

The Vortex

**239th ACS
National Meeting
March 21-25 2010**



ACS
Chemistry for Life™

Office of Professional Education



Courses in:

Analytical Chemistry;
Biological/Medicinal
Chemistry; Computational
Chemistry; Statistics;
Chemical Engineering;
Organic Chemistry;
Physical Chemistry;
Polymer Chemistry; Food
Chemistry; Professional
Development; and
Regulatory/Environmental
Chemistry.

Register Today for Short Courses specifically designed to help chemical scientists and technicians keep current in today's competitive marketplace.

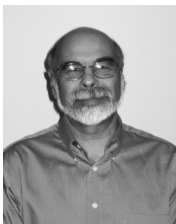
These 1, 2 and 3 day short courses are held in conjunction with the ACS Spring 2010 National Meeting & Exposition, March 20-24, 2010 in San Francisco, CA.

Register now at
www.ProEd.acs.org

Advanced Registration and
Group Discounts are available.

Short Courses are also
being held this Spring in
St. Louis, MO – April 19-21;
Las Vegas, NV – May 24-26;
Philadelphia, PA – June 21-25 and
Webcast Courses are held
throughout the year.

American Chemical Society



Welcome

Paul Vartanian,
Chair 2010 CalACS

The American Chemical Society has come to San Francisco this month for its spring meeting and we of the California Section and the Santa Clara Valley Section are pleased to be the co-hosts. To our visitors, “welcome”. Please take the opportunity to see the sights of the area and enjoy what San Francisco and the ACS Meeting has to offer.

San Francisco has always been a place that seems older than its real age. It was the first “city” on the west coast of the United States and due to the explosive growth of its population during the Gold Rush starting in 1849, it became the center of the west coast for just about everything. That is until the sleepy village of Los Angeles blossomed starting in the 1930s. Still, its importance to California and the west is as rich as is its history.

In the 1850s it was important because of gold. Its streets were mainly dirt, mud when it rained, and it burned down several times, but gold and trade kept it an expanding, exciting place. Even the completion of the transcontinental railroad, whose terminal was in Sacra-

(continued on page 21)

Welcome

Bruce Raby, Chair 2010 SCV-ACS
ACS meets in San Francisco in 1910.
What a difference a hundred years make.

Stanford University had been holding classes for less than 20 years, had no tuition, and so large was the Stanford fortune it would not charge any tuition until 1921. Widow, Mrs. Leland (Jane) Stanford, believing that women were naturally superior at academic studies, feared that the Leland Stanford Junior University founded to honor her now deceased son would become a women’s school. She earlier had put into place a ruling that the maximum number of women attending Stanford would be 500.

Her ruling was still in place until the 1950’s. (And what amazing women they were.)

The first national ACS meeting in San Francisco in 1910 was small. ALL the ACS meeting attendees were photographed on the steps of the newly rebuilt St. Francis Hotel. (Good luck with that in 2010.)

Four years earlier in April 1906, San Francisco had been nearly leveled with its earthquake and subsequent fire. But it

(continued on page 11)



THE VORTEX

Published monthly except July & August by the California Section, American Chemical Society. Opinions expressed by the editors or contributors to THE VORTEX do not necessarily reflect the official position of the Section. The publisher reserves the right to reject copy submitted. Subscription included in \$13 annual dues payment. Nonmember subscription \$15.

MAGAZINE OF THE CALIFORNIA SECTION, AMERICAN CHEMICAL SOCIETY

EDITOR:

Louis A. Rigali
309 4th St. #117, Oakland 94607

510-268 9933

ADVERTISING MANAGER:

Vince Gale, MBO Services
Box 1150 Marshfield MA 02050-1150

781-837-0424

OFFICE ADMINISTRATIVE ASSISTANT:

Julie Mason
2950 Merced St. # 225 San Leandro CA 94577

510-351-9922

PRINTER:

Postscript Press
2861 Mandala Parkway Oakland CA 94608
Printed in USA on recycled paper

510-444-3933

CONTRIBUTING EDITORS:

Evaldo Kothny
William Motzer

EDITORIAL STAFF:

Glenn Fuller
Evaldo Kothny
Alex Madonik
Paul Vartanian

For advertising and subscription information, call the California Section Office, 510 351 9922

California Section Web Site: <http://www.calacs.org>

Volume LXXI

March 2010

Number 3

Table of Contents

WELCOME (P. VARTANIAN, CALACS CHAIR)	PAGE 3
WELCOME (B. RABY, SCV-ACS CHAIR)	PAGE 3
MARCH MEETING	PAGE 4
LOOKING FOR WINE (P.VARTANIAN)	PAGE 6
ELK-N-ACS (E. KOTHNY)	PAGE 7
MARCH CHEMICAL ANNIVERSARIES (L MAY)	PAGE 8
PUBLIC IMAGE OF CHEMISTRY (A. PAVLATH)	PAGE 9
THE IMPACTS OF IMPACTS (W. MOTZER)	PAGE 10
PIMENTEL EVENTS	PAGE 11
MAP OF SAN FRANCISCO	PAGE 12&13
CHOCOLATE IN SAN FRANCISCO (H.& S.PETERS)	PAGE 14
WELCOME (M. WU DIRECTOR-AT-LARGE)	PAGE 15
UC BERKELY EXTENSION	PAGE 16
SUSTAINABILITY THROUGH CHEMISTRY	PAGE 17
PROJECT SEED (E.YAMAGUCHI)	PAGE 18
BUSINESS DIRECTORY	PAGE 19,20,22,23
INDEX OF ADVERTISERS	PAGE 23

Rapid Results • Quality • Accuracy • Competitive Pricing



Robertson Microlit Laboratories

- Elemental CHN, S, X, Analysis - same day service
- Metals by ICP-OES, ICP-MS, A/A
- FTIR, UV/VIS Spectroscopy
- Ion Chromatography
- Bioavailability
- Polarimetry
- DSC
- KF Aquametry, Titrimetry

P. O. Box 927 • 29 Samson Avenue • Madison, NJ 07940

Tel: (973) 966-6668 • Fax (973) 966-0136

www.robertson-microlit.com • email:results@robertson-microlit.com

FDA Inspected

*California Section
American Chemical Society
March Meeting
and
Science Café*

"Dogs for Diabetics - Service Dogs" by Breanne Harris and Friends

Date: Thursday, March 25, 2010

Time: 6:00 pm Social hour, 7:00 pm talk

Place: Lafayette Library Arts and Science Discovery Center,
3491Mt. Diablo Blvd., Lafayette

Cost: \$10 (Students \$5)

Light snack/dinner buffet served during the Social Hour)

Abstract

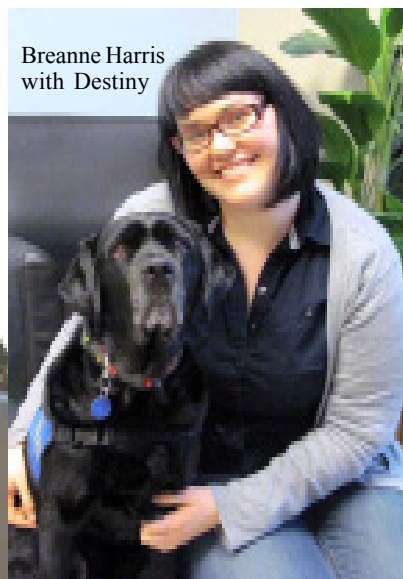
Mark Ruefenacht, who is not blind but raises Guide Dog puppies, works with crime labs as a forensic metrologist. An experience with a guide dog puppy that tried to awaken him from a diabetic seizure started Ruefenacht down the road to confirm that a dog can be trained to detect a chemical imbalance with a diabetic. He founded Dogs4Diabetics

In October 2004, Dogs For Diabetics, Inc. was formally incorporated in the State of California and applied for nonprofit status.



Founder Mark Ruefenacht

The IRS granted 501(c) nonprofit status in



Breanne Harris
with Destiny

early 2005. For more information, please visit the web site www.dogs4diabetics.com

Dogs for Diabetics is a charitable, tax-exempt, 501(c)(3) organization dedicated to improving the lives of all insulin-dependent

(Continued on page 18)

Looking for Wine in All the Right Places

Paul Vartanian

When visitors to San Francisco indulge in the food and wine at local restaurants, they often are surprised at the wide variety of wines from which to choose in the wine lists. Even restricting the choice to a locally produced northern California wine is difficult, as there are so many. Take the opportunity to get to know more about the wines in the area with a visit to the early spring California countryside. In the spring the vineyards are beginning to bud out and a visit with an overnight stay in a local bed and breakfast inn or hotel is a great getaway.

In the past, pre 1970, we talked about the Napa Valley, the Sonoma Valley, and the Livermore Valley as the main “wine countries” in northern California. The bulk of the fine wine grapes were grown in these locals. The Sonoma and Livermore valleys were better known for their white wines and the Napa valley for its reds. Now practically every spot in the state that can support wine grape production does so. Many wineries obtain their grapes not from their own estates, but from independent growers in other areas. Wine labeling laws have been passed to prevent, say, a Sonoma Valley winery from making wine using grapes grown 200 miles away from being represented as being made from Sonoma grapes. This helps the consumer, but still does not address the problem of the multitude of wines on the market. The only answer here is to taste wines and remember the names of the ones you like.

North of San Francisco, about an hour’s drive, are the Sonoma and Napa valleys, with many wineries. From Santa Rosa in the south to the area around Geyserville in the north, Sonoma county is home to wineries that concentrate on white wines. Off highway US 101 is the Alexander Valley an area of Sonoma county that is worth a visit.

Up R29 in Napa county is, perhaps, the best way to get introduced to wine if you have not visited wineries in the past. There are many wineries along the road starting from below Yountville in the south to Calistoga in the north. Like other areas in the wine country, small areas of the Napa Valley have distinct characteristics and their appellations on the label help inform the knowledgeable consumer of what is inside the bottle. The Silverado Trail on the east side of the valley is less traveled, but will reward the visitor with some very good tastings along the way.

Further north the Mendocino and Lake county wineries offer good wines although they are fewer and farther spaced than in Napa and Sonoma.

An hour to the east along Interstate 580 is



the Livermore Valley with old and new wineries south and east of Livermore city. This area has seen new wineries develop in recent years to complement the great historical ones of the past. Further east, between R88 and I80, near R49, about a two to three hour drive from San Francisco and building on the earliest northern California wine area, the foothill counties of Amador and El Dorado have some good wineries in the historic “gold

(Continued on page21)



ELK-N-ACS (Dyes and colors in art (part IV)).

Evaldo Kothny

This part continues with some more copper pigments descriptions.

Both Paris green and Schweinfurt green are copper acetate-arsenites [$\text{Cu acetate} \cdot 3 \text{Cu}(\text{AsO}_2)_2$] synthesized in 1814, and were extensively used for printing wallpaper. It was also employed by farmers as an insecticide. However, later on it was discovered that moldy wallpaper printed with these pigments emitted arsine (AsH_3) intoxicating people. In 1849 appeared Scheele's green, a neutral Cu arsenite (CuHAsO_3). Unsafe residues of arsenicals and copper on crops led to the abandonment of these insecticides.

Among other green pigments, it is worth mentioning turquoise, an ancient pigment consisting of an impure Cu Al phosphate (ideally $\text{CuAl}_6\text{P}_4\text{O}_{20} \cdot 9 \text{H}_2\text{O}$). Turquoise is generally used as a gemstone.

Around 1800 appeared the first chromium containing pigments: Turkish green (Co-Cr-Al oxides), Cr yellow (Ba or Pb chromate in 1809), Cr bluish green (ignited Cr hydrate with boric acid in 1838), Cadmium yellow (basic Cd chromate in 1869), Bi red (Bi dichromate around 1880), black iron chromate around 1900, light yellow chromate (lead chromate/sulfate in 1922), Cr green (Cr phosphate, around 1900), Barium green (Ba manganate, from 1952). Other unusual colored pigments are Gayards violet (heated Cu ferrocyanide, of 1849), Mo blue (coprecipitated Mo(+5) onto SnO_2 , of 1900), tungsten yellow (Ca polytungstate, of 1880), Mo orange (basic Pb chromate-molybdate-sulfate, of 1939, used for red paint and plastic together with organic purple dyes for correcting the emitted color spectra), and Cu phthalocyanine (of 1928), the most heat resisting blue organic pigment. When used as a brilliant coat, this Phthalo blue has the undesirable property of purple reflections. Other production formulas.

Mosaic gold (Aurum musicum) invented in 1650 by mixing and heating 25 parts tin chloride with 35 parts sulfur, 50 parts 50% tin amalgam and 35 parts ammonium chloride. Can also be produced by heating 100 parts of stannous chloride with 50 parts of sulfur. Leach the pale yellow product. A better reddish yellow product is obtained with the original process. Nowadays the original formulation with mercury is no longer acceptable. The pigment is used for imitating gold in the printing process.

Chrome green is made by igniting aluminum hydroxide soaked with chromic acid. Chrome bluish green of 1838 is made by heating to 600 C a mixture of one part sodium bichromate and 3 parts of boric acid. Leach with water.

Tin violet of 1900. Metastannic acid is first obtained from the attack of 100 parts Sn with nitric acid. This is mixed with 100 parts of a 5 % solution of potassium bichromate, 200 parts of slaked lime and 100 parts silica. The mixture is dried and sintered at high temperature, then ground up and leached with water.

Red copper (Cu_2O) of 1917 can be made by reducing cupric oxide with sulfur dioxide at high temperature.

Minium of 15 BC, originally obtained by heating litharge for a long time, can also be produced by fusing together lead sulfate, sodium nitrate and sodium carbonate at 350 to 400 C. Leach with water.

Naples yellow, ancient bright yellow pigment (estimated from 600 BC), can be obtained pure by first intimate fusion of 3 parts Bi, 24 parts Sb trisulfide and 64 parts of potassium nitrate (caution! Pyrophoric reaction). Leach with water. Second, one part of the product so obtained is fused with 8 parts lead oxide and some ammonium chloride. A faster process is precipitating sodium antimonate with lead acetate. The original Babylonian product contained some zinc oxide in addition.

White lead, an antique basic lead carbonate (estimated from 400 BC). This was obtained from lead sheets exposed during extended

(Continued on page 14)

March Historical Events In Chemistry

Leopold May

March 1, 1910 Archer J. P. Martin was born. He shared the Nobel Prize in Chemistry with Richard L. M. Synge in 1952 for their invention of partition chromatography.

March 3, 1876 Seventy-five years ago in 1935 on this date, Gregory P. Baxter and C. P. Alter determined atomic weight of lead, which led to estimations of the age of minerals.

March 5, 1893 Emmett J. Culligan who founded the world's largest water treatment organization as well as concept of water softening, was born on this date.

March 7, 1792 John F. W. Herschel, inventor of photography on sensitized paper, was born on this day. He introduced the terms, positive & negative for photography.

March 8, 1879 Otto Hahn discovered protactinium with Lise Meitner in 1917 and did research in nuclear fission with Otto Strassman. He received the Nobel Prize in Chemistry in 1944 for his discovery of the fission of heavy nuclei was born on this date.

March 12, 1900 Seventy-five years ago in 1935, Frédéric J. Joliot (Joliot-Curie) shared the Nobel Prize in Chemistry with his wife Irène Joliot-Curie, for production of artificial radioisotopes. In 1934, he, H. Halban, and L. W. Kowarski proved experimentally that neutron emission occurs in nuclear fission. He was born on this date.

March 13, 1733 Joseph Priestley, born on this date, was the discoverer of oxygen, ammonia, hydrochloric acid gas, carbon monoxide, sulfur dioxide, and oxides of nitrogen. He also made the first soda drink.

March 14, 1935 Seventy-five years ago, Julius B. Cohen died on this date. He was a researcher on the laws of aromatic substitutions and optical activity. He was born on May 6, 1859.

March 14, 1935 Seventy-five years ago, Arthur Hantzsch died on this date. He was a researcher in electrical conductivity of organic compounds, organic acids and stereochemistry of nitrogen compounds. His birthdate was March 7, 1857

March 17, 1803 In 1826, Carl Löwig was

one discoverer of bromine but because of examinations he did not publish a report, thereby allowing A. Balard to receive precedence of discovery, was born on this date.

March 20, 1735 Torbern Bergman was born on this date. He was a researcher on carbon dioxide, hydrogen sulfide and the preparation of artificial mineral water.

March 21, 1932 Walter Gilbert, researcher on the determination of deoxyribonucleic acid (DNA) base sequence; was born on this date. In 1980, he shared the Nobel Prize in Chemistry with Paul Berg and Frederick Sanger for their contributions concerning the determination of base sequences in nucleic acids.

March 22, 1788 Pierre J. Pelletier discovered quinine, strychnine, and other alkaloids; obtained toluene by distilling pipe resin with Philip Walter, 1836 was born on this date.

March 23, 1962 Neil Bartlett made the first noble gas compound, XePtF₆, on this date.

March 25, 1863 Simon Flexner isolated the common strain of dysentery bacillus, *Shigella dysenteriae* in 1899. He developed curative serum for cerebrospinal meningitis in 1907 and was born on this date.

March 27, 1847 One hundred years ago, Otto Wallach, a researcher on essential oils and terpenes, was awarded the Nobel Prize in Chemistry in 1910 in recognition of his services to organic chemistry and the chemical industry by his pioneer work in the field of alicyclic compounds. He was born on this date.

March 28, 1861 George C. Pond, a chemistry teacher and preserver of the Priestley home in Pennsylvania, was born on this date.

March 30 1920 Daniel E. Koshland, Jr., who studied the catalytic activity of enzymes, and Editor, *Science* was born on this date.

March 31, 1860 Isidor Traube was born on this date. He founded capillary chemistry and did research on liquids and critical temperature, osmosis, surface tension and colloids. He designed a viscometer and capillarymeter and in 1891 made the first systematic observation of the hydrophobic effect.





The Public Image of Chemistry, can you help?

Attila Pavlath

Did you ever think about what would our life be without the many benefits chemistry has provided? Do you think chemis-

try has received the proper recognition? True, some chemical developments represent problems, but what is perfect in life? Can you name any action you have ever made in you life, which had zero risk? There is no question, that for a single problem attributed to chemistry there are hundreds of developments which benefited our life. Why is it then that newspapers always focus on problems with large headlines, but are mostly silent about the advantages? One science editor gave an honest explanation. "While in everyday life no news is good news, Newspapers operate reversely: good news is no news."

There is a worldwide movement to overcome the negative image the media created and attributed to chemistry. The lack of recognition of the many achievements of chemistry improving everyday life is of major worldwide concern. The general public is continuously bombarded by occasional side effects of certain discoveries without giving proper recognition and coverage for the hundreds of benefits without which we would be back to the Stone Age. This degrades the image of chemistry within the population, creates negative legislations, decreases funding for research and, in addition, frequently steers our young people away from selecting chemistry as their profession.

The United Nations declared 2011 as the International Year of Chemistry. IUPAC is using a poster exhibit for the opening of the celebration in Paris to be held in January 2011. It is an outgrowth of our electronic exhibit created in 2001 for celebrating the 125 anniversary of ACS. Four poster boards

summarized the major accomplishments of chemistry and chemical engineering on the areas of Energy & Transportation, Information & Communication, Health & Medicine and Food & Agriculture. It was aimed for showing it around the country to the non-chemist population. Since the electronic boards were too bulky to move around, it was converted to an artistic, colored exhibit of 32 posters.

They are grouped by the four topics mentioned above, listing first the general importance and the chronology, then followed with the individual developments, generally 3-4 of them to a page. Posters are available on a disc for easy print-out, and it also includes Power Point presentations on these four areas suitable for lectures with each slide listing only one development for easier viewing.

The importance of this exhibit became evident when the Hungarian Chemical Society translated it to Hungarian and distributed it to high school chemistry teachers. They were experimenting with starting out introductory chemistry classes with the accomplishments of chemistry, not with atoms, molecules and chemistry principles. It was found, that once the students realized the role chemical developments play in everyday life, there was an increased interest in how chemistry accomplishes them.

The success by the Hungarians demonstrated that these posters have worldwide relevance and importance. They were already translated to Spanish, Portuguese, Romanian, Swahili and Slovakian. Other translations are in progress to Chinese, Estonian, Finnish, French, German and Japanese. Some of these translations were done by bilingual Americans. This is the area where I am asking for your help.

The posters were prepared in Power Point format with a set of colorful backgrounds. The description of the individual achievements can be easily removed and replaced by the corresponding translation. Many smaller chemical societies would like to translate it to their own language, yet they

(Continued to page 11)



The Impacts of Impacts: Aspects of Catastrophic Climate and Ecological Changes by Asteroid Impacts (Part 1)

Bill Motzer

As a geologist/geochemist, I have long been fascinated with the science of paleoclimatology. Scientists investigating past climates have backgrounds and expertise in geology, particularly in stratigraphy, paleontology (including micropaleontology and botany), petrology, hydrogeology, etc; but also in physics (including astrophysics and tectonophysics), chemistry (e.g., isotope geochemistry), and climatology. Paleoclimatologists scour the earth searching for rocks, minerals, and fossils that can reveal past climates. One paleoclimatologist has indicated that the study of paleoclimatology was like flying: “long periods of boredom accentuated by moments of stark terror!” It’s those moments of “stark terror” that I would like to discuss in this article.

In 1980, the Nobel Prize physicist Luis Alvarez, his geologist son Walter, and chemists Frank Asaro and Helen Michels published their now famous paper in the journal *Science* (v. 208, no. 4448, pp. 1095-1108) about the discovery of an iridium (Ir)-rich clay layer separating the Cretaceous from the Tertiary (now renamed the Paleogene) Periods (~65.5 million years ago or (~65.5 Ma). Above this stratigraphic boundary, dinosaur fossils and approximately 70 to 75% of terrestrial and marine flora and fauna unique to the Cretaceous abruptly disappeared. As Dr. Alvarez stated: “...about half of all of the existing genera ceased to exist never to be seen again.” (See also his very readable book: *T. rex and the Crater of Doom*: Vintage Books, New York, NY, 185 p.)

The “K-T” boundary is one of several extinction boundaries in the fossil record (another is the Permian-Triassic Extinction, for which I will discuss it’s geochemistry in a

future article). What is unique about the K-T event is that for the first time, the Ir anomaly or fingerprint indicated that a large asteroid had impacted the Earth. This is because Ir is rather rare in terrestrial rocks ($\sim 0.03 \pm 0.02$ ng/g), but abundant in meteors and asteroids by a factor of 10^4 . Based on the amount of Ir in the K-T clay layer, worldwide, Alvarez and his team estimated that the impacting asteroid was about 10 km in diameter (approximately the size of Mount Everest), that its approach velocity was ~ 25 km/s, and that it released an explosive energy equivalent to 10^8 Mt of TNT (1.0 Mt = 4.2×10^{15} J).

Without evidence of a K-T impact crater, their hypothesis caused considerable controversy among other scientists. There is fossil evidence that numerous dinosaur species and other biota were undergoing significant stress and declines prior to the K-T impact event; e.g., the Deccan Traps (a huge out pouring of basaltic lava also known as a large igneous province or LIP) in India that contributed large amounts of SO_2 ($\sim 1,000$ Mt annually per 1,000 km of erupted lavas), CO_2 , and Cl_2 to the atmosphere at least 300,000 years earlier and climate change has reported for other LIP eruptions that may be responsible for planet-wide extinctions (e.g., the Siberian Traps for the Permian extinction, occurring about 251 Ma). During the late Cretaceous, climate cooling was also occurring. Other hypotheses suggest that dinosaur’s decline may have been from some type of insect-borne plague or other pathogen and recent fossil evidence tends to support this. In 1991, Alan Hildebrand and a team from the University of Arizona, Carson Services, Inc., Geological Survey of Canada, Petróleos Mexicanos, and Harvard University suggested that the ~ 180 - 200 km wide buried Chicxulub crater adjacent to the Yucatan peninsula, was the site of the K-T crater and the “smoking gun” as evidence of dinosaur extinction. The evidence for this crater was based on geological and gravity data, impact breccias, and shocked quartz, which are only found in impact structures and nuclear bomb detonation debris. Therefore, the current working hypothesis is that

(Continued on page 16)

(Continued from page 3)

had been built back with gusto. This was an opportunity to demonstrate to the Eastern universities and chemical companies that San Francisco was on the rebound. Many of those long-ago attendees gathered to come west on one train - and it had an accident.

In 1910 the ACS California Section was for the entire state. The Santa Clara Valley (SCV) Local Section was formed from it in 1954 and includes five counties, Santa Clara, San Mateo, Santa Cruz, San Benito & Monterey. The late Dr. Harry Mosher, Professor of Chemistry at Stanford, spearheaded that formation and received our founding charter from then ACS President (and UC Berkeley Professor of Chemistry) Dr. Joel Hildebrand. SCV has grown to over 3500 ACS members - and the area is often better known to the layperson as "Silicon Valley" or "Biotech Bay" - for obvious reasons.

Welcome to this San Francisco ACS meeting - in our backyard. Visit www.scvacs.org As is found in the rest of this Vortex, San Francisco teems with activity and diversion. Have fun....and do try to attend some technical sessions and committee meetings.



(Continued from page 9)

lack suitable opportunities to do so. If you are fluent in English and any another language, your expertise and contribution can be very valuable. You will be provided the text, the small printout of the posters, and the disk. The most important step is to provide me with the translation in any word processing format. If you are quite familiar with the Power Point program, you can replace the text your- self, but the translation is most important. Your name will appear as the translator on the front page. Please, send me an e-mail (AttilaPavlath@yahoo.com) or phone me: 510-559-5620 if you have further questions.

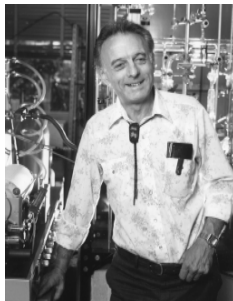
Even if you cannot help with any translation, you could improve the public image of chemistry by using the material for talks to civic organization and especially for schools. Contact me if you are interested to help help a small country, perhaps your native one, not only to celebrate appropriately the International Year of Chemistry, but also to help their chemical education, and thus build bridges of cultural awareness and respects.



*ACS meeting in San Francisco:
Events related to
George C. Pimentel (1922-1989)*

Meeting attendees may be interested in the following:
Symposium on the 50th anniversary of CHEM Study Mon., March 22: 1- 4 Parc 55 Hotel

George C. Pimentel Award in Chemical Education: Symposium in honor of awardee Zafra M. Lerman Tuesday, March 23: 8 am-4 pm Parc 55 Hotel



Details at Division of Chemical Education: <http://abstracts.acs.org/chem/239nm/prgram/divisionindex.php?act=session&val=89&prog=89>

Friends, students, and colleagues of George Pimentel are invited to an informal reception in his honor Monday, March 22: 5-7 pm Intercontinental Hotel. Contact Jeanne Pimentel, pim@berkeley.edu,

510-843-3171 for information.



CHOCOLATE IN SAN FRANCISCO aka I WOULD RATHER FALL IN CHOCOLATE....

Howard & Sally Peters
(aka Mr. & Mrs. Chocolate)

For the chocolate lover in all of us, San Francisco is the place to be. Here are some tips about our local Theobroma Cocoa - Food of the Gods & Cheap Thrills.

Ghirardelli: www.ghirardelli.com The iconic Ghirardelli Square is no longer a wonderfully smelling food factory but has many tourist boutiques. Ghirardelli was an early terrible gold miner - but found his 'brown' gold in great chocolate. A visit to this corner chocolate shoppe is pricy but worth it - just for the smell. Also visit Ghirardelli at 42 Stockton. (And to think that this old line chocolate company is now owned by the pasta group - Golden Grain.)

See's Candies: www.sees.com The trademark black and white See's Candies shops can be found in downtown San Francisco. e.g. The Flat Iron Building, 540 Market St. (near Montgomery), Three Embarcadero Center (on Commercial St.). Mary See and her family came from Canada to Pasadena about 1920 - and the rest is history. See's has been owned since the 1970s by Warren Buffett's Berkshire-Hathaway (FYI & B-H also owns Dairy Queen.) Guittard Chocolate of nearby Burlingame is their premium chocolate supplier.

Scharffen Berger: www.scharffenberger.com John Scharffenberger was early a champagne maker in Napa county. He sold off the bubbly and joined with physician Dr. Robert Steinberg (deceased) to create this premier chocolate company. A Scharffen Berger shoppe is to be found in the Ferry Building on the water at the end of Market Street. This dark chocolate is to die for.

(FYI - This high end line was purchased by Hershey in 2005. The local factory/headquarters on Heinz in Berkeley was closed last April. A medical marijuana center is now considering leasing the site. Scharffen Berger Chocolate is mostly produced at a Hershey plant in downstate Illinois.

TCHO: www.tcho.com This newcomer

is making a splash on the Pier 17 in San Francisco. It is managed by a venture capitalist and a NASA engineer and everything is done very scientifically - even down to beta testing of the products. You may have to visit the home site on Pier 17 on the waterfront to sample this and also try their web site.

Joseph Schmidt: www.josephschmidt.com Schmidt was a high end artisan chocolate manufacturer whose specialty was painting on white and dark chocolate with food coloring. J.S. was purchased by Hershey in 2005 and with the downturn in the economy was shuttered forever last March...GONE....

Many other specialty chocolate shops abound.... Check for times and special events ...Happy hunting...

Fog City News at 455 Market St. (near Montgomery) often carries over 500 different varieties of chocolate bars from around the world. It is worth a visit.

Gourmet Walks (see <http://www.gourmetwalks.com/>) For \$51.22 they will provide you with a fine three-hour champagne and chocolate sampling tour of San Francisco.

HAVE FUN.....CHOCOLATE... MORE CHOCOLATE ...NEVER ENOUGH CHOCOLATE...



(Continued from page 7)

time to moist, acetic acid containing air. A faster process is by passing CO₂ and steam through a solution of lead acetate.

Blanc fixe of 1775, barium sulfate, is coarser when obtained from a soluble barium compound precipitated with sulfuric acid than when made by precipitating with sodium or magnesium sulfate.

Knowing that old paintings with lead pigments darken with time (due to sulfide formation), would anyone nowadays try to copy artwork using them and why?





Welcome

Marinda Li Wu

As a member of the California Section and an ACS Director-at-Large, I wish to extend a welcome to all attending the 239th ACS National meeting in San Francisco. As in previous

years, whenever the national meeting comes to San Francisco, the California Section partners with our neighbor, the Santa Clara Valley Section, to co-host the meeting.

As always, the national meeting provides a myriad of exciting multidisciplinary programs and events appealing to all ages ranging from budding scientists to mid-career professionals to veteran retirees. "Chemistry for a Sustainable World" is the timely theme for this 2010 meeting. Presidential events and symposia are scheduled on various topics such as "Green Chemistry," "Sustainable Energy," and "Global Water Sustainability." In addition, a Presidential Outreach Event: Hands-on Sustainability will be held at the California Academy of Sciences on March 20, 11:00-2:00 along with a special Sustainability Engagement Event on March 23, 3:00-5:30 which will seek ideas and input on the topic of "Sustainability through Chemistry." Visit www.acs.org/sustainability for details and sign up for this forum in the Esplanade Ballroom 301 of Moscone Center South.

The Women Chemists Committee (WCC) of the California Section looks forward to

collaborating with the national Women Chemists Committee to host a reception as is our tradition whenever the meeting is in San Francisco. Even more exciting this year is the fact that WCC is working with the Joint Subcommittee on Diversity along with the Younger Chemists Committee, Committee on Minority Affairs, Committee on Chemists with Disabilities, and the Committee on Technician Affairs to host a Diversity Reception on March 22 from 6:30-8:00pm at the Moscone Center. I hope you might have time to stop by before Sci-Mix to network and help promote professional diversity!

We all know that the meeting is a wonderful place for professional networking. Whether you are looking for a job or not, the ACS Career Fair at the Moscone Center West (Rooms 2000 and 2002) offers a variety of helpful career workshops on topics ranging from Planning Your Job Search, Effective Interviewing, and Resume Preparation to workshops on Patents and Intellectual Property, Writing Excellent ACS PRF Proposals, Jobs in Industry, Jobs in Academia, Navigating the Federal Employment Process as well as a panel on March 22 from 8:30-10:00 for "Foreign National Scientists: Obtaining a Job in the U.S." Individual resume reviews and mock interview demonstrations will also be available.

I highlighted a few of the many programs and activities planned for this meeting. Please send any suggestions or feedback you might have to me at m.wu@acs.org. Happy 2010 and enjoy the meeting!





The Nadjik Pheromone
By Michael Kenneth Hemp

- An only slightly fictional novel announcing the future of GC-MS-breath analysis lie-detection
- Presented at the American Chemical Society San Francisco Conference, March 24th, 2010.

Amazon.com 5-star book - 2009 Indie Book Awards-Finalist

www.TheNadjikPheromone.com

UC Berkeley Extension Embraces Green Chemistry, Expands Offerings

As the demand for hazard-free products and production processes continues to rise, so does the need for skilled professionals in the field of green chemistry. Poised to meet those needs in the Bay Area and beyond, UC Berkeley Extension offers two new green chemistry courses this spring: Green Chemistry Policy (starting online February 9 and in Berkeley February 24) tackles the current and historical context of the regulation of industrial chemicals; Toxicology and Risk Assessment (starting in Berkeley March 31) examines the toxic effects of hazardous chemicals on biological systems. Both courses are part of the Certificate Program in the Essentials of Green Chemistry to be launched in late 2010 or early 2011 in both online and classroom formats.

To build excitement for these courses and the upcoming professional certificate, Extension invites the public to attend a free lecture with Dr. Robert Peoples, director of the ACS Green Chemistry Institute. In "Can We Achieve a Sustainable Future? The Role of Green Chemistry," Peoples leads a lively dialogue about green chemistry's role in not only weaning modern society off petroleum but also tackling the challenges of global sustainability. Sustainability at its core means survivability, and green chemistry hopes to ensure that the global population is happy, healthy, and here in the future. This free public lecture takes place on March 25, 6:30-8 p.m., in 105 Stanley Hall on the University of California, Berkeley, campus.

To learn more about UC Berkeley Extension's green chemistry offerings and to enroll, visit extension.berkeley.edu/subject/chemistry.html.



(continued from page 10)

the K-T extinction was largely driven by the Chicxulub impact. (Note: this could have been a multiple impact event; we just haven't found the other craters.)

This has now become a serious subject: based on what we now know about past asteroid impacts, in 2005 Congress authorized NASA to catalog near-earth objects (NEOs) and their potential to impact the Earth. NEOs are defined as asteroids and comets with trajectories that bring them within 45×10^6 km of the Earth. Those NEOs greater than 140 m diameter that have orbits that bring them within 7.5×10^6 km of Earth's orbit have been classified as potentially hazardous objects (PHOs) and most of these are classified as potentially hazardous asteroids (PHAs)! NASA has cataloged 900 PHAs out of an estimated population of about 20,000 PHOs. Those >50 m could survive entry through the atmosphere and one impact may occur every 100 to 500 years. PHAs >1 km in diameter would cause global environmental disasters; these occur every few hundred thousand years to once every million years. PHAs =10 km (extinction-class) may occur on average every 50 to 100 million years. (And, the Chicxulub impact occurred 65.5 Ma!)

What would a Chicxulub-sized asteroid impact do to the Earth's climate and ecology and what could it do when it occurs again? In my next article, I'll briefly review some of the chemical and geochemical findings, including:

- (1) Initial impact effects
- (2) Tsunamis
- (3) Thermal radiation and the resultant fires
- (4) Impacts from injected atmospheric dust
- (5) Sulfate aerosol effects
- (6) Carbon dioxide inputs to the atmosphere
- (7) Effects of heavy acid rain
- (8) Metal poisoning of the environment



SEE the Future of Sustainability through Chemistry



As our world faces the sustainability challenges of providing sufficient and secure energy, clean drinking water, and adequate food, housing, and medical care, to name a few, The creative input of the global scientific community is needed. To address these challenges, ACS will host an innovative Sustainability Engagement Event (SEE) <http://www.acs.org/sustainability> during the spring National Meeting in San Francisco.

The event is designed to help us SEE this future of sustainability through chemistry. It will focus on collecting, refining, and implementing the ideas of a broad range of stakeholders, as well as 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 level. 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. If you would not be able to join us in San Francisco, you are encouraged to share your ideas

at <http://www.acs.org/sustainability>. The SEE kickoff will take place on Sunday March 21 from 6:00 - 8:30 p.m. in the Expo Hall and the Forum will be on Tuesday, March 23 from 3:00 - 5:30 p.m. Preregistration is requested for the Forum, which is quick and easy at www.acs.org/sustainability.

Chemistry for a Sustainable World

Plenary Symposium: Big Picture Concerns and Real Green Chemistry Solutions?(Sunday, March 21; 3:00-6:10 p.m.)

Organizer: Robert Peoples, co-sponsored by the Green Chemistry Institute

. Speakers:

. Jean-Michel Cousteau (Ocean Futures Society)

. Robert Grubbs (Victor and Elizabeth Atkins Professor of Chemistry, California Institute of Technology, Nobel Laureate)

. Carlo Montemagno (University of Cincinnati, Dean - College of Engineering and Applied Science)

. Len Sauers (Vice President of Global Sustainability, Procter & Gamble)

Keynote: Green Chemistry: Chemical Solutions for a Sustainable World?(Monday, March 22; 5:00-6:00 p.m.)

Invited Speaker:

Paul Anastas (EPA Assistant Administrator for Research and Development, Center for Green Chemistry and Green Engineering, Yale University)



California Section 2009 SEED Program

E. S. Yamaguchi

Students

Students for the 2009 California Section SEED program

consisted of 23 females and 19 males who worked 9 weeks, full time. We started the program with 43 and ended the program with 42 students this year. One student learned early he was not really interested in the repetitive nature of laboratory work. All 42 students gave their oral presentations at one of several different symposia that were organized in their honor. Approximately 25 people attended each symposium followed by celebration lunches for the attendees.

Student Interviews, Scheduling, Symposia

To arrive at our 42 students, the Project SEED Committee interviewed over 90 students in early May. Especially for the students in Stockton, we had to finish the interviews very early because these students started their Project SEED experience right after school was out in May. The other students in our system started in mid-June. Seven symposia capped our SEED Program, with six students each. The symposia were held all over Northern and Central California.

Scholarships

Ciba Specialty Chemicals Scholars - Prior to the company's acquisition by BASF, The Ciba Foundation made a generous legacy gift to the American Chemical Society. The Ciba SEED Endowment will support six high school SEED students per year. A new element was added to the SEED college scholarship program with the establishment of the Ciba Specialty Chemicals Scholars Endowment. Nine 1st-year SEED college scholarship recipients will receive scholarships for the remaining 3 years of their chemi-

cal science degree programs. Karen Wong, a 2007 SEED I student, won such a scholarship. Karen (Kai Wai) Wong is studying Biochemistry at the University of California, Berkeley. She is now in her sophomore year and will receive \$5000 for each year. She was mentored by K.S. Ng and E. S. Yamaguchi at Chevron during her SEED experience and worked on valve train wear control by zinc dialkyldithiophosphates.

Three other California Section students won SEED scholarships: Joanie Wen, Yi Feng Li, and Jack Lei each won \$5000 for their freshman year at college.

In summary, this was a very successful program for Project SEED in California. The following people are appreciated for their help during this period: Andrew Breksa, Glenn Fuller, Silvio Rodriguez, Julie Mason, Gary Martin, Michael Cheng, John Ward, and the many other volunteer mentors.



(continued from page 5)

diabetics, empowering individuals, children and families to achieve lifelong successes with their disease. To fulfill this mission, Dogs4Diabetics provides quality medical alert dogs to insulin-dependent diabetics through programs of training, placement, and follow-up services. Dogs4Diabetics strives to set high standards for medical alert service and to be recognized as a organization of dedication, integrity, and service. The organization is a fully accredited member of Assistance Dogs International.

Dogs4Diabetics assistance dogs have been specifically trained to identify, and more importantly, act upon the subtle scent changes that hypoglycemia (low blood glucose) creates in body chemistry—changes undetectable to their human companions. These dogs play a critical role for their partners in their diabetes management.





SCHB Division of Small Chemical Businesses

*To aid in the formation, development, and growth
of small chemical businesses*

San Francisco National Meeting program
All SCHB symposia are in the Moscone West Room 3014

- Sun 1:00 PM:** Best Practices for Entrepreneurs Panel Discussion.
Mon 9:00 AM: Sustaining a Chemical Business through Federal R&D Grants.
Mon 1:30 PM: Algae as a Feedstock for Energy, Chemistry and Environmental Remediation.
Mon 8:00 PM: Sci-Mix Poster Session — What can SCHB do for you?
Tue 8:30 AM: Sustainable Energy Sources and Light-Footprint Usage.
Tue 1:00 PM: Innovations from Small Businesses in the Environmental Industry.
Tue 4:00 PM: Garvan-Ofin Award Networking Reception at Marriott Marquis Hotel.
Wed 9:00 AM: True Stories of Success from Chemical Entrepreneurs.
Wed 1:00 PM: Sustaining a Work-Life Balance.

Visit SCHB at Expo booth #24 — SCHB-The future of the chemical enterprise

See our website <http://membership.acs.org/S/SCHB>

vacuubrand

Five Decades of Vacuum Innovation

Productivity Catalyst

A catalyst is a little thing that can make a big difference. VACUUBRAND® VARIO™ vacuum systems are compact pumps that continuously optimize vacuum conditions without oversight or programming.

- Complete evaporations up to 30% faster
- Protect samples from bumping
- Free scientist time for more productive tasks

Ideal for reactors and rotary evaporation of complex mixtures, these reliable systems also save energy and permit nearly 100% solvent vapor capture.

React today! Call us to arrange a demo!

VACUUBRAND, INC.

Tel 860-767-5341

Fax 860-767-2563

**ACS
Booth
327**



The VACUUBRAND PC3001
1.5 Torr, 27 lpm

www.vacuubrand.com

Cust. Service 888-882-6730

PROTECT Your Expensive Lab Work With Research and Development Record Books

STOCK RECORD BOOKS

B50D -- Fifty pages and fifty duplicates, 1/4 inch sqs. on right pages.

B100P-- 100 pages, 1/4 inch sqs. on right pages, 100 pages, 10 sqs. per inch on left pages

B200P -- 208 pages with 1/4 inch sqs. on right and left pages.

B200PH-208 horizontally lined right and left pages.

Books have instruction and TOCs. Page size 11 x 8 1/2.

Hard extension brown cloth covers. Pages open flat.

\$15.00 each, F.O.B. Chicago
CUSTOM MADE BOOKS TO ORDER
SCIENTIFIC BINDERY PRODUCTIONS, INC
8111 N. Saint Louis Avenue, Skokie, IL 60076
Phone:847-329-0510 Fax:847-329-0608
www.scientificbindery88yrs.com

 RILAS
Technologies

The Chromatography
Solutions Experts

Chiral Purifications by SFC

Rilas Technologies is your partner for all your chiral separations needs, from analysis to purification. Our services are fast, flexible and highly affordable. We Offer:

- Chiral Analysis, enantiomeric excess determination within 1-3 days
- Purifications of enantiomers from milligram to gram scale within 3-5 days
- Free sample pick up and delivery within Boston Metro area

The Advantage of Working with Rilas

- We offer over 25 years of experience
- There is no need to disclose structural information
- Simple pricing with no lengthy quoting and negotiating process

For more information:
www.rilastech.com
info@rilastech.com
857-231-2078

Delta Pharma, change you can count on.
Let us be your provider for professional
Scientific and Clinical Staff.

Call us today at 877-335-8210.

 **DELTA**pharma
a Randstad company

Delta combines the functional services offered by CRO's with tried and true, experienced scientific, clinical and technology staffing solutions, in the most cost effective, efficient manner possible. Our experienced scientific recruitment staff provides niche focused staffing solutions. Whether it's through temporary staffing, permanent placement or functional services outsourcing, Delta can help you build the right teams.

- Organic Chemists
- Analytical Chemists
- Formulation Chemists
- Protein Chemists
- Lab Technicians
- Cell and Molecular Biologists
- DMPK Scientists
- Microbiologists
- GMP Manufacturing Professionals
- QA/QC Professionals

(Continued from page 3)

mento in 1869, 100 miles away, did not detract from the fact that San Francisco was the star of California. The railroad barons built their mansions and their headquarters here even though most freight and passengers left the train in Oakland and entered the city by ferry. It became the natural outlet for the agricultural bounty grown in the central valley of California as the two major rivers of the state drain into the delta and then San Francisco Bay. The great earthquake and fire of 1906 slowed things down for a while, as most of the city east of Van Ness Avenue and north of Mission Street was completely destroyed. By 1915, however, San Francisco was fully back in business. It was the main port for the Pacific theater of World War II and the expansion of trade with the Far East in more recent times. It continues to be a city noted for its great vistas, great food and wine, and cool summer fog.

The California Section of the ACS was chartered in 1901 and the Santa Clara Valley Section in 1954. The about 7000 ACS members in the two sections contribute greatly to economic and scientific richness of the region. We hope you have a pleasant stay here and get a chance to visit the surrounding area in addition to hearing the wide variety of chemical papers at the meeting.



(Continued from page 6)

country” of the state. On the way there one can stop at wineries in the Lodi (SR 99) area where good wines are being made.

To the south, an hour away using US 101, the wineries of Santa Clara and Santa Cruz counties often get grapes from Monterey county to augment their own production. Even further south, two to three hours along US 101, the San Luis Obispo and Santa Barbara wine producing counties are making very good wines.

Most wineries are open on the weekends for tasting and some of the bigger ones offer guided tours. Most now charge a fee for tasting.

Most general bookstores in the San Francisco Bay area have a selection of books on wines, and winery guides. The American Automobile Association has several maps on the various wine areas. A little time, however, spent in the internet with your favorite search engine will quickly lead you to sites with specific information about the particular wine area in which you are interested. In each area, local free publications list wineries, B & Bs, restaurants, and other attractions. Take some time, have some good food in a local restaurant with a glass of one of the local wines, and enjoy the visit.



NOWCC | National
Older
Worker
Career
Center

**Senior Environmental Employment (SEE) Program
Seeks Chemical Engineers**

Applicants must be 55 years of age or older by statute. Benefits: health insurance, sick, vacation, holidays. Positions located at EPA Labs and Offices across the country. Send resume to D. Hamlett, NOWCC, 3811 North Fairfax Dr., Suite 900, Arlington, VA 22203 or fax: 703-243-0706 EOE. For more open positions and information about the federal senior employment programs administered by NOWCC visit our web-sites: www.NOWCC.org and www.ACESProgram.org

BUSINESS DIRECTORY

www.cslab.com

An Employee-Owned Company

Trusted technical expertise.



3860 G. Palo Verde Road, Suite 500, Tucson, AZ 85714 | 520.573.1961 | tucsonlab@cslab.com

Our Tucson Laboratory provides professional Micro-Elemental and Fuel Testing Services

- **CHNOS** - Combustion / TC / IR Detection
- **Carbon & Sulfur** - High Temperature Combustion / IR Detection
- **Halogen & Sulfur** - Oxygen Bomb & Flash Combustion / IC or ISE Detection
- **Metals** - Total Acid Dissolution, Fusions, ICP-OES, ICP/MS, AAS
- **Fuel Analysis** - Proximate, Ultimate and BTU Content
- **Air Sensitive & Hygroscopic Samples** - Nitrogen Dry Box

Contact Columbia Analytical for a full list of capabilities.

Serving the fields of:
Academic Research
Biotech
Chemicals
Cosmetics
Electronics
Energy
Manufacturing
Mining
Environmental
Pharmaceuticals

 **Columbia
Analytical Services[®]**

Same day to 4-6 day rush services available.

www.emdchemicals.com/analyticals



Does EMD know anything
about ACS Reagents?

You might say we're
in tune with your needs.
EMD offers a diverse range
of ACS products that perform.
The quality of our solvents
plays second fiddle to no one.

That's what's in it for you. EMD Chemicals



BUSINESS DIRECTORY

PROMOTE YOUR PRODUCTS AND SERVICES • ADVERTISE IN THE VORTEX

The Vortex readership is greater San Francisco's largest source for chemical and biochemical buyers. *The Vortex* reaches more than 3,500 readers each month. It has been estimated that these buyers annually purchase more than \$175,000,000 of:

- EQUIPMENT
- SUPPLIES
- CONSULTING SERVICES

Placing an advertisement in *The Vortex* is the lowest cost method of reaching this select audience.

For further information and other options for promoting your company's products and services visit:
www.mboservices.net



NEW ERA ENTERPRISES, INC. NMR-IR/FTIR-UV-VIS-FL sampling supplies & accessories

Three major catalogs / pricing to view and download from
www.newera-spectro.com

One source for Spectroscopic
Sampling Supplies

CAGE Code: 44ME9
DUNS: 556785657

1-800-821-4667 cs@newera-spectro.com

BOOST OUR RAVINGS

When you tell our advertisers that you saw their ads here they have more confidence in our newsletter's viability as an advertising medium. They advertise more. This supports our many activities.

ELEMENTAL ANALYSIS

- ◆ C,H,N,O,S,P ◆ Halogens
- ◆ Ash ◆ Metals ◆ TOC ◆ TOX
- ◆ BTU ◆ ICP ◆ ICP/MS ◆ IC

Custom Analysis ◆ Problem Solving

HUFFMAN

Laboratories, Inc

Quality Analytical Services Since 1936

4630 Indiana Street Golden, CO 80403

Fon:303-278-4455 Fax: 303-278-7012

Chemistry@huffmanlabs.com

www.huffmanlabs.com

NMR Service 500MHz

*Mass

*Elemental Analysis

NuMega Resonance Labs

numegalabs.com P-858-793-6057

INDEX OF ADVERTISERS

Recruitment	11
ACSProSpective	2
ACS Small Business	19
ACS Vortex	23
Bay Bioanalytical Lab. Inc	BP
Columbia Analytical Services	22
Delta Pharma	20
EMD	22
Huffman Labs	23
MassVac	BP
Nadjik Pheromone	15
New Era Enterprises, Inc	23
NOWCC	21
NuMega Resonance Labs	23
Rilas Technologies	20
Robertson Microlit	4
Scientific Bindery	20
Vacuubrand, Inc	19

LB Bay Bioanalytical Laboratory, Inc.

A Contract Analytical Lab Serving
the Pharmaceutical Industry since 1991

HPLC Methods Development & Validation
GC/MS UV-Vis Polarimetry Karl Fischer

LC/MS/MS Support for Drug Discovery & Development

- State-of-the-art equipment
- Fast turn-around times

Services Include:

- Quantitation
- MW Determination
- Structural Elucidation
(unknowns & impurities)
- Proteomics

BBL is cGMP/GLP compliant & FDA inspected
551A Linus Pauling Dr, Hercules CA 94547
phone: 510-724-8052 fax: 510-724-8053
chemists@baybiolab.com
www.baybiolab.com

Non-Profit Organization
U.S. POSTAGE
PAID
Permit No. 2346, Oakland CA

TIME VALUE

CALIFORNIA SECTION
AMERICAN CHEMICAL SOCIETY
2950 Merced St #225
San Leandro CA 94577

PLEASE DO NOT DELAY - DATED NOTICE INSIDE



Vacuum Inlet Traps

Because vacuum pumps don't
grow on trees.



Oil Filtration Systems

Because a really old, really healthy
vacuum pump is a beautiful thing.



Oil Mist Eliminators

Because no one wants to eat oily mist.



PRODUCTS

A Division of Mass-Vac, Inc.

247 Rangeway Road • PO Box 359 • North Billerica, MA 01862
978-667-2393 • Fax: 978-671-0014 • sales@massvac.com • www.massvac.com