

Newsletter for Senior Chemists

June, 2014

Dear All:

Welcome to the latest edition of the Senior Chemists Newsletter, which by ACS statistics is the most widely read of ACS newsletters with 38% of the newsletters opened. Much of the credit for this goes to our over-achieving staff, headed by editor Lynn Hartshorn. It is gratifying to know that we are publishing topics that you find interesting to read. Along the same topic, a number of our readers have been sufficiently interested in what the committee is doing that they have asked about joining the committee itself. We certainly appreciate that interest and have forwarded your names to the Committee on Committees (ConC), which is responsible for membership of committees, for future reference. We also encourage you to contact the Senior Chemists Committee (SCC) directly with topics that you believe the committee should undertake or topics that you would like to submit to the Newsletter for future issues. Please contact me or Cheryl Brown at C_Brown@acs.org or Lynn Hartshorn at lghartshorn@stthomas.edu to offer your ideas.

SCC members have been busy doing speed mentoring with undergraduates at national meetings. We would encourage any of you who attend national meetings to consider joining our members in this activity. It is usually held on Monday afternoon over a two-hour period. I think you will find it both intensely interesting and satisfying. Contact Tom Beattie at beattietr@aol.com for details.



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The SCC is also co-sponsoring two programs at the next national meeting in San Francisco.

They are: *"Innovation from International Collaboration"* and *"I am Over 50 And I Just Got a Job"*. We encourage you to attend. Also if you have ideas for future symposia, please let me know.

The SCC was established to support the interests and activities of our senior members, but the committee cannot possibly discern all the possible topics and issues that are of interest to you. We need your input to assure that we meet your expectations. We welcome hearing from you; and if you attend the next national meeting, please feel free to attend our committee meeting on Monday morning and introduce yourself.

George Heinze, Chair
Senior Chemists Committee

Senior Chemists in San Francisco

KAUST Professor Jean Frechet to Speak at Senior Chemists Breakfast

By Tom Beattie, Vice Chair, Senior Chemists Committee, San Diego Local Section



The keynote speaker on Tuesday morning, August 12, 7:30-9:30 a.m., at the ACS National Meeting in San Francisco will be Professor Jean Frechet, Vice President of Research, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia.

Professor Frechet's distinguished career as a polymer chemist at the University of Ottawa, Cornell University, and the University of California, Berkeley resulted in 900 scientific papers, 80 U.S. Patents, and numerous awards and honors.

Upon retirement from UC Berkeley in 2010, he became the Vice President of Research at KAUST, and helped to found and create a new, private, western style, graduate research university in Saudi Arabia with English as its official language. Its mission is to excel and make a difference – by leveraging talents and integrating capabilities in science, engineering, innovation and enterprise.

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Professor Frechet has been asked to share his experiences and observations in his new career at KAUST. Come join us to hear what should be a truly unique perspective of relevance to STEM issues here in the U.S. and worldwide. Ticket price is \$15.00 for the breakfast and can be purchased through the meeting registration.

SCC Programming

The ACS Committee on International Activities (IAC), co-sponsored by Senior Chemists Committee (SCC), the Division of Business Development and Management (BMGT), and the Division of Professional Relations (PROF), have organized an all-day symposium for San Francisco called “**Innovation from International Collaboration**”. The 15 speakers participating include U. S. and foreign industrial and academic chemists, and members of foreign chemical societies. The symposium will take place on Monday, August 11, 8:30 a.m.-5:05 p.m.

SCC and PROF are co-sponsoring a symposium entitled “**I am Over 50 and I Just got a Job**” that will take place on Wednesday morning, August 13, 9:00 -11:00 a.m. This symposium will provide useful information for older chemists who are job-seeking. Susan Fahrenholtz (SCC) and Daniel Libby (PROF) are the organizers. See the San Francisco National Meeting Program for details on both programs.

Senior Activities

Editor's Note: The following five articles have been provided by ACS members who are retired and want to share activities or topics that could be of interest to others.

Presenting Science in Elementary Schools

By Richard Hermens, Senior Chemists Committee, Richland Local Section

This information is for those who are interested in presenting science in elementary schools. Teachers generally are happy to have a visiting scientist to come to their classrooms and they are most happy if the speaker will talk about a science topic. In elementary classes the students are eager to see a demonstration or to perform the experiment themselves.

Background:

My background in this topic was bringing science to elementary schools in Idaho and Oregon for more than 2 years. I visited more than 55 schools and the total attendance was more than 12,000 students. The grade range was from kindergarten to seventh grade.

Process:

The first thing one must do is to contact the principal or superintendent to determine what process the school uses to allow visitors. The principal will probably ask which class level would be appropriate for what you plan to do.

Make certain that the school has safety goggles for the students to wear. If they do not, perhaps a local industrial firm can loan some for the experiments.

It is wise to find out what the students have been working on so you can determine what topic fits within the curriculum the school has in place. The other method is to find what the teacher's lesson plan is so you can adjust your presentation.

Students find science topics exciting for two reasons. First, a real scientist is talking to them and, second, they will be doing real science. If you notice, I did not say "chemistry"; I said science.

For example, I had fifth grade students work with 1.5 volt circuits demonstrating the difference between series and parallel circuits. They also worked with LED's. Another example of an experiment is using a straw to allow the student to blow air into lime-water and dissolving the precipitate with vinegar.

Any science topic gets the students excited and the excitement is the reward the scientist earns.

RISE: A Unique Way to Use the Expertise of Retired Industrial Scientists

By Lynn Hartshorn, Newsletter Editor, and Jon Kettenring, Director, RISE

RISE (The Charles A. Dana Research Institute for Scientists Emeriti) is a program at Drew University in Madison, New Jersey. It is a special research program in the sciences for undergraduates, staffed with highly accomplished retired researchers from industry who conduct state-of-the-art research with students. RISE was the inspiration of Professor Emeritus James Miller, a former chair of the chemistry department at Drew. He observed that Drew University was located in the ideal location to attract retired workers from New Jersey's many research-based companies, especially those in the pharmaceutical and telecommunications industries. When the former Director of Research from Ciba-Geigy, George deStevens, joined the Drew faculty in 1979 he began fund raising, succeeding in raising over \$1,000,000 for the construction of labs and office space, and later became the Founding Director of RISE. The program is housed on the top floor of the Hall of Sciences at Drew University.

Now RISE has eleven retired researchers on its staff, including several chemists and biochemists, and experts in the disciplines of physics, statistics, microbiology and molecular biology. The director is Jon Kettenring, a statistician. Their main mission is to mentor undergraduates who want to get involved in research. The program has mentored over 350 students, some of whom got involved in research in their freshman year, while others begin by attending Drew's Summer Science Institute. The students are encouraged to present their research at professional meetings and publish in peer-reviewed journals.

Another objective of the program is to provide retired industrial scientists with continuing opportunities for research and scholarship in an academic environment. These RISE members receive offices, research space and the use of equipment at RISE in exchange for directing the research of undergraduates. They maintain their links with their former employers, and sometimes establish new ones with other companies. These links have led to donations of surplus equipment for the well-equipped labs at RISE, and are useful in helping undergraduates obtain internships in local companies. They also lead to shared seminars and visitor exchanges that are mutually beneficial.

The RISE program is unique. It benefits the university, the undergraduates, the retired researchers, and local industry. More information can be found at the website, www.drew.edu/rise. I discussed with Jon Kettenring whether a similar program could be

established elsewhere. He pointed out that start-up funding might be more difficult to obtain now than it was when the RISE program began around 1980. However given a serious benefactor, it would be possible to establish a similar program in a metropolitan area with colleges and hi-tech industry, such as Boston, Seattle, Minneapolis, etc.

Meshing My Vocation and Avocation in Retirement

By Dwight Chasar, Councilor, Cleveland Local Section

When I retired eight years ago, I decided to mesh my interests in chemistry and birds. I developed a PowerPoint presentation entitled "Chemistry is for the Birds", joined the ACS Speaker's Directory and talked up my program at ACS meetings. I've been on a speaker's tour and have given a number of individual presentations to ACS local sections. It's been a "hoot", to quote one bird call.

In this and subsequent issues of the newsletter, I intend to describe some of the chemical topics I cover in my talk on "Chemistry is for the Birds". I hope you enjoy. Maybe your local section will need an after-dinner speaker.

Chemistry is for the Birds



Those of you who have seen my name know that I have been active in the ACS for many years, currently as the senior Councilor in the Cleveland Section. Those of you who have met me probably know that my extreme avocational interest is birding, bird watching, field ornithology, or whatever you would want to call it. Birding is the fastest growing outdoor activity in the U.S. What I intend to do over a series of articles is to blend together my background in chemistry and birds and explain how scientists have been using the central science to further understand various aspects of bird taxonomy, appearance, and behavior.

I will begin, however, with the scoop on bird poop. Believe it or not, a book was published in 1991 entitled, "What Bird Did That? A driver's guide to some common birds of North America", by Peter Hansard and Burton Silver. This book would lead us to believe that one can identify a bird by its defecation splay topography on car windshields. I do not intend to discuss those ID issues here but instead will concentrate more specifically on the chemical make-up of bird poop.

Bird poop is made of up to two components. The dark portion (guano) is the general waste or feces from the food that was eaten but not used. The white portion that seems to occupy the greater part of the splay is uric acid. While mammals remove toxic nitrogenous waste in the form of urea in their urine, birds cannot afford to store urine because it would add weight to their bodies and birds must be as light as possible to fly efficiently. So instead they emit a thick suspension of uric acid mixed with feces.

Most birders know that many perched birds defecate just before taking flight in order to lighten their load.

Each molecule of uric acid contains twice as much nitrogen as a molecule of urea. Birds require only 0.5–1.0 mL of water to secrete 370 mL of nitrogen as uric acid, whereas mammals require 20 mL of water to excrete the same amount of nitrogen as urea (Ornithology by Frank Gill, 1995).

Guano will be discussed in the next installment.

Editor's Note: Jim Butler has a PhD in Biochemistry from Seton Hall University and spent 42 years in the Diagnostics industry. He is currently retired, which has given him more time to read extensively in science related topics including Astronomy, History, Religion, Evolution and Environmental Chemistry. He has given several seminars in Astronomy where he combined the formation of the all 92 elements (Astrophysics) with Biochemistry (which elements are important for life). He has written the following article about an environmental problem in the Great Lakes.

Micro Particles in the Great Lakes

By Jim Butler, ACS Member, Bellingham, WA

Gigantic masses of floating plastics have been found in the world's oceans. Now plastic particles have been found in the Great Lakes that make up about 1/5 of the world's fresh water. Last year scientists found tiny plastic particles floating in Lake Superior, Lake Huron and Lake Erie.

Scientists are now skimming the surface of all five Great Lakes and in particular have found that the level of particles from Lake Erie was higher than in comparable samples taken from the oceans. Scientists suspect that these perfectly round particles are micro beads used in personal care products such as facial and body washes and toothpaste.

These particles are so small (50 to 200 microns) that up to several hundred could fit on the head of a penny, and they float through the screens at waste treatment plants and float out with the treated waste into the Great Lakes.

Birds and fish may feed on these micro particles while toxins and organic compounds may be absorbed onto the surface of these micro particles, and birds and fish may feed on them.

Shampoos have been found to contain micro beads made from polyacrylate-1-crosspolymer beads. Other facial cleaning products contain "exfoliating" plastic beads. These consist of tiny particles of polyethylene designed to help lift dirt from your face. After use all of these beads are flushed into the sewer system where they are too small to be recovered in the waste treatment plants.

Some of the large companies making these personal care products have agreed to either phase out or reformulate those products that contain these beads. Additional studies are underway at waste treatment plants to determine whether the particles might be removed before entering the Great Lakes.

Staying Engaged With Chemistry After Retirement

By Francis J. Waller



Editor's Note: Francis J. Waller obtained his PhD in organic chemistry from The University of Vermont in 1970. He taught organic chemistry at St. Lawrence University (1 year) and Simmons College (2 years) before joining E. I. du Pont and de Nemours in 1974. In 1988, he joined Air Products and Chemicals in Trexlertown, PA also as a research scientist. He started teaching in 1993 at Lehigh University where he developed several undergraduate and graduate level courses. He is now retired, but still

engaged.

Retirement from the working professional career can open the door to rewarding pursuits that utilize your chemistry expertise. After retiring from Air Products in 2005, I continued to teach a graduate/undergraduate course in Organic Polymer Science at Lehigh University as an adjunct professor until 2009. Starting in 2006, I developed and taught a practical short course on intellectual property for the Department of Professional Education of ACS. This short course was converted into my first book and published by J. Wiley in 2011. The book, *Writing Chemistry Patents and Intellectual Property: A Practical Guide*, is for scientists. A second book with Consulting Editor J. Hasford, Esquire, will be available in mid-2014 from Lexis Nexis. The book title is *Chemistry for Patent Attorneys*.

There are many chemistry related activities that deserve your closer examination. Judging at local, regional, and international science fairs like ISEF helps young people to continue their interest in the sciences and at the same time be mentored by experts in the field. In my community, we also have the DaVinci Science Center which selects the best high school students for a Science Hall of Fame Award. One can serve as a judge on their selection committee. Finally, any opportunity to discuss science careers with these young scientists is beneficial.

Many of us who have retired have specialized knowledge and may consult with a small company. While a research scientist at Du Pont's Experiment Station in Wilmington, DE, I was involved for 8 to 10 years on finding non-traditional applications such as acid or bifunctional acid-metal catalysis for perfluorinated ion-exchange polymers, mostly Nafion®. Who would have guessed after 34 years, I would find myself on a short list of researchers having practical knowledge about these perfluoro-polymers.

Lastly, you may qualify to join an Angel Investor group where entrepreneurs and business leaders come together to fund local and regional start-up companies with good ideas and business plans. Many of these groups are looking not only for investors but also technology experts who can perform "due diligence" evaluations before the group invests funds. If your educational background is chemistry and your career took the industrial pathway, you can put your expertise to very good use here.

These activities have enriched my retirement and expanded my horizons. Involvement after retirement benefits the community; and if you are not sure what opportunities are available at the local, regional, or national level, contact ACS for help.

News from Local Section Senior Groups

German Exchange Program of the Northeastern Section

By Morton Z. Hoffman, Senior Chemists Committee, Northeastern Local Section

The beginning of the connection between the ACS Northeastern Local Section (NESACS) and the German Chemical Society (GDCh) took place in 1999 when Michael Strem, President, Strem Chemicals, a member of the ACS Board of Directors from District I (1997-2000), and a member of the NESACS Board of Directors, met Kurt Begitt, Deputy Director, GDCh, as part of a rapidly developing ACS-GDCh interaction. Begitt suggested to Strem that his company, which is located in Newburyport, MA, and has an international operation, might wish to exhibit its products at the *Chemiedozententagung*, the annual March meeting of the GDCh at which postdoctoral fellows, who are looking for an academic job in Germany, present their work to interested German professors.

At that meeting in 2000, Strem saw an exhibit by the *Jungchemikerforum* (JCF), and recognized immediately that this group and its members were very similar in purpose and organization, age, and stage of professional development to that of the Northeastern Section YCC (NSYCC). Strem and Begitt discussed the idea of a cooperative program between JCF and NSYCC in which each group would alternate hosting (on an annual or biannual basis) the other in Boston or in Germany for one week. The visits would be built around conferences at which the dozen or so graduate students (as well as some undergraduates) would make oral or poster presentations about their research work; in addition, there would be career fairs, visits to academic and industrial research facilities in the geographic area, and social and cultural excursions that would encourage networking and personal interactions among the German and American participants.

Upon his return to Boston, Strem presented the idea to the NESACS Board of Directors and NSYCC. With GDCh prepared to send a group of German students (and a few accompanying “grown-ups”) to Boston in 2001, a steering committee to organize the Exchange was formed. Because NESACS would serve as the host of the 2001 Exchange, its Board appropriated sufficient funds to provide lodging, local transportation, meals, and excursions for the JCF visitors.

The German Exchange has continued since that time without interruption, with delegations of 15-16 making the journey each year. Its 15th anniversary will be celebrated in August 2015 at the time of the next ACS National Meeting in Boston.

Report on the Chicago Section Senior Chemists Committee

By Claude Lucchesi, Senior Chemists Committee, Chicago Local Section

The Chicago Section Senior Chemists Committee is planning a luncheon meeting at the Chicago Museum of Science and Industry on Lake Shore Drive, Chicago. There will be a speaker from the museum that is the author of “GoReact”, an app developed at the museum that is used for an interactive Periodic Table. Attendees will be encouraged to bring their iPads, iPhones and other compatible devices in order to install “GoReact” and learn how to use it. They can then take it home and use it, for example in teaching chemistry or in volunteer activities.

Editor’s note: We encourage you to submit news of your local section Senior Chemists group to this newsletter (lghartshorn@stthomas.edu).

Senior Chemists Offer Mini-Grants

The ACS Senior Chemists Committee (SCC) is pleased to offer a limited number of grants to local sections that wish to sponsor an event or activity that will increase the engagement of senior members and encourage innovative activities that will benefit the local community, schools, or legislative government. For details, contact silvercircle@acs.org.

The SCC will also be sponsoring two ChemLuminary Awards in 2015 for activities held in 2014. These awards are to recognize local sections for their efforts to increase the participation of senior members and to encourage innovative activities at the local level. The criteria will be based on number of members involved, duration of activity, impact on the local section and community, and feedback from chemists. For more information, go to www.acs.org/silvercircle or email silvercircle@acs.org.

ACS Announcements

Share Science as a Chemistry Ambassador

You can help kids learn to understand and love science as a [Chemistry Ambassador](#), and ACS is ready to help you do it. Volunteer with youth groups, summer camps, and scouts in your community – the [Chemistry Ambassadors program](#) has tips and resources to support your outreach to your neighbors or students in your area. In addition to the many sample experiments offered by the [Chemistry Ambassadors program](#), we have a limited number of free “Kids & Chemistry” kits you can request if you wish to conduct hands-on activities with groups of up to 32 kids. Find out more information about the kits and order one today. Once you experience the rewards of helping kids learn about chemistry, consider doing it again. The Chemistry Ambassadors program makes it easy to stay involved, whether you have a lot of time, or just a little. Visit www.acs.org/chemistryambassadors to get more details and get started!

[A Donation That Pays You Back](#)

A charitable gift annuity is a safe, solid plan that offers a steady stream of income for the rest of your life, as well as a way to support education programs of the American Chemical Society. If you are 65 or older and interested in more information, [request a free brochure](#) or [customize a benefit illustration](#) on the ACS Legacy Planning website, or contact [Mary Bet Dobson](#) at 202-872-4094.



Science Coach *noun*

A chemist who partners with an elementary, middle, or high school teacher to enhance students' science education throughout one school year.

Example of SCIENCE COACH:

- ACS donates \$500 to each school where a science coach volunteers.

Applications open June 2 for the 2014-15 academic year.
To learn more, visit www.acs.org/sciencecoaches.



ACS Webinars: Keeping Senior Chemists in Chemistry

You've heard the quote, "Never Stop Learning." Well ACS senior chemists are doing just that. One of the more dedicated webinar attendees as a group is senior chemists. Why?

Broadcasted every Thursday from 2-3 PM Eastern Time, ACS Webinars® connects ACS members and scientific professionals with subject matter experts and global thought leaders. These live one-hour presentations cover topics from careers, business and innovation, professional growth, joy of science, extreme chemistry, entrepreneurial initiative, to green chemistry, and more.

Register for a webinar today at www.acswebinars.org.

Become a Contributing Editor for this Newsletter!

Lynn Hartshorn (editor) and Roland Hirsch (co-editor) hope that you have enjoyed reading this Newsletter. We would like to hear from you about the kind of articles that you like to see in the Newsletter.

We also will welcome your help in a more direct way. We are seeking Contributing Editors for the Newsletter. The Contributing Editors will write articles for us, find senior chemists in their communities to write articles for us, and/or review submitted articles. This will not involve a lot of work and it will all be done by e-mail. Would you like to help us out from time to time in this way? If so please contact me at lghartshorn@stthomas.edu

Thanks! Lynn and Roland

Mission Statement

The Senior Chemists Committee was established January 1, 2013 as a Joint Board-Council Committee and consists of 17 members and 3 associate members. The Committee will serve two constituencies within the ACS: (1) seniors who are still active either as full time or part time employees, consultants, or those who still wish to stay closely connected to the ACS and its spectrum of activities; and (2) younger members and students who have questions about a chemistry based career or who have started careers but are looking for guidance in how to progress. Their mission is:

1. To share with ACS members of all ages a rich variety of personal experiences and expertise gained over many years of professional service;
2. To foster interest and participation in the science of chemistry through community outreach, especially in grades K-12;
3. To act as science advisers/ambassadors for the purpose of cultural exchange at home and abroad;
4. To provide senior ACS members with challenging, diverse, and enjoyable professional experiences that enable them to contribute to the cultural experiences of their communities; and
5. To recommend policies that address issues of interest to senior chemists.

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