**FEBRUARY 2012 NEWSLETTER TOPICS**

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- Teach the Teachers “Water: A Chemical Solution”
- New Members List for January
- The Iron Lady
- 2012 Science Fairs
- Highlights of the January 19th Harry and Carol Mosher Award Presentation

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**Reminder**

**Februray Dinner Meeting**

**A Cubic Mile of Oil**

**Realities and Options for Averting the Looming Global Energy Crisis**

**Abstract**

A Cubic Mile of Oil is a call for an informed public debate on energy, arguably the biggest challenge we face. The talk will be for an interested layperson and makes all the technical discussion accessible and relatable by dispensing with mind numbing multipliers like billions, and trillions or unfamiliar units, like Watts, barrels and Btu. The book describes how much energy we use and from what sources, where we are headed, and what it would take to utilize alternate sources. It uses a cubic mile of oil (CMO) as the metric for comparing global energy flows from all sources.

The current global consumption of oil (ca. 80 million barrels a day) amounts to 1 cubic mile over one year. Additionally, each year the world uses 0.8 CMO of energy from coal, 0.6 from natural gas, roughly 0.2 from each of hydro, nuclear, and... 

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**Chair's Message**

For this month's meeting, we will discuss the looming energy crisis. Dr. Ripudaman Malhotra, Associate Director of Chemical Science and Technology Laboratory in SRI's Physical Sciences Division, and his colleagues have defined a new unit of energy, the cubic mile of oil, to help frame the magnitude of the issue. A cubic mile of oil represents about the current global annual amount of oil used today. It provides an understandable representation of the magnitude of the challenge for alternate energy sources. In order to make a significant contribution to the energy needs, any alternative source will have to approach the energy contained within one cubic mile of oil.

On a lighter note, February is also the month for Valentine’s celebrations. Many people celebrate with one of Western civilization’s favorite aphrodisiacs: chocolate. Chocolate contains caffeine, theobromine and tryptophan, all neuroactive chemicals. Theobromine – a weak stimulant found in chocolate – in concert with other chemicals such as caffeine, may be responsible for the characteristic 'buzz' experienced when eating chocolate. Scientists at the Neurosciences Institute in San Diego suggest that chocolate contains pharmacologically active substances that produce a cannabis-like effect on the brain, such as anandamide, a cannabinoid neurotransmitter (Di Tomaso E, Beltramo M, Piomelli D (1996) Brain cannabinoids... 

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**February Dinner Meeting**

**Date:** Thursday, February 16, 2012

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

**Speaker:** Dr. Ripudaman Malhotra
"A Cubic Mile of Oil"
Associate Director of the Chemical Science and Technology Laboratory SRI International

**Location:** Biltmore Hotel & Suites
2151 Laurelwood Boulevard
Santa Clara, CA

**Cost:** $26.00, Teriyaki Steak or Pasta Primavera

**Reservations:** [www.scvacs.org](http://www.scvacs.org)
Sally Peters  650-812-4994

Reservations should be made by February 15th stating your name, address, company/school 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 Wednesday, February 15th, you will be invoiced following the dinner meeting.
The chemicals in chocolate help contribute to chocolate's appeal. But other more subtle aspects of chocolate are also very important to consider when you are picking out that special collection for your Valentine, including the appearance and the mouth feel. These are influenced by the crystalline structure, the fat content and the melting point. For more information, and some fun kitchen chemistry, NSF has prepared an interesting video on the Chemistry of Chocolate that you can find at http://science360.gov/obj/video/27d931d9-c35c-45c6-adac-aa0a-42304ad6.

I hope to meet you at the upcoming dinner meeting. It should be thought provoking and informative.
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 – 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 January

Dr. Shibu Abraham
Dr. Paolo Actis
Jyothirmai Ambati
Olegario Avalos
Maliheh Bakhshi
Gediminas Jonas Brizgys
Jennifer Brousseau
Dr. Kristi Burns
Ngan Hong
Nizar Kheraj
Daniel Kimm
Dr. Alan Kleiman
Dr. Daniel Witold Krassowski
Tom Lam
Dr. Kristopher Lavery
Jay Levine
Dr. Zhe Lu
Kazimiera Luce
Michael Jeffrey McCarthy
Dr. Lorenza Moro
Vivek Narasimhan
Huy Nguyen
Tuan Nguyen
Cristine Quiason
Dr. Stephen H. Reaney
Connor Rosen
Oscar Sanchez
Evan A. Sarina
Ariella Simke
Leah Simke
Travis Allen Smalley
Steven John Spencer
Dr. Zheng Sun
Clarissa Tadeus
Dr. James Robert Trudell
Patricia Walters
James Michael Warner
David Zarale
Elizabeth Zarate

from the San Jose Water District, who provided an entertaining set of teaching resources, including books, demonstrations and music.

The teachers who attended came from a variety of public and private schools; about half were first time attendees. We were happy to also welcome back several teachers who have attended the workshop many times since it began in 1996. The repeat attendance reflects the usefulness of having a new topic every year, as well as the continuing appreciation of the teachers of the value of the workshop. The feedback from the teachers was overwhelmingly positive. They expressed particular appreciation for the hands-on aspect of the workshop, and for the involvement of the many volunteers who work to make the workshop a success.

In addition to Gilead, RAFT, and the workshop instructors, the workshop depends on the hard work and time commitments of our dedicated volunteers. Volunteers prepare many of the materials, help with room set up, obtain and organize refreshments, obtain and organize materials for the raffle of laboratory supplies, and clean up after an exhausting day. We particularly appreciate the energy and participation of the students from WISE at Canada College and from Santa Clara University. Thanks go to our other amazing ACS volunteers who jumped in wherever needed and made the workshop run smoothly: Linda Brunauer, Hugh Dubb, Lois Durham, Lee Latimer, Natalie McClure, Jeanette Medina, Susan Oldham-Fritts, Howard Peters, and Ean Warren.

This award-winning workshop is a great partnership which provides a wonderful service for teachers and students in the bay area. We hope to keep it going for many years to come.

Bonnie Charpentier
Workshop Organizer
The recent film "The Iron Lady" is the story of the life of Baroness Margaret Thatcher of the United Kingdom. Themes for this film were apparently drawn from her daughter Carol’s memoir “A Swim-On Part in the Goldfish Bowl” (2008). Carol was the first to make public in detail the serious nature of the indomitable Margaret Thatcher's late-in-life decline into dementia. Overall, the film is a masterpiece and is highly recommended.

Meryl Streep provides an unforgettable portrayal of The Iron Lady. However, to the taste and background of these reviewers, the film would be improved by an additional five minutes delving into the class relations, the religious views and the scientific class distinctions in the UK of the time. We need to appreciate how remarkable it was that in the 1940’s a shop keeper’s daughter from Grantham would receive a scholarship to Oxford University in chemistry, that she would next challenge the system by studying law at night and finally, not be ashamed of her strong Methodist views. Some better suited story materials might easily have been drawn from The Iron Lady’s own words from her speeches, and from her two memoirs: "Margaret Thatcher: In Her Own Words” (2011, 256 pages), "The Path to Power” (1996, 672 pages) and "The Downing Street Years” (1995, 928 pages). All are available from Amazon.com.

The Chemist

While Baroness Thatcher earned her degree in chemistry at Oxford, she did research in the laboratory of the late Dr. Dorothy Crowfoot Hodgkin, who later received the Nobel Prize (1964) in Chemistry for her work in crystallography. After graduating, Thatcher's first chemistry job, in 1946, was in an ice cream plant studying the crystallization of ice cream. Recent articles suggest that it was the only position available for a woman chemist. Before we get too riled up, consider the fact that those were different times for women. In fact, the only legal position available to Sandra Day O’Connor, now retired US Supreme Court Justice, was that of legal secretary, despite the fact that she graduated top of her class from the Stanford University School of Law in the 1950’s, and took her only offered local legal position, a legal secretary in Menlo Park.

The Prime Minister

Thatcher, who continued her studies in law at night, was initially drawn to patent law and then to tax law. She passed the exams, and then went on to a spectacular career in politics. She was soon elected a Member of Parliament and later served as Prime Minister of the UK from 1979 to 1990, the first woman and longest serving Prime Minister of the UK in the 20th Century. After leaving 10 Downing Street, she was in demand for her writings and consultations, and she enjoyed a lucrative lecturing career. She became, and relished being the Honorary Chancellor of the College of William & Mary, America’s only royally chartered college (1693). Justice O’Conner now holds the position.

The American Chemical Society

In 2007 Baroness Thatcher was elected an Honorary Member of the ACS Division of Chemistry and the Law. Long term Santa Clara Valley Section Members and Division of Chemistry and the Law members, Howard and Sally Peters, presented the ACS plaque and other documents to Andrew Riley, the archivist for the Thatcher Collection at Churchill College, Cambridge, on July 10, 2007. Churchill College officials were thrilled with the ACS plaque and planned to use it to attract more scientists’ papers and archive materials. Howard and Sally saw an original high school analytical chemistry notebook of Baroness Thatcher’s dated 1941. Her father was a lay minister in the local Methodist Church, and because of the wartime paper shortage he used the second half of the notebook for his sermon notes.

Howard and Sally share with Baroness Thatcher undergraduate degrees in chemistry, a law degree earned at night, a wedding in a Methodist Church, a love of chocolate and...a birthday!

Howard and Sally Peters

2012 Science Fairs

In addition to Sciencepaloza and the San Mateo, San Francisco, and Monterey County Science Fairs we discussed in this space last month, there are two more local competitions that need our expertise as judges:

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

Date: Wednesday, March 7, 2012
Location: San Jose Convention Center, San Jose
For more information on category award judging, visit http://science.santacruz.k12.ca.us/judges.html

Santa Cruz Science Fair

Sixth through twelfth grade Santa Cruz County students
Date: Saturday, March 10, 2012
Location: Santa Cruz County Fairgrounds, Santa Cruz
For more information, visit http://science.santacruz.k12.ca.us/

For more information on participating in the SCV-ACS judging team, contact Susan Oldham-Fritts, sofritts@garlic.com, or Mark Kent, markkent@yahoo.com
See you at the fair!
Highlights of the January 19th Harry and Carol Mosher Award Presentation

Photos Courtesy of Lois Durham

William Carroll and Natalie McClure

John and Bob Stutz, Bonnie Charpentier

Karl and Randa Marhenke

Mary and William Carroll, Howard and Sally Peters

Sally Peters and Susan Oldham-Fritts

Natalie McClure

William Carroll and Natalie McClure
**FUTURE MEETINGS**

**Feb 16**
Dr. Ripudaman Malhotra, SRI
A Cubic Mile of Oil
Biltmore Hotel & Suites
Santa Clara, CA

**Mar 15**
Dr. Peter Rusch
New Definition of the Kilogram
Venue to be announced

**Mar 25-29**
Spring National Meeting
San Diego, CA

**Mar-Apr**
Santa Clara Valley Chemistry Olympiad

**Apr 4-6**
16th Annual John Stauffer Lectures
Stanford University Chemistry Department

**Apr 18**
James Sabry, MD, Ph.D.
Vice President Genentech Bioscience Forum
[www.biosf.org](http://www.biosf.org)

**Apr 19**
Monthly Section Meeting