American Chemical Society
Division of the History of Chemistry

Program and Abstracts

239th ACS National Meeting
San Francisco, CA
March 21-25, 2010

S. C. Rasmussen, Program Chair

HIST

DIVISION OF THE HISTORY OF CHEMISTRY

Final Program, 239th ACS National Meeting, San Francisco, CA, March 21-25, 2010

S. C. Rasmussen, *Program Chair*

SOCIAL EVENT:
Stocker Symposium Reception, 5:15 PM: Tue

SUNDAY AFTERNOON

The Moscone Center -- Room 200 East

General Papers

S. C. Rasmussen, *Organizer, Presiding*

1:45 — 1. Aleksandr Mikhailovich Zaitsev (1841-1910): His lasting contributions a century after his death.. **D. E. Lewis**
2:15 — 2. The Faraday Society and the birth of polymer science. **G. D. Patterson**
2:45 — 3. From the history of the language of chemistry: Louis Pasteur's *dissymétrie*. **J. Gal**
3:15 — Intermission.
3:30 — 4. Historical perspectives and unexpected applications of Mendeleev's periodic table of the elements. **D. E. Hobart**, D. L. Clark
4:00 — 5. Nonexistent compounds: The long-held confusion between isolability and stability. **T. P. Hanusa**

MONDAY MORNING

The Moscone Center -- Room 200 East

100+ Years of Plastics: Leo Baekeland and Beyond

E. Strom, *Organizer, Presiding*

8:10 — Introductory Remarks.
8:15 — 6. Leo H. Baekeland: Father of the plastics industry. **C. Kaufmann**
9:00 — 7. Portrait of Leo H. Baekeland. **H. Karraker**
9:45 — 8. Leo Hendrik Baekeland Award of the North Jersey American Chemical Society. **B. E. Wagner**
10:15 — Intermission.
10:30 — 9. History of interpenetrating polymer networks starting with bakelite-based compositions. **L. H. Sperling**
11:00 — 10. In their own words: *Plastics Pioneers* in the Chemical Heritage Foundation oral history archive. **J. G. Traynham**
11:30 — 11. Materia polymerica. **G. D. Patterson**

MONDAY AFTERNOON

The Moscone Center -- Room 200 East

100+ Years of Plastics: Leo Baekeland and Beyond

E. Strom, *Organizer*, *Presiding*

1:45 — 12. Historical perspectives on phenolic resins. **J. Economy**, Z. Parkar
2:15 — 13. Historical perspectives on the *p*-hydroxybenzoic acid family of polymers. **J. Economy**, Z. Parkar
2:45 — 14. History of polystyrene. **T. Samurkas**
3:15 — Intermission.
3:30 — 15. History of polymers in musculoskeletal medicine and tissue engineering. **M. J. Yaszemski**
4:00 — 16. History of polyethylene from zero to world's number one plastic in 70 years. **M. Demirors**
4:30 — 17. Electronically conducting plastics: Revising the history of conjugated polymers. **S. C. Rasmussen**

MONDAY EVENING

The Moscone Center -- Hall D

Sci-Mix

S. C. Rasmussen, *Organizer*

8:00 - 10:00
1, 17. See previous listings.
18, 20, 26. See subsequent listings.

TUESDAY MORNING

The Moscone Center -- Room 200 East

General Papers

S. Rasmussen, *Organizer, Presiding*

8:55 — Introductory Remarks.
9:00 — 18. Not safe yet: History of anti-aging cosmetics and development of FDA regulations on cosmetics. **N. Taseski**
9:30 — 19. Franklin's missed 1952 DNA solution. **L. O. Elkin**
10:00 — 20. Excerpts from *The Making of the Atomic Bomb* on UC Berkeley, Lewis, Lawrence, and more.... **R. J. Schroeder**
10:30 — Intermission.
10:45 — 21. Many lives of DDT: Update and overview. **G. Hiel**
11:15 — 22. Chemical philately and the history of chemistry: An overview. **D. Rabinovich**

TUESDAY AFTERNOON

The Moscone Center -- Room 200 East

The Many Facets of Jack Stocker: A Diamond Who Defied the Third Law

J. Hayes, *Organizer*
M. Orna, *Organizer*, *Presiding*

1:30 — 23. Jack Stocker: The multifaceted man. **J. M. Hayes**, J. B. Sharkey
1:55 — 24. Jack: The research chemist. **N. D. Heindel**
2:20 — 25. Chemage: Compost for the garden of the discipline. **N. Foster**
2:45 — 26. Jack Stocker: Councilor, disaster-survivor, and bibliophile. **J. A. Walsh**
3:10 — Intermission.
3:25 — 27. Chemistry and science fiction. **B. B. Chastain**
3:50 — 28. Thoughts upon Joining the Krewe of Stocker: Truth, exaggeration and outright science fiction. **W. F. Carroll**
4:15 — 29. Jack as a father. **D. Stocker**, D. Stocker
4:40 — Panel Discussion.

Abstracts

HIST 1: Aleksandr Mikhailovich Zaitsev (1841-1910): His lasting contributions a century after his death

D. E. Lewis, *lewisd@uwec.edu. Department of Chemistry, UW-Eau Claire, Eau Claire, WIsconsin, United States*

Aleksandr Mikhailovich Zaitsev (1841-1910) was a major figure in the history of one of the most fertile and creative schools of chemistry to come out of Russia in the nineteenth century. As a student at Kazan' University, Zaitsev's career was characterized by what one would not unreasonably categorize as risky behavior and a lack of consideration of the possible consequences of his actions. Despite this, he rose to become Professor of Chemistry at Kazan' University, and was twice elected President of the Russian Physical-Chemical Society (although for reasons that were political rather than scientific). Since the 1960's, his name has appeared in almost every introductory textbook of organic chemistry. His contributions to the development of the science, both in his own right, and by those whom he mentored, will be discussed.

HIST 2: The Faraday Society and the birth of polymer science

G. D. Patterson*, gp9a@andrew.cmu.edu. Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, United States*

One of the most important scientific communities that helped give birth to the formal research community known as Polymer Science was the Faraday Society. It was founded in 1903 to promote the creation and use of scientific knowledge derived from physical chemistry. Its members included all the leading lights in British chemical physics. One of the major activities of the Faraday Society was the holding of public Discussions on controversial topics and subsequent publication in the Transactions of the Faraday Society. Early topics included Osmotic Pressure (1907) and Colloids and their Viscosity (1913). After the War, it was decided to hold a series of three Discussions on topics in Colloid Science. The present paper will discuss these Discussions and the subsequent emergence of a coherent community of Polymer Scientists.

HIST 3: From the history of the language of chemistry: Louis Pasteur's dissymétrie

J. Gal*, joe.gal@ucdenver.edu. Division of Clinical Pharmacology, University of Colorado Denver, School of Medicine, Aurora, Colorado, United States*

Louis Pasteur discovered molecular chirality in 1848 when he found the conglomerate crystallization of sodium ammonium (±)-tartrate, and in the process he created new language for his new science. Pasteur did not use the terms chiral or chirality as they were introduced forty-six years after his discovery, by Lord Kelvin. Instead, Pasteur converted dissymétrie (dissymmetry) – a term that had been in use in French at least since 1821 to denote asymmetry, disruption of symmetry, or dissimilarity – to mean chirality. Chirality and asymmetry are not synonymous but the literature overwhelmingly mistranslates Pasteur's dissymmetry as asymmetry. He in fact used asymmetric only once, in 1883, referring to the asymmetric carbon atom of van 't Hoff and Le Bel. In the 1960s chirality displaced dissymmetry in stereochemistry and dissymmetry is rarely employed today in the sense of chirality, although it is widely used in other disciplines to denote asymmetry or dissimilarity.

HIST 4: Historical perspectives and unexpected applications of Mendeleev’s periodic table of the elements

D. E. Hobart[1,2]*, dhobart@lanl.gov, and D. L. Clark*[2,3]*.* [1]*Actinide Analytical Chemistry Group, Los Alamos National Laboratory, Los Alamos, NM, United States,* [2]*Seaborg Institute for Transactinium Science, Los Alamos National Laboratory, Los Alamos, NM, United States,* [3]*Stockpile Manufacturing and Support, Los Alamos National Laboratory, Los Alamos, NM, United States*

From modest beginnings in a small village in Siberia, an extraordinary Russian chemist, Dmitri Ivanovich Mendeleev (1834-1907) conceived of one of the most significant and revolutionary contributions to science, the periodic table of the elements. The arrangement of the periodic table has been refined and extended over time as new elements have been discovered and new theoretical models have been developed, but Mendeleev’s fundamental concept is intact. Today the periodic table is a fundamental cornerstone of science. It remains a central unifying principal that has significant impacts in the areas of chemistry, materials science, physics, biology, engineering, earth and planetary sciences, and many other disciplines. Historical perspectives, an update of the latest modifications, and a short review of some far-reaching and unexpected applications of the periodic table will be followed by the authors’ recollections of their 2009 trip to Tobolsk, Siberia to celebrate the 175th Anniversary of Mendeleev’s birthday.

HIST 5: Nonexistent compounds: The long-held confusion between isolability and stability

T. P. Hanusa*, t.hanusa@vanderbilt.edu. Department of Chemistry, Vanderbilt University, Nashville, TN, United States*

William E. Dasent’s classic textbook Nonexistent Compounds: Compounds of Low Stability (Marcel Dekker, 1965) provided detailed arguments about the stability of organic and inorganic compounds, and offered rationalizations why a number of then-unknown species were unlikely targets for preparation. Ironically, the book appeared just prior to the start of a multidecade-long success story in chemical synthesis, in which many compounds once thought to be inaccessible (e.g., the perbromate anion and multiply bonded compounds of second row elements) were eventually isolated. Nonexistent Compounds stands in a long tradition of pessimistic predictions about the stability and accessibility of chemical compounds. In some cases, entire theories of bonding have been buttressed by the unavailability of such species. A common element in the erroneous predictions is a logically fallacious inference made after difficulties or failures in preparing the compounds were encountered. The century-long history of this problem will be discussed.

HIST 6: Leo H. Baekeland: Father of the plastics industry

C. Kaufmann*, kaufcaru@earthlink.net. NA, United States*

Two major changes were taking place in science and technology in the first half of the 20th century: One was the melding of basic research with practical application; the other a merging of chemistry with other disciplines, breaking down conventional boundaries and leading to the modern era in the physical sciences. L. H. Baekeland epitomized the first of these trends and anticipated the second. Moving comfortably between theory and practice, he was equally at home in a laboratory or on the manufacturing floor. As new vistas opened in science, Baekeland was early to see that science could not longer be divided in separate boxes, and that chemistry and biology would become inseparable.

HIST 7: Portrait of Leo H. Baekeland

***H. Karraker1**, karraker@optonline.net. 1278 Poverty Hollow Road, Redding, CT, United States, 2NA, United States*

As a member of the Baekeland family, I have a unique perspective on my mother's grandfather. Her notes on 62 journals convey his actions and thoughts between 1906 and 1942. A short movie followed by a Power Point presentation will concentrate on the public and private Leo Baekeland. Interviews, archival film footage, photographs, and anecdotes reveal choices, events, and processes. A brief description of the accomplishments and prospects of The LH Baekeland Project will conclude the talk.

HIST 8: Leo Hendrik Baekeland Award of the North Jersey American Chemical Society

***B. E. Wagner**, NJACSoffice@aol.com. North Jersey Section of the ACS, Piscataway, New Jersey, United States*

After receiving his PhD magna cum laude at age 21 as the youngest graduate at the University of Ghent/Belgium, Leo Hendrik Baekeland (1863-1944) began what would have been an illustrious academic career by marrying his professor's daughter, and conducting basic research which gained him a chaired professorship in Chemistry and Physics at Bruges by the age of 27. Soon thereafter he was awarded a traveling scholarship and a gold medal for his many accomplishments in the field. The travel award allowed him to uproot his professorial career and to reinvent himself in the United States as industrial pioneer, commercial innovator, and CEO. The gold medal opened him doors in the US. Baekeland considered this award as the key turning point of his life. The biannual Baekeland Award, administered by the North Jersey Section of the ACS, highlights young scientists under 40 and encourages them to follow in his footsteps.

HIST 9: History of interpenetrating polymer networks starting with bakelite-based compositions

***L. H. Sperling**, lhs0@lehigh.edu. Chemical Engineering, Lehigh University, Bethlehem, PA, United States*

Interpenetrating polymer networks, IPNs, are combinations of two polymers, both of which are crosslinked. Bakelite was invented by L. H. Baekeland in 1909, a densely crosslinked network. The original material was a very brittle plastic. As such, it was used by Thomas Edison in his early phonograph records, which needed to be very thick to prevent fracture in handling. Shortly thereafter, in 1914, Jonas Aylsworth added natural rubber and sulfur, creating the first IPN. With the improved material, Edison's photograph records were made much thinner. IPNs were invented and reinvented many times, according to the patent literature. Early workers in the field included K. Frisch at U. Detroit, Yu. Lipatov of Kiev, and the current author at Lehigh University, all of whom began their work in the 1960s. Besides tough plastics, current applications of IPNs include sound and vibration damping, false teeth, and medical applications.

HIST 10: In their own words: Plastics Pioneers in the Chemical Heritage Foundation oral history archive

***J. G. Traynham**, jimtraynham@msn.com. Department of Chemistry, Louisiana State University, Baton Rouge, Louisiana, United States*

The Chemical Heritage Foundation oral history archive is a treasure-trove of interviews with award-winning persons in most segments of the chemical enterprise. Included are transcriptions of recorded interviews with persons selected as Plastics Pioneers by the Plastics Pioneers Association because of their significant contributions to the growth of the plastics industry, particularly in fabrication techniques. Their spunky stories reveal interesting facets of their careers and views not likely to be found in other easily accessible places. Selections from a few of these interviews will be used to highlight this extraordinary source for “chemical history first-hand” in the plastics industry.

HIST 11: Materia polymerica

G. D. Patterson*, gp9a@andrew.cmu.edu. Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, United States*

One of the requirements for a coherent scientific subfield is a body of observable phenomena. As long as the physical world was viewed as a collection of small primitive bodies, a science of macromolecules was impossible. At the dawn of polymer science there were a few actual substances that challenged chemists and physicists to treat them as outside the normal sphere of gases, liquids and solids composed of small atoms and molecules. This chapter reviews a few of these materials and the conceptual world that grew up around them. Natural rubber has fascinated humans ever since it was discovered. It has interesting properties that defy easy explanation. Another natural product with startling properties is styrene. Freshly distilled styrene immediately starts to thicken and becomes a solid mass. No additional ingredient is required. The history of polystyrene will be presented. One of the first commercially important polymeric substances resulted from the mixture of phenol and formaldehyde. The history of the discovery and development of this material will be outlined.

HIST 12: Historical perspectives on phenolic resins

J. Economy*, jeconomy@illinois.edu, and Z. Parkar, zabduls2@illinois.edu. Department of Materials Science and Engineering, University of Illinois at Urbana Champaign, Urbana, IL, United States*

In the early 1900’s, Baekeland first disclosed the successful synthesis of polymers derived from the reaction of phenol and formaldehyde. He was able to commercialize this discovery initially as a Resol and shortly thereafter as a Novolac resin both manufactured and sold in Germany and in the USA. In the early stages of this work, Baekeland focused on the commercial development and manufacturing starting in 1910. He suggested a ring structure including phenol and formaldehyde consistent with perhaps Ostwald’s concept of the colloid theory for polymers. These two polymers found early use in the abrasives industry – Resoles for bonding the coated abrasives and Novolacs for bonded abrasives.In the ensuing years, use of phenolics has grown to over 3 billion lbs/year with a critical area of use in the late 1950’s to the early 1960’s as the matrix of ablative shields for re-entry vehicles. In this presentation I will also outline the early history of the work on heat shields, and then will discuss some more recent work on commercialization of phenolic fibers for use as flame resistant clothing starting in 1969.

HIST 13: Historical perspectives on the p-hydroxybenzoic acid family of polymers

J. Economy*, jeconomy@illinois.edu, and Z. Parkar, zabduls2@illinois.edu. Department of Materials Science and Engineering, University of Illinois at Urbana Champaign, Urbana, IL, United States*

The p-hydroxybenzoic acid polymers were first reported by Klepl in 1883 followed by a report by Fischer in 1909 verifying the work of Klepl (at least the preparation of the dimer and trimer). These two reports provided an important insight into the emerging debate between Ostwald and Staudinger in the colloidal versus chain structure (resolved in 1930). This work reappeared in 1959 when Gilkey and Caldwell reported on the polymerization of p-acetoxybenzoic acid and noted that it decomposed at 350 °C. It was here that our work began when we repeated this work and characterized the decomposition product as p-phenoxyphenyl benzoate (the identical material first characterized by Klepl in 1883). Subsequently we carried out the polymerization to avoid the phenoxy ether and yield the desired p-benzoate polymer. This polymer was commercialized in March 1970 and has been commercially available as a highly profitable product called Ekonol. In 1971, this work was followed by the commercialization of the melt processible liquid crystalline copolyester of pHBA and biphenol terephthalate called Ekkcel or Xydar. The ability to form fibers with Kevlar-like properties was announced in the patent literature in 1974. In the ensuing years we have continued further exploration of the copolymer and have arrived at a new family of all aromatic thermosetting copolyesters with many unique properties.

HIST 14: History of polystyrene

T. Samurkas, *ASamurkas@Dow.com. Styron Division, The Dow Chemical Company, Auburn Hills, MI, United States*

Polystyrene (PS) is one of the worlds most widely used thermoplastics with over 13 MM metric tons/yr of PS and rubber modified polystyrene (HIPS) being produced for applications ranging from packaging and construction to the electronics and appliance industries. The discovery of Styrene monomer is credited to Newman in 1786 and the first polymerization was performed by Simon in 1839. From these humble laboratory origins, polystyrene production on an industrial scale accelerated beginning in 1931 when IG Farben commenced production and particularly after World War II, with a tremendous expansion of Styrene monomer and Polystyrene production. Major innovations came from The Dow Chemical Company, IG Farben/BASF and others during this time period. More recently, a shift to lower cost alternative polymers, rapidly increasing feedstock costs and production overcapacity have created challenges for this industry, but the rapid industrialization of various emerging economies have presented compelling new growth opportunities due to the valuable balance of properties possessed by Polystyrene and HIPS. Innovations in material technology and end use process applications have continued to be developed and will also be reviewed.

HIST 15: History of polymers in musculoskeletal medicine and tissue engineering

M. J. Yaszemski, *Yaszemski.Michael@mayo.edu. Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota, United States*

The polymeric biomaterials in clinical use today trace their history back to Dr. Leo Baekeland’s synthesis of polyoxybenzylmethylenglycolanhydride (Bakelite), the first synthetic polymer, in 1907. This sentinel synthetic event, presented 100 years ago at the New York section meeting of the American Chemical Society in February 1909, was the stimulus that gave rise to the spectrum of thermoset, thermoplastic, and degradable polymers that improve human health and function today. Examples include poly(methylmethacrylate) and poly(dimethylsiloxane) bone cements, poly(hydroxyethylmethacrylate) contact lenses, polyethylene hip replacement liners, carboxyphenoxypropane/carboxyphenoxyhexane cancer drug delivery systems, nylon sutures, poly(ethylene terephthalate) arterial replacements, poly(tetrafluoroethylene) vein replacements, polyurethane scaffolds for chemical vapor deposition of bone replacement metals, and degradable tissue engineering scaffolds (poly(caprolactone fumarate), poly(dityrosyltyrosine carbonate), and poly(propylene fumarate)). This presentation will highlight several of those materials that are in widespread clinical use, and others in development that promise to further improve peoples’ quality of life in the future.

HIST 16: History of polyethylene from zero to world's number one plastic in 70 years

***M. Demirors**, mdemirors@dow.com. Basic Plastics R&D, The Dow Chemical Company, Freeport, Texas, United States*

In 70 years Polyethylene has become the largest man made polymer with an annual consumption of around 150 billion lb/PA. Polyethylene was first made by accident. In 1889 The German Chemist Hans Von Pechmann accidentally made a white waxy solid when he heated azomethane. 45 years later in 1933 ICI chemists Fawchett and Gibson were studying behavior of ethylene under high pressure and temperature made a white waxy solid. This let to the introduction of Low Density Polyethylene (LDPE) by ICI in 1939. Phillips Petroleum chemists Banks and Hogan discovered a new catalyst based on chromium trioxide in 1951. In 1953 Karl Ziegler discovered a new group of catalysts based on titanium halides and organoaluminium compounds, forming the basis of Ziegler –Natta catalyst systems. Developments in catalysis continued with the Walter Kaminsky's discovery of metallocene based systems in 1976. Today the research continues at an accelerated speed.

HIST 17: Electronically conducting plastics: Revising the history of conjugated polymers

***S. C. Rasmussen**, seth.rasmussen@ndsu.edu. Department of Chemistry and Biochemistry, North Dakota State University, Fargo, ND, United States*

The discovery that the conductivity of conjugated organic polymers can be controlled through oxidation or reduction led to materials combining the electronic properties of metals with the weight and density of plastics. For this reason, such materials have been studied extensively and their importance recognized with the awarding of the 2000 Nobel Prize in chemistry to Alan Heeger, Alan MacDiarmid, and Hideki Shirakawa for their polyacetylene work beginning in the 1970s. While these studies produced the most dramatic results, investigations of conjugated polymers date back to the early 1960s, particularly with the work of Donald Weiss on polypyrrole and Marcel Jozefowicz on polyanaline, which is unfortunately overlooked in most discussions of the history of conjugated polymers. To rectify this, both this previous work and the dramatic growth of conjugated polymer studies in the late 1970s will be presented to try to give a more complete picture of the history of these important electronic materials.

HIST 18: Not safe yet: History of anti-aging cosmetics and development of FDA regulations on cosmetics

***N. Taseski**, tasesna@stu.lemoyne.edu. Department of Chemistry, Le Moyne College, Syracuse, NY, United States*

Cosmetics have been used for thousands of years to enhance one's appearance. As cosmetics developed there were no regulation agencies to control what chemicals went into products and assess the health implications of cosmetics. With the appearance of more toxic products some users ended up experiencing the negative side effects, as was the case with the infamous "lash lure." As a result of numerous reported cases of physical damage caused by cosmetics such as blindness, physical deformities and even death, in 1936, the FDA took on responsibility for regulating cosmetics and ensuring the safety of products in the marketplace. Although the FDA regulates labeling of cosmetics and certain dyes that go into cosmetics, the scope of their authority is far too minute to provide sufficient safety for the consumer. In the search for youthful beauty, anti-aging cosmetics emerged and are currently a big percentage of the cosmetic market these days. However, due to lack of regulations by the FDA, many of these anti-aging products contain unregulated quantities of alpha and beta hydroxy acids which have proven to alter the health of one's skin. The journey the FDA has taken to incorporating cosmetics in the FDA regulations has only begun.

Informing the public in a language that would make sense to them is crucial but not enough; because perceptions of certain words such as "natural" and "pure" influence consumers to think a product is safe, FDA's labeling guidelines are and can be bypassed through strategic labeling. Through an examination of anti-aging products over the scope of the past two centuries the need for FDA regulations over contents of cosmeceuticals will be explored.

HIST 19: Franklin's missed 1952 DNA solution

***L. O. Elkin**, lynne.elkin@csueastbay.edu. Department of Biological Sciences CSUEB, CSUEB - California State University, East Bay, Hayward, California, United States*

Rosalind Franklin had expertise in physical chemistry and x-ray diffraction, but lacked the formal crystallography training to interpret all of her DNA data. Whether it was Franklin 's presentation, or if Dorothy Hodgkin had other reasons for impatience, Hodgkin only helped Franklin select the one possible space group out of the trio presented before turning her over to Jack Dunitz for an explanation. Franklin's section of the 1952 December MRC report proves she was poised to solve the double helical backbone of DNA, as did Frances Crick when he saw this MRC report the following February. Unfortunately Franklin 's personality was part of a perfect storm that caused her to refuse a valuable opportunity in November 1952 to obtain the necessary crystallographic assistance. This storm involved the pessimistic views of Maurice Wilkins about Franklin inspiring Director John Randall to react in ways that proved simultaneously astute and disruptive.

HIST 20: Excerpts from The Making of the Atomic Bomb on UC Berkeley, Lewis, Lawrence, and more...

***R. J. Schroeder**, ScienceIsGOLDEN@Live.com. Educational Development, ScienceIsGolden.com, Santa Maria, CA, United States*

G.N. Lewis was known to have a second suitcase just for his cigars. Gilman Hall was built for Lewis and was where a young Glenn T. Seaborg isolated plutonium chloride in a sink on the third floor (and placed the sample in a cigar box). Ernest Orlando Lawrence sold pots and pans door to door in South Dakota to raise money for his education. He was known to sleep with a transmitter that would alert him when the cyclotron that he perfected turned off and would get out of bed and go fix it. Seaborg and Al Ghiorso were introduced by their wives, (Helen (Griggs) Seaborg was Lawrence's secretary). Harold Urey slept in a tent for two years while an undergrad at University of Montana. There are many more interesting facts and inspirational stories concerning the University of California that seem to be lost but are readily available in the Pullitzer Prize winning book by Richard Rhodes, "The Making of the Atomic Bomb", and will be shared here.

HIST 21: Many lives of DDT: Update and overview

***G. Hiel**, gpth55@aol.com. Physical Sciences Department, Ferris State University, Big Rapids, MI, United States*

DDT has had a surprisingly long run as a broad spectrum pesticide. In her signature and seminal work Silent Spring (published in the early '60's) Rachel Carson described DDT (and its cousin synthetics) as biocides due to their broad activity in ways both intended and unforeseen. Today, well into its 7th decade of use, and despite being banned or severely restricted in most of the world, its low cost and short term punch still make it a serviceable if highly flawed weapon. Once lauded by farmers, corporate purveyors (and even Churchill) , this iconic symbol of good intentions gone awry lives on in a few (mostly) poor nations where it still saves crops and health. According to some estimates DDT (generally not regarded as acutely harmful to humans in ordinary use) , may have saved as many as 50 million lives. It is also measurably present in most of us. The darker side of DDT's mixed legacy includes frequent acquired resistance by target species, threats to raptor populations (eggshell thinning), and potential for endocrine disruption from its metabolites. We will close with a look at highlights of recent DDT-related research, issues, and usage history.

HIST 22: Chemical philately and the history of chemistry: An overview

***D. Rabinovich**, drabinov@uncc.edu. Department of Chemistry, The University of North Carolina at Charlotte, Charlotte, North Carolina, United States*

Postage stamps constitute an inexpensive and engaging way of communicating ideas to a broad audience and are therefore often used by governments or postal authorities to commemorate events and inform the general public on a variety of topics, including history, geography, literature and the arts. A number of stamps have also been issued to celebrate scientific discoveries or to honor well-known scientists and can be used as simple yet powerful teaching tools in the classroom or to illustrate technical presentations. This presentation will feature an overview of postage stamps and other philatelic materials related to the history of chemistry, from the four elements in Ancient Greece to the development of the modern periodic table. Postage stamps that depict various aspects of the discovery or isolation of certain elements, their natural sources, and their applications will also be shown in this presentation.

HIST 23: Jack Stocker: The multifaceted man

***J. M. Hayes**[1], jmhayes@earthlink.net, and J. B. Sharkey[2]. [1]Project Inclusion, Sacramento, CA, United States, [2]Department of Chemistry, Pace University, New York, NY, United States*

The death of John H. Stocker on July 8, 2009 was a loss to the Division of History of Chemistry and the entire ACS. In his honor, we would like to start this symposium with an overview of his life and contributions to the ACS, to the Chemical Heritage Foundation, to the Bolton Society, and to the lore of our profession.

HIST 24: Jack: The research chemist

***N. D. Heindel**, ndh0@lehigh.edu. Department of Chemistry, Leigh University, Bethlehem, PA, United States*

Jack's research publication career began with his graduate work at Tulane on mechanisms of ketal and acetal formation, advanced through his postdoctoral studies in Germany on condensations of catechols, and continued through a long and productive academic career at the University of New Orleans with 16 papers on quantitative stereochemistry. Through his decades of research in mechanistic organic chemistry he nurtured a parallel interest in nomenclature rules, history, science fiction, and whimsy. Those latter topics dominated his retirement years and represent the side of Jack for which he is most remembered by his many friends.

HIST 25: Chemage: Compost for the garden of the discipline

***N. Foster**, nf00@lehigh.edu. Department of Chemistry, Lehigh University, Bethlehem, PA, United States*

Jack was an ardent collector – of stories, of friends, of books – and his collection of chemical wit and witticism dubbed 'chemage' (a combination of chemistry and garbage) was one of his continuing pleasures. No one can speak of chemage like Jack could, but this presentation will recount some old favorites and some new entries in the Pantheon that Jack built of humorous anecdotes, clever and sometimes downright sneaky comments, and general departures from austerity that have appeared in scientific publications. Jack always said that only a secure, mature discipline could laugh at itself publicly, and the many examples of chemical frivolity he collected over his life certainly illustrate that our science is capable of doing just that. Laissez le bon temps rouler.

HIST 26: Jack Stocker: Councilor, disaster-survivor, and bibliophile

***J. A. Walsh**, jwalsh03@tampabay.rr.com. Department of Chemistry, John Carroll University, Treasure Island, FL, United States*

Beginning in 1987, I replaced Bill Nevill as Jack's roommate at National ACS meetings. Thus began a long and delightful association, one that I will forever treasure. From that perspective, this talk will touch on Jack's activities as an ACS Councilor, the upheaval in his life that Katrina caused, and his unquenchable passion as a book lover.

HIST 27: Chemistry and science fiction

***B. B. Chastain**, bbchasta@samford.edu. Department of Chemistry, Samford University, Birmingham, AL, United States*

In April 1992, at the National Meeting in San Francisco, there was a symposium organized by Jack Stocker and entitled "Chemistry and Science Fiction". It resulted, after many adventures, in a 1998 book using the same title. This paper presents reminiscences (by a presenter and author) about the symposium, the book, and Jack's longtime interest in science fiction.

HIST 28: Thoughts upon Joining the Krewe of Stocker: Truth, exaggeration and outright science fiction

***W. F. Carroll**, William_F._Carroll@oxy.com. Industry Issues, Occidental Chemical Corp., Dallas, TX, United States*

So, there I was, one minute minding my own business in my office, when the phone rang. The next, Jack had talked me into speaking at a symposium called "Whimsy in Chemistry." Of course, the good news was it didn't require cogent scientific thought on my part. But could a crude raconteur, known for broad humor rather than incisive, hang with the masters of chem on wry. The smart money said "No"…..

HIST 29: Jack as a father

***D. Stocker**, dan@danstocker.com, and D. Stocker. NY, Stocker Sons, Dunkirk, NY, United States*

As Jack's sons, the speakers will have an opportunity to reflect on their father and their father's life and impact.