660 academic programs, 10,000 faculty members, and 90,000 publication citations.

Try searching ***DGRweb*** today. Let ACS know what you think by completing the 60-second survey. This survey provides ACS staff with data to help improve the future editions of ***DGRweb***. And... while you are surfing ***DGRweb***, do not forget to bookmark it. More than likely, you will be coming back for more information! inc

### In *DGRweb*

**FACULTY SEARCHES INCLUDE:**

- **specific research area**
- **academic rank**
- **gender**
- **state**
- **direct links to faculty e-mail addresses and web pages.**

**INSTITUTIONAL SEARCHES INCLUDE:**

- **all departmental contact information**
- **statistical data on the number of students and faculty in the department involved in graduate research.**

The online, searchable version of the *ACS Directory of Graduate Research* (DGRweb) is a free resource available on the ACS website at **www.acs.org/dgrweb**. inc


ISTOCK

# Undergraduate Programs at ACS National Meetings

## *What to Expect… and Why You Should Go*

BY RACHEL HURLEY

Have you ever wondered what it's like to attend an ACS national meeting? Last year, I was among the nearly 2,500 undergraduate students who traveled to sunny Anaheim, CA, to participate in the undergraduate program at the 241st ACS National Meeting. It was a fun and motivating learning experience that I highly recommend to others.

### Making the most

The undergraduate program typically runs on Sunday and Monday, the first two days of the national meeting. It's packed with events for undergraduate chemistry students and opens with a breakfast early Sunday morning. Since the meeting was in Anaheim — home of Disneyland — the breakfast featured (what else?) Mickey Mouse Rice Krispies treats.

The big reason to attend this breakfast (aside from the free food and great ACS freebies) is that it gives undergraduates the opportunity to meet one another. Students from the U.S. and abroad travel to ACS national meetings, and most of us are making the journey for the first time. We represent many different universities and have a wide range of career interests.

When you look at the on-site meeting program, you'll see that ACS national meetings have thousands of program events. This would be totally overwhelming, except that right after breakfast, you can attend the event "Making the Most of Your First ACS National Meeting." It features a panel of students and professors who share highlights of their past experiences at national meetings and provide tips on which events to attend and how to fully benefit from the meeting.

One point the professors really emphasized to us was how important it was in the current job market to take advantage of networking opportunities. They encouraged us to mingle with other meeting attendees and to explore our interests by attending symposia and workshops at the meeting.

### Preparing for the future

Primed with the importance of developing both technical knowledge and soft skills, we headed to the event titled "Careers in Chemistry — Alternative Careers." Every undergraduate program at ACS national meetings features similar career symposia, and they're definitely worth checking out. We heard Kawaljit Tandon talk about studying aromatics and flavors for the wine industry. Sandra Thompson shared how she became a patent attorney, highlighting the different options for a trained chemist within the world of patents. Finally, Alfredo Ayala described his journey as a Walt Disney Imagineer. These diverse panelists gave us a strong insight into their respective fields.

Later in the day, the "Graduate School Reality Check" presentation taught us how to prepare for the graduate school application process, and we also received tips on what to do once we were accepted into a program. The event emphasized the importance of undergraduate research, explained the application process, and described what life in graduate school was really like. Both the "Networking Social with Graduate School Recruiters" and the "Graduate School Recruiting Breakfast" provided opportunities to talk with professors, recruiters, and students from graduate programs from across the country.

Other career-related events on Sunday included "Professional Development Symposium — Get Inspired to Develop Your Career Now!", "Globalizing Education: Graduate School Opportunities in North America and Europe," and "Networking Reception with Industrial Chemists." All of the events provided us with an appreciation of the diverse possibilities for our future careers.

### Furthering community outreach

Because 2011 was the International Year of Chemistry, the undergraduate program also emphasized outreach events and demonstrations. ACS student chapter members came together at the Chem-Demo Exchange to share their top demonstrations and to hear about new outreach ideas. What I remember most about the event was seeing demos of elephant soap, lip gloss, and bubble makers, and also feeling lots of excitement as a huge group of undergraduates gathered to swap ideas.

### *It's a Scientific Phenomenon*

ACS national meetings occur twice a year in various cities around the U.S., and each one attracts an estimated 11,000 to 17,000 chemists, chemical engineers, academicians, graduate and undergraduate students, and other related professionals. Each meeting features more than 7,000 presentations organized into technical symposia that highlight important research advances. inC



FAR LEFT: **During his Eminent Scientist Lecture, David Phillips, President of the Royal Society of Chemistry, used many dramatic demonstrations to illustrate the power of light.** CENTER LEFT: **Chapter members from the University of Puerto Rico, Mayagüez pose with their chapter poster at Sci-Mix.** CENTER RIGHT: **California State University, Fresno students display their Minnie Mouse ears.** FAR RIGHT: **Members of the Newberry College (SC) student chapter display their plaque from the Chapter Awards Ceremony.**

The "Making Demo's Matter" and the "Outreach Workshop: NCW Ideas" events provided unique ideas for engaging students in demo shows and taught us how to challenge the students to think about the science and chemistry involved. Both were hands-on opportunities to learn about leadership.

## Gaining knowledge

At each ACS national meeting, the undergraduate program features an Eminent Scientist speaker. In Anaheim, the speaker was David Phillips, President of the Royal Society of Chemistry. He began his presentation, "A Little Light Relief," with a bang — literally — as he showed us the power of light through multiple demonstrations. He highlighted the many roles of light in the medical field, including the various uses of light to treat disease. The lecture was informative, exciting, interactive, and entertaining. Students met with Phillips afterward and received souvenir glow sticks as mementos of the event.

The program also featured the Technical Symposium "Chemistry of the Gulf Coast Spill." This event provided another opportunity to hear from prominent researchers in the chemistry field. Amy McKenna and Edward Overton highlighted chemistry's role in the multidisciplinary approach used to combat the oil spill disaster. We learned about the action of dispersants and heard about some of the oil spill's long-term environmental impacts.

## Celebrating together

The ACS Student Chapter Awards Ceremony brought together more than 1,000 undergraduates whose chapters received special recognition for the 2009–2010 academic year. We saw a short video celebrating the impact that student chapters have had on their campuses, in their communities, and on ACS itself. The ACS presidential succession joined us to share in the excitement, reminding us to continue serving as Chemistry Ambassadors.

After the ceremony, we journeyed to the Disneyland Hotel Grand Ballroom for the Undergraduate Social. The evening began with a bingo ice breaker and time to network with one another. We enjoyed a nice spread of food and, later in the evening, great music. Many students joined together on the dance floor and continued the celebration late into the night!

## Communicating our research

The highlight for many undergraduate students when they travel to an ACS national meeting is the opportunity to present their research. At the Undergraduate Research Poster Session, over 1,000 students shared their research with their peers, faculty, and meeting attendees. We learned about one another's research and discussed our experiences. The undergraduate programming concluded with the poster presentations for successful student chapters at the Sci-Mix session, as 94 chapters shared what they had found most important in starting, developing, and maintaining active chapters. Throughout the national meeting, it was clear that the undergraduate students attending the meeting were motivated and looking to benefit from the experience. Seminars and lectures had standing room only; graduate school recruiters were surrounded by interested students; and multiple meeting attendees commented on how impressive the undergraduate students had been! With the sunny California weather and the magical environment of Disneyland — the "happiest place on Earth," as it calls itself — the undergraduate programming was a huge success! We had a variety of opportunities to network, exchange ideas with leading experts in the field, develop soft skills, expand our outreach, and prepare for the future! We left Anaheim with a greater appreciation of the role chemistry plays in the global economy, health, safety, and the environment.

Upcoming ACS national meetings will be in San Diego, CA, March 25–29, 2012, and in Philadelphia, PA, August 19–23, 2012. I encourage you to start making plans today to attend one of these meetings. The undergraduate programming promises to be exciting, fun, and beneficial to all involved! inc

**Rachel Hurley** *graduated from Augustana College in 2011 and was the student liaison to the 2011 Society Committee on Education Task Force on Undergraduate Programming.*

ACS STUDENT MEMBERS CELEBRATE 75 YEARS 1937 – 2012

# 243rd ACS National Meeting

# UNDERGRADUATE

*Featuring Special Programming on the Chemistry of Life*

## SUNDAY, MARCH 25

**Undergraduate Hospitality Center**
8:00 a.m. – 5:00 p.m.

**Making the Most of Your First ACS National Meeting**
8:00 – 8:45 a.m.

**Careers in Academia Workshop**
9:00 – 10:30 a.m.

**Technical Symposium: Chemistry in a Cup o' Java**
9:00 – 10:30 a.m.

**Chem Demo Exchange**
10:30 a.m. – 12:00 noon

**Graduate School Reality Check, Step I: Getting in**
1:00 – 2:00 p.m.

**Graduate School Reality Check, Step II: You're in – Now What?**
2:00 – 3:00 p.m.

**Symposium: International Year of Chemistry Student Chapter Projects and the United National Framework Convention on Climate Change**
2:00 – 4:00 p.m.

**Networking Social with Graduate School Recruiters**
3:00 – 5:00 p.m.

**Making Demos Matter Workshop**
3:30 – 5:30 p.m.

**Student Chapter Awards Ceremony**
7:00 – 8:30 p.m.

**Undergraduate Social**
8:30 – 11:00 p.m.

## MONDAY, MARCH 26

**Undergraduate Hospitality Center**
8:00 a.m. – 5:00 p.m.

**Graduate School Recruiting Breakfast**
8:00 – 10:00 a.m.

**Outreach Workshop: Chemists Celebrate Earth Day Ideas**
9:45 – 11:15 a.m.

**Technical Symposium: Nuclear Power Generation – Lessons from Fukushima Daiichi and Future Directions**
9:45 – 11:15 a.m.

**Undergraduate Research Poster Session**
12:00 noon – 2:30 p.m.

**Eminent Scientist Lecture**
3:00 – 4:00 p.m.

**Networking Reception with Industrial Chemists**
4:00 – 5:30 p.m.

**The Kavli Foundation Lecture**
5:30 – 6:30 p.m.

**Sci-Mix/ Successful Student Chapter Poster Session**
8:00 – 10:00 p.m.

## TUESDAY, MARCH 27

**Chemistry and the Environment Film Series: *Climate Refugees: The Human Face of Climate Change***
12:00 noon – 2:00 p.m.

# PROGRAM

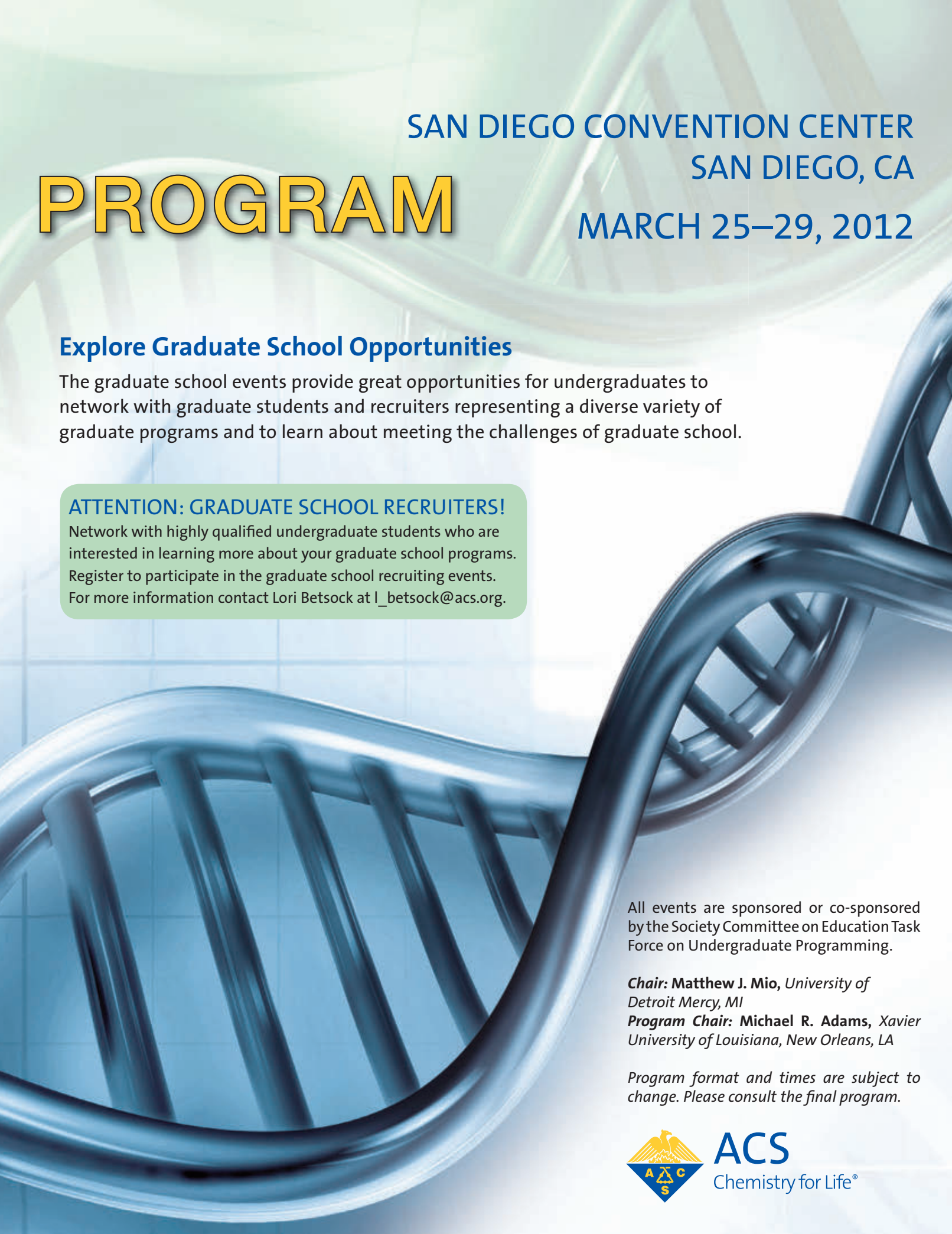
SAN DIEGO CONVENTION CENTER
SAN DIEGO, CA
MARCH 25–29, 2012

## Explore Graduate School Opportunities

The graduate school events provide great opportunities for undergraduates to network with graduate students and recruiters representing a diverse variety of graduate programs and to learn about meeting the challenges of graduate school.

### ATTENTION: GRADUATE SCHOOL RECRUITERS!

Network with highly qualified undergraduate students who are interested in learning more about your graduate school programs. Register to participate in the graduate school recruiting events. For more information contact Lori Betsock at l_betsock@acs.org.



All events are sponsored or co-sponsored by the Society Committee on Education Task Force on Undergraduate Programming.

***Chair:*** **Matthew J. Mio,** *University of Detroit Mercy, MI*
***Program Chair:*** **Michael R. Adams,** *Xavier University of Louisiana, New Orleans, LA*

*Program format and times are subject to change. Please consult the final program.*

ACS
Chemistry for Life®

# Present Your Undergraduate Research Poster at the 244th ACS National Meeting

## PHILADELPHIA, PA • AUGUST 19-23, 2012

Be Revolutionary!

***Join more than 12,000 chemical science and engineering professionals at the 244th ACS National Meeting.***

**To be considered for a presentation, submit an abstract via the Program and Abstract Creation System (PACS)**

**ABSTRACT DEADLINE: MARCH 19, 2012**

**Submit your abstract at http://abstracts.acs.org**

**For more information about the Undergraduate Program in Philadelphia, e-mail undergrad@acs.org or go to www.acs.org/undergrad.**

ACS STUDENT MEMBERS CELEBRATE 75 YEARS 1937–2012

Portrait of Benjamin Franklin Copyright Michael J. Deas

ACS Chemistry for Life®

www.acs.org

# S-T-A-R-T SCIENCE!

## *How the Yeshiva University ACS Student Chapter Developed a Successful Middle School Outreach Program*

BY ERIC STEWART

Yair Saperstein knew he was on the right track when he opened his e-mail inbox one day last January.

As president of the outreach committee within the ACS student chapter at Yeshiva University (YU) in New York City, Saperstein had sent out an e-mail request to the student body at YU to participate in an educational outreach activity at a local intermediate school during the spring of 2011.

"I expected to get maybe six or seven responses," recalls Saperstein, "and ended up with an enormous amount of replies — about 70." Soon the chapter had a virtual army of people who wanted to help.

### A rapid START

"We're a relatively new chapter, and basically still in our infancy," explains Ari Cuperfain, ACS student leader and president of YU's ACS student chapter. "The 2008–2009 academic year was our first year as a real ACS chapter, and we knew that the Physics and Engineering Club had successfully put on physics shows at a local elementary school and a middle school in the past. So we started off doing magic shows at the elementary school as our chapter's major activity. But this year, things really took off with our START (Students, Teachers, and Researchers Teach) Science! program."

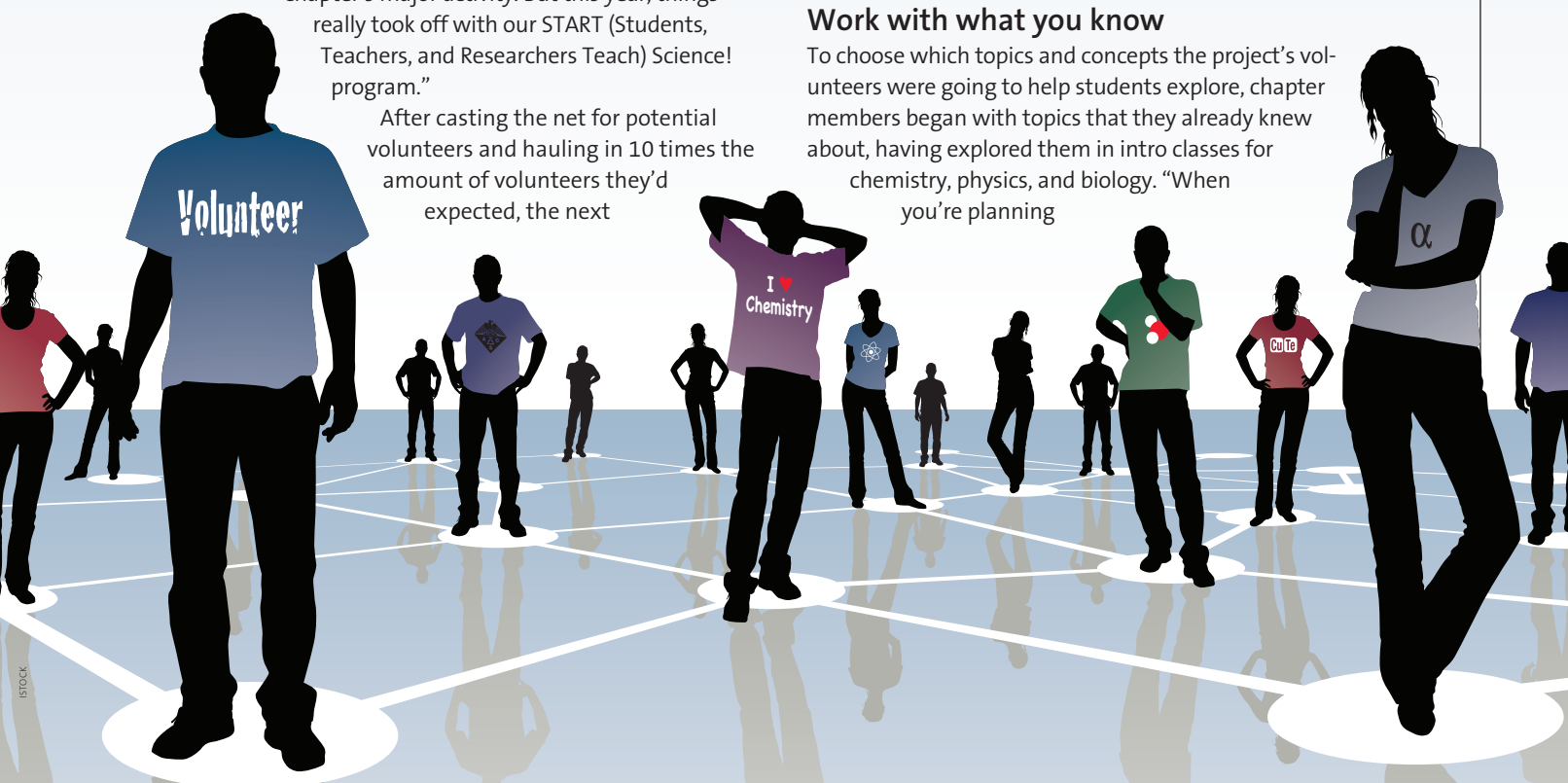
After casting the net for potential volunteers and hauling in 10 times the amount of volunteers they'd expected, the next step was to figure out how to put their people power to good use. "It was our chapter's faculty advisor, Raji Viswanathan, who had the idea of splitting the volunteers into different sections," recalls Saperstein, "so that each group could teach a two-week module. That way, we wouldn't overwhelm the school when our teams arrived."

### Work with what you know

To choose which topics and concepts the project's volunteers were going to help students explore, chapter members began with topics that they already knew about, having explored them in intro classes for chemistry, physics, and biology. "When you're planning

### *The Take-Home Lesson: Why the START Program Was So Successful*

- Chapter members and the faculty advisor met with the principal in person to discuss the proposed program.
- Chapter members visited the classroom on a regular basis so that the students looked forward to their visits.
- Presentations were at the appropriate level for students.
- Chapter members formed teams that developed and taught a particular module so responsibilities were shared by all rather than shouldered by only a few members.
- Teams created lessons that could be reused with another group of students.




ISTOCK

## *Meeting with the School*

**WHEN YOU MEET WITH THE PRINCIPAL OR TEACHER, BE SURE TO COVER THESE KEY DISCUSSION POINTS:**

- Your student chapter is interested in helping students learn science.
- The program should focus on one grade, rather than all the students at the school. Keep in mind that the principal or teacher will likely select the grade where chemistry or physical science is taught.
- Ask which topics are covered in science in that grade because it's important that the program will be lessons in the curriculum.
- Express your willingness to design activities to match classroom topics or offer to work with small groups of students during labs that the teacher plans and leads.
- Explain how your program will reinforce vocabulary or science concepts the teacher has taught. This will catch students' attention and give them practice applying their learning.
- If possible, offer to have enough members of your student chapter come to the school at once so that you can each work with a small group of students.

**If the principal or teacher says no... move on to another school and try again. Your student chapter has something wonderful to offer younger students. Consider that it is difficult for school leaders to take a chance on people who come into their school. However, when you are able to build a relationship with a school, your chapter will likely be invited back for years to come.**



something like this from scratch," observes Cuperfain, "you definitely need to allow some time to figure out exactly what you're going to do, and how you're going to explain the science."

As Saperstein recalls, the members of the module teams actually had some very interesting internal debates among themselves about the best way to explain certain concepts. "We learned that when we started looking at these concepts from outside our normal academic setting, it took some extra thought. Later, when we were working with the kids, we found that analogies and metaphors worked great at getting across key ideas."

PHOTO COURTESY OF YESHIVA UNIVERSITY.

**Zachary Goldstein, YU ACS student chapter board member, prepares a solution of copper and zinc for an experiment in the electrochemistry module.**

PHOTO COURTESY OF YESHIVA UNIVERSITY.

**Using a circuit board, LEDs, resistors, capacitors, and wires, the electrical engineering module team helped students learn how the intensity of light can be affected by various factors. Working with the students are YU ACS student chapter members Yosef Hoffman (far left) and Ari Cuperfain (second from left).**

Each section module had its own leader, who organized volunteers involved with that module and oversaw the development of a lesson plan and hands-on activities. The teams spent many hours rehearsing and practicing the activities, and finding new options for processes and materials that might improve the results.

"For example," notes Saperstein, "in our first module, on forensics, we did fingerprint analysis, using cyano-acrylate fuming to make fingerprints develop on a microscope slide. It took us a little while to figure how to optimize the reaction." The team eventually discovered that if they added NaOH to the cyano-acrylate (they actually used superglue), the reaction worked much faster.

After the teams had developed the proposed lesson plans and activities, it was time to find a school that wanted to participate. Saperstein and Viswanathan, who is also associate dean of academic affairs at YU, dropped by a middle school near the university, Eleanor Roosevelt Intermediate School (I.S. 143), to meet with its principal and tell her about the proposed program. "After about 10 minutes," says Saperstein, "she called in her science assistant principal, and they loved the program so much we started the following week. There was no red tape at all."

One of the most beneficial aspects of the number of volunteers involved was that the chapter was able to have one volunteer at each table in the classroom, so the student-to-teacher ratio was roughly 4:1, allowing the young students much more direct interaction with the college-age volunteers.

## Excitement in the air

"At the first session, we could already sense excitement among the students," says Saperstein. "But when we came back the following week, the students we had been working with were not only excited to see us, but some actually came in with interesting questions, activities, and experiments they thought might be related to what we'd been doing."

## A Broad Spectrum of Hands-On Science

In START Science!, Yeshiva University students designed and implemented science curricular modules at New York City's I.S. 143 over a seven-week program:

- **Forensic Chemistry—** The students used chromatography to identify the pen used to write an incriminating letter. The group caught the "perpetrator" by learning how to develop fingerprints (such as those left on the pen) using superglue.
- **Electrochemistry—** After experimenting to see which vegetables contain aqueous electrolytes (demonstrated by their ability to power a light bulb), the group performed spontaneous and non-spontaneous electroplating, using CIC power supplies, copper, and zinc.
- **Mechanical Energy—** Students learned about the Law of Conservation of Energy using food and money as analogies, and demonstrated the conservation of mechanical energy using rubber balls. They also explored the concept of friction using a block on an inclined plane, and graphed the results.
- **Bacterial Growth—** Students prepared bacterial cultures by pressing their thumbs onto agar plates, and by swabbing various areas of the classroom. There were four groups of thumb variables, including unwashed control thumbs! After incubating the cultures, the group found which cleaners were best at eliminating bacteria, and which surfaces contained the most bacteria.
- **Mammalian Anatomy—** Here, students explored the structure and function of the heart, with a guided dissection of sheep hearts. The students were encouraged to think about how each of the heart's structures contributes to its functions.
- **Bridge Building—** Here, students explored the structural features of different types of bridges, such as arch, beam, suspension, and cable-stayed. The students then competed in groups to construct the sturdiest and most efficient bridge out of gumdrops and toothpicks.
- **Electrical Engineering—** In the final module, students investigated basic electronics concepts and circuitry, including resistors, LEDs, capacitors, and wires. Using circuit boards, students learned the basics of short circuits, tested the effects of resistors, and observed the decay of current while capacitors are charged.

## Tips for Working with Younger Students

- Demos are a great way to focus the attention of the whole group, but be sure to give students practice doing hands-on activities. You want the students to realize that they can do science.
- Praise scientific thinking, good questions, and excellent lab practices as you see them.
  - When working with students in grades K–5, point this out to everyone in a small group or to the whole class, and soon you will see that others are doing this good behavior, too.
  - When working with students in grades 6–12, say this to the individual students or in small groups. When commenting on something wonderful you observed to the whole class, be general so that you do not inadvertently call a student out.

Several YU students attended throughout the series of modules, including Saperstein and Cuperfain. As a result, there was a sense of continuity, and lessons learned by the team running the current module were readily passed on to the next team. In addition, notes Cuperfain, "We always had a teacher in the room whenever we taught, so we never had the class to ourselves or had to get special permission from the students' teachers or parents."

Just as the students at I.S. 143 were excited, the activity was also creating a lot of enthusiasm among the YU students involved. "Everyone was enthralled," recalls Saperstein. "We actually had about two times the number of YU students volunteering at the last session as we'd had at the first."

The YU chapter has already started planning for the coming year. "Based on our success last year," notes Saperstein, "we hope to expand the program. This year we only did programs once a week, on Fridays. But because so many other YU students wanted to help, we're hoping we can add more sessions on other days of the week."

As another sign of the positive response from the young students, Saperstein recalls that one of them asked about the possibility of going on a science-related field trip. After hearing about the student's question, one of the ACS student chapter's past presidents, Chanan Reitblat, came up with the idea to help the kids learn about the science involved in magnetic resonance imaging (MRI) and nuclear magnetic resonance (NMR) spectroscopy. The chapter members are now looking into the viability of taking the students on a field trip to a local hospital.

### Seeing the big picture

The communities served by the school where YU has been conducting its outreach work are not affluent, observes Cuperfain. "We already knew that there was a real demand for hands-on science activities for kids. In fact, at the elementary level, there are no teachers who focus solely on science, so there was an opportunity to make a big impact on our community, using our own resources and support from YU."

"We've gotten great feedback from the teachers and administrators," says Cuperfain, "and are hoping to spread the word with other ACS student chapters interested in learning from our activities. If other ACS chapters want to try implementing similar experiments, they can contact the YU student chapter at ycamchem@gmail.com." Saperstein echoes the sentiment, adding, "It's been a really great experience, a lot of fun, and very rewarding, We're looking forward to doing even more in the coming year."

**Eric Stewart** *is a freelance writer and editor living in Arlington, VA.*

# Show Me the Money, Honey

## *Fund-Raising Ideas for ACS Student Chapters*

BY ALLISON BYRUM PROFFITT

Raising money can be a challenge for ACS student chapters, but it's also a necessity. We polled 45 chapters to see what's working, and came away with some real gems. From the tried-and-true to the completely new, you're bound to find ideas here to line your coffers!

### Fund-raising 101

First, the goal of fund-raising is to make money. That might seem obvious, but take a closer look at your fund-raising efforts and ensure that they are, in fact, making you money. You should not be providing any goods or services at cost as part of your fund-raising activities; if you can't charge a reasonable markup, then find other options. Also, be sure to consider the competition. If the campus bookstore sells model kits for $10 and you can only find kits for $8.50, then you won't be able to both make money *and* be competitive.

Your goal is to make money as efficiently as possible, so be conscious of your members' time as well. Finally, have a plan and a timeline for your fund-raising efforts. Know exactly how you hope to spend the money, how much you need, and your deadlines. Everyone will be much more motivated!

### Free money

Before you sell your first tchotchke, make sure you are taking advantage of the grant programs available to you. ACS offers grants for active student chapters in good standing. Applications are straightforward, but be sure to follow the instructions and provide all of the information requested by the due date. Otherwise, you'll waste your stamp ... and the reviewers' time as well!

Here are descriptions of the various grants that ACS offers — so make sure to apply for any that are relevant to your chapter:

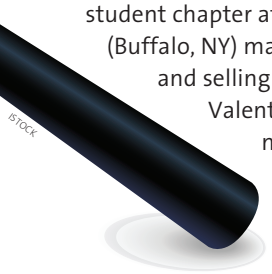
- **Starter Grant for ACS Student Chapters at Two-Year Colleges:** Students at two-year colleges can receive starter grants in the amount of $500 to start or reactivate an ACS student chapter.
- **National Meeting Travel Grant:** ACS awards grants to help active ACS student chapters pay for registration fees, lodging, and/or transportation costs associated with ACS national meetings.
- **Undergraduate Programming at Regional Meetings Grant:** Chapters can receive up to $2,800 to develop undergraduate events and activities for ACS regional meetings.
- **Community Interaction Grant:** Active student chapters are eligible to receive up to $500 to help improve the science learning experience of minority children through community interactions and projects.
- **Innovative Activities Grant:** Active chapters are eligible to receive up to $500 in matching funds to support new and innovative chemistry-related projects.

### Feed your brain

Food fills an ever-present void for college students — one in their stomachs! And savvy chapters are making the most of the hungry masses. For example, at

LEFT: **Chapter members from Adams State College (Alamosa, CO) sell pizza at their college's club fair.** CENTER: **On Mole Day, chapter members from the University of Colorado, Boulder raise money by selling Periodic Table cupcakes.** RIGHT: **Spring Hill College (Mobile, AL) co-sponsors an annual crawfish boil with the ACS Mobile Local Section.**

Millikin University (Decatur, IL), the ACS fridge is stocked with weekly trips to Sam's Club. Snacks and beverages are sold on the honor system to students, generating about $200 a semester in profit for the chapter. Meanwhile, the student chapter at Canisius College (Buffalo, NY) made $700 making and selling chocolate roses for Valentine's Day. To raise money for your chapter, try selling:




◆ Periodic table cupcakes, cookies, or brownies ◆ Candy ◆ Chips ◆ Nachos ◆ Burritos ◆ Soda ◆ Bottled water ◆ Coffee ◆ Energy bars ◆ Liquid nitrogen ice cream or marshmallows ◆ Sandwiches from a local restaurant ◆ Krispy Kreme doughnuts ◆ Cookie dough

## Apparel and gear

The original chemistry club fund-raiser: goggles! Here are a few other must-haves you could sell to equip your peers:

◆ Lab coats ◆ Lab aprons ◆ Lab manuals ◆ Lab notebooks ◆ ACS exam study guides ◆ Model kits ◆ Books ◆ Pocket periodic tables ◆ Dopamine tattoos — a fun way to celebrate Valentine's Day

## Tips and Tricks

Whenever you're raising funds, there are a few key tricks to remember:

1. **Be consistent.** Chances are you'll do much better the third week you're selling burritos than you did the first week. People are more likely to spend money if they are expecting you. The same goes for annual events. Whether it's a Periodic Table of Cookies or a Mole Day Fun Run, create something people can look forward to... and then stick with it.
2. **Be clear and polite.** When you're asking for donations, profit sharing, or other funds from a company or business, write a letter clearly explaining what you plan to do with the money or product, and then follow up with a timely, detailed, personal thank-you note.
3. **Do your research.** Maybe you've always ordered your goggles from the same place every year, but is it still the best source today? You may be able to increase your profit simply by finding a more affordable supplier.
4. **Ask for help.** If you need fresh ideas for fund-raising options, be sure to reach out to your ACS local section. Members may be able to make suggestions or help with connections in the community. inc

## Put your name on it

College is based on a few basic laws. Chief among them: the more T-shirts you have, the less frequently you'll need to do laundry. Try selling:

◆ Department or slogan T-shirts — the funnier, the better! Look into printing more than one design; someone might buy two.
◆ Green chemistry bracelets
◆ Green chemistry buttons
◆ Water bottles branded with your chapter name
◆ Lanyards (ropes or cords worn around the neck to carry a name badge, keys, or other lightweight items)
◆ Key chains
◆ Bumper stickers or car stickers
◆ Reusable grocery bags

## ATP creation

If sitting at a table of goodies isn't your thing, get moving... and get someone to pay you for it! Some ideas:

◆ Hold a sporting event or race. Montana State University (Bozeman) held a 5K fund-raiser run to raise some extra cash.
◆ Offer to clean up after a campus event, and see if the administration will make a donation for your work.
◆ Is there a campus-wide activities day? If so, why not host a Dunking Booth, Pie-in-the-Face Booth, or free-throw contest? You'll be raising funds and awareness at once.

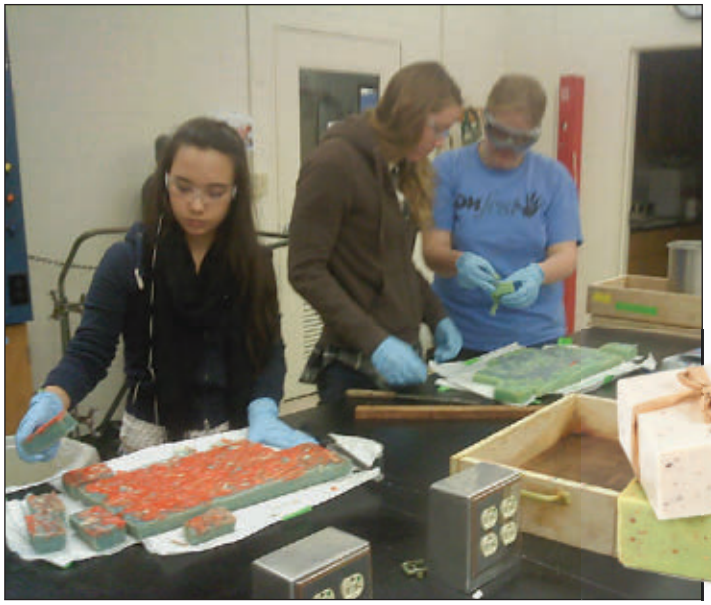
## Get friendly with the locals

If you aren't attracting crowds, go where the customers are! To get a little more traffic coming your way, try one of these approaches:



ABOVE UNDER SNOWCONE IMAGE: **At Cal Poly (San Luis Obispo), the student chapter sells snow cones at an open house and hosts the Revenge-o-Rama, where students pay to throw a wet sponge at a p-chem professor** (PAGE 14).


ABOVE: **The Indiana University of Pennsylvania (Indiana, PA) student chapter earns money through weekly hot dog fund-raisers, and it also sells periodic table stickers and T-shirts.**




ABOVE: **Scented soaps made and sold by the Hartwick College (Oneonta, NY) student chapter in time for Christmas and Mother's Day provide most of the chapter's fund-raising revenue.** RIGHT: **The Francis Marion University (Florence, SC) student chapter earns its money by selling general chemistry, organic chemistry, and laboratory safety manuals each semester.**



- **Set up a profit-share day with a local business. For example, the Cal Poly (San Luis Obispo) chapter arranged a promotion with Panda Express in which every purchase made using a simple coupon netted the chapter 20% of the total cost of the meal.**
- **The West Virginia State University (Institute) chapter teamed up with Kroger Cares to earn 5% of every $5,000 spent at Kroger by anyone with a WVSU Kroger gift card, and used the funds for the chapter's school outreach program. (The national Kroger Cares program is open to any organization and costs nothing to join.)**
- **Hold a silent auction and ask for donated gift certificates and products from area businesses. Businesses are often happy to give free products or services, which draw in customers.**

## Go big or go home

Although they are more risky, big fund-raising events or projects can net big profits, and the more creative, the better!

Here are a few examples:

- **The Spring Hill College (Mobile, AL) chapter holds a crawfish boil every spring and sells tickets at the door. With help from the ACS Mobile Local Section and University of South Alabama student members, the chapter hosted 150 guests this year during Alumni Weekend.**
- **The Hartwick College (Oneonta, NY) student chapter makes and sells handmade soap in time for Christmas and Mother's Day each year. Last year they mixed 16 batches and made over $1,000.**
- **The chapter at William Jewell College (Liberty, MO) sold exam survival kits to parents and delivered them to students the week before finals began.** inc

### How to Get Your Creative Juices Flowing

Of course, this is not an exhaustive list of suppliers, but it will get you off to a good start!

- **www.acs.org/undergrad**
  **List of ACS grants available to student chapters.**
- **www.usimprints.com**
  **US Imprints sells thousands of items that can be personalized, including some in small quantities.**
- **www.zazzle.com/create**
  **Zazzle has lots of customizable options as well, including many with no minimum order.**
- **www.store.acs.org**
  **The ACS store sells chemistry silly bands, periodic tables, and everything in between.**
- **www.globalindustrial.com**
  **Global Industrial sells chemical splash-resistant goggles for as low as $1.50/pair.**
- **www.prosafetysupplies.com**
  **Pro Safety Supplies sells a range of goggles for as low as $1.16/pair.** inc

**Allison Byrum Proffitt** *is a writer and editor based in Singapore and covers science all over the world. When she's not writing, she is traveling as much as she can.*

ACS
Chemistry for Life®

www.acs.org/scholars

## American Chemical Society Scholars Program

# Pathways to Success in the Chemical Sciences

## *Inviting African-American, Hispanic, & Native American students to apply for renewable scholarships for the 2012–2013 academic year.*

Up to $5,000 will be awarded to under-represented minority students who want to enter the field of chemistry or chemistry-related fields, such as environmental science, toxicology, and chemical technology. High school seniors and college freshmen, sophomores, or juniors are eligible to apply.

**Eligible applicants include those who are interested in:**

- **pursuing four-year degrees in the chemical sciences**
- **transferring from two-year colleges to four-year colleges to pursue chemical science degrees**
- **pursuing two-year degrees in chemical technology.**

**For more information, and to access the online application form, visit:**

**www.acs.org/scholars**

**Application deadline is March 1, 2012.**

*Approximately 100 scholarships will be awarded.*

# Surviving Your First ACS Undergraduate Poster Presentation

BY ACS STAFF


Is the mere thought of presenting your first poster at an ACS local, regional, or national meeting causing you to rethink your choice of major? If so, take comfort in the fact that you're not alone. At the upcoming 243rd ACS National Meeting in San Diego, CA, most of the nearly 1,200 students who will be presenting their posters at the Undergraduate Research Poster Session are first-time presenters. The whole process is also less intimidating if you know what to expect as a poster presenter at an ACS undergraduate poster session.

## The basics

First, know the basics. Depending on the size of the poster session, you will likely present your poster in a large hotel room or hall filled with narrow rows of poster boards. If you are presenting a poster, approximately 30 minutes before the start time of the session, you will be allowed into the assigned area to install your poster. Authors are responsible for mounting their posters before the opening of the poster session. ACS supplies the poster numbers — which are placed in the upper corner of each

## *How to Design a Scientific Poster*

BY ANGELA HOFFMAN

**A scientific poster is not an enlarged version of a paper. A poster summarizes your research project and follows a standard format for reporting scientific results.**

- Know the poster board specifications. Specifications vary widely among groups and organizations.
- Craft your poster to tell a single story.
- The story has to be obvious and should be clear to the reader. Eliminate jargon.
- Don't attempt to tell the entire research history of your project. Present only enough data to support your conclusions and show the originality of the work.
- Provide photos, illustrations, and graphs where needed to clarify the story. All illustrations need captions and must be referred to in the narrative.
- Use full sentences and your very best English, and be succinct.
- It's important to make the print large enough to read easily from 3 feet away. Title lettering should be about 2" to 3" tall (5 to 7.5 cm). Subheading lettering should be 1/2" to 1" tall (1.25 to 2.5 cm). Body text lettering should be approximately 24 points tall (1/4" or 0.625 cm).
- Divide the poster into labeled sections (such as Title, Authors, Introduction, Methods, Results, and Discussion/ Conclusions).
- Use the minimum amount of details in the Methods section. You will be there to fill in the details.
- Always be generous with acknowledgments.
- Use a solid pastel color for the background. If you use a patterned background, make sure it's non-distracting. Don't be fancy!
- Proofread and get suggestions from others, especially your advisor, before you print.
- Copy your poster onto a flash drive to create a backup copy of your poster. inc

**Angela Hoffman** *is a professor of chemistry at the University of Portland in Portland, OR.*

## ACS Poster Specifications

**Each horizontal poster board at ACS meetings measures 4 feet high x 6 feet wide, including the frame, and all presentations must be confined to the poster board itself. Computer display equipment, sound or projection equipment, free-standing or three-dimensional displays, demonstrations/experiments, or tables for handout materials are not permitted in the poster session.** inc


## How to Communicate Your Research to Others

BY BRENT ZNOSKO

**You have invested months, or perhaps years, mastering chemistry concepts and conducting your research project. Now the final challenge is to articulately communicate your results to others.**

1. **Practice, practice, practice** presenting your poster to yourself and to your advisor and labmates. You should have a solid understanding of your research and be familiar with other related research.
2. **Always introduce yourself** and make sure to get your visitors' names.
3. Before you begin your presentation, **ask visitors about their background knowledge about the topic.** If they are experts, you do not have to go into detail about the background and introduction. If they know little about your topic, you may want to spend more time on the background. For example, I heard one poster presenter go into a ton of needless detail about the background, even though one of my papers was actually referenced on the poster. The presenter simply didn't realize who I was.
4. **Be prepared to provide a brief, one-minute presentation** about your poster. If visitors are interested in learning more, they will ask you questions. With many posters in a session, viewers do not want to get "trapped" at a poster that they are only moderately interested in.
5. **Do not read the poster to your visitors.** They already know how to read! inc

**Brent Znosko** *is an associate professor of chemistry at Saint Louis University in St. Louis, MO.*

poster board by ACS staff — and the poster pins. Each poster number corresponds with the number appearing beside a listing of the poster in the program book. Your poster should be up and ready to present no less than 15 minutes before the start of your poster session. Immediately after the close of the session, you are responsible for removing your poster. Even if you're in a rush to get someplace else, don't leave your poster behind — ACS does not assume responsibility for materials left beyond those time limits.

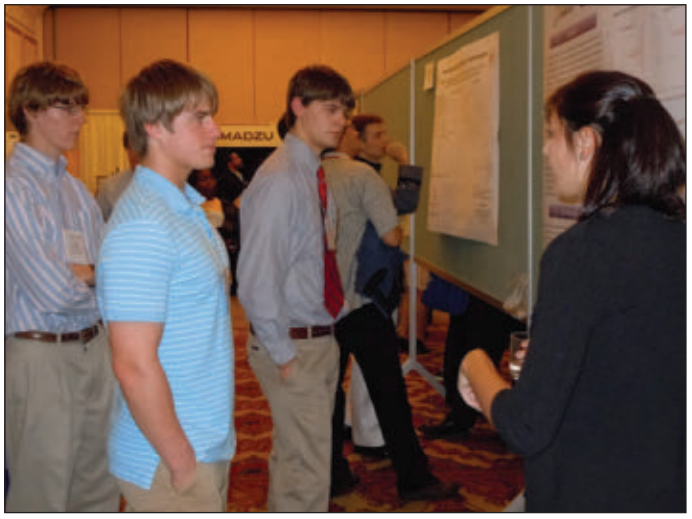
Presentation times and rules at ACS regional meetings vary widely, so it's important to know what time you will be presenting your poster. As a rule of thumb, at ACS national meetings, once the Undergraduate Research Poster Session begins, authors who have been assigned even-numbered posters will present their posters for the first hour of the poster session. Those with odd-numbered posters present their posters for the second hour.

Make smart use of your spare time. The poster session is a great time to network with other students who are presenting their posters and with session visitors, so make it a point to visit other posters during your free hour.

### Exude professionalism

Making a positive first impression is important, so dress and act professionally. Wear comfortable shoes — you may be standing on cement during your presentation time. Show enthusiasm about your research. You will be talking to viewers who may be undergraduate or graduate students, faculty, members of industry, or others with an interest in chemistry. Not everyone will be familiar with your area of research, so before you begin describing your research project, find out what they know about your research area. Then, try to adapt your presentation accordingly.

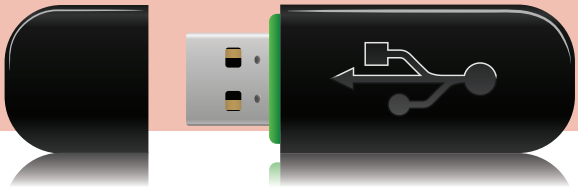
Be sure you have a solid understanding of your research.


**At an ACS poster session, you may be talking to undergraduate or graduate students, faculty, members of industry, or others with an interest in chemistry. Find out what they know about your research area and adapt your presentation accordingly.**

## *Be Prepared for the Unexpected*

**Here's a lesson you don't want to learn the hard way — posters have a way of getting misplaced, left behind in cabs, buses, or cars, or lost in hotels and baggage claim areas at airports, so having a backup copy that you can print out in an emergency can be a lifesaver! Be prepared for the unexpected! Before you leave for the meeting, copy your poster files onto a flash drive and bring it with you to the meeting.** inc



Practice presenting a one-minute summary of your research. Ask a friend to listen to your summary and provide feedback. You should also be familiar with prior research done in the area.

It's also a good idea to bring business cards to give to those who visit your poster and to others you meet while networking. Include your name, address, phone numbers, degree major, and graduation date. It is also wise to include a professional objective, such as graduate school, an internship, or an employment position. Business cards will help you to appear more professional and make you more memorable to those you meet.

When you offer your business card, be sure to ask your visitors for their business cards as well. Write a note about your conversation with each person who visits your poster on the back of their business card, and follow up by e-mail within one week after the meeting. In the e-mail, you might thank your visitors for stopping by your poster, answer any questions they had, or send them more information pertaining to your poster.

If there is a point at which no one is visiting your poster, resist the temptation to text or talk on your cell phone or talk with nearby friends. These actions will make visitors less likely to approach your poster. Also, be aware that some visitors may be evaluating you for graduate school or for a professional position, so exude professionalism at all times.

## Follow up

Come equipped with a notepad and pen so that you can write down suggestions from visitors about your poster, future directions of your research, or where to apply to graduate school. After the end of the poster session, jot down notes of what went well with your poster presentation and what you hope to improve upon for the next time. Include any new ideas for additional research or experiments relating to your research, and any unanswered questions you may need to discuss with your advisor. Feel proud that you have taken the next step on your professional pathway! inc

# VOICES OF EXPERIENCE

## *In this issue, four students who participated in the Undergraduate Poster Session at the 242nd ACS National Meeting in Denver, CO, offer tips on presenting a poster at a scientific meeting.*

COMPILED BY LORI BETSOCK

### Casey Rogers

**Institution:** *James Madison University*

**Graduation Year:** *2012*

**Major:** *Chemistry*

**Poster Topic:** *"Chemical Demonstrations: Developing an Infrastructure for Outreach"*

**Plans after Graduation:** *I hope to obtain a Master of Arts in Teaching in 2013 and teach high school.*

### Gabriela Alvarez

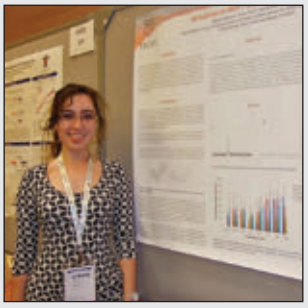
**Institution:** *Emory University*

**Graduation Year:** *2013*

**Majors:** *Anthropology and Human Biology*

**Poster Topic:** *"Synthesis and Characterization of 4- and 4'-Substituted Chalcones and Their Corresponding Diaryl-isoxazoles"*

**Plans after Graduation:** *After graduation I plan to attend medical school and pursue an M.D.*



### Thomas Gately

**Institution:** *Colorado School of Mines*

**Graduation Year:** *2013*

**Majors:** *Chemistry and Engineering Physics*

**Poster Topic:** *"Analysis of Rare Earth Elements in a Sodium Peroxide Fusion Matrix Using ICP-AES"*

**Plans after Graduation:** *I am in the Air Force ROTC program and will go on active duty once I graduate. I do not yet know what my position will be, but I hope to go into research and development.*

### Niger Washington

**Institution:** *Pomona College*

**Graduation Year:** *2012*

**Majors:** *Chemistry and Mathematics*

**Poster Topic:** *"Spin-Orbit States for the $HBr^+ + CO_2 \rightarrow Br + HOCO^+$ Reaction"*

**Plans after Graduation:** *I am currently applying for jobs and graduate programs in the chemical engineering field, but I have a preference for attending graduate school. I will have to evaluate my options carefully over the next several months.*

## *How did you prepare for your poster presentation?*

**Rogers:** I did a poster presentation at our university's Spring Symposium, and before that, I gave one at a local chapter session. Also, my advisor requires us to give project updates to our group members at meetings so that we become more comfortable talking about our research.

**Alvarez:** I made sure I understood everything on my poster — the introduction, how I collected the data, how to interpret the graphs, the equipment used, etc. Sometimes when we work on a project, we don't understand how the raw data was manipulated to be presented in graph form, or why certain steps were added in the procedure.

**Gately:** I ran through my presentation several times by myself and in front of other people, and got feedback from them. The most helpful feedback I got was the questions from people who had presented posters before.

**Washington:** Before the presentation, I went through the poster several times to practice what I was going to say, by myself in front of a mirror. That way I could choose the best way to phrase something, and the best order to present the information in. This was important because if I made mistakes the first time through, I could be sure to fix them for the next time.

## *What was it like to present a poster at an ACS national meeting?*

**Rogers:** It was very relaxed. I didn't think it was any different or more intimidating than presenting at a local chapter session.

**Alvarez:** Before I got there, it seemed like it would be really daunting, but once it started it felt more like a normal poster session. Occasionally you'll encounter a person who might ask tough questions, but in general, the ACS members understand that as undergraduates, we may not have the experience or knowledge that would be expected of a graduate student or a postdoc, and they're very friendly and supportive.

**Gately:** I met some cool people in the chemistry field, and got feedback on the work I've done. At the meeting, there were a lot of helpful Undergraduate Program activities and presentations that were going on outside of the poster session too, so it was a busy meeting.

**Washington:** Having an opportunity to present my work was a very rewarding experience. What really gets me excited about poster presentations is that I get to share my knowledge with other chemists (students and

professors alike) who are just as excited about chemistry as I am. Presenting a poster is also a great networking experience.

## What advice do you have for undergraduate students who are presenting their poster for the first time?

**Rogers:** Relax. Presenting a poster is not nearly as nerve-wracking as an oral presentation. Most interactions are with a few people at a time and it's more conversational in style than when you are standing before a group presenting.

**Alvarez:** Make sure you know your project well. Being nervous while speaking happens to everybody, but as long as you know what you are presenting, you can communicate it well to someone who may not have all of the knowledge. There's nothing to worry about — it's the science that's the most important thing.

**Gately:** Practice and relax. You've worked on this project for a long time and know your stuff. Practice makes perfect.

**Washington:** Making your first poster can be a bit intimidating. Your research advisor will be a crucial resource if you are preparing a poster for the first time. Be sure to get an early start so that you can have plenty of time to revise, reformat, add proper citations, etc., and also to allow for any unanticipated problems (for example, in printing the poster). Also, don't be discouraged if not many people are stopping by your poster. There will be hundreds of other undergraduates presenting at the same session as well, who are all trying to showcase their own work at the same time you are. Some spectators will come to see certain posters, while others will walk through the aisles and take a glance at many. With that said, don't be afraid to encourage a passerby to listen to your presentation.

In addition, you won't be able to convey every aspect of your project on your poster, so it is best to start early in order to give yourself time to narrow down the aspects of your project that will be most relevant to the audience. It's important to know that many students will not know the theory behind your project, so as trivial as it may seem, explaining the background information is crucial.

## Were you nervous? If so, how did you deal with it?

**Rogers:** I wasn't nervous. I had done this before, and as I said earlier, this is much more relaxed than giving an oral presentation. It really isn't anything to be nervous about as long as you can explain what you did in your research.

**Alverez:** I think just about everybody gets nervous when they have to speak in front of others. Even now, I still shake a little bit and my voice falters speaking in public, even though I know in my head that there is nothing to worry about. Definitely preparing and knowing how you are going to present helps a lot. When you really know the material, sometimes the words just come out naturally and automatically; you don't have to worry about getting stuck or missing something. Also, if you are a person who gets nervous, it's perfectly fine to say to yourself, "I may not be the best speaker, and that's okay," which is what I do. No one is good at everything, but just trying your best is more than enough.

**Gately:** I was very nervous. This was my first poster, and it was at the ACS national meeting. The most helpful thing I did was practice beforehand, but it took a couple of people asking me questions to get into the groove of presenting.

**Washington:** I was a bit nervous because I wasn't sure how I was going to convey the information on my poster to people in a coherent manner. Also, I did have a bit of anxiety with regards to answering questions, because I couldn't anticipate everything that was going to be asked (and I, of course, wanted to be able to correctly answer them all). Some questions can catch you off guard, but it's okay if you don't know all the answers. It's better to be truthful than to give misleading information. If you approach the poster presentation as a learning experience, then you will be much more receptive to handling constructive feedback.

## How did you benefit from the experience?

**Rogers:** It taught me how to give a short recap of my research in less than a minute. For scientists, this skill is particularly useful when networking with other scientists or in writing abstracts.

**Alvarez:** I saw several different ways in which scientists can organize and present their research. And of course, I benefited from learning how to present my poster and handle sometimes-difficult questions.

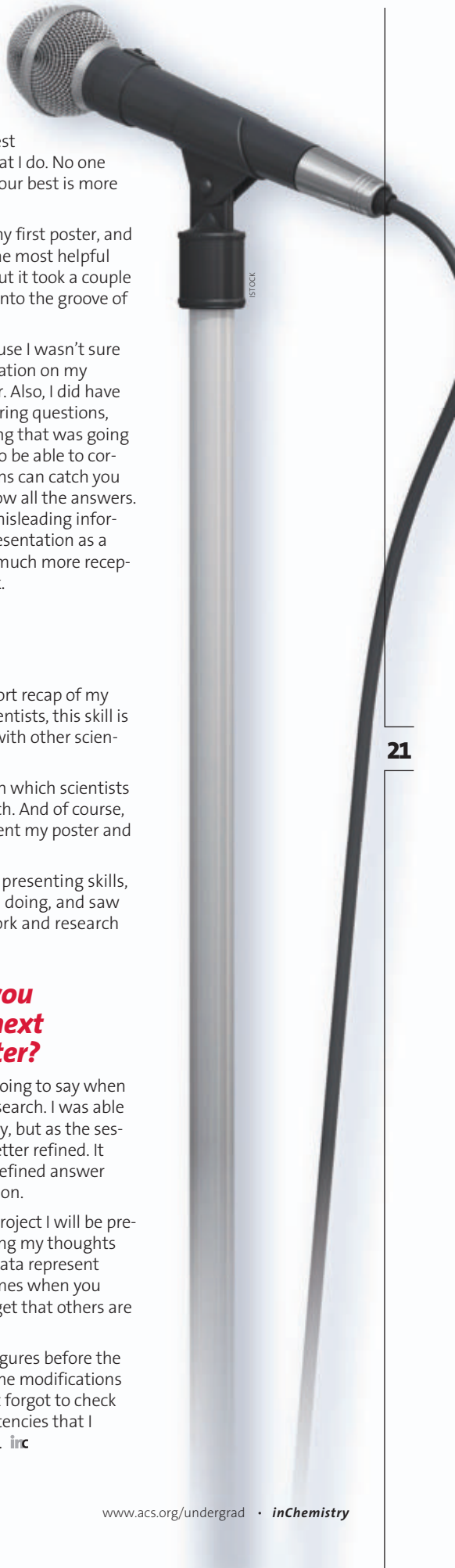
**Gately:** I received feedback about my presenting skills, learned what many of my peers were doing, and saw some interesting presentations of work and research going on in other fields of chemistry.

## What is the one thing you will do differently the next time you present a poster?

**Rogers:** I plan to figure out what I'm going to say when someone asks me what I did as my research. I was able to come up with an answer fairly easily, but as the session went on, my answer got much better refined. It would have been better to have that refined answer from the beginning of the poster session.

**Alvarez:** It all depends on the sort of project I will be presenting. I know I can work on organizing my thoughts a bit better and explaining what the data represent before diving into the results. Sometimes when you know a project so well, it's easy to forget that others are looking at it for the first time.

**Gately:** I will make sure to check my figures before the final printing of my poster. I made some modifications to my poster and checked the text but forgot to check the images and had a couple inconsistencies that I didn't realize until after it was printed. inc


ISTOCK

PROFILES IN CHEMISTRY

# Kevin Wier *A Chemistry Education Can Take You*

BY WENDY HANKLE

For Kevin Wier, landing his first job out of graduate school was a textbook case of networking. "A lot of time people don't like to hear the word 'networking,'" says Wier, 33. So instead of getting hung up on the negative connotations of the term, Wier suggests looking at it from a different perspective. "You don't set out to 'network' specifically to get a job, but rather to get to know people and their day-to-day activities. Instead of saying 'I'm looking for a job,' just be kind and courteous."

It's a good bit of advice coming from Wier, an associate materials engineering specialist at the Dow Corning Corporation Business & Technology Incubator in Midland, MI. His post at Dow Corning is his first out of graduate school, and he heard about the job because of the friendships and connections he made as a graduate student. One of the members of Wier's thesis committee graduated from the same research group as his first boss at Dow Corning. The two former colleagues kept in touch over the years, and when the position became available at Dow Corning, Wier had the skills and education they were looking for, so he applied. The rest, as they say, is history.

Now, five years later, Wier is still there. His duties at Dow Corning mostly consist of project work, developing products based on new chemistry and technologies. He has worked in areas including new cure chemistry for silicon materials and has developed products for solar industry, next-generation renewable energy, and clean water technologies. And, although he doesn't spend time gazing into a crystal ball, his position requires more than a little prescience. "We're looking for what's going to be big in the future," he says.

## A passion for learning

"For me, I enjoy the challenge and I like learning new things," Wier explains. "We work on a project long enough to see if it's going to be a benefit to the corporation, and if it is, we develop it to the point where we can tell whether it's going to work as a commercial project. If it's not, we move to the next project."

As far as how Wier gets his marching orders, it's a combination of top-down and bottom-up. "Our projects come in a variety of ways, based on research looking for a need in the market," he explains. "Another way is from individual researchers. We have time on Friday afternoons, and the company allows us to look at literature and do a few experiments." Then, if the researcher believes strongly in an idea, the researcher can submit a proposal. "Several projects have started that way," he adds.

But Wier's not holed up in a lab 24/7. In addition to benchwork, Wier has access to other opportunities. "When I was working on materials for solar applications, I actually got to visit a production facility in Spain, where they have a big solar field and test a lot of solar technologies, trying to figure out which one's going to win."

Trips like the one to Spain, as well as his project work, add another enjoyable aspect to Wier's job: the opportunity to collaborate. "Collaboration actually happens quite a bit," Wier explains. "We're trying to look for new and innovative ideas, and a lot of times, you're not going to be the expert in that area. But there's going to be someone around who is."

Typically, Wier works on a project with anywhere from 3 to 10 peers, and he prefers projects that bring him into larger groups. "You get more ideas with the more diverse group of people because, especially when you're doing research, you want to be able to ask questions and bounce ideas off people," he explains. "So the more eyes looking at the project, the better."

And that's a big part of his job, too — knowing the resources he has and where to find them. Wier says he's lucky to work for an organization that supports employees' efforts to get better at different aspects of their job. The company has a web-based system allowing staff to pursue, for instance, management training. Also, external instructors are brought in to coach employees, and monetary support is also available to pay for learning opportunities off-site. Wier recently attended the ACS Leadership Development Program, with his company's support. "They're very good at allowing you to enrich your professional development."

## Exploring careers

Wier also points to other aspects of his organization that solidified his interest in working there. "One of the things I liked when I interviewed at Dow Corning was that there were a lot of different career

### *Kevin Wier*

AGE: ***33***

JOB TITLE: ***Associate Materials Engineering Specialist***

EMPLOYER: ***Dow Corning Corporation Business & Technology Incubator, 5 years***

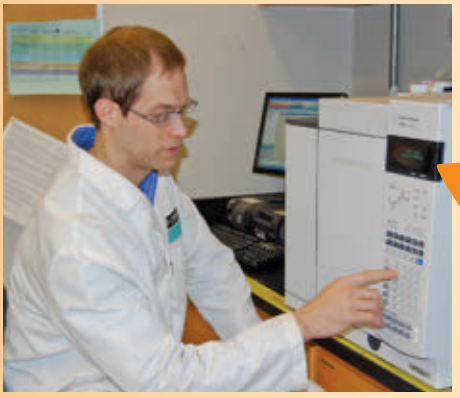
LOCATION: ***Midland, MI***

UNDERGRADUATE DEGREE: ***Michigan Technological University, Houghton, MI***

GRADUATE DEGREE: ***University of Massachusetts***

THESIS TOPIC: ***Polymer Composites Prepared in Supercritical Carbon Dioxide***

# Unexpected Places



Kevin Wier

paths people could take," he says. "You'll see people who are in sales and marketing with a chemistry background, for instance. It allows them to have better interactions with customers."

Bottom line: a chemistry education can take you unexpected places. All that's needed, in many cases, is a good foundation of knowledge and a willingness to learn new things. An open mind will help you both professionally and academically.

This is a lesson that Wier first encountered when he was considering which topic to tackle for his graduate thesis at the University of Massachusetts (UMass). He decided on polymer composites prepared in supercritical carbon dioxide — and not because he had an intimate knowledge of the subject matter. "When I first heard about the topic, I didn't even know what 'supercritical' meant," Wier says. "So I was kind of interested to find out a little bit about it in the initial presentations faculty advisors gave."

Wier was intrigued by the research, and by another characteristic of the team that caught his attention. "It seemed like there were a lot of good people in that group," he explains. "That's probably one of the keys to a successful graduate career: having a group of people that you'll enjoy working with, including your advisor."

He also learned other lessons from his graduate program that are serving him well in his current job: the ability to do a good literature search and, another biggie, patience.

"In undergraduate chemistry courses, all the labs worked exactly like they're supposed to, and you typically don't have any problems. In graduate school, almost nothing goes exactly as you planned and you have to think quickly and figure out the best path — not even necessarily to achieve the goal, but to get you pointed in the proper direction," he says. "That happens not quite as much in the professional world, because the projects are a little more focused, but there are still times in the lab where I have to build pieces of equipment that are nonstandard. In such cases, I have to open the catalog and buy some pieces and put them together."

Wier went directly to graduate school after receiving his bachelor's degree at Michigan Technological University (MTU). He'd had a taste of research during his undergraduate experience, working at an internship at General Motors Corporation between his sophomore and junior year, then alongside a graduate student the following summer. "I got a feel for what it was like to work in the lab," he recalls. "I think that was the point when I started looking at graduate schools, just to see what options were available."

## Making choices

Deciding whether to go to graduate school after finishing an undergraduate degree is not a slam-dunk. Wier suggests interning at a company whose work interests you while you're still an undergraduate, or getting your feet wet in a laboratory to see if that type of work suits you.

He also recommends being open to non-traditional careers in science. In fact, he can reel off a list of people he knows who went to graduate school for chemistry but who are now using their knowledge to make a difference in other fields. For example, one colleague works at a university library and is in charge of technical document searches. Another works at an international aid agency and uses scientific expertise to help with program planning, implementation, and evaluation.

"There's also the example of Catherine Coleman," Wier explains. "She graduated several years ahead of me from the Polymer Science and Engineering department at UMass and is now a NASA astronaut who actually flew to the International Space Station last year. There's a wide variety of career options available for scientists, and few people follow a perfectly straight path, so ask a lot of people for their opinions as you make your own choices."

Education is still a theme in Wier's life, even now that he is in the professional world. He was a member of the ACS as an undergraduate at MTU, off and on through graduate school (resources permitting), and has been a member for the past five years, helping out at community outreach events, such as local school visits. "In most cases the kids are really excited when we come in," he says. "Anytime you can make something break or make a lot of noise, they love it. Then you can go into the explanation and help them understand why that happened." inc

**Wendy Hankle** *is a freelance writer and communications professional who lives in Ithaca, NY.*

# PHOTO CHEMISTRY

## *Capturing the energy and enthusiasm of ACS student members…*

COMPILED BY ACS STAFF

Central Washington University (Ellensburg, WA) chapter members hosted a liquid nitrogen ice cream social.

Chapter members from the University of Puerto Rico-Humacao celebrated NCW at the "Festival de Química" at the Paseo de la Princesa in Viejo San Juan.

Wittenburg University (Springfield, OH) chapter members performed demos at a Lil' Sibs Weekend event at the university.

By helping to build a house for a local family through Habitat for Humanity, University of Texas at Tyler chapter members gave back to their community.

Ferris State University (Big Rapids, MI) chapter community service efforts included yardwork for disabled community members.

The University of Detroit Mercy (MI) chapter competed against other area colleges at the annual "Battle of the Chem Clubs" challenge.

## ... showcasing their activities, events, and accomplishments.

For their classic cartoons-themed homecoming parade, Southeast Missouri State University (Cape Girardeau) chapter members chose Mighty Mouse and donned safety gear, capes, and chemical symbols spelling out "SUPEr MoUSe."

Waynesburg University (PA) chapter members learned how and why steel is galvanized when they toured the GalvTech facility in Pittsburgh.


The University of Pittsburgh-Johnstown (PA) chapter toured the Penn Brewery in Pittsburgh.

The Allegheny College (Meadville, PA) chapter used the proceeds from its laboratory notebook sale to subsidize ACS student membership dues.

University of Puerto Rico at Mayagüez chapter members helped children make Flubber during an outreach event.

SPOTLIGHT

# Indiana University of Pennsylvania Indiana, PA

COMPILED BY ACS STAFF

**Chapter president:** Lindsay Matolyak **Number of chapter members:** 32 **Number of ACS student members:** 15
**Website:** www.iup.edu/page.aspx?id=40925 **Institution description:** Large, public, suburban, 4-year institution

***Q:*** **How do you ensure a smooth officer transition from year to year?**

***A:*** Chapter members who want to become officers shadow the current officers. At the end of each academic year, we elect new officers for the upcoming year. Also, this is when our new treasurer takes over management of the financial records in order to start helping other new officers prepare for their terms.

***Q:*** **How did you celebrate National Chemistry Week and Chemists Celebrate Earth Day?**

***A:*** During National Chemistry Week, we set up demonstrations and did activities with elementary school children at the Carnegie Science Center. We also performed on-campus awareness activities— such as liquid nitrogen experiments and the science of hockey. For Earth Day we plan to promote green chemistry by explaining the 12 principles of green chemistry, and demonstrate how everyone can help by following the principles.

***Q:*** **In what ways does your chapter give back to the community?**

***A:*** Every year, at a local high school we do chemical demonstrations and donate $1,000 to help improve their chemistry department. We also provide weekly tutoring for chemistry students at our university.

***Q:*** **What are some of the interesting ways your chapter recruits/retains its members?**

***A:*** Our members visit all the science/chemistry classes to spread awareness of our organization as well as keep our members updated on chapter events. To keep members interested, our chapter offers a variety of events from year to year, including picnics, fund-raisers, and field trips. We also provide networking opportunities by collaborating with other organizations on campus, such as the physics club, SACNAS, biology club, and Alpha Phi Sigma, and by collaborating with the ACS student chapter at Duquesne University.


PHOTO COURTESY OF INDIANA UNIVERSITY OF PENNSYLVANIA

**Each year, the IUP student chapter performs chemical demonstrations at a selected local high school and also donates $1,000 to help improve the school's chemistry program.**

**Faculty advisor:**
Nathan McElroy, 6 years

***Q:*** **How did you become a faculty advisor?**

**McElroy:** When I was an undergraduate chemistry major at IUP, I served as secretary of the club. When I later returned as a faculty member, I asked to become the advisor.

***Q:*** **What challenges have you faced in your position?**

**McElroy:** Other than finding it difficult to make some of the chapter meetings (Mondays at 8 pm), there haven't been too many challenges. I've been fortunate to have very dependable executive officers and a great group of students. Our department chairs and the college deans have been very supportive with funding and cooperation for activities, and the university's media relations office is terrific in setting up event photographers and press releases.

***Q:*** **What has been the most rewarding aspect of your service as a faculty advisor?**

**McElroy:** I particularly enjoy seeing the recognition the students get from the national ACS office and event coverage in our local newspaper. It's great to see students getting positive press.

***Q:*** **What advice can you offer those new to the advisor position?**

**McElroy:** Don't underestimate your students' creativity. Don't micromanage. Develop a good relationship with school administration and local community leaders.

SPOTLIGHT

# Salt Lake Community College Salt Lake City, UT

COMPILED BY ACS STAFF

**Chapter president:** Charles Kambourian **Number of chapter members:** 79 **Number of ACS student members:** 47
**Website:** slcc-science.org/chem/ACS/ACS-index-Fall.htm **Institution description:** Large, public, 2-year institution

### *Q:* Do you have any unique positions?

***A:*** We have a variety of unique positions for our chapter members. Officer positions include marketing director, fund-raising, service coordinator, research director, speakers coordinator, student resources, events coordinator, treasurer, and activities coordinator. Because we have a large group of pre-pharmacy students, we also formed the Pre-Pharmacy Informational Learning Society (PILS), which has similar officer positions, for more individual growth.

### *Q:* In what ways does your chapter give back to the community?

***A:*** We have been very involved in the Festival of Trees program, where we decorate a tree with many different items of sports memorabilia to be auctioned off to the general public. All of the proceeds are sent to Primary Children's Medical Center. We have a large group of chapter members, who call themselves "Elemental Expeditions," who visit local elementary school students and show them entertaining, safe, and fun chemical reactions that involve food. We also visit local schools that send their students to SLCC and we demonstrate interesting chemical reactions and tell students about SLCC chemistry.

### *Q:* What is your most successful recruiting event?

***A:*** We hold a general meeting at the beginning of spring and fall semesters. All of our professors that are involved with the chapter announce that the SLCC ACS student chapter will be holding a general meeting to meet all of the officers, announce our activities, and share our current or future research projects. In general we have about 60–100 students attend this meeting. We also provide pizza and soda, which always helps.

### *Q:* What types of activities do you sponsor?

***A:*** We have field trips to local industries, such as Kennecott Copper analytical laboratories, See's Candies chocolate manufacturing, Energy Solutions, and Uinta brewery. We host professional speakers and student panels from area universities. Social activities include weekly golf outings, skiing and skating in the winter, and hiking and water skiing in the summer.

### *Q:* How involved is your chapter on campus?

***A:*** Our chapter is super-involved on our large campus. We constantly announce our activities and service projects via our chemistry professors to the students. Service projects are a large part of our program on campus.

### *Q:* Do you collaborate with other clubs on campus on activities?

***A:*** We are constantly collaborating with other like-minded clubs. Since we started PILS, we have had service projects and research projects performed together. We have also invited speakers and performed research with the pre-med club as well.

PHOTO COURTESY OF SALT LAKE COMMUNITY COLLEGE.

**The large variety of officer positions enables many members of the SLCC student chapter to develop leadership skills in areas that interest them and also makes for a strong and vibrant chapter.**

### *Q:* What is your most successful fund-raiser to date?

***A:*** We hold a silent auction. Our club members gathered products and services donated from local businesses that ranged from 18-hole golf to a transmission service. We had around 30 items listed on a wall in the entrance to our Science and Industry building for anyone to bid on for a whole week.

**Faculty advisor:**
Ron Valcarce, 17 years

### *Q:* Why/how did you become a faculty advisor?

**Valcarce:** Because I was active in an ACS student affiliate chapter as an undergraduate, I knew about the opportunities for leadership, camaraderie, education, and service an ACS student chapter could provide. I wanted our students here at SLCC to have the same experiences.

### *Q:* What challenges have you faced in your position?

**Valcarce:** Because SLCC is a two-year institution, we have a high rate of student membership turnover. Many students do not join our chapter until their sophomore year, so they have only one year of membership before they move on to a four-year institution. We have to be very active in recruiting and training new officers on a yearly basis.

### *Q:* What has been the most rewarding aspect of your service as a faculty advisor?

**Valcarce:** I have particularly enjoyed watching new officers gain confidence as they interact and learn to lead the chapter. These skills, in particular, help these students make the transition to a four-year institution and ultimately to their chosen profession.

SPOTLIGHT

# Francis Marion University

## Florence, SC

COMPILED BY ACS STAFF

**Chapter president:** Yana Sivolobova **Number of chapter members:** 39 **Number of ACS student members:** 9
**Website:** www.facebook.com/pages/Francis-Marion-Universitys-American-Chemical-Society/149043830740
**Institution description:** Small, public, suburban, minority-serving, 4-year institution

### *Q:* In what ways does your chapter give back to the community?

***A:*** We redecorated our chemistry major room/tutoring center. It was in dire need of new furniture and a paint job. The makeover was phenomenal, and use of the room has increased dramatically. We also do outreach activities with local elementary schools and did some demos for a group that visited our campus this year.

### *Q:* What is your most successful recruiting event/method?

***A:*** Each year we have hot dog socials and senior cookouts. These activities create opportunities for students to have informal interactions with students and professors in the chemistry department.

### *Q:* What other types of activities do you sponsor?

***A:*** We sponsor tours of chemistry-related industries, trips to regional ACS meetings, guest speakers who present their research, biannual alumni symposia, and students who share their summer internship experiences with other students.

### *Q:* How do you ensure a smooth officer transition from year to year?

***A:*** We usually elect new officers in late spring for the next fall. Last year, our president graduated in December so our upcoming president worked closely with her so she could take over at the start of the spring semester. This made a smoother transition than if our incoming president had waited until fall to get started. Next, we plan to start a binder system that each officer can use to collect copies of any paperwork they developed for their position to hand over to incoming officers.

### *Q:* What are your most popular or unique chapter activities?

***A:*** We sponsored and organized a Chemistry Olympics for National Chemistry Week (NCW) and held a variety of carnival-like games to encourage non-science majors to experiment with materials we regularly use in the lab. Some of the games included Pipetting with Pickle Juice, Titrate to the Lightest Pink, Guess How Much Sand, and Pin the Functional Group on the Benzene Ring.

### *Q:* Do you collaborate with other clubs on campus on activities?

***A:*** We collaborated with the biology club to present a screening of the Percy Julian movie, "Forgotten Genius," as an event for Black History Month and also teamed up to distribute reusable tote bags and tire pressure gauges for Earth Day.

### *Q:* What is your most successful fund-raiser to date?

***A:*** We sell chemistry lab manuals and goggles at the beginning of each semester. It's a great way to be seen and to meet new students. We also give out a lot of directions to new students as they look for their classrooms. inc

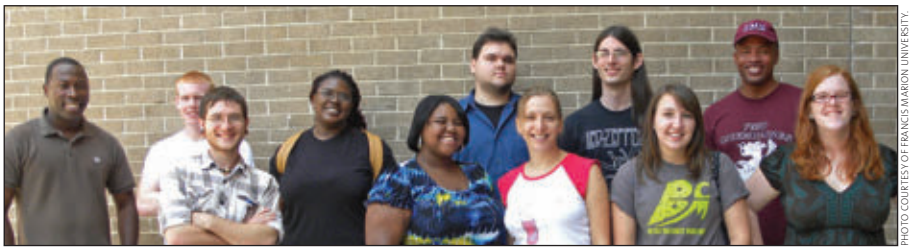


PHOTO COURTESY OF FRANCIS MARION UNIVERSITY.

**To encourage non-science majors to experiment and experience chemistry, the FMU student chapter held a Chemistry Olympics featuring a variety of carnival-like games.**

### Faculty Advisor:
Jennifer Kelley, 4 years

### *Q:* Why/how did you become a faculty advisor?

**Kelley:** Our student chapter had been inactive for many years. As a new faculty member, I was given the challenge of reactivating and improving our chapter. I really enjoy interacting with the students and was pegged as the best candidate for the job.

### *Q:* What challenges have you faced in your position?

**Kelley:** The biggest challenge was finding funds for the activities the group wanted to do. We began selling chemistry lab manuals, which were written and edited by our faculty. Other challenges were reinstating our group as an active student organization on campus, and setting up activities within the university system. Now, the challenge for me is letting go and letting the students have more and more autonomy.

### *Q:* What has been the most rewarding aspect of your service as a faculty advisor?

**Kelley:** The family-like atmosphere our chemistry students have with each other. I think they feel much more connected to the department and to the university. I see and hear a lot more discussion about chemistry and what they are thinking about for their futures.

### *Q:* What advice can you offer those new to the advisor position?

**Kelley:** Don't expect big changes right away. It takes time for momentum to build, but once it gets going, it will snowball. At some point, you will see your enthusiasm reflected in your students. Also, seek out advice and support from fellow faculty; their experience and participation are invaluable. inc

# **Create a video** for the National Meeting and **Stay 4 Nights Free**

Tell us in **30 seconds** how ACS national Meetings contribute to the Chemistry of Life and you could win! Get Creative. Get the Most Votes. Get Rewarded!

243RD AMERICAN CHEMICAL SOCIETY NATIONAL MEETING & EXPOSITION - SAN DIEGO CA., MARCH 25 - 29 2012

CHEMISTRY OF


**First Place**
wins 4 free nights at an ACS hotel during the 243rd ACS National Meeting in San Diego.

**Second place**
wins one free night at an ACS hotel*

**Third place**
wins VIP access to the Attendee Welcome Reception*

HURRY! VOTING BEGINS Feb. 27

Register for the meeting and upload your video between **February 1- 24, 2012.**

Go to **www.acs.org/mymeetingvideo** to upload your video and for contest rules.

Disclaimer: *Prizes are for the 243rd ACS National Meeting only and are non-transferable. Participants must be 18 years of age or older and paid registrants of the 243rd American Chemical Society National meeting & Exposition. One video submission per participant. Only one vote per person per video will be counted. Only one winner will be selected. Prize includes standard room, double occupancy at a hotel selected by ACS for 5 days, 4 nights from March 25-29, 2012. Offer subject to federal, state and local regulations and laws and is void where taxed, restricted or prohibited. Detailed contest rules and restrictions are available at www.acs.org/mymeetingvideo

**www.acs.org/sandiego2012**

ACS Chemistry for Life®

ACS
Chemistry for Life®

American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036

NON-PROFIT ORG.
U.S. POSTAGE
PAID
Washington, DC
PERMIT NO. 4119