



SCALACS

November/December 2012

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



**Southern California
Women Chemists
Committee Dinner**

**DNA Signaling
Prof. Jacqueline
Barton, Caltech**

**Wednesday,
November 14th, 2012
Pasadena City
College**

See Page 3

**San Geronio
Section Meeting
Mt. San Antonio College**

**November 15, 2012
See Page 11**

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SCALACS

A Joint Publication of the
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American Chemical Society

Volume LXV November/December 2012 Number 7

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Southern California Section

Chair's Message

Great Chemists for All Seasons!

I am simultaneously amazed and pleased how much time, effort, and passion our local section members devote to doing Great Chemistry! I am reminded of a quote from the World War II hero and California native James Doolittle – "There's nothing stronger than the heart of a volunteer." SCALACS members continue to live up to this even in a time with increasingly busy schedules and other distractions.

It is my honor to recognize four SCALACS members who have made extraordinary contributions to their community. Each will be recognized with an **ACS Salutes to Excellence** award at our upcoming dinner meeting on November 14th.

Dr. Rita Boggs is honored for her dedication to chemistry and public affairs. She has truly earned the title of citizen chemist through her tireless efforts in applying her scientific expertise to improve people's lives through the transforming power of chemistry. Rita's impact on her community is something that we should all celebrate.

Professors Armando Rivera and Veronica Jaramillo are honored for their outstanding work with ACS student members. Not only did they and their students plan a trend-setting undergraduate program for the 2011 Western Regional meeting, they have been working for years to promote scholarship and service among the students at East Los Angeles College. Veronica has recently moved on to Pasadena City College and we already hear that good progress is being made in forming one of our newest student chapters.

Barbara Belmont is honored for advancing the involvement and acknowledgement of lesbian, gay, bisexual, and transgender (LGBT) members of the American Chemical Society through several innovative initiatives and mentoring activities. In 2010 Barbara was appointed to serve as first chair of the ACS Professional Relations Subdivision for Gay and Transgender Chemists and Allies.

I wish you all the best for a great holiday season. During a reflective moment in the waning days of 2012, consider joining us in 2013 for all of the wonderful activities that Brian Brady has in store for us.

Good Health and Prosperity in 2013!

Bob de Groot
rdegroot@oxy.edu

Southern California Section

Women Chemists Committee Dinner Meeting

Co-Sponsored by eSTEM grant, Thanks to Lynn M. Wright and
Dr. David N. Douglas

Wednesday, November 14, 2012

at

Creveling Lounge, Pasadena City College

1570 E. Colorado Blvd.
Pasadena, CA 91106

DNA Signaling

Jacqueline K. Barton

Hanisch Memorial Professor of Chemistry and
Chair, Division of Chemistry and Chemical Engineering,
California Institute of Technology,
Pasadena, CA 91125

6:15 p.m. Check-in

7:15 p.m. Dinner

8:15 Presentation

Abstract: We think of the DNA double helix as the library of the cell, encoding all that we are. But the DNA helix can also serve as a conduit for the flow of electrons, a medium for signaling. DNA can show reactivity from insulating to wire-like depending upon the stacking of the base pairs. Many experiments have now shown that double helical DNA can serve as a conduit for the transport of electrons over long molecular distances. Importantly, since DNA conductivity depends upon base pair stacking, we can utilize this chemistry in designing sensitive DNA-based diagnostic sensors. But do electrons and holes also migrate along the DNA helix within the cell? DNA charge transport chemistry may be used advantageously within the cell in long range signaling to DNA-bound proteins, both to activate responses to cellular stresses and to activate repair of bases damaged under conditions of oxidative stress. DNA charge transport provides an opportunity to carry out redox chemistry at a distance, and hence the DNA helix can serve as a conduit for signaling across the genome.

(Continued on Page 4)

Southern California Section

WCC Dinner Meeting (Continued from Page 3)

Biography: Dr. Jacqueline K. Barton is the Arthur and Marian Hanisch Memorial Professor of Chemistry and Chair of the Division of Chemistry and Chemical Engineering at the California Institute of Technology. She is a native New Yorker. Barton was awarded the A.B. *summa cum laude* at Barnard College in 1974 and a Ph.D. in Inorganic Chemistry at Columbia University in 1978. After a postdoctoral fellowship at Bell Laboratories and Yale University, she became an assistant professor at Hunter College, City University of New York. She then returned to Columbia University, becoming an associate professor of chemistry and biological sciences in 1985 and professor in 1986. In the fall of 1989, she joined the faculty at Caltech, and in 2009 began her term as Chair of the Division.

Professor Barton has pioneered the application of transition metal complexes to probe recognition and reactions of double helical DNA. She designed chiral metal complexes that recognize nucleic acid sites with specificities rivaling DNA-binding proteins. In seminal studies, Barton has also elucidated a new property of DNA, how electrons migrate through the DNA double helix. This chemistry has been applied in the development of DNA-based sensors and may be critical to long range signaling within the cell.

Barton has received numerous awards including many ACS awards. She received the Tolman Medal in 1994. Barton has served the chemical community through her participation in ACS, government and industrial boards. She has served as a member of the Board of Directors of the Dow Chemical Company since 1993. Based upon her industrial board service, with a focus on furthering science and technology, she was named an Outstanding Director by ODX. Barton has also trained more than 100 graduate students and postdoctoral associates, including many now in faculty positions across the globe. In October, 2011, Dr. Barton was awarded the National Medal of Science by President Obama.

Reservations: There will be a chicken dinner. The cost of the dinner is \$26 per person including tax and tip; cash or check at the door. Please call Nancy Paradiso in the Section Office at 310 327-1216 or email office@scalacs.org by Monday, November 12, 2012 for reservations.

Directions: A campus map and directions are available at http://www.pasadena.edu/maps/campus_map.cfm. Parking is \$2. You can park in the Staff Parking Lot right next to the Creviling Center or across Hill Avenue in Student Parking Lot 10.

Southern California Section

Southern California Section Bylaws Revisions

The Executive Committee of SCALACS is proposing modifications to the Section's bylaws, which can be viewed on the Section's website at www.scalacs.org. **These changes will be presented at the January meeting of the Section** (check your January/February issue of SCALACS or our website, www.scalacs.org, for details). If you have any questions or need copies of the changes that are being proposed, please contact Nancy Paradiso at (310) 327-1216 or via email at office@scalacs.org.

Call for Nominations 2012 Richard C. Tolman Medal

The Tolman Medal is awarded each year by the Southern California Section of the American Chemical Society in recognition of outstanding contributions to chemistry. These contributions may include achievements in fundamental studies; achievements in chemical technology; significant contributions to chemical education; or outstanding leadership in science on a national level. The nominee need not be a Southern California resident; however, most of the award-related accomplishments must have been made in this area.

The Southern California Section of the American Chemical Society and the Tolman Award Committee are now seeking nominations for the 2012 award. There is no official nominating form for this award; nominations are accepted from any member of this Section or of cooperating Sections. The nomination package should include:

- an up-to-date curriculum vitae or resume of the candidate
- letters of support from colleagues in the profession describing the candidate's major achievements
- if the candidate is being considered for outstanding teaching, letters of support from former students should be included.

It is preferred that nomination packages be electronically transmitted to the Chair of the Tolman Committee at office@scalacs.org. We are also deleting the requirement for copies of publications. Rather, a list of representative publications would suffice. **The deadline for receipt of nominations is December 15, 2012.** Inquiries should be directed to the Chairperson at (310) 327-1216 or via e-mail at office@scalacs.org. A list of past winners, available on our website www.scalacs.org, demonstrates the caliber of awardee sought by the committee.

Southern California Section

Thanks to all 2012 Volunteers

The many programs and services that your Section provides are accomplished by the volunteers of the various committees. We would like to acknowledge and thank all of you who volunteered your time and talents during this year.

Chair: Bob de Groot

Chair Elect: Brian Brady

Secretary: Spencer Ririe

Treasurer: Barbara Belmont

Elected Members of Executive Committee:

Jason Anspach

Brian Brady

Tina Choe

Bill Harter

Yumei Lin

Michael Morgan

Armando Rivera

Tieli Wang

William Welker

Councilors:

Rita Boggs

Bob de Groot

Tom LeBon

Virgil Lee

Eleanor Siebert

Barbara Sitzman

Alternate Councilors:

Henry Abrash

Brian Brady

Devin Imoto

Joe Khoury

Virgil Lee

Sofia Pappatheodorou

Jodye Selco

Maria Tellez

Agnes Ann Green

Award

Bob de Groot, Chair

Bylaws Committee

Virgil Lee

Expanding Your Horizons

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Syvine Deprele

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Veronica Magana

Michelle Mai

Melissa Marquez

Jeanne Ngo

Dorothy Nguyen-Graff

Lauren Que

Kassandra Simkins

Julia Stearns

Tameka Watson

Diana Yu

**Educational Affairs—
High School Teacher
of the Year**

Michael Morgan, Chair

Gerald Delker

Richard Erdman

Peter Shin

Teacher's Meeting

Michael Morgan, Chair

Robert de Groot

Richard Erdman

High School Olympiad

Gerald Delker, Chair

Henry Abrash

Barbara Belmont

Bob de Groot

Paul Groves

Derek Marin

Michael Morgan

Eleanor Siebert

Barbara Sitzman

**Community Activities:
NCW, CCED & others**

Robert de Groot, Chair

Henry Abrash

Jackie Barton

Barbara Belmont

Brian Brady

Gerald Delker

Laura Gallegos

Frank Gomez

Veronica Jaramillo

Carolyn Kusaba

Angel Luna

Derek Marin

Michael Morgan

Sofia Pappatheodorou

Ana Perez

Hannah Pham

Armando Rivera-Figueroa

Marina Rueda

Eleanor Siebert

Barbara Sitzman

Megan Stewart

Sanda Sun

Antonio Tinoco

Diana Yu

(Continued on Page 7)

Southern California Section

Thank You List (Continued from Page 6)

Community Activities (Continued)

- ACS Student Chapter at Cal. State Long Beach
- ACS Student Chapter at UCLA
- WISH Organization at Mount St. Mary's College
- Science Society—Cal. State Dominguez Hills
- Priory of Biology & Chemistry at ELAC

Organizations Supporting Section Community Activity Efforts:

- ACS Office of Volunteer Support
- ACS Office of Public Affairs
- California Science Center Education Department
- Discovery Science Center Public Programs
- Cal State University, Long Beach - Department of Chem. & Biochem.
- East Los Angeles College Chemistry Department
- Pasadena City College
- Verbum Dei High School

Boy Scout Expo:

Derek Marin and Gerald Delker—Coordinators
Jon Ashby
Vickie Clawson
Linda Geddes
Myles Herbert
Amber Johnson
Kenneth Johnson
Mia Mackowski
Spencer Ririe
Brian Sullivan
Melissa Williams
Lisa Yan
Mike Young

Nominations, Elections & Awards

Barbara Belmont

Project SEED:

Joe Khoury/Frank Gomez,
Chairs

Publication Committee

Barbara Belmont
Harold Goldwhite
Eileen DiMauro, SG
Eleanor Siebert

Senior Chemists

Henry Abrash, Chair

Tolman Award

Prof. Stephen Bradforth,
Chair. Confidential list, but
you know who you are!

Undergraduate Research Conference

Henry Abrash, Chair
Blake Gillespie,
CSU Channel
Islands

Webmaster

Barbara Belmont

Women Chemists Committee

Veronica Jaramillo,
Chair

WRM Planning Committee 2011

Bob de Groot
Brian Brady
Chris Brazier
Gerald Delker
Veronica Jaramillo
Joe Khoury
Jim Kilgore
Jay Labinger
Virgil Lee
Gerald Delker
Nancy Paradiso
Armando Rivera
Jodye Selco
Eleanor Siebert
Yumei Lin

As you can see, it takes a lot of people's time and efforts to make our programs work. We as a Section, and the community at large, sincerely appreciate the dedication of these people and invite you to participate if you haven't already! This Section would be nothing without your volunteer efforts.

We tried to get everyone on the list, if we missed you, please accept our thanks for a job well done!



This Month in Chemical History

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

In November 2011 the Southern California Section of the ACS celebrated its centenary, and I assembled from my library a book display showing aspects of the development of chemistry books from the 18th to the 20th century. This selection is idiosyncratic, but I believe it gives an idea of the range of chemistry books during this period of rapid development of the science.

I began with one of the most famous of all chemistry texts: “Elements of Chemistry” by Antoine Lavoisier, published in Paris in 1789 with rapid translation into English by Robert Kerr, first published in Edinburgh only a year later. I wish I owned a first edition, but I content myself with a Dover facsimile. This was arguably the first modern chemistry text, embodying Lavoisier’s new oxygen theory of combustion. It contains a table of the elements (simple substances) that interestingly includes light and caloric (heat). Despite Lavoisier’s rejection of phlogiston, his caloric comes uncomfortably close to that hypothesis. The text also includes the first chemical equation – in words, not symbols - describing fermentation of sugar.

In the early part of the 19th century, there was a growing interest in science as witness, for example, the popular lectures at the Royal Institution by Humphry Davy and Michael Faraday. The next book: “The Cabinet Cyclopaedia: Chemistry” by Michael Donovan, published in London in 1832 is typical of texts aimed at the rising middle class of the time. It is compact in format (and in content) and was reasonably priced.

Another famous text, though it disappointed one of the best-known chemists of the period, namely the Swede Berzelius, was “A New System of Chemical Philosophy” by John Dalton, published in London in 1808. This famous book was republished many times; my copy is from New York in 1964. It contains Dalton’s own exposition of his chemical ideas, including the atomic theory, which were first published, with his permission, in an 1806 text by Thomas Thompson. The book includes a table of relative atomic weights, and of chemical combinations using Dalton’s graphic symbols. These are based primarily on Dalton’s

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This Month in Chemical History

(Continued from Page 8)

principle of simplicity. If only one combination of elements A and B is known then its formula must be AB. Hence water is HO, ammonia NH etc.

Very different is the next book on display: "The Boy's Playbook of Science in illustration of the elementary branches of chemistry and natural philosophy" by John Henry Pepper, published in London, ca. 1865. This lavishly illustrated book, with a gorgeous cover in green and gold, was a popular work for children (especially boys!). It contains, in addition to quite a bit of serious science, the kind of content one still finds today in science "magic" works.

The next book I chose is a quite serious work on the art of organic synthesis by one of its early exponents. "La Synthese Chimique" was published by Marcellin Berthelot in Paris in 1876. It is the second in a series (the first was published in 1860) in which Berthelot systematized organic synthesis. One of his great achievements was his idea of synthesis from the elements. Passing hydrogen through a carbon arc generated acetylene, a building block for many more complex organic compounds. Berthelot, in addition to his organic synthetic work, was a pioneer of thermochemistry.

I close this column with a famous work of chemical theory: "Valence and the Structure of Atoms and Molecules" by Gilbert Newton Lewis, published in New York in 1923. Lewis, head of the U.C. Berkeley Chemistry Department, first sketched his electronic theory embodying the octet rule in 1908 – a rule we still teach to beginning chemistry students a century later. This book lays out Lewis's further development of electronic theory.

In a subsequent column I will discuss the rest of this display of significant chemistry books.



Dalton's Symbol for
Oxygen



Dalton's Symbol
for Hydrogen



Dalton's Symbol for
Nitrogen



Dalton's Symbol
for Carbon

San Gorgonio Section

Chair's Message

The San Gorgonio Executive Board is finalizing plans for exciting and meaningful activities for next year! The familiar events such as participation in the Chemistry Olympiad, National Chemistry Week celebrations and recognition of 50 & 60 year members are on the schedule. In addition, we are searching out interesting and dynamic speakers for section meetings.

I'm sure you are aware that local section operations are carried out by volunteers with support from the national ACS organization. In order to continue to provide opportunities for local chemists to network with each other and share their enthusiasm about science with the public, the San Gorgonio section is in need of volunteers.

I have been serving on the Executive Board for several years and have found it to be extremely rewarding! There is immense satisfaction during our National Chemistry Week event watching scores of children, guided by college students, fascinated by hands-on experiments. It is inspirational to interact with high school students who have participated in the Chemistry Olympiad event as well as to listen to 50 and 60 year ACS members reminisce about the changes and advances they have seen during their careers.

I strongly encourage local San Gorgonio Section members to experience this satisfaction by volunteering. Listed below are some of the volunteer opportunities available. If you are interested and able to make a modest commitment of time, please contact me:

Eileen DiMauro, edimauro@mtsac.edu, (909) 594-5611x4533

Chair Elect, Executive Board – serves for three years: Chair-Elect the first year, Chair of the Section the second year and Past-Chair for the third year.

Program Committee – organize dinner meetings, including selecting speakers and venues.

Education Committee –organize the Chemistry Olympiad and Annual Awards Banquet.

Program SEED mentors – One of the ACS programs that the Section has proudly participated in is Project SEED. For those who are unfamiliar with Project SEED, here is a synopsis from the ACS website, *“Project SEED was established in 1968 to help economically disadvantaged high school students expand their education and career outlook. The program provides opportunities for students who historically lack exposure to scientific careers to spend a summer conducting hands-on research with a scientist in academic, industry, and government research laboratories.”* High school junior and seniors are given an opportunity to spend 8 to 10 weeks during the summer working on a project in a research laboratory with a mentor. In order to continue this program, we are in desperate need of mentors. Eileen DiMauro, Chair

San Gorgonio Section

San Gorgonio Section Meeting

Thursday, November 15, 2012
7:00 p.m.

Mt. San Antonio College
Science South (Bldg. 7), room 7-2114
1100 N. Grand Avenue
Walnut, CA 91789

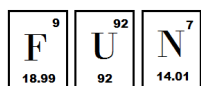
The focus this month is on education, although we will finish one item of Section business (bylaws). We plan to get an early start on preparing for the Chemistry Olympiad, with information about the local and national exams as well as the Awards Banquet. Two dynamic Professors of Chemistry from Mt. San Antonio College will share their latest work. Food (sandwiches, fruit, cheeses, water, and sodas) will be provided. There will also be a drawing for a variety of door prizes.

Agenda:

Final approval of Section bylaws. The revised bylaws can be viewed on the Section website (<http://sangorgonio.sites.acs.org>).

Kick-Off for the 2013 Chemistry Olympiad

Mrs. Karelyn Hoover:



The Missing Element

Dr. Iraj Nejad: Implementing Green Experiments into the Organic Chemistry Curriculum

Door prize drawings throughout the meeting!

Reservations: Please RSVP to edimauro@mtsac.edu or dpedersn@csusb.edu **no later than** Tuesday, November 13. Even though there is no cost to attend the meeting, it is important to know how many people will be attending so that we can plan food and drinks.

Parking: The parking fee is \$3.00. Park in Pay Lot A, Student Lot B (both off of Grand Ave.) or Student Lot D (off of Temple Ave). Be sure to purchase a day-use permit from a dispenser in the Student Lots. Day-use permits are not valid at meters or in staff lots. Carpools are encouraged.

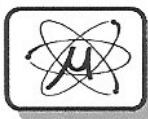
(Continued on Page 12)

San Gorgonio Section

November Dinner Meeting (Continued from Page 11)

Directions: Mt. San Antonio College is located near the intersection of the 60 and 10 freeways. From the east, take CA 60 west. Exit on Grand Ave. (Exit 24B). Turn west. Continue approximate 3 miles to the campus. Consult the campus website for a detailed area map, showing various ways of getting to the campus: <http://www.mtsac.edu/about/location.html>.

The Science South building (bldg. 7) is located near the corner of N. Grand Ave. and Temple Ave.



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**SOUTHERN CALIFORNIA SECTION
AMERICAN CHEMICAL SOCIETY**

14934 S. FIGUEROA STREET
GARDENA, CA 90248

***IMPORTANT
Do Not Delay!***

Contains Dated Meeting Announcement

PERIODICAL

Bi-Section Chemists' Calendar

November

- 14 SC WCC Dinner Meeting with Jackie Barton—see page 3
- 15 SG Section Meeting—see page 11
- 15 Deadline for SC High School Teacher of the Year nominations—
see October issue of SCALACS

December

- 15 Deadline for the SC Richard C. Tolman Award nominations—see
page 5

Happy Holidays!