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SCALACS

April 2014

A Joint Publication of the Southern California and
San Gorgonio Sections of the American Chemical Society



**Southern California Section
Tolman Award Dinner
Tuesday, May 6, 2014**

**Recipient of the 2013
Tolman Medal:
Prof. Mark Thompson
University of Southern
California**

See Page 3



photography by Raúl Mena &
Peter Schupmann
La Verne Magazine
Summer 2002

**San Gorgonio Section
Remembering Ernest Ikenberry**
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**April 22, 2014
From Oranges to Art:
Conservation Science and the
Importance of
Co-operative Education**

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The Getty Conservation Institute**
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SCALACS

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Southern California Section

Chair's Message



We had so many events in March. We had Prof. Frances Arnold from Caltech give a talk on March 6th. The Los Angeles County Science Fair was held on March 28th and 29th.

We had another very successful High School Chemistry Olympiad on March 19th and 20th. We had more than 1,500 students participating this year. We want to thank all the volunteers for their effort and dedication and look forward to the National Exam on April 26th. Please mark your calendar for **May 16, 2014** for the High School Awards Banquet to recognize the top students in the Olympiad.

In addition, we are pleased to announce Prof. Mark Thompson from USC as the recipient of the 2013 Richard C. Tolman Award. More details on this award dinner event are on page 3.

And happy Earth Day - April 22! We will have the Chemists Celebrate Earth Day events at the California Science Center. This year, the theme is "The Wonders of Water". Please check our website or <http://www.californiasciencecenter.org> for more information.

We have more events scheduled in April. On April 5, the Expanding Your Horizons Conference for middle school girls will take place at Mount St. Mary's College Doheny Campus. Also, on April 5, the Younger Chemists Committee invites you to join them for an Ice Cream Social event. In addition, we will have the Chemistry Bowl Competition at Pasadena City College on April 12. Please check out these events (and more!) in this issue of SCALACS or on our website, www.scalacs.org, for more detailed information. I thank our Section members for planning these events.

Finally, welcome Spring! And please check us out on Facebook and LinkedIn. You can also follow us on Twitter (SCALACS@scalacs1).

Best,
- Yumei Lin, Chair

Southern California Section

Tolman Award Dinner Meeting

Tuesday, May 6, 2014

**USC University Club
at King Stoops Hall**

705 West 34th Street

University of Southern California

Los Angeles, CA 90089-1541

"Using Phosphorescent Metal Complexes to Squeeze Every Last Photon Out of an Organic LED"

Mark E. Thompson

Professor of Chemistry and Materials Sciences

6:00 p.m. Check-in & Hosted Social Hour

7:00 p.m. Dinner

8:00 p.m. Presentation

The Award: The Richard C. Tolman Medal is awarded each year by the Southern California Section of the American Chemical Society in recognition of outstanding contributions to chemistry in Southern California. The Tolman Medal recognizes broad accomplishments in chemistry rather than a single fundamental discovery. These contributions may be of several kinds, including seminal research of widely regarded influence, achievements of broad impact in chemical technology, significant contributions to chemical education, and outstanding leadership in science on a national level. To be eligible for the Medal, the recipient must have accomplished a major portion of his or her work while a resident of Southern California.

Abstract: We have developed a great deal of chemistry around phosphorescent iridium and platinum complexes for monochromatic and white OLEDs. These materials give LEDs with efficiencies close to 100%. The reason that these Ir and Pt complexes perform so much better than pure organic analogs is that the electroluminescent process generates a mixture of singlet and triplet excited states. The strong spin orbit coupling of third row transition metals efficiently mixes singlet and triplet states, allowing us to collect all of the electrically generated

(Continued on Page 4)

Southern California Section

Tolman Award Dinner (Abstract Continued from Page 3)

excitations. In this talk, I will start with the mechanism of electroluminescence and then move on to our work in studying a wide range of iridium and platinum organometallic complexes, which emit with near unit efficiency from the UV to the nearinfrared. We have prepared high efficiency OLEDs with the visible and NIR emitting materials. I will also discuss our efforts to generate broadband (white) emitting OLEDs. Time permitting, I will discuss our recent results with Copper based phosphors for electroluminescence.

Cost: There is a choice of dinner entree of Red Wine Braised Beef Brisket or Risotto with Roast Roma Tomatoes and Lavender. The cost is \$35 which includes the hosted social hour, the meal, and wine with dinner, payable at the door with cash or check. Please RSVP to Nancy Paradiso at office@scalacs.org or 310 327-1216 by Wednesday, April 30th.

Directions: For parking information and a map, go to <http://universityclub.usc.edu/html/content.cfm?CID=39>. Parking is \$10. Enter at Gate 4 (Royal Street and Jefferson Blvd.)

Younger Chemists Committee Ice Cream Social

The Younger Chemists Committee invites you to join them for an Ice Cream Social on **Saturday, April 5th at 12:00 pm**. This is a great opportunity to meet and network with fellow chemists in a fun and relaxing atmosphere. We will be meeting at **The Chocolate Chair**, an ice cream shop where each order is made right in front of you using liquid nitrogen! ACS members and non-members are welcome.

The Chocolate Chair
Madang Plaza
621 S. Western Avenue
Los Angeles, CA 90005

Please RSVP to office@scalacs.org by April 3, 2014. We hope to see you there!

Southern California Section

Mark E. Thompson 2013 Richard C. Tolman Award Recipient

The Southern California Section of the American Chemical Society is pleased to announce the 2013 Recipient of the Richard C. Tolman Award, Mark E. Thompson of USC.

Dr. Mark E. Thompson (Ph.D., California Institute of Technology) is Professor of Chemistry at the University of Southern California. Dr. Thompson received his B.S. degree in Chemistry in 1980 (U.C. Berkeley) and his Ph.D. in chemistry in 1985 (California Institute of Technology). He spent two years as a S.E.R.C. fellow in the Inorganic Chemistry laboratory at Oxford University. Prof. Thompson took a position in the Chemistry Department at Princeton University in 1987, as an Assistant Professor. In 1995, Prof. Thompson moved his research team to the University of Southern California, where he is currently a Professor of Chemistry. His research program involves the study of new materials and devices for electroluminescence, solar energy conversion, chemical/biological sensing and catalysis. Prof. Thompson is the author of approximately 300 papers in refereed professional journals and holds more than 130 patents primarily in the areas of molecular and polymeric materials for optoelectronic applications, organic thin film devices, and heterogeneous catalysis.

Undergraduate Research Conference

The 2014 Undergraduate Research Conference in Chemistry and Biochemistry will be held on **Saturday, April 12th** at **Concordia University, Irvine** (1530 Concordia West, Irvine, CA 92612). It will feature a keynote address by distinguished professor, **Dr. Harry Gray** of Caltech. For more information, please visit the conference website (<http://acsscurccb2014.webs.com/>) or contact Grace Chong at grace.chong@eagles.cui.edu. or Dr. John W. Kenney at 949-214-3298 or john.kenney@cui.edu.

Southern California Section



Outreach Activities and Chemists Celebrate Earth Day Theme: "The Wonders of Water"

The **Expanding Your Horizons Conference** for middle school girls will take place on **April 5th, 2014** from 8:45 am to 2:45 pm at **Mount St. Mary's College Doheny Campus**, Los Angeles. Expanding Your Horizons is a career day to inform young women in grades 5-8 about careers in math and science-related fields. Since this is a conference for girls, women volunteers to help out for the day are very welcome. If you would like to volunteer, please contact Dr. Eleanor Siebert at esiebert@msmc.la.edu.

Late April 2014 - Chemists Celebrate Earth Day Activities at the California Science Center, 700 Exposition Park Drive, Los Angeles, CA 90037, website: <http://www.californiasciencecenter.org>. **The 2014 theme is: "The Wonders of Water."** Join volunteers for CCED activities. Dates and times will be listed on the SCALACS website. For more information, or if you would like to volunteer please contact Henry Abrash at: abrash8@aol.com.

The Intel Science Fair will take place on May 13-16, 2014. If you would like to volunteer as a judge, please contact Brian Brady at brian.b.brady@aero.org.

Southern California Section

Joint Younger Chemists and Women Chemists Event

Brewery Tour and Tasting at Smog City Brewery

1901 Del Amo Blvd., Ste. B,
Torrance, CA 90501

**Thursday, April 24, 2014
7-9 pm**

Come join your fellow chemists for a tour of the facilities and sample some great beer! There is no cover fee; drinks are \$2-\$3 for tasters and \$6 for pints. Anyone over the age of 21 is welcome to attend.

Please RSVP to Nancy Paradiso in the Section Office at office@scalacs.org by **Monday, April 21st**. For directions, go to <http://www.smogcitybrewing.com/>

Attention Unemployed Chemists!

In the coming months, the Employment Committee will be offering a one-day resume, interview, and networking workshop applicable to all members—unemployed chemists as well as first time job seekers. The workshop will be interactive where you will be invited to participate with your fellow attendees and facilitators. We believe this method is superior to just listening to a lecture, for it is more akin to real world situations.

We would like to create an event that serves your needs. In addition, we are available to answer questions you may have concerning your job search. If you have suggestions or questions, please email the Employment Committee at office@scalacs.org.

Thank you for your time and good luck in your search.

- Brian Sullivan
Chairman of Employment Committee

Southern California Section

First Annual Chemistry Bowl

Saturday, April 12, 2014

8:30 am—3:00 pm

Pasadena City College

1570 E. Colorado Blvd.

Pasadena, CA 91106

The Pasadena City College ACS Student Chapter, in collaboration with SCALACS, will hold a Chemistry Bowl at their campus.

The Chemistry Bowl will be a competition between local ACS student chapters in the Southern California region. The competition will consist of lab bench challenges, spectroscopy, a relay obstacle course, and chemistry jeopardy.

The first lab bench challenge will be a titration where teams are given a set time to determine the concentration of an unknown solution and then are judged by their precision, accuracy, and lab technique. In the spectroscopy challenge, teams are given a spectra to determine the correct chemical structure. The battery building challenge will require teams to build a galvanic cell. The relay obstacle course will be done out in the stadium and will consist of a chemistry themed relay. Last is the chemistry jeopardy finale where the top three teams will compete to determine a winner. All competing teams will consist of five members.

Please contact Dr. Veronica Jaramillo, vijaramillo@pasadena.edu, for more information on how you can help make this event successful or if your chemistry club would like to participate.

Southern California Section

Volunteers Needed for Boy Scout Expo

May 31, 2014

Rose Bowl Stadium Concourse

1001 Rose Bowl Drive, Pasadena, CA

8:30 am to 4:00 pm (including setup and cleanup)

SCALACS will be hosting its annual Chemistry Merit Badge activity at the Scout Expo being held at the Rose Bowl Stadium Outside Concourse. We are hoping to help at least 80 scouts earn their badges, so we need a minimum of two instructors for each of four stations. Last year we helped 150 scouts get their chemistry badges.

We're looking for volunteers throughout the day for a minimum of two hour shifts. Lunch is not provided but there will be snacks and beverages. There is a cooler to store your lunch. Parking is free.

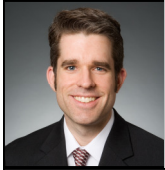
If you would like to volunteer, please contact Derek Marin at Derek.Marin@DunnEdwards.com or Jerry Delker at delker@earthlink.net before May 28th.

High School Olympiad

Did you know that the Southern California Section has been sponsoring the High School Contest non-stop for the past 100 years? The Southern California Section has the longest running contest in American Chemical Society annals.

This year, we had a record 1,546 students from 48 schools take the local exam with our section. It is the logistics mastery of **Dr. Gerald Delker** that has made this event so accessible to so many students, and the reason why the program has grown so much in recent years. Thank you, Jerry, for your great work.

The National Exam will be held on April 26th at California State University, Dominguez Hills for the students that qualify. The Awards Banquet will be held on Friday, May 16th, 2014 at Mount St. Mary's College Doheny campus to honor our top students, the National Team members and the Paul Shin Memorial High School Teacher of the Year.



Insights Into IP Law
Keith Orso*, Irell & Manella LLP
KOrso@irell.com

Last month, this column asked the reader to consider a fictitious patent claiming a composition comprising chemicals A, B, C, and D in admixture, and pointed out that the owner of such a patent may not actually be free to make and sell such a composition because someone else may hold a patent that covers compositions containing the subset of chemicals A, B, and C, for example. It was noted that the coexistence of two such patents may seem counterintuitive, but building on the patented combination of A, B, and C to produce an invention of A, B, C, and D in admixture was just the sort of activity that the United States patent laws are designed to encourage.

United States patent laws are rooted in the Constitution, which in one section empowers Congress “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” (United States Constitution, Article I, Section 8). This section is known as the “Intellectual Property Clause” of the Constitution. Empowered by that clause, Congress has enacted copyright laws, which generally protect original works of authorship for the limited time of the life of the author plus 70 years, and patent laws, which generally protect inventions for the limited time of 20 years from the earliest application date.

One theory underlying the Intellectual Property Clause, and the copyright and patent laws enacted pursuant to it, recognizes that intellectual property created by one person often can easily be duplicated and exploited by others without permission. For example, if you discover that the composition comprising chemicals A, B, C, and D in admixture cures the common cold, knowledge of the composition and its utility enables your competitors to market their own cold cures. You might have spent a significant amount of time and money discovering your cold cure, only to have others swoop in at the end and duplicate the result without performing any work or spending even a single dime.

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Insights Into IP Law

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People will not invest time and money to develop intellectual property, so the argument goes, unless they have some assurances that the fruits of their efforts can be protected from unauthorized exploitation. Absent such assurances, there will be less investment in intellectual property, which will result in fewer inventions being made, stymying innovation. Alternatively, people might invest time and money developing only intellectual property that is kept secret. But that stymies innovation too, because others are unable to learn from, build on, or develop improvements to, advances that are kept secret. This inhibits the progress of science and useful arts. Securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries incentivizes the public to invest time and money in innovation. It also promotes dissemination of inventions to the public. To obtain the exclusive right of a patent, an inventor must disclose his or her invention in the patent itself, which must contain a written description of the invention and teachings that enable people having ordinary skill in the pertinent field to make and use the invention without undue experimentation. (Until recently, an inventor also had to disclose what he or she believed to be the “best mode” of practicing the patented invention.) These patent disclosures equip the public to exploit the patented invention once the patent expires, and in the meantime permit the public to build on and improve upon the patented invention.

But inventors can, of course, choose not to seek patent protection. Instead, they can treat their inventions as trade secrets so the inventions do not have to be disclosed. Such a strategy is not without its risks, but that is a topic for a future column. As always, please email me at korso@irell.com with any questions or issues that you would like to see addressed here.

* The author earned engineering and chemical engineering degrees from Harvey Mudd College (undergraduate) and the University of Texas at Austin (graduate), before attending law school at UCLA. He is a registered patent attorney and a partner at the law firm of Irell & Manella LLP. This column does not constitute legal advice and does not necessarily reflect the views of the firm or its clients.



This Month in Chemical History

Harold Goldwhite,
California State University, Los Angeles
hgoldwh@calstatela.edu

In my last column I described the way that I became interested in the 19th. century text on "The Chemistry of Creation" by Robert Ellis F.L.S. subtitled "A sketch of the chemical phenomena of the earth, the air, the ocean" third edition; published in 1855 under the direction of The Committee of General Literature and Education appointed by The Society for Promoting Christian Knowledge (S.P.C.K.). I also gave some of Ellis's background, qualifications, and activities. In this column I will focus on the book itself.

As is to be expected from its origins, this is a propagandist work dedicated to showing, in Dr. Pangloss's words from "Candide" that "All's for the best in this best of all possible worlds". There is nothing obviously wrong, given the knowledge of the times, in Ellis's presentation of the science of the state of the Earth and of natural phenomena. But almost everywhere he can he puts in a plug for the beneficence of the divine creator. In Part III he discusses the salinity of the oceans. "The all-wise Creator suffers nothing to be done by chance; and if the ocean was to be made salt by the lixiviation of the crust of the earth, can we suppose that so important a result ... would be permitted to the operation of accident? If, instead of employing limestone it had pleased God to employ baryta ...in constructing ...the earth's crust ... the ocean would have been unfit for the residence of a single living creature. The saltiness of the ocean is, therefore, a wonderful instance of the forethought and wisdom of the world's Creator.." (I have abbreviated by about one-third the content of this paragraph without, I believe, changing its meaning. Ellis tends to be long-winded in a very Victorian way.)

I will present the book systematically. A 20 page introduction, headed by an engraving of an alchemist, covers the origins an development of chemistry from ancient Egypt to the nineteenth century. The illustrations are significant contributors to the beauty of this book. A full page engraving of a hilly scene with a waterfall and a vista of a river valley introduces Part I- The Earth. In this section the author discusses the elements as known in the 1850s. There are sixty-two of which number several are still doubtful. Curiously he does not give a list or Table of these elements; we have to infer their names from his later discussions. Ellis's discussions in this section of the novel art of photography are interesting. The actinic ray of light has been long known for its effects on silver compounds. Now (1855) this effect has been captured in a number of processes: the Daguerrotype; the Talbotype; and the collodion plate. There are even announcements of photographs in color. Electricity is another wonder of

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This Month in Chemical History

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the earth. The communication speed of the Electric telegraph means that “the Royal speech may be printed and distributed at the very ends of our island on the afternoon of its delivery”. In a Chapter on Chemistry of the Land, Ellis does some careful tightrope walking over Niagara. “At the Falls of Niagara, for example, geologists are considered to have proved that in the course of time the river has cut its way back through several miles of rock, and is still gradually receding, though with extreme slowness, at the rate, it is said, of a foot a year.” He then adds in a telling footnote: “It will be understood that while admitting this fact, no assent is thereby given to the argument as to the assumed age of the earth, which is conceived to be supported by this phenomenon”. Arguments about the age of the earth were key to the debates raging at that time about the role of evolution in the development of living species.

Part II-The Air is introduced by a picture of various forms of clouds. The physics and chemistry of the atmosphere seem to be one of Ellis’s enthusiasms. There are pages and chapters of straightforward scientific analysis with hardly a word about the Creator. He contrasts the experiments of Dalton and Gay-Lussac agreeing with the latter that the proportions of oxygen and nitrogen in the air are constant regardless of place or altitude. This section does contain some remarkable allegations indicative in part of the state of medical science of the time. Malaria (as its name indicates) is “an atmospheric impurity resulting from vegetable decomposition..”. Cholera may be “a disease due to a deficiency in the amount of the electricity of the air”. In St. Petersburg it is alleged that a large magnet lost its power during a cholera epidemic, and the electric telegraph failed!

Part III-The Ocean is introduced by a picture of an ocean bay ringed by volcanic hills. I discussed some of Ellis’s observation on salinity earlier.

The whole work concludes with a paean of praise to the all-wise beneficent creator.

On the whole “The Chemistry of Creation” does its job of telling a believing audience about the overall chemistry of the earth well. It does it without including a single chemical symbol or formula. It does include a sketchy and relatively uninformative discussion of chemical equivalents, but there is no mention of atomic weights that were by 1855 central to any deep analysis of chemistry. This book is, for me, a fascinating insight into the views of believing Christians about the natural world in mid-nineteenth century Britain.

San Gorgonio Section

Chair's Message

There is such a thing as a free lunch! Here is an update on the time for the Goldstein Lecture in May.

7th Annual Goldstein Distinguished Lecture

May 9, 2014

Time 11:45-2:45

Kellogg West Conference Center
Cal Poly, Pomona

Remembering Ernest Ikenberry: Ernest A. Ikenberry passed away in October 2013. He was Professor of Chemistry at the University of La Verne from 1956 to 1989. During that time he was Department Chairperson for 30 years and Chairperson of the Division of Natural Sciences and Mathematics for 14 years. Ernie was an active member of the American Chemical Society and past Chairperson of the San Gorgonio Section.

Ernie was born and spent his first 17 years in Ping T'ingshow, China. His parents were Christian missionaries who traveled to China while on their honeymoon. The family was present during the Japanese occupation of the province. After being evacuated from China in 1941, the family made its way to La Verne, where Ernie attended Damien High School. The high school made quite an impression on him. "I never visited a school with a swimming pool before," he said.

Ernie earned three degrees in chemistry; A.B. McPherson College, McPherson, Kansas, ('47), M.S. Kansas State University, Manhattan, Kansas, ('51), Ph.D. Kansas State University, Manhattan, Kansas, ('55). While a Dow Research Fellow, he performed research in organic chemistry, resulting in several publications and patents. He and his wife migrated to the west coast where he accepted a job in industry. During that time he quickly recognized his love of teaching and accepted a position as Associate Professor of Chemistry at the University of La Verne in 1956, along with the accompanying 50% salary reduction.

During his career, Ernie taught a variety of courses both in and out of the Chemistry Department. He is credited with pioneering the use of computers on the campus during the 1970's. He was the first faculty member to bring a personal computer to campus; a Model One 1.2 megahertz with 90 kilobytes of memory purchased at Radio Shack. He was also the first faculty member to teach a computer class.

Ernie is remembered for his immense dedication to the University and students. He spent countless hours maintaining analytical instrumentation and working in the central computing facility. He actively raised funds to financially support science programs during fiscally lean times. He will be missed!

- Eileen DiMauro

San Geronio Section

April Dinner Meeting

Tuesday, April 22, 2014

From Oranges to Art: Conservation Science and the Importance of Co-operative Education

**Michael R. Schilling, Senior Scientist,
The Getty Conservation Institute**

Roberta's Village Inn
2326 "D" Street
La Verne, CA

Social and Check-in: 6:00PM
Dinner: 6:30 PM
Speaker: 7:15 PM

Program Overview: Much of the science that takes place in museums involves characterization of the materials and techniques used by artists and craftsmen to create works of art, artifacts and monuments. Conservation scientists routinely address questions such as: What materials were used to make a work of art? Where and when did the materials originate? Has the object been treated by art restorers or conservators in order to preserve it? How have the original and treatment materials changed over time? Answers to these and other challenging questions come from either direct analysis of the object using non-invasive techniques, or from tests of minute samples removed from the object. Art conservators rely on the information to develop treatments designed to preserve the object for future generations, and many art historians involved in provenance research take keen interest in this knowledge. Presentation of research on characterizing Asian lacquered objects and animation cels will illustrate the unique aspects and breadth of conservation science. The impact of co-operative education in the presenter's career will also be featured.

Biography: Michael R. Schilling, who began his career at the Getty Conservation Institute in 1983, is a Senior Scientist and head of the Organic Materials Laboratory. Given the prevalence of organic materials in works of art, his group studies a broad range of traditional and contemporary museum objects, and participates in field projects at cultural heritage sites. The group teaches workshops about their analytical methodologies to scientists and art
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San Gorgonio Section

April Meeting (Continued from Page 11)

conservators around the world, and collaborates in numerous graduate research projects. Michael earned his B. S. (1983) and M.S. (1989) degrees in chemistry from California State Polytechnic University, Pomona.

Dinner: Buffet dinner includes green salad, fruit platter, dinner rolls, steamed vegetables, mashed potatoes, grilled chicken, pot roast, beverages (coffee, ice tea, sodas, lemonade-no alcohol), and peach cobbler.

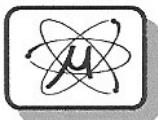
Cost and Reservations: The cost (includes tax and tip) is \$15 for members, \$18 for nonmembers, \$12 for retirees and \$8 for students. RSVP to Eileen DiMauro (edimauro@mtsac.edu) or (909) 274-4533 no later than Wednesday, April 15.

Directions and Parking: Parking is free in Downtown La Verne, but you may have to walk a little. To get map/directions, visit: <http://www.yelp.com/biz/robertas-village-inn-la-verne>.

From Riverside: Take CA 60 west to the I 15 north. Go north on I 15 to I 10. Take I 10 west (towards Los Angeles) to Towne Ave. Take the Towne Ave. exit and then turn right onto N. Towne Ave. Take the 1st left onto E. La Verne Ave. and then turn left onto Arrow Highway. Drive about 1 mile and then turn right onto D Street. Roberta's Village Inn will be on the right.

From San Bernardino: Take the CA 210 west toward Pasadena to the Fruit St. exit. Take Fruit St. exit and turn left onto Fruit Street. Turn right onto Foothill Blvd. Take the 1st left onto D St. Roberta's Village Inn will be on the left about a mile down.

From Pomona: Take the I 10 east toward San Bernardino to the Fairplex Dr/W McKinley Ave exit. Take the exit and turn left onto Fairplex Dr. Stay on Fairplex Drive for about 1 mile. You will have to turn left at the fairgrounds and then right to stay on Fairplex Dr. Turn left onto Arrow Highway and then take the first right on D Street. Roberta's Village Inn will be on the right.



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PERIODICAL

Bi-Section Chemists' Calendar

For more information on these events, please check the SCALACS
website at www.scalacs.org

April

- 5 SC Younger Chemists event at the Chocolate Chair—see page 4
- 5 Expanding Your Horizons Conference at Mount St. Mary's
College—see page 6
- 12 SC Chem. Bowl at Pasadena City College—see page 8
- 12 Undergraduate Research Conference at Concordia University—
see page 5
- 22 SG Dinner Meeting—Michael Schilling's Talk—see page 15
- 24 SC YCC & WCC Event—Brewery Tour & Tasting at Smog City
Brewery—see page 7

May

- 6 SC Tolman Dinner at USC—see page 3
- 9 SG 7th Annual Goldstein Distinguished Lecture—see page 14
- 13-16 Intel Science Fair—see page 6
- 16 SC Educational Awards Banquet—see page 9
- 31 Boy Scout Expo at Rose Bowl Pavilion—see page 9