

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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APRIL 2011 NEWSLETTER TOPICS

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May Dinner Meeting

Stem Cells, Enhancers and Emergence of Epigenomes in Development

Joanna Wysocka, Ph.D.

Abstract

Less than 2% of the human genome encodes protein coding genes. But many trait-specific and disease-specific mutations seem to map away from such coding sequences. This paradox is partially resolved by observation that many of the noncoding sequences are involved in regulation of when and where in the developing organism genes are to be turned on and off. One class of such regulatory sequences is called enhancers, since they have a property to greatly enhance gene expression. Genomic DNA in the cells is physically organized in the form of chromatin, which consists of DNA wrapped around histone proteins. Specific combinations of chemical modifications of histones form a basis of epigenetic marking system, which helps to organize the genome into functional domains, some of which are active, while others are silenced. We have recently discovered that in human embryonic stem cells two different epigenetic signatures are associated with, and



specifically distinguish, two classes of enhancer elements. One signature marks enhancers that are actively turned on in embryonic stem cells, and another marks class of enhancers that we dubbed "poised enhancers", which are not active, but are kept in a state of

continued on next page

May Dinner Meeting

Date: Thursday, May 19, 2011

Time: 6:00 Networking
7:00 Dinner
8:00 Presentation

Location: Ming's Chinese Restaurant
1700 Embarcadero Road
Palo Alto, CA 94303
www.mings.com

Speaker: Dr. Joanna Wysocka
Stanford University
Stem Cells, Enhancers and
Emergence of Epigenomes
in Development

Cost: \$28.00

Menu of Family-Style Dining:
Chicken Salad, Hot & Sour Soup,
Ming's Special Beef, Prawns with
Walnuts, Vegetarian Eggplant,
Garlic string beans, Vegetarian
fried rice, tea and wine

Reservations: www.scvacs.org

Sally Peters 650-812-4994

Reservations MUST be made by Sunday, May 15th, stating your name, address, company affiliation, number of people in party. Watch the web site for more information. If you are unable to honor your reservation and do not cancel by Tuesday, May 17th, you will be invoiced following the dinner meeting.

Chair's Message

Is that a ray of light at the end of the tunnel? "What tunnel?" you ask. I'm talking about the unemployment and under-employment tunnel. Analysts are predicting that, in the wake of the recession, 2011 will be the same or slightly better than 2010 for job-seeking chemists. Does this ring true to you?

Let's first examine perception versus reali-



ty. If you're like me and have Bay Area colleagues and friends that are job-seeking, no doubt you perceive the employment market to be pretty dismal. In reality, the unemployment rate for chemists during 2009 and 2010 is the highest in recorded history (~4%), but it remains well below that of the national unemployment average (~10%). However, that doesn't make it any less worrisome for those that are currently job seeking, or anticipating a change in employment in the near future. With this perception and reality in hand, I wanted to take a look at the bright spots in the employment outlook.

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Chair's Message, continued from front page

To accomplish this task, I sought out the ACS Webinar, "Employment (and Un-employment) Trends in the Chemical and Pharma Industries." I was unable to participate in real-time, but thanks to the convenience of the ACS Webinar series, you can watch the presentation at <http://acswebinars.org/category/chemistry-the-economy>.

Presenters from the Bureau of Labor Statistics spoke to the projected job growth for chemists during 2008 to 2018. The projected employment growth rate for all chemists in 2008-2018 is 2.5%. The employment growth rate for biochemists is projected to be 37%, so don't shirk those biology classes. While chemical manufacturing jobs overall are declining, pharmaceutical manufacturing chemists are expected to grow in demand by 6.1%. The

outlook for chemists working in materials science, particularly those researching new energy and green science, is steadily improving. You can check out the stats from the Bureau of Labor Statistics for yourself at www.bls.gov/oco/ocos049.htm.

After this minimal research, I don't have any magic answers for job-seekers but the best advice I've heard overall is—if you have a passion for chemistry, then become a chemist and keep doing chemistry. Persevere in the pursuit of your next great chemistry job and be willing to step outside of your current box. If you have the ability and desire to explore new, related fields such as energy, green chemistry and biotechnology, then go for it! And please use the SCV-ACS as your resource—check out our Chememployment Ads in the newsletter or on our webpage at www.scvacs.org.

[org/Local_Folder/abstract.htm](http://www.facebook.com/pages/Santa-Clara-Valley-ACS/163127730396140), connect at our Santa Clara Valley ACS Facebook page at www.facebook.com/pages/Santa-Clara-Valley-ACS/163127730396140, volunteer for one of our numerous SCV-ACS activities, and come to a dinner meeting.

We've planned many meetings this year in conjunction with varied local societies to provide a chance for you to network with different scientists throughout the Bay Area. Case in point—our 28th of April dinner meeting will be held at Devil's Canyon Brewery in Belmont. Come share a brew with the California Section of the ACS. It's sure to be a fun and relaxing evening—hope to see you there. And I look forward to seeing our Santa Clara Valley chemists creating and becoming the employment bright spots of 2011.

Stem Cells, continued from front page

anticipation that allows them to become rapidly activated when stem cells undergo a decision to differentiate. I will discuss this work as well as its implications for stem cell biology and regenerative medicine.

Biography

Joanna Wysocka, Ph.D., is an Assistant Professor in the Department of Chemical and Systems Biology and the Department of Developmental Biology at Stanford University. She has done her undergraduate studies at the University of Warsaw, Poland, and her graduate work at the Cold Spring Harbor Laboratory in New York.

Since receiving her doctoral degree in 2003, she has done postdoctoral training at the Rockefeller University with Dr. David Allis (2003-2006). Dr. Wysocka's research is focused on the role of chromatin modifiers in the establishment and maintenance of gene expression programs in development and differentiation, with particular emphasis on the epigenetic regulation of stem cell fate.

Dr. Wysocka has received numerous awards for her research, including the Searle Scholar Award, the Baxter Award, the Terman Fellow Award, the California Institute for Regenerative Medicine New Faculty Award, and the W.M. Keck Foundation Distinguished Young Scholar Award. Last year she was selected as the recipient of the 2010 International Society for Stem Cell Research Outstanding Young Investigator Award in recognition of her group's unique contributions to the stem cell field.

Reminder

April Dinner Meeting

Reminder

Beer: The Great Scientific Medium

Dr. Charles Bamforth



Abstract

Beer: the most complex and fascinating of beverages when considered from a chemistry perspective. Which means that it is harder to make than any other drink. Brewers don't mess about with hyped rhetoric about their chosen specialty. They just get on and make a liquid that delights and does you good. And there is a beer for pretty much every occasion. Every drop a vintage.



April Dinner Meeting

Joint Meeting
with California Section

Date: Thursday, April 28, 2011

Time: 6:30 Networking and beer tasting
7:00 Dinner
7:30 Presentation

Location: Devil's Canyon Brewing Company
111 Industrial Road, #7
Belmont, CA 94002
www.devilscanyon.com

Speaker: Dr. Charles Bamforth,
Anheuser-Busch
Professor of Brewing
University of California, Davis
Beer: The Great Scientific
Medium

Cost: \$28.00

Bar style buffet with sliders, wings,
quesadillas, salad, beer, and dessert

Reservations: www.scvacs.org
Sally Peters 650-812-4994

Reservations MUST be made by Sunday, April 24th, stating your name, address, company affiliation, and number of people in your party. Watch the web site for more information. If you are unable to honor your reservation and do not cancel by Tuesday, April 26th, you will be invoiced following the dinner meeting.

2011 ACS Fellow Program

Nominations for 2011 ACS Fellows are now being accepted. The deadline is **May 2, 2011**. The year 2011 is the third year of this program, which was created by the ACS Board in December 2008 “**to recognize members of the ACS for outstanding achievements in and contributions to Science, the Profession, and the Society.**” ACS Fellows are recognized and honored at the Fall ACS National Meetings. Each Fellow receives a lapel pin and a certificate.

Ultimately, it is expected that approximately 1-2% of the ACS will be honored as ACS Fellows. The Santa Clara Valley section can nominate up to 7 individuals. If you would like to suggest someone who you think deserves this honor, please either nominate them yourself, or propose their name to the executive committee for nomination from the local section. Fellows are selected by a broadly representative Selection Committee appointed by the Board Committee on Grants and Awards, which has governance oversight for the program.

The criteria for ACS fellowship are outlined below.

Eligibility

Nominees must be current members in good standing with ACS. The selection of ACS Fellows is based on demonstrated contributions in two defined areas:

Excellence in Science/Profession: Could include, but is not limited to:

- Excellence in R&D
- Teaching or education
- Demonstrated leadership or managerial excellence in an organization within the chemical sciences

Outstanding Service to the American

Chemical Society: Could include, but is not limited to:

- Governance service on a divisional, local, regional, national and/or international level
- Publications, such as editor, assistant or associate editor
- Meetings through organization of symposia or major presentations
- Involvement in National Chemistry Week, Chemists Celebrate Earth Day, and similar outreach activities
- Public communication by press, radio, TV or electronic media

Nominations:

- Nominations can come from an ACS National Committee, Local Section, Technical Division or an individual member.
- Each Local Section may nominate up to the

Welcome to the Santa Clara Valley Section of ACS

Each month the section receives a spreadsheet from national ACS with the names of members new to our section. The members are either new to ACS, have transferred in from other areas, or are the newest members -- the students. To welcome you to the section and get to know you, the Executive Committee offers new members a free dinner!! To encourage you to attend a monthly section dinner meeting, we would like you to be our guest. When you register, make certain to mention that you are a new member and you and a spouse (or friend) will

be our guests. The dinner meetings are often the 3rd Thursday of the month at a local spot, somewhat convenient to the entire section. If you are unable to attend in the evening, perhaps you would join us for an outreach event, like judging a science fair, participating in the chemistry olympiad, or a national chemistry week event in October. Then, there is our annual wine tasting and awards picnic in July. The local section is a volunteer organization. Please attend an event, volunteer to help, and get to know your local fellow chemists. Welcome!!

New Members List for March

Dr. Sreedhara Alavattam
Zeynep Araci
Dr. Richard Bott
Dr. Ivana Bozidarevic
Dr. Scott R. Brozell
Thuba Bui
Seth D. Byers
Priyanka Chandrasekaran
Jong Suk Choi
Caitlin M. Crowder
Dr. Madhusudhana Rao
Dowlapalli
Dr. Joseph J. Dumais
Anna Faris
Sara Farsio
Melissae Stuart Fellet
Rita R. Finones
Laxmi Gandhi
Cyril Sergei Gary
Clifford Gee
Rosalia Pet Gemora

Dr. Josh H. Golden
Dr. David Michael Goldstein
Stanley C. Hiew
Makoto Honda
Ryan Horiye
Kami L. Hull
Sarah K. Jarchow-Choy
Ashley Katana
Christian H. Kjaergaard
Gregory Kott
Helen Lam
Alyssa Lampe
George M. Lane
Aline Lanna
Christopher Li
Portia Li
Andrew Martinolich
Dr. Murray Mckinnell
Meagan Nakamoto
Angela Nguyen
Brian T. Nguyen

Daniel Ngoc Nguyen
Kathleen O'Leary
Mahendra C. Orilall
Trenton Otto
Marisa A. Plescia
Michael Frank Powell
Dr. Carol Louise Preisig
Angel Resendez
Frederick J. Seidl
Dr. Gargi Seth
Ann C. Sjolander
Jessica St. John
Lisa Staugaard
Mathew A. Steadman
Yin Kwan Tang
Ernesto Vasquez
Dr. Aleksandra Vojvodic
Vi-Anh Thi Vu
Lea Westman
Bingyang Zheng

number of Councilors from the Local Section.

- Each individual ACS member may nominate only one candidate.
- Self-nominations will not be accepted.

Each nomination must be submitted by a Primary Nominator and two Secondary Nominators who must all be ACS members in good standing with the ACS and must each write a letter of recommendation in support of the nomination.

Steps you can take in preparation for submitting a nomination:

- Identify the candidate(s).
- Determine who will be the Primary Nominator. The Primary Nominator will be responsible for submitting the nomination(s) on line. The Primary

Nominator will also need to write a letter of recommendation in support of the nominee.

- Identify the Secondary Nominators (2) and ask them to prepare letters of recommendations for upload into the nomination system.
- Gather contact information for the Primary and Secondary Nominators and membership numbers as these will be required as part of the nomination packet.

Complete the 2011 Nomination for Fellow of the American Chemical Society Form for upload into the nomination system.

Additional Information:

Additional information on the ACS Fellows Program can be obtained by sending an email to: fellows@acs.org.

Ottenberg Service Award 2011 Call for Nominations

It is again time to nominate candidates for the Abraham Ottenberg Service Award of the Santa Clara Valley Section.

This Award was established in 1973 by the Santa Clara Valley Section to recognize members who have rendered outstanding service to the Section. It is named after Abraham Ottenberg, a former member who devoted much of himself to service to the Section. The award consists of an engraved plaque and a check for two hundred fifty dollars. The award recipient is selected from candidates nominated by members of the Section. Nominees must be members of the Santa Clara Valley Section.

Previous recipients are: Shirley B. Radding (1974), Oliver F. Senn (1975), Floyd M. Hobbs (1976), Frank R. Mayo (1977), Harry S. Mosher (1978), Lois J. Durham (1979), Richard W. Gaver (1980), Alan C. Ling (1982), Ludwig A. Mayer (1983), John F. Riley (1983), Howard M. Peters (1984). June G. Jones

(1986), Robert L. Montoya (1986), Malcolm Dole (1987), Donald E. Green (1991), Hubert E. Dubb (1992), Karl Marhenke (1993), Stephen N. Senzer (1994), Carol W. Mosher (1995), Bonnie Charpentier (1998), Linda Brunauer (1999), Herbert B. Silber (2000), Sally Peters (2001), Jamil Talhouk (2002). Ean Warren (2003), Maureen Scharberg (2004), Hong Gao (2005), George Lechner (2006), David Parker (2007), Bruce Raby (2008), Peter Rusch (2009), and Stephanie Gehling (2010).

The nominating letter should include a brief biography of the candidate and a description or evaluation of the service(s) to be recognized by the award. Seconding

nominations are not required but will be accepted.

Nominations should be sent to:
Chairman, Ottenberg Award Committee
Santa Clara Valley Section, ACS
Post Office Box 395
Palo Alto, CA 94302

Nominations must be received by June 1, 2010 to be considered for the 2011 Award.

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Egg in a Bottle

Kids never cease to be amazed by this little trick, no matter how many times you show it to them.

What You'll Need:

- One Hard Boiled Egg Peeled
- Boiling Water
- A Bottle with a neck slightly smaller than the egg

The Experiment:

1. Set the egg on the neck of the bottle to demonstrate that the egg simply won't fit in the bottle. Tell the child that you know a trick to make that egg go down into the bottle without breaking it.
2. Remove the egg from the bottle and pour the boiling water into the bottle. Carefully roll the water around in the bottle and then pour it out.
3. Quickly put the egg back on the neck of the bottle, while the bottle is still hot, and wait for it to get sucked down into the bottle.

The Explanation:

When you put the hot water into the bottle and then poured it out, the hot water left steam behind in the bottle. The steam forces out some of the air that was already in the bottle. As the steam in the bottle cools down, it converts into tiny droplets of water. The drops of water require less space and this reduces the amount of air pressure in the bottle. The pressure on the outside of the bottle is greater than the pressure on the inside of the bottle and that is what forces the egg into the bottle.

Removing The Egg From The Bottle:

You can remove the egg from the bottle using the same process in reverse. Hold the bottle upside down and blow into the bottle for about 30 seconds. Be sure to seal your lips around the mouth of the bottle when you do this. By blowing into the bottle, you will increase the pressure on the inside of the bottle and force the egg out.





Call for Nominations Shirley B. Radding Award



The Santa Clara Valley Section of the American Chemical Society (ACS) announces the call for nominations for the 2011 Shirley B. Radding Award.

First awarded in 1994 to its namesake, the Shirley B. Radding Award annually honors someone who has been a member of the ACS for at least 20 years. Nominees must have demonstrated dedicated, unselfish leadership, service and significant contributions over a sustained period of time to industrial, applied or academic chemistry and to the ACS through elected or appointed positions at local, district and national levels.

Award Criteria

- Member of the American Chemical Society for more than twenty (20) years.
- Demonstrated dedicated and unselfish service to ACS and its members over a

sustained period of time.

- Provided leadership through elected and appointed ACS positions at local, district and national levels.
- Made significant contributions to industrial, applied or academic chemistry.

The award consists of an honorarium of \$1,000 and a suitably inscribed memento. Nominations must consist of at least one letter of nomination stating how the nominee's work relates to all aspects of the award. It is strongly recommended that seconding letters accompany the nomination.

Nominations are due on or before May 1, 2011, and may be sent electronically to Radding-Award@scvacvcs.org or be mailed to:

Radding Award Committee
Santa Clara Valley Section ACS

Post Office Box 395
Palo Alto, CA 94302

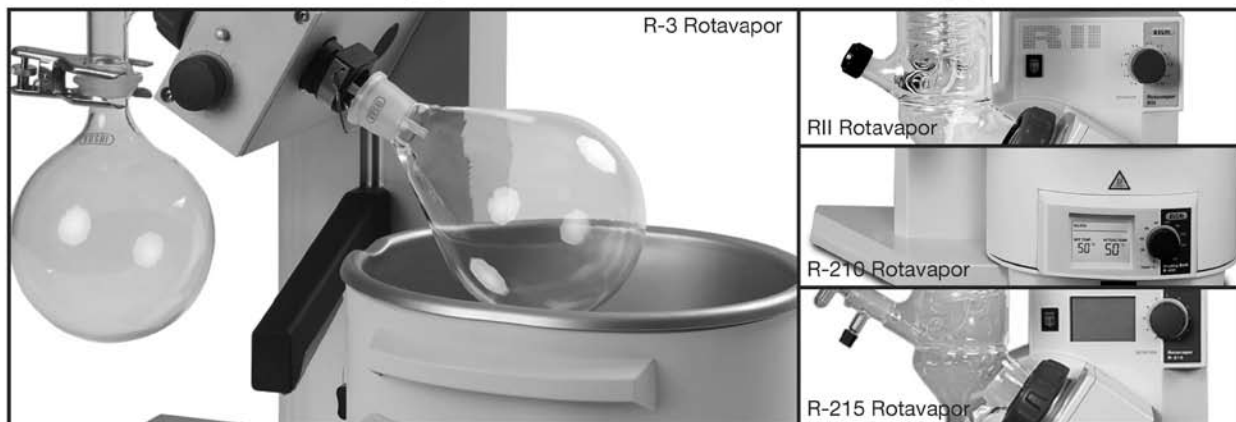


Previous Award Recipients

1994	Shirley B. Radding (deceased)
1995	Agnes Ann Green (deceased)
1996	John F. "Jack" Riley (deceased)
1997	Howard M. Peters
1998	Alan C. Nixon (deceased)
1999	Valerie J. Kuck
2000	Halley A. Merrell
2001	Norman A. LeBel (deceased)
2002	Paul H. L. Walter
2003	Jean'ne M. Shreeve
2004	Maureen G. Chan
2005	Glenn Fuller
2006	Janan M. Hayes
2007	Merle I. Eiss
2008	Dorothy J. Phillips
2009	Bryan Balazs
2010	Herbert B. Silber

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Quality in your hands

The Silicon Valley Science and Engineering Fair Our Local Synopsys Championship

By Howard Peters

The Synopsys Championship (our local Silicon Valley Science and Engineering Fair) was held Wednesday, March 9, at the San Jose Convention Center. See <http://sites.google.com/site/synopsyschampionship/>

The annual Synopsys Championship showcases students in the Santa Clara county of California who will become some of our future scientists, technology experts, engineers, and mathematicians. This regional competition celebrates achievement by middle and high school students supported by their parents, teachers, and schools.

Through the annual Fair competition, hundreds of the area's competitive students are challenged to go beyond their classroom studies to do independent project-based research. They work independently or in teams to address questions in the fields of Computer Science, Environmental Science, Medicine and Health, Chemistry, Biology, and a half dozen other categories.

The Synopsys Championship produc-

es winners who go on to compete and win in other state and national competitions, including the prestigious Intel International Science and Engineering Fair on May 9-13, 2011. But whether or not a student wins, every student is celebrated and encouraged by the hundreds of other attending students, parents, teachers, mentors, sponsors, judges, and members of the public.

The Santa Clara Valley Section will provide special awards totaling \$1,000 to the winning students. Abby Kennedy, the Section chair, will present the awards on Sunday, April 2, in the afternoon at Paramount's Great America in Santa Clara.

In these times it is important to encourage bright young students such as these who are interested and capable in science and technology for us to be able to innovate and invent our way out of the present world and national economic situation. Science fairs are the window to see, up-close-and-personal, our talented scientist and engineers of the future.

Next month's issue of The Silicon Valley Chemist will list the ACS student winners. Our thanks are again extended to Dr. Art DeGusse, CEO of Synopsys, and the Synopsys Foundation for their continuing generous support of the efforts of our local science students and this important science and engineering outreach.

Judges from our Section included Mark Kent, Susan Oldham-Fritts and Dr. Howard Peters. Chemistry judges in other categories included among many others: Dr. Hubert Dubb, Dr. Ronald Orłowski, Dr. Jane Frommer, and Dr. Rick Di Pietro. A huge debt of gratitude goes out to judges in all categories for volunteering their time and expertise. Science fairs don't happen without these committed judges.

Judges in all categories and special award judges are still needed at the Intel International Science and Engineering Fair. Project judging will be held on Tuesday and Wednesday, May 10-11. See www.society-for-science.org/intelisef2011 to register.

What Are You Doing on April 16th?

Want to do a little volunteering for your local section? It is April, so it is Chemistry Olympiad time. This year the national exam will be held at the chemistry department of Santa Clara University and be hosted by Dr. Linda Brunauer. There will be 34 super bright high school students vying for the opportunity to represent us at the International Chemistry Olympiad in Ankara, Turkey in July.

The students from the California section will be joining our 17 finalists in a day of testing. The day will begin at 8:30 am with introductions and instructions and immediately go into a 90-minute multiple-choice exam. Then, after a short break, they will begin the 60-minute problem set session. We will break for a pizza lunch and head right into the lab part of the exam. By 2:30 pm, the students are totally spent and we wrap up and they head home by 3:00 pm.

The students will be doing all of the hard work. They are amazing! We need a

few able bodied members from our section to simply act as proctors. For the proctors, the morning is easy. The afternoon is a bit more challenging because you need to wear goggles (provided) and walk around in the lab! Your chemistry knowledge will not be tested, but theirs will!

If you can give us a couple hours on that Saturday, or even the entire day, the committee would appreciate it. Your pay is being in the company of some really intelligent students and getting to mingle with a few of your fellow section members.

If you can't help on the 16th, perhaps you can help to customize the certificates that all the students receive for participation. Access to

a good color printer or scanner/printer helps. Customizing the certificates with your calligraphy skills would be grand! There should be about 125 ACS-supplied certificates that will need to be personalized!

Here is your chance to help your local section in 2011. Contact Sally Peters by email or telephone to volunteer.

Sally.Peters@parc.com
or 650-854-4614



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Call for Nominations for the Mosher Award

The Harry and Carol Mosher award is the Santa Clara Valley Section's highest honor. This award was established in 1980 by our Section to:

1. Recognize and encourage outstanding work in chemistry,
2. Advance chemistry as a profession, and
3. Recognize service to ACS.

The award is named for the late Dr. Harry S. Mosher of Stanford University, Palo Alto, California, and Carol W. Mosher of the Stanford Research Institute International, Menlo Park, California, husband and wife, charter members and long-time supporters of this Section. The award is presented annually, typically at the January dinner meeting.

The first scientists to receive this award were Drs. Harry and Carol Mosher themselves in recognition of their contributions to the local section, ACS and chemistry in general. The committee noted that the Moshers, including a brother, Dr. William A. Mosher, also a chemist and former Chairman of the Department of Chemistry at University of Delaware, are outstanding examples of the qualities to be recognized and honored by this award.

Any ACS member residing in the United States is eligible to be nominated for the Mosher Award. Nominations, including attachments (e.g., reprints) should be sent by e-mail to mosher_award@scvacvcs.org. The

nomination should address the criteria listed above in the first paragraph: outstanding work in chemistry, accomplishments in advancing chemistry as a profession, and service to the ACS. At least one seconding letter should be submitted.

The deadline for submission of nominations is the last day in May of each year.

Past recipients include:

- | | | | |
|------|--|------|--|
| 1980 | Harry and Carol Mosher, <i>Stanford University and SRI International</i> | 1991 | Jean'ne M. Shreeve, <i>University of Idaho</i> |
| 1981 | Robert C. Brasted, <i>University of Minnesota</i> | 1992 | Carl R. Johnson, <i>Wayne State University</i> |
| 1982 | Ernest L. Eliel, <i>University of North Carolina</i> | 1993 | Koji Nakanishi, <i>Columbia University</i> |
| 1983 | Alfred and Helen Free, <i>Miles Laboratories</i> | 1994 | Peter Beak, <i>University of Illinois</i> |
| 1984 | Albert C. Zettlemoyer, <i>Lehigh University</i> | 1995 | Ned D. Heindel, <i>Lehigh University</i> |
| 1985 | Malcolm Renfrew, <i>University of Idaho</i> | 1996 | Joginder Lal, <i>Goodyear Tire and Rubber Company</i> |
| 1986 | Robert and Gloria Lyle, <i>South West Research Institute and UTSA</i> | 1997 | Joseph A. Dixon, <i>Pennsylvania State University</i> |
| 1987 | John G. Verkade, <i>Iowa State University</i> | 1998 | Glenn A. Crosby, <i>Washington State University</i> |
| 1988 | Richard M. Lemmon, <i>Lawrence Berkeley Lab and U. C., Berkeley</i> | 1999 | 20-year recognition of the Award |
| 1989 | Arthur W. Adamson, <i>University of Southern California</i> | 2000 | Darleane Hoffman, <i>Lawrence Berkeley National Laboratory</i> |
| 1990 | Fred Basolo, <i>Northwestern University</i> | 2001 | James Morrison, <i>University of New Hampshire</i> |
| | | 2002 | C. Marvin Lang, <i>University of Wisconsin Stevens Point</i> |
| | | 2003 | Joseph Lambert, <i>Northwestern University</i> |
| | | 2004 | Paul S. Anderson, <i>DuPont Merck</i> |
| | | 2005 | Michael Doyle |
| | | 2006 | Robert Parry |
| | | 2007 | Dennis Curran |
| | | 2008 | Theodore L. Brown |
| | | 2009 | Howard and Sally Peters |
| | | 2010 | Tobin Marks, <i>Northwestern University</i> |

Those Resilient Little Birds...

As we plunge into the 21st century, it is time we take a closer look at the technological wonders we create. Here, we try to discover just a little bit more about the world around us through the miracles of science, technology, and preservatives.

We hope you enjoy this educational tour as we work to characterize everybody's favorite Easter candy, the Marshmallow Peep.

Visit www.peepresearch.org and see some of the amazing research being done with all of our favorite Easter treats including...

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- Reaction to heat
- Solubility testing
- Low-pressure environments

Peep Health: Perhaps one of the most under-represented areas of study worldwide, issues of Peep well-being are only now making their way into the mainstream consciousness.

- Risk Analysis: Investigating the effects of smoking and alcohol on Peep health.
- Medical Miracle! Quintuplet Peep siblings, conjoined at birth, have been separated through this daring application of modern medicine!
- Fear Response: Discover what causes this dramatic Peep behavior.



Trick Candles for April Fools Day

It's a familiar scene at birthday celebrations and practical jokes: The guest of honor blows out the candles on his or her birthday cake. Thin ribbons of smoke escape from the wicks, signaling the guests to clap and cheer.

But wait! The wicks begin to glow a fiery red. They flicker, and suddenly the flames reappear. Looking bemused, the birthday boy or girl tries to blow out the candles—again and again, much to the delight of the onlookers.

Trick candles, also known as magic candles, can add a flash of spontaneity to any party. The chemistry that allows these candles to repeatedly reignite turns out to be surprisingly simple.

Candle wax is typically made from paraffin hydrocarbons, and the wick is usually braided cotton treated with a chemical salt solution to prevent the wick from being destroyed too quickly by the flames, says Bob Nelson, director of fragrance development at Yankee Candle. "Wick manufacturers are secretive about the exact formulations they use," he adds.

In a trick candle, magnesium powder is incorporated into the candle's wick. Magnesium is a highly reactive metal when powdered or sliced thinly. It can ignite at temperatures as low as 800°F (430°C). When the flame is blown out, the hot embers from the wick ignite the magnesium powder, producing tiny sparks. This, in turn, ignites the vaporized paraffin hydrocarbons, which relights the wick. The magnesium found lower down in the wick doesn't burn because it is protected by the paraffin. Magnesium powder is used in trick candles because it is flammable at a lower temperature than other pyrophoric metals such as aluminum or iron.

Trick candles are so simple to make that video instructions are readily available on YouTube and other video-sharing sites. But experts caution that the simple fun of these candles belies the dangers they pose. "We're very concerned about these candles because of the potential fire hazard," says Barbara Miller, a spokeswoman for the National Candle Association, in Washington, D.C. "People think the candles are done, so they take them out of the cake and throw them in the

trash. Suddenly their trash is on fire."

Miller recommends thoroughly extinguishing the candles by running them under water to cut off the candle's oxygen supply. "When I use the candles, I douse them in water and set them in my sink for an hour or two before I put them in the trash," she says.

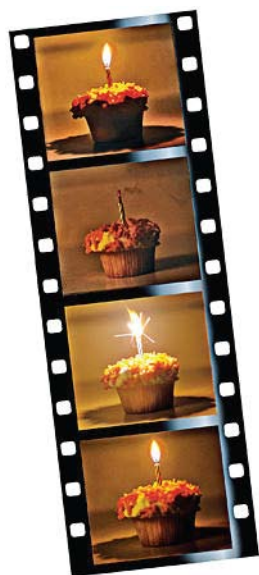
Canada has banned the sale and advertisement of trick candles since 1977. Trick candles are currently legal in the U.S., and they are typically manufactured in Asia. "I think it would be very difficult to ban them here in the U.S.," says Miller. "Of all of the issues that people are dealing with in product safety, trick candles are way down on the list. Our best bet is to continually try to educate consumers about the potential fire hazards of these candles."

Information on when trick candles were invented and by whom is difficult to track down, but C&EN found several patents related to the basic principle. For example, in a 1983 Japanese patent titled "Self-Ignited Candle," inventor Toshio Takahashi describes a candle fuse made of aluminum, magnesium, or iron, or an alloy of those metals. In a 2003 U.S. patent, Earl M. Stenger describes his invention of a wind-resistant candle that contains wick fibers made of a pyrophoric material such as magnesium or a magnesium-aluminum blend.

Inventors continue to experiment with novelty candles, including those

that burn with colored flames.

These candles are typically made by incorporating metal salts into the candles, but so far the commercial potential of these candles has been limited. Nelson says that Yankee Candle had looked into colored-flame candles



several years ago, but there were issues with proper burning in the prototypes they examined.

Ron Newman, director of research and development at Maesa Group, a beauty and home fragrance products manufacturer, says his company has also looked into colored-flame candles, but because of a lack of data on the toxicity of metal oxide emissions from such candles, the company is holding off on licensing the technology. "This is really an unknown area of emissions," says Newman.

As for trick candles, the novelty never seems to wear off. At birthday parties everywhere, the candles, like their flames, just keep coming back.

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Highlights of the March Dinner Meeting with Dr. Schwarzman

Photos Courtesy of Lois Durham



Susan Oldham-Fritts and Natalie McClure



Ashley Fouts made arrangements for AWIS and SCVACS Joint Meeting



Part of the audience in attendance



Abby Kennedy



Abby Kennedy and Dr. Megan Schwarzman



Megan Schwarzman

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CHEMEMPLOYMENT ABSTRACT 3958

Position Title: Polymer and Plastics Development Process Engineer

Job Description:

- specify and commission equipment
- develop and implement new processes for product development and manufacturing
- support or conduct pilot and small manufacturing trials
- manufacturing support; optimize on-going processes, continuous improvement; maintenance/preventative maintenance
- identify areas for cost control and implementing changes to achieve cost reduction targets

QUALIFICATIONS DESIRED:

Education: M.S. in Engineering or equivalent experience

Experience:

- minimum 5 years industrial experience
- specific process development or manufacturing experience
- experience with a broad range of polymer materials used for coatings, adhesives, and extruded or molded articles
- experiment design and documentation

LOCATION, SALARY, EMPLOYER:

Job Location: Menlo Park, CA

Salary: TBD

Employer: Bay Materials conducts client driven research and development with a focus on product development requiring high performance or unique polymer materials. Bay Materials provides small scale manufacturing capability for scale up or transition of products to full scale manufacturing.

Application Instructions: Please review the Bay Materials web site <http://baymaterials.com> and contact Chris Vogdes for detailed job description. Please contact by E-Mail: cvogdes@baymaterials.com. Bay Area locals only.





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FUTURE MEETINGS

- Apr 16** Chemistry Olympiad, National Exam
Department of Chemistry
Santa Clara University
- Apr 22** Earth Day
- Apr 28** Dr. Charles Bamforth
UC Davis Professor
Beer: the Great Scientific Medium
Devil's Canyon Brewing Company
Belmont, CA
- May 11** Jonathan L. Sessler Distinguished
Alumni Lecture Series
Department of Chemistry
Stanford University
www.stanford.edu/dept/chemistry/events/conf/jlsessler/index.html
- May 19** Dr. Joanna Wysocka, Stanford University
Stem Cells, Enhancers and Emergence
of Epigenomes in Development
Ming's Chinese Restaurant
Palo Alto, CA 94303
- Jun 19-22** 85th ACS Colloid and Surface
Science Symposium
McGill University, Montreal, Quebec