

# Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

Volume 32 No. 2

## FEBRUARY 2010 NEWSLETTER TOPICS

- March Dinner Meeting - Energetic Molecules and Russian Spies
- Chair's Message
- February Dinner Meeting - Benefits of Wine with Dinner
- President Obama Announces National Lab Day
- A Former Student in His Graduate Class of 1963
- An Outreach Event for the ACS National Meeting
- Local Science Fairs in 2010
- SEE the Future of Sustainability through Chemistry
- Water Conservation Efforts
- Call for Nominations - Shirley B. Radding Award
- ISEF 2010

## March Dinner Meeting

# Energetic Molecules and Russian Spies

Dr. Joseph A. Castellano

### Abstract:

This talk will discuss some of the government classified research on the synthesis and properties of nitrogen-fluorine compounds that was performed in the early 1960s at the Thiokol Chemical Company in Denville, New Jersey. Some of the reactions involving difluoramine ( $\text{HNF}_2$ ), tetrafluorohydrazine ( $\text{N}_2\text{F}_4$ ), and perfluoroguanidine (PFG) with various substances will be described. The objective of the research was to synthesize organic compounds with a large number of difluoramino ( $\text{NF}_2$ ) groups for use in rocket propellant formulations. The higher the number of these groups per molecule, the more "energetic" the material. Formulas and samples of some of these materials were given to a Soviet KGB agent by one of



our coworkers, code named "Cook," by the KGB. The story of this espionage activity and the ultimate fate of Cook as well as his KGB "handler" will also be related. Finally, some possible future uses for nitrogen-fluorine compounds will be proposed.

### Biography:

Joseph A. Castellano was born in

*continued on next page*

## March Dinner Meeting

**Date:** Thursday, March 18, 2010

**Time:** 6:00 Social Hour  
7:00 Dinner  
8:00 Presentation

**Location:** Biltmore Hotel & Suites  
2151 Laurelwood Blvd.  
Santa Clara, CA 95054

**Speakers:** Dr. Joseph Castellano  
Energy Molecules and  
Russian Spies

**Cost:** \$27.00 with a choice of:  
Greek Chicken with olives and  
feta cheese  
Vegetarian Crepes

**Reservations:** [www.scvacs.org](http://www.scvacs.org) or  
Shirley Radding 408-246-2564  
408-296-8625 Fax

Reservations should be made by March 15th stating your name, address, company affiliation, number of people in party, and menu selection. If you are unable to honor your reservation and do not cancel by Tuesday, March 16th, you will be invoiced following the dinner meeting.

## Chair's Message

The New Year is underway. I hope that it will be a good year for you, especially for those of you who have lost jobs or have had your salaries reduced. We do need an uptick in the economy.

Our next Section meeting will be on Wednesday, February 17 at the Biltmore. Please note that the meeting will be held on a Wednesday instead of a Thursday this month. Our guest will be Dr. Valery Uhl who will tell us about how toxic can be healthy!

The next national ACS meeting will be March 21-25 in San Francisco.



Spring is the season for science fairs, which give students the opportunity to create experiments and report their results. Please consider becoming a judge for some of these fairs; it is a good way to meet students and give them some guidance.

Sciencepalooza, February 27, Santa Clara County fairgrounds

Synopsis Championship, March 16-17, San Jose Convention Center  
Intel ISEF, May 9-14, San Jose Convention Center

See you at the Biltmore on the 17th!



*Energetic, continued from front page*

Manhattan and raised in Brooklyn. He received his B.S. from the City College of New York (CCNY) and a Master of Science and Ph.D. from the Polytechnic Institute of New York University (formerly the Polytechnic Institute of Brooklyn).

Castellano began his professional career in 1959 with the Witco Chemical

Company in Paterson, New Jersey developing analytical methods for industrial chemical manufacturing. In 1962, he joined Thiokol Chemical Company, Denville, New Jersey, where he performed classified rocket fuel research under contract to the U.S. Naval Research Laboratory. Castellano joined

RCA Laboratories in Princeton, New Jersey in 1965 and performed pioneering research in liquid crystal materials and electronic displays. He was a member of the team that developed the world's first liquid crystal display (LCD). In 1976, he founded Stanford Resources in San Jose, California and as CEO helped grow the company into a world leader in market research and analysis of the electronic display industry. He retired in 2003 following the merger of Stanford Resources with iSuppli Corporation.

Castellano has authored or co-authored more than 60 scientific/technical papers and two books, and he is the holder of 12 U.S. patents. He continues to be active in several international scientific associations and helps teach eighth-grade physical science as a volunteer in the RESEED Silicon Valley program.

---

**Reminder**      **February Dinner Meeting**      **Reminder**  
**Benefits of Wine with Dinner**

**Dr. Valery Uhl**

**Abstract:**

Chemists know that simple alcohols are poisonous compounds. Ethanol is just the least toxic to humans. Many "toxic" compounds are beneficial to humans in small doses. After defining "moderate alcohol consumption" and explaining the "French Paradox," Dr. Uhl will discuss the health benefits of moderate alcohol consumption. The talk will cover the health benefits of wine and will contrast wine being part of a meal or not part of a meal. Some of the compounds of wine that might be responsible for its beneficial nature will be discussed.



She continues to collect and donate wine for many of her special causes such as the American Cancer Society of which she is a Board member, various Breast Cancer events and Summit Medical Center in Oakland where she is also the Director of Radiation Oncology Services at the AB Summit

Comprehensive Cancer Center's Department of Radiation Oncology.

**Biography:**

Dr. Uhl is the Chief Judge and Director of the "North of the Gate" Wine Competition for the Sonoma-Marina Fair in Petaluma, California. She also judges for the San Francisco International Wine Competition, the Pacific Rim International Wine Competition, the Grand Harvest Awards, the National Women's Wine Competition, the West Coast Wine Competition, the El Dorado County Fair Wine Competition, the International Japan Wine Challenge, the Mid American Wine Competition and multiple others.

Dr. Uhl has a degree in Viticulture Management, and graduated Cum Laude from U.C. Davis where she was a Taster for the U.C. Davis Enology and Food Science Departments. Her family owns gold medal Pinot Noir vineyards in the Green Valley sub-appellation of the Russian River AVA.

She has written papers and given lectures around the country on the health benefits of wine. She also educates various Bay Area clubs on wine and food pairings.

---

**February Dinner Meeting**

**Date:** Wednesday, February 17, 2010

**Time:** 6:00 Social Hour

7:00 Dinner

8:00 Presentation

**Location:** Biltmore Hotel & Suites  
2151 Laurelwood Blvd.  
Santa Clara, CA 95054

**Speakers:** Dr. Valery Uhl  
Benefits of Wine with Dinner

**Cost:** \$27.00 with a choice of:  
Chicken Vernique (cream sauce)  
Schezwan Vegetable Stir-Fry

**Reservations:** [www.scvacs.org](http://www.scvacs.org) or  
Shirley Radding 408-246-2564  
408-296-8625 Fax

Reservations should be made by February 14th stating your name, address, Company, affiliation, number of people in party and menu selection. If you are unable to honor your reservation and do not cancel by Tuesday, February 16th, you will be invoiced following the dinner meeting.

---

❖      ❖      ❖  
**President Obama  
Announces National  
Lab Day**

On November 23, President Barack Obama announced the establishment of National Lab Day, an effort supported by ACS and 190 other organizations representing more than 6.5 million science, technology, engineering, and math (STEM) professionals.

The first National Lab Day is tentatively set for early May 2010 and will be part of a large, ongoing STEM initiative called "Educate to Innovate." ACS and other organizers hope National Lab Day will help stimulate more hands-on science learning by fostering enduring collaborations between individual STEM professionals, teachers, and students. ACS Chemistry Ambassadors are already making these connections.

To join the effort or learn more, visit [www.acs.org/chemistryambassadors](http://www.acs.org/chemistryambassadors) and [www.nationallabday.org](http://www.nationallabday.org).

**Happy  
Valentine's  
Day**

# Eugene E. van Tamelen

By Howard Peters

## A Former Student in His Graduate Class of 1963

According to a Stanford University press release, Dr. Eugene E. van Tamelen, a prominent organic chemist at Stanford who often turned to nature for inspiration in synthesizing molecules, died December 12 of cancer at his home in Los Altos Hills. He was 84.

Eric Jacobsen, a professor of chemistry at Harvard said, "He was an organic chemist, but he really asked big questions that transcended the specific discipline of organic chemistry. He was one of the first people half a century ago to take what we call a biomimetic approach to synthesis."

One of the problems van Tamelen tackled was how the body produces cholesterol, a complicated molecule that is vital for living organisms (although troublesome in excessive quantities).

"It looks like nature was insane to go and make that," said K. Barry Sharpless, a former student of Dr. van Tamelen, who was once a professor at M.I.T. and more recently the 2000 Nobel Prize-

winning chemist at the Scripps Research Institute in San Diego.

Dr. van Tamelen discovered a molecule called squalene oxide that was a crucial ingredient in a complex one-step reaction that creates the maze of linked carbon rings in the core of cholesterol molecules.

That, Dr. Jacobsen said, "was a terrific insight that has laid the groundwork for a lot chemistry and drug discovery."

Born in Zeeland, Michigan, on July 20, 1925, Eugene Earle van Tamelen attended Hope College (well known then for its undergraduate research programs), a small Christian college in Holland, Michigan, planning to become an automobile designer. An organic chemistry course changed his career direction.

While still a student at Hope, van Tamelen published a paper that was the first of more than 150 papers he would publish in prestigious journals. He graduated from Hope in 1947 and received

his doctorate from Harvard in 1950. While at Harvard in the research group of Dr. Gilbert Stork, he was part of the team that synthesized cantharidin, the structure of Spanish Fly. He joined the chemistry faculty at the University of Wisconsin where he was shortly named the Homer Adkins Professor of Chemistry before moving to Stanford in 1962.

In 1963 Dr. van Tamelen published the successful synthesis of Dewar benzene, a simple-looking variation of ring-shaped benzene, which many chemists thought impossible to make because the chemical bonds were arranged into a highly strained configuration. He retired from Stanford in 1987.

Dr. van Tamelen was a member of the National Academy of Sciences.

He is survived by his wife, Mary, of Los Altos Hills, two daughters and a son, and five grandchildren.



---

## An Outreach Event for the ACS National Meeting

ACS President Joseph Francisco and the Committee on Community Activities will be hosting an outreach event for the San Francisco community on the day before the start of the upcoming 239th ACS national meeting, which will be March 21-25.

The event, called "Hands-on Sustainability: An Outreach Event of the American Chemical Society" will be held on Saturday, March 20th, 11:00 am to 2:00 pm at the California Academy of Sciences (CAS), 55 Music Concourse Drive, Golden Gate Park, San Francisco, CA 94118. The East Garden has been reserved, and if the weather prohibits an outdoor meeting, it will be held inside.

This outreach event will feature 12-18 hands-on demonstration stations where children will have to ability to learn about a variety of chemical properties and to explore chemistry in a fun and exciting environment. Members of the Santa Clara Valley and California Sections who would be able to assist with several pre-event and

on-site key functions are invited and urged to volunteer. Contact Natalie McClure (nmccclure@drugregulatoryaffairs.com) or Paul Vartanian (pfvartanian@gmail.com).

1. Site visit: meet with the event planner at the CAS to discuss the set-up for the day (a diagram will be provided, and there will be a conference call with the volunteer prior to his or her meeting with the Academy staff).

2. Purchase supplies: we have found that it is more economical for local ACS members to purchase the items for the event in bulk and deliver to the site the morning of the event. A shopping list will be provided and shoppers will be reimbursed.

3. A runner: In the event that we need additional supplies on-site, someone will be needed to be available to go to the store to restock on the day of the event.

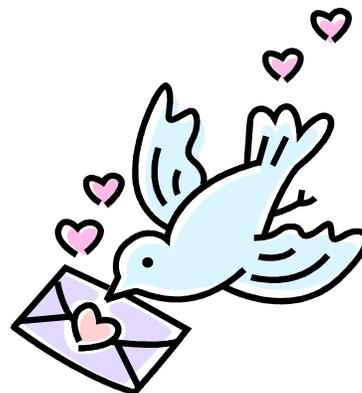
4. TENTATIVE: Approximately 25 easels for the signs will be needed.

5. TENTATIVE: Does the section have access to goggles?

6. Volunteer: we need volunteers to assist with all aspects of the event: set-up, help with activities, restock stations, goggle police (make sure the attendees are following safety procedures), etc.

If you are interested in assisting with any of these tasks or know someone who is, please let us know by January 29th. I encourage you to share this information with others.

Thanks in advance for your assistance.



## Local Science Fairs in 2010

Contact: Howard Peters, [peters4pa@sbcglobal.net](mailto:peters4pa@sbcglobal.net)

January to June of each year is the time for intense effort for IMPORTANT science and engineering fair competitions at the local, regional, state and international levels.

### San Francisco Area Science Fairs - ISEF affiliate

San Mateo County students eligible

Judges needed: Thursday, March 25, 2010

Location: San Francisco County Fair Ground Building - Golden Gate Park

Contact: Greta Mayfield (925)842-3047 or [Greta.Mayfield@chevron.com](mailto:Greta.Mayfield@chevron.com)

For more information, visit [www.usc.edu/CSSF/Fairs/300.html](http://www.usc.edu/CSSF/Fairs/300.html)

### San Mateo County Science, Math and Technology Fair

Date: February 1-4

Judges Needed: February 2, 2010

Location: Hiller Aviation Museum, San Carlos

[www.hiller.org/upcoming-events.shtml](http://www.hiller.org/upcoming-events.shtml)

Contact: Christine or Gary Nakagiri (650) 802-5337 or [cjoy@smcoe.k12.ca.us](mailto:cjoy@smcoe.k12.ca.us)

For more information, visit [www.usc.edu/CSSF/Fairs/400.html](http://www.usc.edu/CSSF/Fairs/400.html)

### SCIENCEPALOOZA

East Side Union High School for first time science fair participants

Date: Saturday, February 27, 2010

Location: Santa Clara County Fair Grounds, San Jose.

For more information, visit [www.outreach-foundation.org/judges.html](http://www.outreach-foundation.org/judges.html)

### Monterey County Science and Engineering Fair

County High School students

Judges needed: Saturday, March 6, 2010

Location: California State University, Monterey Bay.

For more information, visit [www.montereycountysciencefair.com/](http://www.montereycountysciencefair.com/)

### Santa Cruz Science Fair

Santa Cruz County high school students

Date: Saturday, March 13, 2010

Location: Santa Cruz Civic Auditorium, Santa Cruz

For more information, visit [www.science.santacruz.k12.ca.us/links.html](http://www.science.santacruz.k12.ca.us/links.html)

### Synopsys Championship (aka Santa Clara Valley Science and Engineering Fair)

Date: Wednesday, March 17, 2010

Location: San Jose Convention Center, San Jose

For more information, visit [www.outreach-foundation.org/judges.html](http://www.outreach-foundation.org/judges.html)

### Tri-Valley Science and Engineering Fair

Date: March 30-April 2, 2010

Location: Livermore CA

For more information, visit: <https://tvsef.llnl.gov>

### Intel International Science and Engineering Fair (ISEF) World Class Competition

Date: Sun-Fri May 9-14;

JUDGING Tues-Wed, May 11, 2010 5pm to 8pm and

May 12, 2010 from 8am to 6pm.

Location: San Jose Convention Center, San Jose CA

Contact: Dr. Howard Peters at [peters4pa@sbcglobal.net](mailto:peters4pa@sbcglobal.net)

or Dr. Roy Okuda, SJSU at [okuda@sjsu.edu](mailto:okuda@sjsu.edu).

For more information, visit: [www.sciserv.org/isef/](http://www.sciserv.org/isef/) or

[www.isef2010sanjose.org/judges.html](http://www.isef2010sanjose.org/judges.html)

### California State Science Fair

Date: Monday-Tuesday, May 17-18, 2009

Location: California Science Center, LA.

For information, visit: [www.usc.edu/CSSF/](http://www.usc.edu/CSSF/)

For other affiliated U.S. Science Fairs, please visit: [www.societyforscience.org/](http://www.societyforscience.org/)

## SEE the Future of Sustainability through Chemistry

The global challenges of providing sufficient and secure energy, clean drinking water, and adequate food, housing, and medical care will require the creative input of all of the planet's scientists. To address these challenges, ACS will host an innovative Sustainability Engagement Event (SEE) during the spring national meeting in San Francisco ([www.acs.org/sustainability](http://www.acs.org/sustainability)).

The event will help us to SEE this future. It will focus on collecting, refining, and implementing the ideas of a broad range of stakeholders, and on strengthening their engagement. The goals are to generate excitement about the ACS sustainability efforts; to brainstorm, create, and develop projects that can and will make a difference; and to connect with members of all ages and fields, especially those who are not currently engaged with ACS on a volunteer level.

The varied backgrounds and experiences of chemists inspire us in different ways to offer workable solutions at the local, regional, and global levels. Working together, ACS and chemists can identify the solutions that will help us achieve a sustainable future.

All meeting attendees and ACS members are invited to participate in the event forum. Even if you are not planning to be in San Francisco, you are encouraged to share your ideas at [www.acs.org/sustainability](http://www.acs.org/sustainability). The SEE kickoff will take place on Sunday, March 21 from 6 to 8:30 pm in the Expo Hall, and the forum will be on Tuesday, March 23 from 3 to 5:30 pm. Preregistration is requested for the forum, which is quick and easy at [www.acs.org/sustainability](http://www.acs.org/sustainability).



## Water Conservation Efforts

*One of our Councilors suggested that an accounting of local efforts at water conservation might be of interest to members of the Section. Here is a description of water conservation activities at San Jose State University (SJSU), written as part of a class project, and originally intended for publication on the SJSU campus:*

Are you aware of the water conservation efforts San Jose State University has been practicing? Or will be implementing in the future?

If you are the typical San Jose State University community member you probably have little to no idea what water conservation efforts are being practiced!

### The University is currently practicing:

- 20 million gallons of recycled water per year for campus cooling
- 1 million gallons of water saved per year from Spartan Stadium artificial turf
- 20 million gallons of recycled water per year used for athletic fields and irrigation
- Use of low flow fixtures
- Landscaping with drought tolerant and native plants
- Water savings of \$100,000 per year

### Future University water conservation plans:

- Use of waterless urinals

- Collection of storm water for irrigation
- Convert King Library toilet/urinals to recycled water
- Increase use of recycled water for irrigation
- Increase use of drought tolerant and native plants in landscaping
- Student Union renovation and new Health Center to incorporate recycled water and low flow fixtures

It is unfortunate that communication regarding such important conservation efforts are not publicized more. The university has every right to be proud of not only their water conservation efforts but all of their conservation efforts. In a time of climate change and loss of biodiversity, the entire community should be proud of the efforts being implemented and the future plans for increased conservation.

Please join in the conservation efforts and do all you can to help conserve water at the university, at your home, and in your city.

And San Jose State University, don't be afraid to "toot your own horn" and communicate the great conservation practices being implemented. We all want to know, we all want to help, we all want to be proud of our community.

We all are in this together for a better environment!



## 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 2010 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.

### Previous Award Recipients

1994 Shirley B. Radding	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

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, 2010**, and may be sent electronically to [Radding-Award@scvacs.org](mailto:Radding-Award@scvacs.org) or be mailed to:

Radding Award Committee  
Santa Clara Valley Section ACS  
Post Office Box 395, Palo Alto, CA 94302-0395

## ISEF 2010

The judging for the 2010 Intel International Science and Engineering Fair (ISEF 2010) will be held in San Jose, CA on May 11-12 (Tuesday starting at about 5 pm; Wednesday starting at about 6 pm). There will be a need for an enhanced commitment of our Silicon Valley scientists to volunteer for judges in all judging categories.

**REMEMBER** - There is always a need for judges for these science fairs. There are many other volunteer and sponsorship opportunities. Please volunteer now!



SANTA CLARA VALLEY SECTION  
AMERICAN CHEMICAL SOCIETY  
P.O. Box 395, Palo Alto, CA 94302

Visit our web site at:



<http://www.scvacs.org>

To receive an email when our newsletter  
is published on our web site, sign up at:  
<http://www.scvacs.org/newsletter/>

## SANTA CLARA VALLEY SECTION

### 2010 Section Officers

Chair	<b>Bruce Raby</b>	408-294-6718	alanice811@att.net
Chair-Elect	<b>Abby Kennedy</b>	209-640-2005	akennedy@exelixis.com
Past Chair	<b>Natalie McClure</b>	650-906-7831	nmccclure@drugregulatoryaffairs.com
Secretary	<b>Karl Marhenke</b>	831-688-4959	karlmar@armory.com
Treasurer	<b>Ihab Darwish</b>	650-594-1654	darwishis@yahoo.com

### Councilors

2008-2010	<b>George Lechner</b>	408-226-7262	glechner@aol.com
2008-2010	<b>Herb Silber</b>	408-924-4954	hbsilber@science.sjsu.edu
2009-2011	<b>Abby Kennedy</b>	209-640-2005	akennedy@exelixis.com
2009-2011	<b>Howard Peters</b>	650-854-4614	peters4pa@sbcglobal.net
2009-2011	<b>Ean Warren</b>	650-329-4554	ewarren@scvacs.org
2010-2012	<b>Linda Brunauer</b>	408-554-6947	lbrunauer@scu.edu
2010-2012	<b>Sally Peters</b>	650-812-4994	Sally.Peters@parc.com
2010-2012	<b>Peter Rusch</b>	650-961-8120	pfrusch@aol.com

### Alternate Councilors

2008-2010	<b>Mark Kent</b>	408-736-0989	markkent@yahoo.com
2009-2011	<b>Ihab Darwish</b>	650-594-1654	darwishis@yahoo.com
2009-2011	<b>David Parker</b>	408-615-4961	dparker@santaclaraca.gov
2009-2011	<b>Bruce Raby</b>	408-294-6718	brida954@comcast.net
2010-2012	<b>Lois Durham</b>	650-322-3507	ldurham9398@sbcglobal.net
2010-2012	<b>Natalie McClure</b>	650-906-7831	nmccclure@drugregulatoryaffairs.com
2010-2012	<b>Stephanie Gehling</b>	408-429-9681	s_gehling@hotmail.com
2010	<b>Harry Ungar</b>	831-708-2049	haungar@cruzio.com

### Newsletter

Editor	<b>Stephanie Gehling</b>	408-429-9681	s_gehling@hotmail.com
--------	--------------------------	--------------	-----------------------

### ChemPloyment Abstracts

Director	<b>Charles Sullivan</b>	650-728-7034	cdansullivan@sbcglobal.net
----------	-------------------------	--------------	----------------------------

## FUTURE MEETINGS

<b>Feb 17</b> Wednesday	Dr. Valery Uhl Benefits of Wine with Dinner Biltmore Hotel, Santa Clara, CA
<b>Feb 27</b>	SCIENCEPALOOZA Santa Clara County Fair Grounds <a href="http://www.outreach-foundation.org">www.outreach-foundation.org</a>
<b>Mar 12-14</b>	Santa Cruz County Science Fair <a href="http://science.santacruz.k12.ca.us">http://science.santacruz.k12.ca.us</a>
<b>Mar 17</b>	Synopsys Silicon Valley Science and Technology Championship San Jose Convention Center <a href="http://www.outreach-foundation.org">www.outreach-foundation.org</a>
<b>Mar 18</b>	Dr. Joseph Castellano Energetic Molecules and Russian Spies
<b>Mar 21-25</b>	Spring National Meeting Chemistry for a Sustainable World San Francisco, CA
<b>Apr 17</b>	Regional High School Chemistry Olympiad Las Positas College, Livermore, CA