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Thair Higgins receives the "Salute to Excellence" award for his over 15 years service to the California Section as Assistant Treasurer.

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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
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CONTRIBUTING EDITORS:
Evaldo Kothny
William Motzer

EDITORIAL STAFF:
Glenn Fuller
Evaldo Kothny
Alex Madonik
Paul Vartanian
Eileen Nottoli

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November 2009

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November Historical Events In Chemistry

by Leopold May

November 1, 1909 Hooker Electro-Chemical Company was founded on this date.

November 2, 1841 C. H. C. Willgerodt born on this day did research on the conversion of internal ketones to terminal thioamides, which is known as the Willgerodt reaction.

November 5, 1854 Paul Sabatier, researcher in catalysis in organic chemistry; discovered a process for hydrogenation of oils to solid fats with Jean B. Senderens, was born on this date. In 1912, he shared the Nobel Prize in Chemistry for his method of hydrogenating organic compounds in the presence of finely disintegrated metals whereby the progress of organic chemistry has been greatly advanced in recent years with F. Victor Grignard for the discovery of the so-called Grignard reagent.

November 7, 1929 Eric Kandel discovered how the efficiency of synapses can be modified and did research in molecular mechanism of memory was born on this date. In 2000, he shared the Nobel Prize in Physiology or Medicine with Arvid Carlsson and Paul Greengard for their discoveries concerning signal transduction in the nervous system.

November 11, 1884 Jean-Baptiste A. Dumas

died. He was a researcher on organic compounds, and isolated methanol in 1834 and anthracene with Peligot from coal tar in 1831. Also, he did research on the composition of water, vapor density and made accurate measurement of nitrogen in compounds (Dumas Method). He was born on July 14, 1800.

November 14, 1863 Leo Baekeland patented Velox paper and plastic Bakelite. He was known as the "father of the plastic industry" and was born on this date.

November 15, 1280 St. Albertus Magnus discovered arsenic in 1250 and the first to use affinity in the sense of chemical reactions. He died on this date.

November 18, 1918 Lawrence E. Glendenin, was born on this date, discovered promethium element #61 in 1945, with J. A. Marinsky and C. D. Coryell,

November 20, 1886 Karl von Frisch, who discovered how bees orient and communicate, was born on this date. In 1973, he shared the Nobel Prize in Medicine with Konrad Lorenz and Nikolaas Tinbergen for their discoveries concerning organization and elicitation of individual and social behaviour patterns.

November 24, 1859 The Origin of Species by Charles Darwin was published.

November 26, 1934 Beckman Instruments, Inc., was incorporated.





Moderation and Common Sense.

Attila Pavlath

Last month I described nuclear fusion as a possible solution to our energy problem. As you remember, in a "magnetic bottle" hydrogen iso-

topes, i.e. when deuterium and tritium are exposed to very high temperatures, over a million degrees, they will fuse producing helium and high-energy neutrons. In the simplest layman explanation, the high temperature strips off the electrons and the bare nuclei can be forced to fuse. Since the starting materials are abundant, the only problem remaining is that the creation and maintenance of the magnetic bottle requires more energy than that obtained.

However, twenty years ago an interesting development was announced about fusion. Two U.S. scientists claimed that fusion can be accomplished without high temperature and the process was named "Cold Fusion". As it is known from catalytic hydrogenation reactions, again in layman explanation, the assumption for their investigation was based on the well-known fact that palladium powder can adsorb on its surface considerable amount of hydrogen, . If the space in the crystallic structure of the palladium is packed with deuterium, fusion might occur if the electrons are removed. They assumed that this would happen if heavy water, i.e. D₂O were electrolyzed with palladium electrodes. In 1989, they announced that fusion occurred under such conditions. They based their claim on observing excess heat and neutrons.



Interestingly, already in the early nineteen-twenties claims were made for the formation of helium from hydrogen using fine palladium powder. However, these claims were later withdrawn as experimental errors. When sixty years later the cold fusion of deuterium was announced seemingly supported with more elaborate studies, it shook up the

scientific world with great hope for cheap, easily available energy. Unfortunately, the initial elation over a low temperature fusion possibility was quickly followed first by skepticism then by ridicule proving the old proverb that only one step separates the supreme from the ridicule. Various researchers claimed that they could not duplicate the experiments and others tried to attribute the results to other than nuclear fusion. They claimed that the observed results were within the limit of experimental errors.

What is the present status of cold fusion? Did it occur under the conditions announced, but the experimental results could not be properly validated by the inaccuracy of the available instrumentations or is it impossible? Scientists are divided into two groups who are keeping away from each other. The openly believer group is relatively small, but probably there are others keeping silent for the fear of being ridiculed. The two original researchers relocated to France to continue their research in a less exposed atmosphere. Today the term "cold fusion" is avoided by most physicists as a plague. (There is a computer program called Cold Fusion, which has nothing to do with nuclear chemistry.) Any proposal bearing the "cold fusion" in its title is neither funded nor accepted for publication in refereed journals. The U.S. Patent Office refuses to grant patents for cold fusion. However, titles such as "anomalous effects in deuterated materials" or "low energy nuclear reactions (LENR)" sometimes do get past the obstacles.

Considering the tremendous benefits if cold fusion could be realized, it is not surprising that research was continued and funded by some groups. Japan and India funded research on cold fusion for 6-8 years before termination. Smaller groups believing that cold fusion is possible continue working without fanfare on this area even if they had to avoid the tag of Cold Fusion. For example the Space and Naval Warfare Systems Center in San Diego (SPAWAR) reported in 2002 on their research as "Thermal and nuclear aspects of

(Continued on page 6)

*California Section
American Chemical Society
November Meeting*

Title: "Earthquake! An Update on the Seismic Situation 20 Years after Loma Prieta" By Richard Eisner, Fellow AIA

Date: Tuesday, November 17, 2009

Time: 6:00 pm Social Hour, 7:00 pm Talk

Place: Chevron Richmond Technical Center, 100 Chevron Way, Richmond, CA

Cost: \$10 (Students \$5) Light snack/dinner buffet served during the Social Hour

Reservations: RSVP by Friday, November, 13, to the Section office by e-mail at office@calacs.org or call (510) 351-9922

Abstract:

October marked the 20th anniversary of the Loma Prieta earthquake. It has been more than 150 years since a major earthquake occurred on the Hayward fault and 103 years since major event on the San Andreas fault. These two faults bracket, on the east and west, nearly 6 million Bay Region residents. The USGS estimates that there is a greater than 62% probability for one or more M 6.7 earthquakes to occur in the Bay Region in the next 30 years. The probabilities for similar sized earthquakes to occur in California are 99% within the next 30 years. What would be the impact of a major quake? How prepared are local and state governments? How prepared are you? The presentation will provide an update on the threat, the consequences of an earthquake occurring, and what you can do to prepare.

Biography:

In 2007 Richard Eisner joined the Fritz Institute in developing the Bay Area Disaster Preparedness Initiative, after 23 years of service with the California Governor's Office of Emergency Services (OES). In this capacity he had served as Manager for the California Integrated Seismic Network (CISN), Tsunami and Earthquake Programs and as Regional Administrator. As Coastal Region Administra-

tor, he was responsible for the State's responses to disasters in the San Francisco Bay Region and north coast counties. Prior to that appointment he served as the founding Director of the Bay Area Regional Earthquake Preparedness Project (BAREPP). This is a FEMA and state funded program, that provides planning and technical assistance to promote and support earthquake preparedness and hazard mitigation by local governments and businesses throughout the Bay Region.



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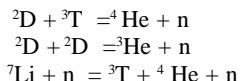
(continued from page 4)

the Pd/D₂O system" strongly suggesting more research. Just a few months ago at an ACS Symposium, the same group reported observing neutron radiation in a cold fusion type of cell design. As scientists, we should be very careful to say that something is impossible. There are only possibilities and probabilities. The dividing line between them is moving with time. We should keep an open mind. Next month article will show more nuclear possibilities.



Editor's Note

In last month's article "Moderation and Common Sense, the Editor failed to notice and correct a technical typographical error made in transposing the original article. The correct forms of the equations are:



Undergraduate Research Symposium

The very sucessful 21st Northern California Undergraduate Research Symposium was held on May 2, 2009. For this symposium, 25 oral presentations and 70 poster presentations were scheduled and the website (<http://galileo.stmarys-ca.edu/chemistry/ACS-2009.htm>) set up for this meeting still contains the schedule and student abstracts. The students submitted their abstracts and general information in a similar manner as using the OASYS to attend a National ACS meeting. The keynote speaker was Todd Harrop who is currently an assistant professor at University of Georgia, Athens where he was actually an undergraduate research presenter back in 1998. He was invited since he hopefully represents a good role model for the current undergraduate researchers.

Steve Bachelder



WCC Meeting Report

The Women's Chemists Committee hosted an event on Saturday, September 26, at Mills College. The title of the seminar was "Three Toxic Surprises in Everyday Life", presented by Caroline Cox. Caroline is the Research Director for the Center for Environmental Health (CEH) in Oakland, California. The case studies explored were the proposed eradication of the light brown apple moth in California, the use of lead in purses, handbags and wallets, and pesticide residues in fruits and vegetables. Each presentation demonstrated how people can be unknowingly exposed to a range of potentially toxic chemicals through seemingly benign activities.

For eradicating the moth, the California Department of Food and Agriculture is proposing to spray an encapsulated pheromone-permethrin mixture over parts of California. There is substantial opposition to the proposal for various reasons including concern that permethrin is a suspected carcinogen and the supposedly inert ingredients in the mixture may not be inert to humans and wildlife. Lead in consumer goods has been in the news frequently in the past year. Caroline's CEH organization has successfully lobbied retailers to take more responsibility in removing these hazardous products from their stores. In 2007 a study showed that over 75% of the produce tested contained pesticide residue. Many of the pesticides are mutagenic and have reproductive effects in humans. In all three case studies, the speaker identified possible options to the toxins used. Chemists can contribute to creating safer products and practices in each of these areas.

The seminar was attended by approximately 45 people, several of whom are students in organic chemistry at Diablo Valley College. Caroline brought a portable XRF scanner to test handbags and wallets for lead, with surprising results. The WCC is grateful to have speakers of this caliber who can engage a diverse audience.

Dr. Michelle C. Douskey



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