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March 2016

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

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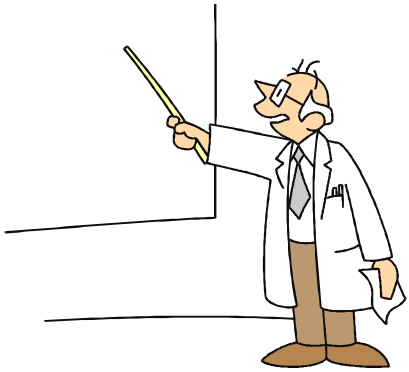

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Chair's Message

Welcome to another issue of SCALACS! We have already made some strides forward this year on the goals I have mapped out for the section. Our outreach through social media is showing results and the number of people following us on Facebook has doubled! We are also showing increases on our Twitter feed. Please join us there and become part of our online presence. There you will see the first announcements of our upcoming brewery tour, a tour of the Neutrogena Plant in Los Angeles, and the announcement of this year's Chem. Bowl.

We have a small change to point out to you dealing with the High School Chemistry Olympiad this year. The United States Department of State is refusing to grant travel papers to people wishing to visit Pakistan which happens to be the host for this year's International Chemistry Olympiad. Because of that the U.S. will not be sending a team. ACS National has also decided to not host a study camp for the top 20 students on the semifinal exam. These students will be honored with medals and prizes but not with the usual trip to Colorado Springs and the courses at the Air Force Academy. Here in Southern California, we will invite any students who qualify to some special events to honor them.

On February 24th the 2015 Tolman Award winner, William Evans, from UC Irvine gave a talk at CSULB for their undergraduate student group that was open to all members of SCALACS. It was a wonderful evening and told a really great tale of being sidetracked in research and discovering some amazing new possibilities in chemistry.

As always, I am quite excited to hear from you! Please feel free to contact me electronically (mmorgan@lausd.net) or by leaving messages for me at the section office.

- Best,
Michael Morgan

Undergraduate Research Conference

The 2016 Undergraduate Research Conference in Chemistry and Biochemistry will be held in the Hall of Science (HSCI) on Saturday, **April 23rd, 2016** at California State University, Long Beach (1250 Bellflower Blvd., Long Beach, CA 90840). The deadline for submissions of abstracts is **Friday, March 25th**. For more information, please visit the conference website (http://chemistry.csulb.edu/scurc) or contact Prof. Chris Brazier at cbrazier@csulb.edu.

High School Olympiad

This year, we will hold the local section High School Olympiad on **March 16th and 17th** at over 35 schools in the Los Angeles area. The test is designed to test a student's knowledge of a wide variety of topics in chemistry. If you know of a school or student that would like to participate, please direct them to our website, www.scalacs.org/?page_id=236 to download the letter and participation form. The top scorers on the local exam are nominated to compete in the National Exam. The National Exam will take place on **April 16th** at California State University, Dominguez Hills.

We recognize the top local students at an Educational Awards Banquet on **May 20th** with monetary awards and certificates. The Banquet will take place at the Mount Saint Mary's University Doheny campus. Prof. Harry Gray from Caltech will be our honored guest speaker. For more information, contact Dr. Jerry Delker at delker@earthlink.net or the Section Office at office@scalacs.org.

2016 Women Chemists Committee Rising Star Award Winners Announced

The ACS Women Chemists Committee (WCC) has named the recipients of its 2016 Rising Star Awards, which recognize exceptional early- to midcareer women chemists across all areas of chemistry on a national level. The awards were established in 2011 to help promote retention of women in science. The 2016 winners from Southern California are:

Anastassia N. Alexandrova, Ph.D., University of California, Los Angeles
Jennifer A. Prescher, Ph.D. University of California, Irvine

The winners will receive a $1,000 stipend to cover travel expenses to the Spring 2016 ACS national meeting in San Diego, where they will present their research at the WCC Rising Star Symposium.

Chemistry Bowl Competition

The Southern California Section's Chemistry Bowl Competition is tentatively scheduled for **Saturday, April 9, 2016**. The Chemistry Bowl will be a competition between local ACS student chapters in the Southern California region. The competition will consist of spectroscopy, lab bench challenges, relay obstacle course, and chemistry jeopardy. **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.**

Insights Into IP Law

Keith Orso*, Irell & Manella LLP
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Over the past several months, in response to a reader's question, this column has explored the rule that three categories of subject matter—abstract ideas, laws of nature, and natural phenomena—generally cannot be patented. Supreme Court cases were used to illustrate the application of this rule for two out of three of these categories. One illustrative case invalidated patent claims directed to methods of hedging risk on the ground that such claims would effectively grant a monopoly over an abstract idea. Another case invalidated methods of optimizing the therapeutic efficacy of oral thiopurine drugs to treat autoimmune diseases because the corresponding patents simply claimed a law of nature. This month's column describes a recent Supreme Court case that addresses the third category of subject matter, analyzing whether patent claims are directed to naturally occurring phenomena.

The patents at issue in this final case resulted from what the Supreme Court referred to as a "medical breakthrough"—namely, the discovery of the precise location and sequence of two human genes (BRCA1 and BRCA2). The Court acknowledged that mutations of these genes can dramatically increase a woman's risk of developing breast and ovarian cancer. The patents claimed isolated segments of DNA coding for BRCA polypeptides, and complementary DNA (cDNA) derived from such DNA (containing the same protein-coding information found in the DNA minus introns, which do not code for amino acids).

It was argued by some that the isolated DNA is not a product of nature because DNA is held together by chemical bonds, and the covalent bonds at the ends of a DNA subsequence must be broken in order to generate the isolated segments of DNA described in the claims. This breaking of bonds, in turn, creates new molecules with unique chemical compositions, even though the process does not really alter the biological information content of the DNA.

Others argued that isolated DNA is not patentable because there is no magic to chemical bonds such that a court should be required to declare patentable a product resulting from making or breaking them. These others emphasized that the sequences of the isolated DNA are the same as the sequences found in naturally occurring human genes.

Still others argued that isolated DNA is patentable because the United States Patent Office had historically granted patents to isolated DNA. The Supreme Court's decision will be the subject of next month's column.

* The author earned engineering and chemical engineering undergraduate and graduate degrees, and is a patent attorney and 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
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In my last column I began a study of a summary of a year of chemistry of a century ago undertaken at the time by the Chemical Society of London (now the Royal Society of Chemistry) in its Annual Report reviewing the work of chemists. As a mark of a new year, and in homage to the Chemical Society, I will continue to devote some columns to Annual Reports Volume XIII covering 1916. You will recall that at this time Great Britain and her allies (though not yet the United States) was engaged in a bitter war with Germany and her allies. Consequently this is one of the slimmer volumes in the series that is ongoing.

It is interesting to the student of chemical history to establish roughly when a paradigmatic change occurs in a fundamental view of an aspect of science. The opening paragraph of the section on Inorganic Chemistry in the 1916 Annual Reports gives us such an occasion: "The last doubt must now be banished from the mind of the most pronounced sceptic as to the definite existence of isotopes with identical chemical properties, but with markedly different atomic weights. …The enunciation of this theory by Soddy and by Fajans, and its proof by Richards and by Honigschmidt, must surely rank as one of the most striking advances that has taken place in chemistry during recent years." (A comment on the evanescence of fame seems in order; if you were asked to name the scientists most responsible for the acceptance of the existence of isotopes, how many of these four would you have included?) The work of both Richards (the first US Nobel Laureate in chemistry) and Honigschmidt was concerned with high precision determinations of the atomic weight of lead from different minerals, including some containing radioactive elements. These determinations by "wet" chemistry showed, for example, a value of 207.004 from American carnotite and 206.084 from Norwegian cleveite. Such a substantial difference was explained by different mixtures of lead isotopes in the two minerals.

Only one new atomic weight was reported in 1916, changing a "definitive" list published in 1915. The atomic weight of columbium is now set at 93.1. Columbium is the name used at that time for element number 41 now known as niobium. Its currently accepted atomic weight is 92.9. The complicated history of the naming and renaming of this

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This Month in Chemical History

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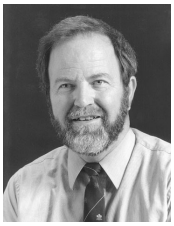
element will be held over to a possible future column. In the realm of molecular weight determination a technically impressive publication reported on the molecular weights of a number of solutes dissolved in liquid bromine. Antimony bromide, stannic bromide, and iodine monobromide were found to be unimolecular; elemental sulfur existed as diatomic molecules in bromine solution.

You must permit me some personal bias in my next report citation, since much of my chemical work when I still undertook experimental chemistry was concerned with phosphorus compounds. Further studies of the allotropes of elementary phosphorus confirm the existence of black phosphorus prepared by heating white phosphorus under pressure. Red phosphorus, in contrast, seems to be a mixture the physical properties of which vary according to the method of preparation. A new possible allotrope, violet phosphorus, was prepared by heating white phosphorus containing a trace of metallic sodium as catalyst under very high pressure.

More than 7 pages are devoted to a summary of four years of results on the separation of the rare earth elements (the lanthanides) and the chemistry of individual elements. Most of the work was done on Brazilian monazite sands, a source of most of the lanthanides. A couple of quotes must suffice to give a flavor of these reports. The most active chemist in this area is the American C. James and commenting on his papers the Report says " …only the most important papers have been referred to, and it is hoped that sufficient has been said to make the story comprehensible and to create a high opinion of the value of this work." A final comment: "Reference is made to the difficulty of isolating holmium, and it is said that this is one of the most difficult problems of inorganic chemistry." With the introduction of ion exchange methods during World War II, as part of the Manhattan Project, the separation and purification of individual lanthanides became much easier.

San Gorgonio Section



Chair's Message

In January I attended the annual ACS Leadership Institute and found the experience to be very informative and enlightening. At the opening Networking Lunch and Strategy Café I met several participants from around the country, an opportunity that continued throughout the weekend. Sharing experiences and challenges may have been the most valuable part of Institute. A common theme that quickly emerged was we all face the challenge of finding ways to increase the level of section member participation. This theme tied directly into the Friday afternoon Local Section Session with presentations on communication, social media strategies, and planning successful activities. During the presentations and accompanying discussions it was clear that a social media presence can play an invaluable role in communication with Section members. I have therefore set as one on my major goals for this year the incorporation of social media into the communication routes of the Section.

Regarding the planning successful activities part of the session, a major focus was the planning of multi-section events. To facilitate this we were seated with persons from nearby sections. We were charged with designing such an event, one that had the potential for national support via an Innovative Program Grant. Several ideas were discussed, with what we decided to call a Rolling Poster Session as our final choice. The idea would be to hold as many as two of these each year rotating among the Los Padres, Orange County, San Diego, San Gorgonio, and Southern California sections. We felt that this would provide our members, particularly students, with an additional opportunity to present their research.

Most of Saturday was devoted to Leadership Workshops. The two I attended were Engaging and Motivating Volunteers and Leading Without Authority. The first workshop provided valuable insight into the importance of having clearly defined task responsibilities, matching these with the interests of potential volunteers, and the importance of providing appropriate support and encouragement. The second workshop was equally valuable, particularly the various role-playing exercises. Key takeaways were how to identify welcome and unwelcome consequences from the view of the other party, the nonauthoritative currency types and motivational factors that one can use, and how to repair a damaged relationship. Running through both workshops was the underlying theme of the importance of tact in all of our interactions. *(Continued on Page 8)*

Chair's Message (Continued from Page)

In January we held our third Academic Laboratory Workshop at Mt. San Antonio College. It was attended by several high school teachers, community college laboratory technicians, and faculty. The main presenter was David Patterson, retired Director of Environmental Health and Safety at Cal Poly, Pomona. He gave an outstanding presentation and I'm sure all attendees came away with much valuable information. A fourth workshop is being planned for later this year potentially in the Riverside-San Bernardino area.

I continue to welcome suggestions of possible topics for our meetings as well as suggestions for speakers. You can always contact me via e-mail at dpedersn@csusb.edu.

- Dennis Pederson, Chair

High School Olympiad

It is the responsibility of the San Gorgonio local section to nominate ten students from our area to take part in the National Chemistry Olympiad exam. This exam is tentatively scheduled to take place at California State, San Bernardino on **Saturday, April 23, 2016**.

In order to identify these ten students, we will conduct a local section exam during the week of **March 14-19**. Schools who register five or more students may choose to administer the exam on their campus. The exam also will be available at two locations: California State Polytechnic University, Pomona and California State University, San Bernardino on **Saturday, March 19**. The results of this exam will also be used to select five students who will receive San Gorgonio Section scholarships of up to $1000 that can be used when they enter college. Registration forms have been sent to all area high schools and are also available at our website http//www.sangorgonio.sites.acs.org. **The registration deadline has been extended to March 10, 2016**.

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Bi-Section Chemists' Calendar

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

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