

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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October Meeting: Great Beginnings, Continuing Success, and a Fitting Culmination – Gareth Wong –

Abstract

Gareth Wong is a strong believer in teaching by the guided inquiry method. In guided inquiry, the instructor poses questions or prompts to his students in the hopes of stimulating critical thinking and more lasting understanding. It differs from the inquiry method in that it is not fully open-ended. Unfortunately, fully open-ended activities consume time, which most teachers can ill afford to commit since their



curricula are so heavily tied to state content standards and the large number of tests that students are now expected to take at the end of the year. Many of the demonstrations and experiments that Mr. Wong utilizes in his Chemistry

Honors classes reflect inquiry and deductive reasoning. During the development of these materials, students were asked to critique the activ-

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Reminder: September Dinner Meeting

On September 26th, Dr. Hongjie Dai of Stanford University will be discussing his work with carbon nanotubes. This dinner will be held at the Biltmore Hotel & Suites in Santa Clara. The meeting will start at 6:00 PM with Social Hour, dinner at 7:00 PM, and the Lecture will begin at 8:00 PM. The cost will be \$26 for either a chicken or an eggplant dish. To register, please visit the local section web site at www.scvacs.org or contact Shirley Radding by September 22nd (Phone: 408-246-2564, Fax: 408-296-8625). Hope to see you there!

Chair's Message

Although I missed it, I understand that this summer's picnic was a huge success in no small part because of Sally and Howard Peters hard work and grilling expertise. Thank you both! With the end of summer, we enter a season of great activity. Not only do dinner meetings begin with a talk this month on nanotechnology by Professor Hongjie Dai of Stanford but preparations for National Chemistry Week really start heating up. National Chemistry Week comes a week early this year: October 20-26. The local section along with the ACS student affiliate sections at San Jose State, Santa Clara, and Stanford Universities will run several fun and educational activities highlighting this year's theme: Chemistry Keeps Us Clean. From local libraries, to San Jose's Tech Museum, to Peninsula soccer fields where kids congregate on weekends, events will engage folks of all ages in learning about chemistry, particularly the chemistry of cleaning. If you are interested in volunteering, please contact Asfia Qureshi (asfiaq@yahoo.com) who is our National Chemistry Week Coordinator.

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October Award Luncheon

- Date:** Saturday, October 19, 2002
- Time:** 11:30 am Luncheon at San José State University Club (408 South 8th Street – cross street is San Salvador)
- 1:30 pm Awards Ceremony at Duncan Hall 135 at SJSU. Presentation of 2002 ACS Western Region Outstanding High School Chemistry Teaching Award to Mr. Gareth Wong and the 2002 Radding Award to Dr. Paul Walters.
- 2:00 pm Gareth Wong's seminar (includes demonstrations) in Duncan Hall 135.
- 3:00-4:30 pm SJSU Department of Chemistry Open House

continued on next page

Chair's Message, continued from front page

The ACS elections are here! You will soon be receiving ballots for National as well as local section elections. The candidates for National offices are, for President-Elect: Charles P. Casey, Alvin L. Kwiram, and E. Ann Nalley; for Directors-at-Large: James D. Burke, Daryle H. Busch, Merle I. Eiss and C. Gordon McCarty; and for Director, District VI: Howard M. Peters, Stanley H. Pine, and Stephen A. Rodemeyer. The Santa Clara Valley Section candidates are, for Chair: George Lechner; for Secretary: Karl Marhenke; for Treasurer: Hong Gao; for Councilors: Maureen Scharberg, John Riley, and Ean Warren; and for Alternate Councilor: David Parker, Laura Rasay, and Asfia Qureshi. I urge you to take the time to look over the candidates' statements and biographical material that accompany the ballots, make your selection, and then make it count by sending in your ballot.

Ean Warren, one of our web gurus, is looking into a plan to offer this newsletter in an electronic form. This would increase the speed of distribution, something that should be of particular interest to those of you looking for ChemPloyment. It also promises savings to the sections on printing and postal costs. Currently, you can sign up for e-mail notification of when the latest newsletter gets posted to our web site. However, this posting does not include ChemPloyment. To join, send an e-mail to: SCVACS-newsletters-subscribe@yahoogroups.com. Ean hopes to draft a plan whereby every member elects to get the complete newsletter by e-mail or regular mail. Stay tuned for details.

Earlier this week I joined several other teachers, post docs, and graduate students in taking high school standardized tests, lots of them. We are working on a nonprofit project called Standards for Success (www.s4s.org) that is looking to make state standardized K-12 tests interpretable and relevant to college admissions and placement (The motto on their brochure reads "connecting high school standards with university success.").

From their web site, "Standards for Success employs a two-part strategy... First, a series of National Conversations held at select AAU institutions will produce a comprehensive statement of what universities desire in well-prepared students." They have already completed this first part.

"Second, researchers... will analyze state educational standards and assessments, then translate the findings and make them available to university admissions officers..." As part of this second task, our group of science faculty from Stanford, U.C. Berkeley, San Jose State, and local junior high and high schools is evaluating the science sections from a number of state exams. There are also teams from other fields working on different sections of the exams. We rate each question according to the skills needed to answer it as well as

the content it covers. It has been enjoyable working with a cross section of teachers from different scientific disciplines and institutions. It took me a while to get used to the education school jargon, but looking at the tests has been eye opening. They vary dramatically in their expectations and coverage.

While evaluating some of the tougher tests, I have overheard folks saying, "I'm glad I didn't go to school in THIS state." I think it is a worthwhile task to make these tests useful for college admissions. In so doing, students might be saved the aggravation of taking additional commercial college entrance exams, and families could save money on these exams and the test preparation course that go along with them. That's the promise anyway. Whether we get there soon or not, tomorrow offers another round of test taking for me.

October Award Luncheon, continued from front page

Location: Map and directions to SJSU also available at www.sjsu.edu/campusmap/map.html

Parking: Park in the 7th Street Garage. Parking is \$4 and correct change, in the form of \$1 bills, is required. Sorry, guest parking passes are no longer available.

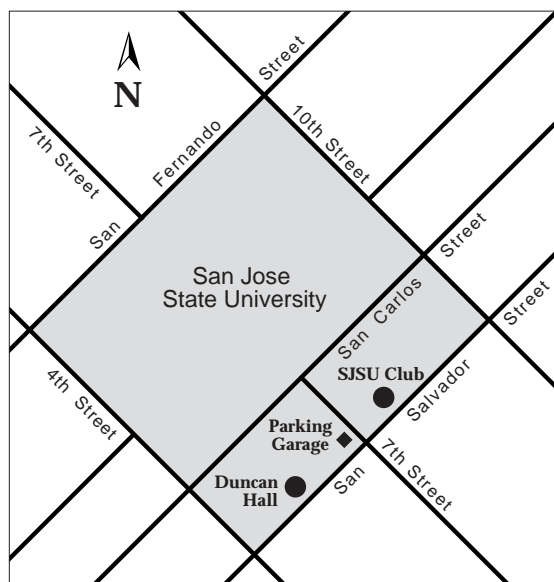
Cost: \$27 with choice of Chicken Dijon or Vegetable Lasagna. Both entrees will be served with rice pilaf, vegetables, and a fresh fruit tart.

Reservations: Shirley Radding Phone: 408-246-2564 Fax: 408-296-8625 Reservations should be made by October 16th; stating your

name, company/school affiliation, number of people in party, and menu preference. Or, register using our web site: www.scvacs.org.

Co-sponsored by: Department of Chemistry, SJSU.

Note: ACS members are also invited to attend a special symposium, "Celebrating Excellence in High School Chemistry Teaching" that will be held prior to the Awards Luncheon. Registration materials and additional information can be found on our web site.



Inflation Hits SCV-ACS Dinner Prices to Increase

Your Executive Committee has been wrestling with the same problems that my family and your companies have been dealing with for several years - income and expenditures. The expenditures just seem to increase while the income remains the same, or worse yet, decreases.

The local section is funded solely by local section member dues that we pay at the same time that we pay our national dues. National sends us our allotments quarterly (I believe). We use this money to provide programs for our members, awards from the section, our newsletter, and outreach

to the public. National Chemistry Week activities are examples of our outreach. The Mosher, Radding, and Ottenberg awards include a stipend and travel expenses when necessary. The Executive Committee has been discussing electronic delivery of the Silicon Valley Chemist to reduce its ever growing cost.

This leaves us with our 9 monthly dinner meetings. Over the past few years, these have included topics and speakers like: "Chemistry of the Stradivarius", a panel on MTBE in gasoline, last May's informative wine tasting, combinatorial chemistry, Dr.

Great Beginnings, continued from front page

ities and their feedback was incorporated into final drafts. Students liked the challenge of these labs and preferred them to conventional ("canned") labs where they were simply validating what others had done before. In his talk, Mr. Wong will share the beginning, mid-year, and year-ending laboratory activities used in his classes, along with a variety of demonstrations that reflect his basic philosophy of teaching.

Biography

Gareth Wong was born and raised in Hawaii, where he received both his Bachelor's and Master's degrees. He also took extensive coursework at both UC Berkeley and San Jose State University. He has taught 36 years in the Fremont Union High School District at two schools; the last 13 years at Homestead High School where he also currently serves as science department chair. He was a part-time instructor for 7 years at West Valley Community College.

Gareth has organized and presented at numerous workshops and conferences in the Bay Area, involving such luminaries in chemical education as the late Dr. Hubert Alyea, the late Dr. J. Arthur Campbell, Dr. Bassam Shakhshiri, and Dr. Glenn Seaborg. Some of these conferences involved well over 100 teachers and represent the best-attended chemistry

conferences ever held in Northern California. He was selected as a teacher fellow for the first Dreyfus Summer Institute in High School Chemistry (1982) and served as both President and Secretary of the Northern Section of the California Association of Chemistry Teachers (1985-1987).

Gareth was selected Teacher of the Year for the city of Sunnyvale (1991 and 2000) and picked Teacher of the Year for the five-school Fremont Union High School District (2000). He was designated a Tandy Technology Fellow in 1997. He was awarded the Education Award by the Tech Museum of Innovation (1994), primarily for his efforts in founding and directing the Bay Area Math and Science Alliance (1992-1996), where he trained industry volunteers in the creation and grading of various types of authentic assessments, such as problem solving/essays, laboratory practicals, oral presentations, and justified multiple-choice exams.

He also has been an eight-time fellow with Industry Initiatives for Science and Mathematics Education (IISME), a non-profit organization that places teachers in industry jobs during the summer. He participated in the Partners in Science Program under Dr. Paul Wagenknecht at San Jose State for two summers.

Carl Djerassi, Dr. Darleane Hoffman, and Dr. Glenn Crosby. The list goes on!

We try to have these dinner meetings in locations that are convenient for all of our members and price them as reasonably as we are able. The member price has been \$25.00 for at least 5 years. And, as one of our web page editors reminds us monthly: "This price includes hors d'oeuvres, main course, coffee, dessert, a glass of wine, and gratuities!" Needless to say the \$25.00 you pay does not cover everything. The Treasurer recently provided us with figures that confirmed my suspicions - we subsidized the first 6 dinner meetings of 2002 on the average of about \$750.00 a dinner! That could be as much as \$6,000 - \$7,000 a year. Unfortunately, we cannot continue at this rate.

What do other professional societies do for their local meetings? Many societies charge up to \$45 for a dinner and speaker, others do not have dinners, and some only have quarterly meetings.

We would like to continue with our present format, but there must be a change. You will begin to notice slight increases in the cost of the dinners. In the near future, it will be \$26 for September and \$27 for October. The Biltmore Hotel has helped us to keep our costs down, but that really limits our dinner selections. They do not charge us for the extra meeting room, if we reserve a minimum of dinners. Remember, you can come to just the lecture without a dinner charge but we do have to meet their dinner minimum.

When I was Chair last year, I put out a plea for other possible locations in which to hold our meetings. Unfortunately at that time no one had any suggestions, so I will ask again for your help in locating new inexpensive areas for our meetings. Does your company's cafeteria host evening meals? Mine does, as does SRI, but then we have additional hidden charges for security, etc!

We need your help.

Sally Peters

Past Chair of the SCVACS
speters@parc.xerox.com

Patent Truths

College and university information

It was reported earlier that the Cohen Boyer gene splicing U.S. patent of Stanford and UC San Francisco generated over \$300,000,000 in its 17-year lifetime. Some other academic patent success stories follow:

1. The University of Wisconsin, in the 1920's, realized that its academic research was not being commercialized. A group of Wisconsin alums went together to create a fund to move the research into the commercial market place. Thus was created the Wisconsin Alumni Research Foundation (WARF). They hit a big winner earlier on (www.warf.ws).
2. Professor Harry Steenbock at University of Wisconsin had been having success with his vitamin D research. Look at your milk carton. The irradiated ergosterol is the fortification of milk with extra vitamin D as found in his US Patent No. 1,680,818 issued August 14, 1928. Other patents followed.
3. In the 1940's, Dr. Karl Paul Link discovered some unusual properties of coumarin. It would work as an in vivo blood thinner in mammals in various blood related diseases and conditions as described in US Patent No. 2,601,204 issued on June 17, 1952. The COUMIDIN my mother took after her strokes was coumarin to try to ward off subsequent strokes.
4. Karl Link's vitamin K work had another twist in that it would induce fatal internal bleeding in small mammals (rats, mice) but was not a serious problem when ingested by larger mammals. D-CON is a rat poison; its active ingredient WARFARIN (coumarin) is a vitamin K antagonist as described in US Patent No. 2,783,177 (issued on February 26, 1957). Does anyone else think it is ironic that former president Richard Nixon after he resigned developed phlebitis and was treated with coumarin?
5. WARF is now a \$20 million+ a year research organization with a

12-story building in Madison. It has returned over \$500 million to the University over the years for scientific research. The latest advances from WARF include early MRI detection (US Patent No. 4,654,591), organ preservation solutions (US Patent 4,798,824) and stem cell research (US patents No. 5,843,780 and No. 6,200,806).

6. The Research Corporation was founded in New York about 1912 with some of the profits received by Frederick Cottrell for his invention of the electrostatic precipitator. At www.invent.org, see US Patent No. 895,729 issued in 1908. The Research Corporation focuses on the patenting of research at non-profit organizations such as colleges, universities and institutes who do not have on-site intellectual property functions. It has funded research for William's Vitamin B₁, Robert Goddard's rockets, and E.O. Lawrence's cyclotron at UC Berkeley. It moved to Tucson AZ about 20 years ago and Dr. Mike Doyle, a chemist and active ACS member, is its new president.

Some Corrections:

March 2002:

The ship Darwin traveled on was the Beagle. His father and grandfather were two of the most prominent and well-to-do physicians in England. The family did not know what to do with unfocused young Charles Darwin.

April 2002:

Michael Sarnoff should be David Sarnoff of RCA.

July 2002:

The story of Dr. Herman Mark's platinum coat hangers is a true one and is found in Edward Teller's autobiography. Teller was a student of Dr. Mark. Thanks to Stan Martin.



Editor's Corner

Due to the Boston national meeting, there will be no technical division column this month. I have made contact with a division who is willing to submit an article for the October issue. Watch for it! Best wishes to the teacher readership for the upcoming academic year!



Calling All Chemists and Chemical Engineers

As many of you know, NCW will celebrated October 20-26 this year. The theme of this year's event is "Chemistry Keeps Us Clean," a salute to the role of chemistry in our daily lives as well as the availability of things in the home for the use in basic chemical experiments. The Santa Clara Valley local section is organizing several events to celebrate chemistry including a teacher workshop, classroom and soccer field demonstrations, exhibits at the Tech Museum in San Jose, public library displays, and a personal-hygiene products drive. We would like to encourage all of you to organize a personal-hygiene products drive at your workplace entitled "Chemistry Makes Cleaning Possible". Collect items such as soap, detergent, toothpaste, toothbrushes, shaving cream, washcloths and sponges as a way to highlight the contributions of chemistry while giving back to the community. These items can then be donated to your local St. Vincent de Paul Society or homeless shelters.

For more information, contact your local NCW Coordinator, Asfia Qureshi at asfiaq@yahoo.com or during business hours at (650) 526-3031.

The University of Tennessee/NSF Supported Research Opportunities for Faculty

The National Science Foundation Chemistry Division has instituted a program of Research Sites for Educators in Chemistry (RSEC) in recognition of the need to encourage research and experiential learning at primarily undergraduate institutions (PUIs) in the US. The Site at the University of Tennessee in Knoxville offers US PUI faculty in chemistry, biology, and other related fields opportunities for NSF-supported fellowships aimed at enhancing both research and teaching in chemistry and related disciplines at Fellows' home institutions. Postdoctoral fellowships are available (at lower priority) for prospective PUI faculty who are US citizens or permanent residents.

NSF/RSEC now offers Fellows flexible research visits of 2-15 months at the University of Tennessee in Knoxville (UTK) and/or at a research-active institution, including Oak Ridge National Lab, UT-Chattanooga, University of the South (Sewanee), University of North Carolina-Asheville, Berea College, and Procter & Gamble. Research hosts at UT and the "partner" institution(s) will help each Fellow establish collaborations sustainable

beyond the term of appointment though "catalyst" grants of up to \$7000 upon completion of the Fellowship. Funding is also provided for sabbatical and/or summer salary, displacement and travel expenses, and supplies.

Teaching activities will be limited to no more than one course per semester (none in the summer), providing an opportunity to share teaching ideas while being actively engaged in state-of-the-art research. Support is now available for a qualified student from the Fellow's home institution for research with the Fellow during and/or after the Fellowship.

Details about the program, contact the RSEC Program Director:

Dr. Kelsey D. Cook

Department of Chemistry
The University of Tennessee, Knoxville
Knoxville, Tennessee 37996-1600
e-mail: rsec@utk.edu
Phone: 865-974-8019

Applications can be submitted at any time, but should be received by mid-January for Fall start dates and mid-July for Spring start dates.

Points to Ponder

In each of us are places where we have never gone. Only by pressing the limits do you ever find them.

Dr. Joyce Brothers
Psychologist



Never doubt that a small group of thoughtful, committed people can change the world. Indeed, it is the only thing that ever has.

Margaret Mead



Always you have been told that work is a curse and labour a misfortune. But I say to you that when you work you fulfill a part of earth's furthest dream, assigned to you when that dream was born, and in keeping

yourself with labour you are in truth loving life . . .

Kahlil Gibran



To be what we are, and to become what we are capable of becoming is the only end in life.

Robert Louis Stevenson



The only job you start out at the top on is digging a ditch.

William Ensley



And the day came when the risk it took to remain tight inside the bud was more painful than the risk it took to blossom.

Anais Nin

SCV-ACS Nominations for 2002

CHAIR-ELECT

George Lechner



SECRETARY

Karl Marhenke



TREASURER

Hong Gao



COUNCILORS (3)

Maureen Scharberg

John Riley

Ean Warren



ALTERNATE COUNCILORS (3)

David Parker

Laura Rasay

Asfia Qureshi

ACS Committee on Professional Training

The ACS Committee on Professional Training (CPT) is in the final stages of revising the guidelines for the chemistry education option as part of the ACS approval process for undergraduate chemistry programs. In addition to revising the guidelines, CPT is considering the addition of a chemistry education minor. The Committee would like your comments on the proposed changes to the guidelines. For more details, please visit the CPT website at <http://chemistry.org/education/cpt>.





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<http://www.scvacs.org>

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ChemPloyment Abstracts

Director: **Shirley B. Radding** 408-246-2564 sradding@att.net

FUTURE MEETINGS

Sep 22-25	Combinatorial Chemistry ACS Prospectives Conference Leesburg, VA
Sep 26	SVC Dinner Meeting <i>Dr. Hongjie Dai</i> Stanford University
Oct 13-16	Future Directions of Drug Delivery Technologies ACS Prospectives Conference Boston, MA
Oct 19	Award Luncheon San Jose State University
Oct 20-26	National Chemistry Week
Nov 12-13	5th Symposium on Groundwater Contaminants Fresno, CA
Nov 21	SCV Dinner Meeting <i>Dr. Jim Collman</i>
Jan 17	SCV Dinner Meeting <i>Dr. C. Marvin Lang</i>

For the latest information, please visit
SCV/ACS web site: www.scvacs.org



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