

The Chemical Bulletin

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NOVEMBER • 2012

**CHICAGO SECTION AMERICAN CHEMICAL SOCIETY
Joint Meeting of the University of Chicago Department of
Chemistry and the Chicago Section ACS
Julius Stieglitz Award Lecture, Dinner and Presentation
WEDNESDAY, NOVEMBER 7, 2012**

Holiday Inn Chicago-Elk Grove
1000 Busse Road
Elk Grove Village, IL 60007
847-847-437-6010

DIRECTIONS

From Chicago

Take I-90-94 west to I-90 west (follow signs for Rockford); exit south on Elmhurst Rd to Landmeier Rd. Turn right onto Landmeier to Busse Rd. (Rt. 83) to arrive at the Holiday Inn.

From Indiana and South

Take the Tri-State (I-294) north to I-290; go west on I-290 to Rt. 83. Take Rt. 83 north and stay on it for 4 to 5 miles to the Holiday Inn on Rt 83 (Busse Rd) and Landmeier.

From Milwaukee and North

Take the Tri-State (I-294) south to I-90 west (follow signs for Rockford). Exit south onto Elmhurst Road. Take Elmhurst Rd. south to Landmeier Rd. Turn right onto Landmeier Rd and stay on it to the Holiday Inn on Landmeier and Busse Rd (Rt. 83).

PARKING: Free

JOB CLUB

5:00 - 6:00 P.M.

SOCIAL HOUR

5:30 - 6:30 P.M.

Cash Bar

DINNER (See Page 2)

6:30 P.M.

STIEGLITZ LECTURE by DR. JOSEPH M. DESIMONE

8:00 P.M.



Dr. Joseph M. DeSimone

Chancellor's Eminent Professor of Chemistry at the University of North Carolina (UNC)-Charlotte; William R. Kenan Jr. Distinguished Professor of Chemical Engineering at North Carolina State University-Raleigh and of Chemistry at UNC; Director, Frank Hawkins Kenan Institute of Private Enterprise, UNC-Charlotte

TITLE: Translating Basic Science into Products and the Role of Diversity in Making that Happen

Abstract: In 1965, Gordon Moore, co-founder of Intel, described the trend that the number of components in integrated circuits had doubled every year since 1958. This trend has continued to today, enabled by advances in photolithography which has taken the minimum feature size of

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transistors down from about 10 microns in 1970 to 0.045 microns (45 nm) today. In biological terms, this corresponds to going from the size of a red blood cell to the size of a single virus particle! As such, this top-down nano-fabrication technology from the semiconductor industry is, for the first time, in the size range to be relevant for the design of medicines, vaccines and interfacially active Janus particles.

This lecture will describe the insights, the team and the strategies behind translating the basic science and engineering from one industry (microelectronics) into products useful in other fields (medicine and vaccines) to improve the health and well-being of society.

Comments and Biography: We are pleased to welcome Dr. DeSimone as our Stieglitz Lecturer for 2012. We are fortunate to have a chemist of such honor and achievement as our speaker for this evening. If you view his resume, it is easy to see why the honors have come. First, his work has taken place in those areas which are at the forefront of our society's technical needs and interests: computers, nanotechnology, and medical technology, to name several prominent areas. Second, his work has been successful in serving as a bridge at a time when there is a need to merge the research and development findings from science and engineering to create new and more efficient techniques and products. Dr. DeSimone has certainly been prominent as a leader in this regard.

Joe received his B.S. in chemistry from Ursinus College in Collegeville, PA, near Philadelphia, in 1986. He received his Ph.D. in chemistry from Virginia Polytechnic and State University in Blackburg, VA in 1990 with Dr. James E. McGrath as his advisor. And so, we can see how successful he has been in carrying out this work by the manner and number of his awards and recognitions. They have come equally from the technical as well as the social sides of our society. We can see this by many he has received during the past twenty years.

Dr. DeSimone has been very active and creative in the various areas of his work and in areas of leadership for his university. This is reflected by his appointments in the many leadership roles for his University. This is also reflected by his achievements in being recognized as a Named Professor of Chemistry at UNC and as a Distinguished Professor of Chemical Engineering at NC State. Just recently he was appointed Director of the Frank Hawkins Kenan Institute of Private

Enterprise, a business institute for the UNC campus.

He has published nearly three hundred papers in various intellectual and scholarly areas of his work and has received 135 domestic and foreign patents. He has received awards and recognitions from many different donors honoring his work. A few of them are listed below as representative of his works. He is a great teacher and has been responsible for many students as postdocs, graduate students, and undergraduates who have worked in his labs.

Dr. DeSimone has these achievements and accomplishments, and many others, after 20 years of work on the faculty as a professor. We are very pleased to honor him for giving our 2012 Stieglitz Lecture.

A Select List of Awards Received by Dr. Joseph DeSimone

- 2012 Stieglitz Lecture
- 2012 ACS Fellow
- 2012 Member of National Academy of Sciences
- 2012 Walston Chubb Award for Innovation -- Sigma XI
- 2010 AAAS Mentor Award, honoring DeSimone's dedication to advancing diversity in the chemistry PhD workforce
- 2008 Recipient of the \$500,000 Lemelson-MIT Prize
- 2008 Tar Heel of the Year by the Raleigh News One of "One Hundred Engineers of the Modern Era" by the American Institute of Chemical Engineers (AIChE) marking the 100th Anniversary of the AIChE
- 2006 H.F. Whalen, Jr. Award for Entrepreneurship by ACS Div. of Business Development & Marketing
- 2005 Member of the National Academy of Engineering
- 2002 Wallace H. Carothers Award from the Delaware Section of the American Chemical Society
- 2001 Esselen Award for Chemistry in the Public Interest to recognize a chemist for outstanding achievement in scientific and technical work that contributes to the public well-being

- 2001 Outstanding Inventor of the Year Award from the Triangle Intellectual Property Law Association
- 1999 Carl S. Marvel Creative Polymer Chemistry Award, presented annually to recognize accomplishments and/or innovation of unusual merit in the field of basic or applied polymer science by younger scientists
- 1998-2001 Alfred P. Sloan Research Fellowship
- 1993 Presidential Faculty Fellow Award from the National Science Foundation
- 1992 National Science Foundation Young Investigator - Division of Materials Research

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DINNER INFORMATION

Menu: Fresh Fruit Cup; Soup Du Jour; Tossed Salad with Choice of Dressing; Rolls & Butter; ENTRÉE CHOICE: Blackened Tilapia, Beef Prime Rib, or Pasta Primavera; Chef's Choice: Vegetable & Starch; Coffee Service and Dessert

The cost is \$35 to Section members who have paid their local section dues, members' families, and visiting ACS members. The cost to members who have NOT paid their local section dues and to non-members is \$37. The cost to students and unemployed members is \$20. Seating will be available for those who wish to attend the meeting without dinner.

Dinner reservations are required and should be received in the Section Office via phone (847-391-9091), email (chicagoacs@ameritech.net) or website (http://chicagoacs.org) by noon on Monday, November 5. PLEASE HONOR YOUR RESERVATIONS. The Section must pay for all dinner orders. No-shows will be billed.

"CHEM SHORTS" For Kids

The Elementary Education Committee of the Chicago Section ACS presents this column. They hope that it will reach young children and help increase their interest in science. Please print it out and pass it on to your children, grandchildren, or elementary school teachers. Teachers are encouraged to incorporate the projects in this column into their lesson plans.

Burning Your Candle from Both Ends

Kids, the "seesaw" candle is a fire science trick that teaches how combustion and Newton's Third Law of Motion work. A candle, balanced between a pair of glasses, seesaws up and down on its own as it burns. **The most important thing you'll need to see this trick is an adult partner.** Have them get a long, thin candle, a needle, two glasses of the same height, a sheet of aluminum foil, and watch them do this trick.

First, protect the experiment area with a sheet of aluminum foil. Then, expose the wick at both ends of the candle. If it has some wick pressed onto the bottom of the wax, loosen it. If there isn't any wick then use a dull knife to cut away some wax. Push the needle all the way through the candle about halfway down its length, so half of the needle sticks out either side of the candle. If the candle wax is soft, the needle may push through easily, but if the wax is hard or thick, then grasp the needle with pliers or tweezers, heat it in a flame and push it through the candle. Use the needle as an axle to balance the candle between a pair of glasses. It is okay if one end of the candle is heavier than the other. **Your adult partner will then light both ends of the candle.** The candle will rock up and down, like a seesaw.

The candle moves in response to forces acting on it, trying to reach equilibrium. The combustion reaction turns the candle wax into carbon dioxide gas and water vapor, making the burning end of a candle lighter in weight. If one side of the candle burns more quickly than the other, the lighter side of the candle moves up. The heavier side of the candle is angled such that the flame melts the wax, causing it to drip wax. This lessens the mass at that end of the candle, plus the force from the dripping wax actually pushes the end of the candle up! This is Newton's Third Law of Motion, which states that for every action, there is an equal and opposite reaction.

Tips and Safety

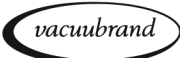
This is a fire project, so have an adult perform all of the steps and stay away from curtains, pets, towels... you get the idea. Lighter candles respond more dramatically to changes in mass than heavier ones. You can watch a video of the project at http://www.youtube.com/watch?v=y3_eCwTR0M0.

Reference

Anne Marie Helmenstine at <http://chemistry.about.com/od/funfireprojects/a/Seesaw-Candle-Fire-Magic-Trick.htm>

DR. KATHLEEN CARRADO GREGAR


To view all past "ChemShorts for Kids" go to: <http://www.chicagoacs.net/ChmShort/kidindex.html>



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DECEMBER HOLIDAY PARTY

Get ready to make reservations for the annual Chicago Section's ACS holiday party on Friday, December 14. Gifts for the raffle will be numbered randomly and placed on side tables in the dining room. Each attendee will draw a number when they register that evening for the meeting.

Gifts will be handed out throughout the evening by calling up groups of individuals having a series of numbers. Meeting attendees are asked to claim their gift only during the time their numbers have been announced. Those individuals who do not claim their gifts will have another opportunity to claim them at the end of the evening. Individuals must present their number in order to pick up their gift.

Door prizes of wine will only be handed out to those 21 or older. A substitute prize will be handed out to students under the age of 21. As always, please do not open your wine at the table.

RICHARD CORNELL
HOSPITALITY CHAIR

DR. JULIUS STIEGLITZ AND THE STIEGLITZ LECTURES

We have over the years since the Stieglitz lectures were first presented given much of the distinguished history of Dr. Julius Stieglitz's life and career. What is always very clear is his most significant role in helping to establish the Chicago Section as one of the truly great sections of the American Chemical Society. The story will always deserve retelling, and I will try to do some of it, while bringing it up to date.

Dr. Julius Stieglitz (1867 – 1937) was a great teacher and a fine organic chemist with a major interest in pharmaceutical and medicinal chemistry. During the early stages of his career, he worked for Parke Davis & Co. in Detroit as a toxicologist. He was born in Hoboken NJ. After attending private and public schools in New York during his early years, both he and his twin brother Leopold were sent to Germany for their higher education. Julius received his doctorate in chemistry from the University of Berlin in 1889.

Following a short period of study with Victor Meyer at Göttingen, he returned to the U.S. in 1890. In 1892, he came to the University of Chicago as a docent, lecturing without salary, his only compensation coming from student donations. In 1893 he was appointed an assistant professor, and moved up through the ranks to become professor of chemistry in 1905. He served as department chair from 1915 – 1933.

In 1933, he was named professor emeritus but continued to teach and serve in the department until his death in 1937. His last doctoral student was Herman Bloch, who went on to have a very distinguished career with UOP and served as Board Chair of the American Chemical Society 1973-75. Dr. Stieglitz was very active in ACS, serving as Chicago Section Chair in 1904, and ACS President in 1917. He helped to establish the Willard Gibbs Medal, and received the Gibbs Medal himself in 1923. He received honorary doctorates from Clark University (D.Sc.), the University of Pittsburgh (Ph.D.).

The first Stieglitz Lecture was given using funds dedicated in his memorial legacy in 1940. The lecture was presented alternatively by the University of Chicago Chemistry department and the Chicago Section in consecutive years until 1994. There was a pause in presentation from 1994 until 1999 until the funds built up to a level where they were sufficient to support a stipend of \$1000 plus expenses for each year. We are pleased to present Prof. Joseph DeSimone, Chancellor's Eminent Professor of Chemistry at the University of North Carolina-Charlotte and the William R. Kenan Jr. Distinguished Professor of Chemical Engineering at North Carolina State University-Raleigh as our Stieglitz Lecturer for 2012.

The full list of Stieglitz Lecturers from 1940 – 2012 is given on page 5.

JIM SHOFFNER

SAFETY CULTURES IN ACADEMIC INSTITUTIONS

The Safety Culture Task Force of the ACS Committee on Chemical Safety (CCS) has published a 57-page report entitled *Creating Safety Cultures in Academic Institutions*. This report includes discussion of common issues with respect to the safety culture in colleges and universities. Several recommendations are made. Appendices list suggested duties of institutional personnel and chemistry-based technicians. The references (called Endnotes in the report) are a timely listing of resources for those working in academic safety areas. An electronic version of the report can be downloaded from the CCS website, www.acs.org/safety. A printed copy can be obtained from the ACS National Office, 1155 Sixteenth St. NW, Washington DC 20036.

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STIEGLITZ LECTURERS 1940-2012

Lecturer	Year
Edward A. Doisy	1940
Fred C. Koch	1941
Carl S. Marvel	1943
Linus Pauling	1944
Wm. Draper Harkins	1945
Dan M. Yost	1946
Dorothy Wrinch	1947
Vincent du Vigneaud	1948
E.S. Cohn	1949
Herman I. Schlesinger	1950
Christopher K. Ingold	1950
Robert B. Woodward	1952
Frank R. Mayo	1953
Paul D. Bartlett	1954
Frank C. Westheimer	1956
Henry B. Hass	1957
Herbert C. Brown	1958
H.A. Lardy	1959
Louis P. Hammett	1960
Nelson J. Leonard	1962
William S. Johnson	1963
Paul Doty	1964
Charles C. Price	1965
H. Gobind Khorana	1966
Wm. von Eggers Doering	1967
George Hammond	1968
D.J. Cram	1969
Jerome A. Berson	1970
Carl Djerassi	1971
Jerrold Meinwald	1972
Andrew Streitwieser	1973
Derek H.R. Barton	1974
E.J. Corey	1975
Bengt Samuelson	1976
James Collman	1977
Joseph Chatt	1978
Gilbert Stork	1979
Robert H. Abeles	1980
Barry Trost	1980
Roald Hoffman	1981
Yoshita Kishi	1982
David Evans	1983
W. Clark Still	1984
Malcom Green	1985
Ronald A. Hites	1988
R. Ernst	1989
George Olah	1990
George Whitesides	1991
William Jorgenson	1992
Peter Kim	1993
Tobin Marks	1994
Frederic Wenger	1999
Joanna Fowler	2000
Patrick R. Gruber	2002
Eric Jacobsen	2003
Eloy Rodriguez	2004
Amos B. Smith, III	2005
Samuel Danishefsky	2006
Jean Frechet	2008
Joan Brennecke	2008
Erick Carreira	2010
Mark E. Davis	2010
Jonathan Ellma	2011
Joseph DeSimone	2012

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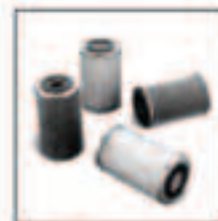
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**CHICAGO'S SPECIALTY
CHEMICAL COMPANY
PIONEERS (PART 3)
BY EDWARD A. KNAGGS**

**Witco Chemical Company
(1920-1999)**

Russian immigrant Robert I. Wishnick's family settled in Chicago in 1896. When Robert was seven he fractured his right elbow resulting in an amputation above the elbow. His handicap made him more determined than ever to succeed later in his life. He earned a chemical engineering degree from the Armour Institute in 1914 in Chicago (later to become Illinois Institute of Technology), and took a job as a chemist at American Magnesium Products Company (makers of flooring products). Mr. Wishnick obtained a law degree from Chicago Kent College of Law at night school (22).

In 1920, Mr. Wishnick joined with Dave and Julius Tumpeer in Chicago to form Wishnick - Tumpeer Chemical Company, repackaging and selling chemicals for paints, varnishes, printing inks, rubber goods, etc. The rapid growth of the printing business in Chicago required carbon black for printing inks, and the remarkable growth of the U.S. auto industry needing carbon black for tires and engine belts, provided a marketing opportunity for Wishnick - Tumpeer. They purchased a carbon black manufacturing plant in Swarz, LA in 1922 and opened a New York office to expand their marketing capability (22).

In 1923, Wishnick - Tumpeer further expanded their Illinois operation, purchasing Pioneer Asphalt Company in Lawrenceville, IL "jobbing" asphalts, mainly to the rubber industry, where they were able to increase sales significantly. The stock market crash of October 1929 ushered in the Great Depression, which was a major set-back to their operations, although they managed to keep their business going in the 1930's.

In 1933, Wishnick-Tumpeer purchased another carbon black manufacturing plant, and joined with Diamond-Shamrock Company and Continental Oil Co. to form Continental Carbon Company, and thereby became the largest producer of carbon black. Wishnick-Tumpeer became their sole marketer of carbon black. They built their first chemical manufacturing plant in Chicago's industrial area during 1939, producing and marketing industrial chemicals and a wide variety of asphaltic products (22).

By 1944 their sales were \$7.8 million, and they decided to change their name to Witco Chemical Company. In the

following year they started manufacturing metallic stearates, and also acquired the India paint and varnish division of America Marrietta Co. in Los Angeles, CA. They also acquired Franks Chemical Co. of Brooklyn, NY, also a producer of stearates. Max Mining, their Vice President was promoted to President with Robert Wishnick becoming chairman of their board in 1951. Witco sales reached \$15.9 million in 1954 (22).

Witco's next big move in 1955 was to acquire Emulsol Corporation of Chicago, producer and marketer of emulsifiers and surface active agents used by makers of foods, chemicals, drugs, cosmetics and agricultural products. Emulsol's \$10 million sales would bring Witco's total sales to \$35 million in 1956.

Also during 1955, Witco purchased Ultra Chemical Works in Pattersen, NJ expanding their entry into the industrial and household detergent market. Witco went public in 1958 with their stock offering after which they started construction of a phthalic anhydride plant in Chicago and a second one in Perth Amboy, NJ in 1960. These plants were designed to use naphthalene feedstock, which later proved to be less efficient than plants based on orthoxylene. Eventually both plants were shutdown.

Thereafter, Witco would primarily focus their efforts toward specialty chemicals in the petroleum and plastic markets. In 1960 Witco acquired Sonneborn Chemical and Refining Company, producers of white oils, petrolatums, petroleum sulfonates, waxes, motor oils and lubricants, and with their \$30 million in sales, Witco sales reached about \$100 million. Robert Wishnick's son, William was appointed chairman of Witco's board in 1964. Witco acquired operations in Canada and Europe.

Witco entered into a joint venture with Richfield Oil Company of California to produce detergent alkylate, the basic feedstock for sulfonation of detergent components. The company constructed a new detergent plant in Chicago based on continuous SO₃ sulfonation. By 1964 Witco sales had grown to \$135 million, and they then acquired Kendal Refining Company, a fully integrated producer of motor oils (including Amalie Pennsylvania grade lubricants, and gasoline). By 1975 Witco sales reached \$528 million, with approximately 5,000 employees. Their sales rose to \$1.36 billion by 1985.

Due to Witco's many acquisitions, by the mid 1980's its 18 operating divisions became un-wieldy. Under visionary William P. Toller's leadership, gradually major corporate changes were instituted focusing on making Witco a global specialty chemical company

powerhouse. By 1993 his restructuring program had essentially been completed with annual sales of about \$2 billion. Mr. Toller retired in 1996 (23).

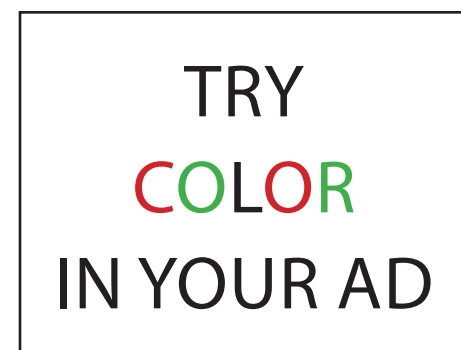
In 1999, Witco merged with Crompton and Knowles, who had sales of \$1.8 billion, combined to form a global force in the chemical specialty business with broad product lines and solid capabilities in polymer products and specialty chemicals. In 2000, they changed the name of the combined companies to Crompton Corporation.

That is quite a success story (24).

(22) Wishnick, W. The Witco Story; Newcomen Society of North America: New York, 1976.

(23) Witco Company History, <http://www.witco.com> (accessed by author Feb 2012)

(24) History of Crompton Corporation, http://en.wikipedia.org/wiki/Crompton_Corporation



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**INSPIRE THE NEXT
GENERATION OF
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VIDEO SERIES**

An ACS video series — aptly named Spellbound — tells the stories of eight chemists whose childhood curiosity about everyday things helped them launch careers in laboratories, win Nobel Prizes and make other notable achievements. Suitable for classrooms and other audiences, the videos are available free at www.acs.org/Spellbound, iTunes, and on Youtube. You can also request a free DVD by emailing Michael Bernstein (m_bernstein@acs.org).

THE CHEMICAL HERITAGE FOUNDATION CELEBRATES CATALYTIC EFFECT OF WOMEN IN CHEMISTRY WITH ONLINE FILM SERIES

Films Aim to Encourage the Study of Science Among Young Women

The Chemical Heritage Foundation (CHF) proudly announces the release of The Catalyst Film Series: Women in Chemistry funded by the Alfred P. Sloan Foundation and created by CHF. This documentary-style film series, accessible at www.chemheritage.org/womeninchemistry, celebrates the effect that extraordinary women have had in chemistry and endeavors to encourage young women to pursue the study of STEM programs in general and the sciences in particular.

"The Chemical Heritage Foundation is thrilled to share the stories of the highly accomplished women featured in the Women In Chemistry series," said Thomas R. Tritton, president and CEO, Chemical Heritage Foundation. "While these women couldn't be more different from one another, they have at least one thing in common: a love of science. We hope their stories will inspire our next generation of women to pursue their dreams and become scientists."

The women featured in these films have been in the roles of student, researcher, wife, professor, advisor, mother, pilot and marketer. They are:

- Kathryn Hach-Darrow, cofounder of the Hach Chemical Company
- Mary L. Good, former president of the American Chemical Society, undersecretary for technology in the U.S. Department of Commerce under President Bill Clinton, and recipient of the Priestley Medal
- Uma Chowdhry, retired senior vice president and chief science and technology officer of DuPont
- Nancy Chang, cofounder and former CEO of the biopharmaceutical firm Tanox
- Mildred Cohn, first female president of the American Society for Biochemistry and Molecular Biology
- Stephanie Kwolek, former research associate at DuPont and patent holder for Kevlar®
- Paula Hammond, David H. Koch Professor in engineering at the Massachusetts Institute of Technology.

In addition to the film series, the web site contains supporting materials such as the women's biographies, information on their respective fields of research and access to "Stories from the Field" available on the web site and through iTunes. "Stories from the Field" is a set of audio recordings by other women scientists who have also endured their share of struggles and triumphs as they pursued a career in science.

About the Chemical Heritage Foundation

The Chemical Heritage Foundation (CHF) fosters an understanding of chemistry's impact on society. An independent, nonprofit organization, CHF maintains major collections of instruments, fine art, photographs, papers, and books. CHF hosts conferences and lectures, supports research, offers fellowships, and produces educational materials. CHF's museum and public programs explore subjects ranging from alchemy to nanotechnology. For more information on the Chemical Heritage Foundation, visit www.chemheritage.org or contact Neil Gussman, 717-314-2494.

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NOVEMBER HISTORICAL EVENTS IN CHEMISTRY

- November 1, 1917** Union Carbide was incorporated as Union Carbide & Carbon Corp.
- November 2, 1931** DuPont began mass production of the first commercially available synthetic rubber, DuPrene.
- November 4, 1903** Boris A. Arbuzov, who discovered the formation of free radicals of triarylmethane derivatives, was born. He investigated properties of terpenes and phosphorous containing heterocyclics.
- November 9, 1994** Three atoms of element 110 were made at GSI in Darmstadt, Germany.
- November 9, 2006** Thermo Fisher Scientific Company was formed from a merger of Thermo Electric Corp. and Fisher Scientific International Inc.
- November 11, 1945** Glenn T. Seaborg announced the discovery of americium and curium on the Quiz Kids radio program.
- November 11, 1925** Discovery of cosmic rays was announced in Madison, Wisconsin
- November 16, 1943** James W. Mitchell, who with his collaborators at Bell Labs, pioneered the development of x-ray fluorescence methods for part per billion (ppb) trace element determinations, was born. He innovated high accuracy activation analysis methods for ultratrace analysis, designed the first laser intracavity spectrophotometer for high accuracy practical determinations of sub-ppb levels of trace impurities, and invented the cryogenic sublimation technique for ultrapurification of liquid analytical reagents and chemicals for fabricating optical waveguides.
- November 18, 1918** Lawrence E. Glendenin, who co-discovered promethium in 1945 with J. A. Marinsky and C. D. Coryell, was born.
- November 18, 1906** George Wald, who worked in the field of the chemistry of vision, was born. He shared the 1967 Nobel Prize in Medicine with Ragner Granit and Haldan Keffer for their discoveries concerning the primary physiological and chemical visual processes in the eye.
- November 22, 1970** The Manned Spacecraft Center, Houston, announced that its scientists perfected a process to extract water and oxygen from moon soil.
- November 24, 1921** Robert L. BanksBorn, who co-discovered the crystalline polypropylene polymer, with J. Paul Hogan, was born.
- November 25, 1960** The first atomic reactor for research and development began operation at Richland, Washington.
- November 27, 1903** Lars Onsager, researcher in thermodynamics of irreversible reactions, was born. He received the 1968 Nobel Prize for the discovery of the reciprocal relations bearing his name, which are fundamental for the thermodynamics of irreversible processes.
- November 28, 1962** Announcement of the first pure compound of berkelium based on work at University of California, Berkeley.
- November 29, 1936** Yuan T. Lee, who shared the 1986 Nobel Prize with Dudley R. Herschbach and John C. Polanyi for their contributions concerning the dynamics of chemical elementary processes, was born.
- November 29, 1901** Monsanto Chemical Works was incorporated. It was renamed Monsanto Chemical Company in 1965.
- November 30, 1915** Henry Taube, researcher in electron transfer reactions, was born. He received the 1983 Nobel Prize for his work on the mechanisms of electron transfer reactions, especially in metal complexes.
- November 30, 1920** Bruno H. Zinn, who did research in DNA properties and the groundwork for genomics, was born.
- November 30, 1948** Chlorotetracycline, a broad spectrum antibiotic, was isolated by B. M. Duggar, American Cyanamid Corporation.
- November 30, 1964** The first of five communications in the *Journal of the American Chemical Society* by Robert B. Woodward and Roald Hoffman on how stereochemical outcome of pericyclic reactions are governed by symmetry properties was received.

LEOPOLD MAY
 Professor Emeritus of Chemistry
 The Catholic University of America
 Washington, DC

Historical events can be found at Dr. May's website, <http://faculty.cua.edu/may/Chemistrycalendar.htm>.

THE UN-COMFORT ZONE

WITH ROBERT WILSON

I Dare You to Read This

Recently, a reader wrote me to suggest that rather than trying to encourage someone, a better way to motivate them is to issue a challenge. So, I felt challenged to write about it.

Whenever I think of laying down a challenge, I think of a classic story about Charles Schwab the magnate of Bethlehem Steel. One day, he was visiting his least productive mill to discover why it was underperforming. During his inspection, he discovered that everything seemed to be in order: the workers all knew their jobs, the equipment was top-notch, and the manager highly educated. Despite all of that, it was producing far behind all his others.

He ended his tour of the facility a few minutes before shift change. Stopping in front of one of the furnaces, he asked a worker, "How many heats has your shift made today?" "Six," the man replied. Schwab then asked for a piece of chalk. He took it, wrote a large number "6" on the floor, then left the building.

When the second shift arrived, they saw the chalked "6" on the floor, and inquired about it. "The big boss was in here today," said one of the men. "He asked us how many heats we made, and we told him six. He chalked it down."

The next morning Schwab visited the same mill. He saw that the "6" had been erased by the second shift and a large number "7" written in its place. He returned to the mill again at the end of first shift, where he saw that the "7" had been replaced with a "10." With a piece of chalk, Schwab started a lively competition that continued until that mill was producing more than any other.

This particular challenge worked because it pitted the esprit de corps of two teams against each other. I'm not sure that particular challenge would work today with the added burden of government regulations and union rules.

I also believe that a challenge does not stand alone as a motivator. There has to be something behind it. It may be pride, prestige, or fear that drives the need to overcome the obstacle.

Challenges are always obstacles whether it is an athletic, academic, intellectual, work-related, health-related, a personal goal or a personal tragedy. Sometimes the challenge is given by a boss, a team mate, a spouse, or simply

the zeitgeist.

Many times a challenge will be issued with the following words: "I'll bet you can't..." or "I dare you to..."

A challenger draws a line in the sand and defies us to cross it. Hmmm, isn't that what the game of American football is all about?

The advertising industry loves to use a challenge to get us to try their product or service. We frequently see words such as "Take the Taste Test," or "Give Us 30 Days and You'll Become a Believer." I remember this one from Gillette: "Take the SensorExcel Challenge: One shave and we bet you'll get rid of your disposable razor for good." Perhaps the most famous challenge ad is this one: "Be All That You Can Be: In The Army."

We love fun challenges such as problems that stimulate our ingenuity: crossword puzzles and sudoku for example. We enjoy the challenge of improving our skill at games and sports. OK, the love/hate challenge of golf notwithstanding.

Ultimately, all our challenges are self-given because it is human nature to want to improve. Pablo Picasso said it best, "I am always doing that which I cannot do, in order that I may learn how to do it."

The personal challenges we give ourselves create the journey known as life. Enjoy the pitfalls and peaks as they come because as Leo Buscaglia, author and professor, put it most bluntly, "Death is a challenge. It tells us not to waste time."

I challenge you to heed his advice and get on with the important things in your life.

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Robert Evans Wilson, Jr. is an author, humorist and innovation consultant. He works with companies that want to be more competitive and with people who want to think like innovators. Robert is also the author of the humorous children's book: *The Annoying Ghost Kid*. For more information on Robert, please visit <http://www.jumpstartyourmeeting.com>

FOOD AND TOY DRIVE

We will be collecting nonperishable food items (no glass containers) for charity at the December Holiday Party again. The food is donated to the local Loaves and Fishes Community Pantry for distribution. Loaves & Fishes Community Pantry is a community-based, non-profit organization established to provide food and personal care essentials to residents in need.

We will also continue our toy drive to collect children's toys for toddlers to 12 year olds. The toys will be donated to a local Silent Santa program.

Please open your heart to both of these programs and bring a nonperishable food item and a new toy to the holiday party.

The mission of the Chicago Section of the ACS is to encourage the advancement of chemical sciences and their practitioners.

SUMMER INDUSTRIAL INTERNSHIPS FOR UNDERGRADUATES

Exceptional sophomores and juniors majoring in chemistry and chemical engineering are encouraged to apply for a prestigious 10-week internship through the SCI Scholars Program. Over thirty scholars will be chosen for the summer 2013. SCI Scholars will receive \$6,000–\$10,000+ for a ten-week internship, a certificate, and an additional \$1,000, which can be used for any purpose, such as participation at an ACS meeting.

Applications are due December 14. Interested students with a minimum GPA of 3.5 should visit www.acs.org/sci to view updated internship listings and to apply.

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CALENDAR

November 1: Joint program of the Chicago Council on Science and Technology, Illinois Science Technology Coalition, Illinois Science Teachers Association, the ARCS Foundation, and the Illinois Science Council for the Science and Technology Member Networking Event. 5:30 - 7:30 pm at the Peggy Notebaert Nature Museum, 2430 N. Cannon Dr., Chicago. Free for C2ST members; \$15 for nonmembers. For more information, go to the link: <http://c2st.org/programs-c2st/member-networking-event>

November 3: STEMfair at the Barrington High School. This Science, Technology, Engineering, and Math event will be 10 am – 3 pm.

November 7: Chicago Section ACS Dinner Meeting. **See details in this issue.**

November 8: Chicago Section ACS Board meeting, 1400 Renaissance Dr., Suite 312, Park Ridge, IL 60068; 847-391-9091.

December 6: Chicago Section ACS Board meeting, 1400 Renaissance Dr., Suite 312, Park Ridge, IL 60068; 847-391-9091.

December 14: Chicago Section ACS Holiday Party and Dinner Meeting, Fountain Blue Banquets, Des Plaines, IL. The speaker will be Matt Young, Half Acre Beer Company.



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NEW ACS GUIDELINES AND RECOMMENDATIONS FOR TEACHING HIGH SCHOOL CHEMISTRY

By featuring strategies and considerations for teaching high school chemistry, the new *ACS Guidelines and Recommendations for Teaching High School Chemistry* is a useful resource for strengthening high school chemistry programs. This timely and comprehensive document provides guidance on the classroom and laboratory environments, safety, the big ideas in chemistry, strategies and technologies for teaching diverse learners, the professional responsibilities of chemistry teachers, and more. Visit www.acs.org/hsguidelines for more information.

NOTICE TO ILLINOIS TEACHERS

The Chicago Section ACS is an ISBE provider for professional development units for Illinois teachers. Teachers who register for this month's meeting will have the opportunity to earn CPDU's.

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JOB CLUB

The next meeting of the Chicago Section **ACS Job Club** will be held on Wednesday, **November 7 at 5:00 p.m. at the Holiday Inn Chicago-Elk Grove in Elk Grove Village**. The meeting will include a review and discussion of some of the tools that a chemist can use to conduct a job search.

The Job Club provides a continuing opportunity for unemployed members of the Section to meet with one another, share their experiences and develop a network that may help in identifying employment opportunities. Bring plenty of resumes and business cards to distribute to your colleagues. Be prepared to talk about the kind of job you are seeking.

Several participants have received outsource help with resume preparation and marketing strategies to present their best attributes to prospective employers. The group has critiqued some individual resumes and made suggestions for improvements in a positive way!

The Job Club is also for employers seeking chemists. Employers need to be prepared to describe the positions to be filled and requirements for these positions.

Should you wish to attend the Section's dinner meeting following the Job Club, the cost is \$20 and you can continue your networking activities. Please call the Section office for reservations and indicate that you are eligible for a discount.

Also, the Chicago Section's website has a link to the Job Club's yahoo job forum group. If you can't attend the Job Club, you can still find out about job openings and other information.



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