# heCHEMICAL bulletin

MAY • 2000

# JOSIAH WILLARD GIBBS MEDAL AWARD DINNER AND CELEBRATION

FRIDAY, MAY 19, 2000

WINDOWS RESTAURANT DoubleTree Hotel 9599 Skokie Boulevard Skokie, Illinois

# **DIRECTIONS TO THE MEETING**

From the City or the North: Take Interstate 94 (Edens Expressway) to Old Orchard Road East exit. Go east (right) to Skokie Boulevard (Route 41). Turn right (south) 2.5 blocks to Golf Road. The DoubleTree Hotel is on the southeast corner of Golf and Skokie Boulevard.

From O'Hare Airport: Take Interstate 294 North to Dempster-East. Go east on Dempster Road to Potter Road, turn left, and proceed to Golf Road. Turn right (east) on Golf Road and proceed 8 miles to Skokie Boulevard (Route 41) and turn right. The DoubleTree Hotel is at the intersection of Golf Road and Skokie Boulevard.

## **FREE PARKING**

SOCIAL HOUR	6:00 - 7:00 PM
DINNER	7:00 PM

Dinner reservations are required. Please send in the form (given on p4) to the Chicago Section office with your menu choice and name for a nametag as well as a check. Tickets will be sent to you by return mail. Tables for ten are available. If you would like a table for a group, please put their names on a separate sheet. Tickets will be returned by mail if form is sent in by May 5, 2000. No refunds will be made after May 16, 2000 for cancellations or no-shows.

The cost of dinner is \$ 35 for members and guests. The cost to non-members is \$ 37. There will be no discounts for students or unemployed.

The menu consists of Mixed Field



Greens with Sundried Cranberries & Candied Pecans, Champagne Vinaigrette Breast of Chicken with Spinach and Asiago, Porcini Mushrooms jus, and a special dessert of Turtle Ice Cream Truffle, Mocha Crème Anglaise. A fish entrée (Fillet of Salmon in a Tomato-Fennel Ragout) is available upon request. Wine will be served during dinner.

### PRESENTATION OF AWARD TO NICHOLAS TURRO 8:30 PM

"For pioneering and interdisciplinary research on the interaction of light and organic molecules, and for the invention of novel and general methods for investigation of organic reactions of supramolecular systems, and for the development of organic systems whose reactivity is extremely sensitive to the application of weak magnetic fields."

Introduction of Dr. Nicholas J. Turro by Professor Frederick Lewis of Northwestern University

# JOSIAH WILLARD GIBBS AWARD PRESENTATION SPEECH

# From Molecular Photochemistry to Supramolecular Photochemistry

During the last 50 years photochemistry has developed from a molecular level in which covalent, molecular structure and dynamics dominate to include a supramolecular level in which noncovalent, intermolecular structure and dynamics dominate. At still another level, in certain molecular and supramolecular systems magnetic interactions can exert a strong control over photochemical processes with magnetic field effects and the generation of nuclear and electron polarization. Examples will be given of research at Columbia which involves the investigation of supramolecular photochemistry and magnetic effects on supramolecular photoreactions involving radical pairs and radicals adsorbed on zeolite porous solids and colloidal micelles. The research emphasized the richness of chemical information that can be achieved through the investigation of the details of how a pair of carbon radicals recombine to form a carbon-carbon bond.

# **Biography**

Dr. Nicholas J. Turro is the William P. Schweitzer Professor of Chemistry and Co-Chairman of the Department of Chemical Engineering & Applied Chemistry at Columbia University in New York City. He received his B.A. from Wesleyan University in Connecticut in 1960 and his Ph.D. in 1963 from the California Institute of Technology under G.S. Hammond. Dr. Turro had a post doctoral position at Harvard University from 1963 to 1964. He has spent his professional career at Columbia University from 1964 until the present.

(continued on page 2)

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# (continued from page 1)

Dr. Turro was elected to both the National Academy of Sciences and the American Academy of Arts and Sciences in 1981. He received a J.S. Guggenheim Award in 1984, and a Cope Scholar Award in 1986 and the James Flack Norris Award in 1987, both from ACS. He has also received the Havinga Medal from Leiden University in 1994, a Caltech Distinguished Alumnus Award in 1996, and the Strahlenchemie Preis from the Max-Planck-Institute for Radiation Chemistry in Mülheim, Germany in 1998, among other awards.

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# Spring 2000 Council Meeting Report

The Chicago Section was fully represented in council by 12 councilors and 1 alternate councilor (Charles Cannon) at the Council meeting held on Wednesday, March 29, 2000 at the 219th Meeting of the ACS in San Francisco, CA. A total of 18,307 people attended the meeting in San Francisco; this was a new record for attendance, exceeding the attendance at the last meeting held in San Francisco in 1997. The National Employment Clearinghouse (NECH) had 1053 candidates applying for 723 posted positions at 165 employers. There were greater than 3000 interviews held at the Clearinghouse.

The following items of interest were discussed at the Council meeting on Wednesday, March 29, 2000.

- The council chose Glenn A. Crosby and Eli M. Pearce to run for President-Elect of the ACS. The council also elected Peter A. Christie and Valerie J. Kuck to serve terms on the Committee on Nominations and Elections.
- 2. The President-Elect Attila Pavlath reiterated his request for input from members in putting together the Strategic Plan for 2001-2003. If you have comments please contact him.
- Hank Whalen, Chair of the Board of Directors, announced that the Board has endorsed the guiding principles of the Chemical Manufacturing Association (CMA) Responsible Care Program. The Council Policy Committee is organizing a task force to consider/recommend programs/policies to implement their endorsement.
- Due to the financial performance of 1999, the Committee on Budget and Finance recommended to Council that membership dues remain unchanged for 2001 at \$108. The council voted to maintain membership dues for 2001 at \$108.
- 5. The Society Committee on Education (SOCED) reported that more than 2000 undergraduate students presented more than 600 student posters at the San Francisco meeting. This exceeded the record number of students at the last San Francisco meeting by greater than 400. No effect has been observed yet from the increased cost for undergraduates to attend the meeting.

- 6. At the end of 1999, there were 161,001 members in the American Chemical Society, an increase of over 2000 members from the end of 1998. The retention rate was 93.5%. The goals for 2000 are 165,000 members with a 94% retention rate. If you know someone who would like to be a member, please contact the section office for a membership form. The section receives some compensation for each new member that is recruited
- The topic for the 2000 Celebration of Chemistry Day will be Kitchen Chemistry.

If you have additional questions about issues discussed at the Council meeting, or you would like to express your views to one of your voting representatives please contact one of the Councilors. The councilors and their committee assignments are Roy Bible, Cherlyn Bradley (Project SEED and Chemical Safety), Bob Buntrock (Chemical Abstracts Service), Jim Doheny, Nathaniel Gilham (Local Section Activities), Fran Karen Kravitz, Tom Kucera (Meetings and Expositions), Claude Lucchesi (International Activities), Barb Moriarty (Economic and Professional Affairs), Seymour Patinkin, Marsha Phillips, Jim Shoffner (Minority Affairs and Committee on Science) and Steve Sichak (Chemical Safety).

**Barb Moriarty** 



May, 2000 Vol. 87, No.5. Published by the Chicago Section of the American Chemical Society, Sanford Angelos, Barbara Moriarty, Editors, Gayle E. O'Neill, Business Manager. Address: 7173 North Austin, Niles, Illinois 60714. 847/647-8405. Subscription rates: \$15 per year, \$15 outside North America. Frequency: monthly-September thru June



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# AMERICAN CHEMICAL SOCIETY CHICAGO SECTION WILLARD GIBBS MEDAL AWARD PRESENTATION

# Friday, May 19, 2000

You and your guest(s) are cordially invited to attend the 89t<sup>h</sup> presentation of the Josiah Willard Gibbs Medal to Dr. Nicholas J. Turro, the William P. Schweitzer Professor of Chemistry at Columbia University, on Friday, May 19, 2000, in the Windows Ballroom at the DoubleTree Hotel, 9599 Skokie Blvd., Skokie Illinois. A social hour begins at 6 p.m. Dinner is served at 7 p.m. Dr. Turro's talk will begin at about 8:30 p.m.

For this occasion, a special gourmet dinner will include salad, entrée of either Breast of Chicken with Spinach and Asiago, Porcini Mushrooms jus or Fillet of Salmon in a Tomato-Fennel Ragout, and a special dessert of Turtle Ice Cream Truffle, Mocha Crème Anglaise. The complete price will be \$35 for members and their guests and \$37 for nonmembers and their guests. Tables of 10 can be reserved. If you request seating for a group, please attach a note with names to your ticket request form.

The Gibbs Award Dinner is always a memorable occasion. Only the Nobel Prize is considered more prestigious. Please come to salute and greet the recipient, Dr. Nicholas Turro of Columbia University, and rejoice in his achievements in and contributions to the science of chemistry.

### Margaret Stowell Levenberg Gibbs Arrangements Committee

		Reservation Form
Please reserve the following number of tickets:		Name
ACS members and guests, \$35 per ticket:		Affiliation
Nonmembers, \$37 per ticket:		Telephone
Total (check enclosed):	\$	
Dinner choice: Salmon	Chicken	Address
		CityStateZip

Please include a list of the names of all the attendees in your party on a separate sheet for nametags. Tables of 10 may be reserved. Orders received by Friday, May 5, 2000, will be filled by mail. There will be no refunds for cancellations made after Tuesday noon, May 16, or for no-shows.

Return this reservation form to:

CHICAGO SECTION, AMERICAN CHEMICAL SOCIETY, ATTN: GIBBS RESERVATION, 7173 N. AUSTIN AVE., NILES, IL 60714

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# Greatest Engineering Feats of the Century

During National Engineers Week 2000, astronaut and engineer Neil Armstrong announced the 20 engineering achievements that have had the greatest impact on the quality of life on the 20th century. The main criterion used was that advancements had made the greatest contribution to the quality of life in the past 100 years. Even though some of the achievements, such as the telephone and the automobile, were invented in the 1800s, they were included because their impact on society was felt on the 20th century. The list of achievements is given below.

- Electrification the vast networks of electricity that power the developed world.
- 2. Automobile the world's major mode of transportation
- 3. Airplane flying made the world accessible, spurring globalization on a grand scale.
- 4. Safe and Abundant Water preventing the spread of disease, increasing life expectancy.
- 5. Electronics vacuum tubes and, later, transistors that underlie nearly all of modern life.
- Radio and Television dramatically changed the way the world received information and entertainment.
- Agricultural Mechanization leading to a vastly larger, safer, less costly food supply.
- Computers the heart of the numerous operations and systems that impact our lives.
- 9. Telephone changing the way the world communicates personally and in business.
- Air Conditioning and Refrigeration

   beyond convenience, it extends the shelf life of food and medicines, protects electronics, and plays an important role in health care delivery.
- 11. Interstate Highways 44,000 miles of U.S. highway allowing goods distribution and personal access.
- Space Exploration going to outer space vastly expanded humanity's horizons and introduced 60,000 new products on Earth.
- Internet a global communications and information system of unparalleled access.
- 14. Imaging Technologies revolutionized medical diagnostics.
- 15. Household Appliances eliminated strenuous, laborious tasks, especially for women.

- Health Technologies mass production of antibiotics and artificial implants led to vast health improvements.
- 17. Petroleum and Gas Technologies - the fuels that energized the 20th century.
- Laser and Fiber Optics applications are wide and varied, including almost simultaneous worldwide communications, non-invasive surgery, and point-of-sale scanners.
- 19. Nuclear Technologies from splitting the atom, we gained a new source of electric power.
- 20. High Performance Materials higher quality, lighter, stronger, and more adaptable.

Many of the achievements also involve chemists and chemical engineers, belonging to the American Chemical Society. Given below are descriptions of some of the achievements involving the chemical sciences.

Water treatment and disinfection is ranked number four behind electrification, the automobile and the airplane because, the disinfection of public water supplies has made America a healthier, safer place. Disinfection has virtually eliminated diseases such as dysentery and typhoid for Americans. According to the NAE, dysentery was the third leading cause of death in America at the beginning of the century. At the same time, typhoid claimed 150 out of every 100,000 Americans every year. Thanks to improved water treatment through chlorine disinfection, these diseases along with cholera were largely eliminated from the American population by mid-century.

Air Conditioning: Life changed immensely in the 20th century as air conditioning and refrigeration systems became more efficient, controllable, and even mobile. Refrigeration makes transporting fresh food and other perishables possible, and makes home storage for days or weeks practical. By the end of the 20th century, 99.5 percent of U.S. households had a least one refrigerator. Climate control became so reliable and affordable it grew from an invisible luxury to a common necessity. Nearly 70 percent of U.S. households had air conditioning by the end of the century. The invention of halocarbon refrigerants by Thomas Midgley in 1928 provided a safe alternative to the toxic and flammable refrigerating fluids previously used, such as ammonia. The Frigidaire division of General Motors, as well as most other refrigerator makers, adopted Freon 12 (dichlorodifluoromethane) refrigerant gas, invented by Midgley and Charles Kettering.

Imaging: In the 20th century engineering created a new class of sensors and precision instruments that brought a range of vision beyond anything humans could have imagined. These modern tools allow us to see inside the human body, to monitor its life forces, and to identify and treat diseases. The entire microelectronics revolution is based upon imaging. Without it, we would never have gotten enough transistors on one piece of silicon to make a microprocessor. The key fabrication process for integrated circuits is done by imaging pictures of circuit patterns on photoresist. Electron microscopes can magnify objects with high resolution so that viewing individual molecules is possible. Atomic force and tunneling microscopes can view atoms, and are making nanotechnology able to yield machines assembled from single atoms.

Health Technologies: Today, people live nearly 30 years longer, on the average, than their great-grandparents did at the beginning of the 20th century. Although many advances were underway early in the century, health technologies really began to blossom in the last half, when engineering and medicine became increasingly interdisciplinary, and the human body was more fully recognized as a complex system of electrical fields, fluid and biomechanics, chemistry, and motion. Since then, remarkable machines, materials, and devices, such as artificial organs, replacement joints, life-enhancing systems, diagnostic and imaging technologies have been developed that save lives and significantly improve the quality of life for millions.

The modern pharmaceutical industry introduced highly active medicinal compounds in the 19th century and life-saving sulfa drugs and vaccines in the 20th. These medicines greatly reduced or completely eradicated diseases that plagued the population for much of this century, such as rheumatic and typhoid fever, lobar pneumonia, poliomyelitis, syphilis, and tuberculosis. Pharmaceuticals have also provided greater protection from infection, which has allowed doctors to go farther in repairing and replacing damaged or worn-out tissues with engineered materials (biomaterials). Synthetic and biological polymers, metals, and ceramics, are used for almost everything from suture material to heart valves, and to replace bones or eye lenses. Woven acrylic artificial arteries prevent rapid clotting of blood in artificial blood vessels. With such a tremendous increase in medical applications, demand for new biomaterials grows by 5 to 15 percent each year.

Petroleum and Gas Technologies: At the beginning of the 20th century, refined oil was used primarily for lighting. Petroleum-based fuels transformed the world landscape as they increased agricultural productivity, provided the means for distributing industrial and farm products, and furnished the personal mobility that defines 20th century technology. Petrochemicals have also had an enormous impact, providing everything from aspirin to zippers, including pharmaceuticals, medical devices, synthetic fabrics, fertilizers, pesticides, building materials, and cosmetics, among them. Initially, the demand for convenient and affordable fuels drove the industry. During the war years and later, concern shifted to finding substitutes for increasingly scarce natural commodities such as rubber. The resulting products, such as sulfa drugs and vitamins, were useful in fighting infectious diseases.

Until 1900, refining consisted of a fairly simple batch process whereby oil was heated until it vaporized, and the various fractions were separated by distillation. The introduction of catalytic cracking (breaking the heavy molecules into lighter molecules) in 1936 yields light oils, heavier oils, and gases such as methane, ethane, ethylene, propane, and propylene. These gases are the starting points for the production of compounds that constitute five major groups of end products: synthetic rubber, plastics, textiles, detergents, and agricultural chemicals.

Laser and Fiber Optics: The technical means for this communications revolution are lasers and fiber optics - a unique blending of light and glass that transmits our words and thoughts immediately anywhere in the world. Aside from providing the basis for modern communications system, the laser is a versatile tool used in many industries. It is used in manufacturing to cut precision parts, in medical applications such as eye surgery, in satellites to transmit weather and climate information, in scanners to read bar codes at cash registers, and in devices to play music on compact discs.

Nuclear Technologies: Nuclear technologies have stirred emotions and controversy, but the engineering achievements related to their development remain among the most important of the 20th century.

Einstein's relativity theory marked, above all, the point from which there was no return. The inevitable development that changed the world, however, occurred in 1942, when Enrico Fermi conducted the first controlled chain reaction, releasing energy from the atom's nucleus. As a destructive power the atomic bomb has been unequalled, and its potential threat alone drives peace and war initiatives worldwide.

Peacetime uses were pursued with equal fervor with the first nuclear-reactor radioisotopes for civilian medical use delivered in 1946. The use of nuclear energy for commercial power plants resulted from this work. Because of its lack of emissions, nuclear energy has potential over fossil-fuel technology as a lasting solution to energy demand. Projected global warming and international hostilities over scarce energy supplies also drive engineers to find solutions toward adopting nuclear and other renewable sources. Furthermore, what has been learned from these technologies-the use of radiation, particularly for medical diagnosis and treatmenthas and continues to improve our lives.

High Performance Materials: Much as earlier eras were characterized as the ages of stone, iron, and copper, it may be that the term that best characterizes the 20th century is "the age of engineered materials." Materials such as steel, copper, silicon, plastics, polymers and biomaterials have been crucial to the inventions and innovations that have transformed the century. The materials revolution that took hold in 1900 began with the heavy building blocks of iron and steel and ended with lighter weight metal alloys and exotic high-strength composites. A massive national effort in polymer chemistry occurred as the United States entered World War II because the seizure of rubber plantations in the Malay Peninsula and East Indies cut off the source of nearly 90 percent of America's natural rubber supply. At the end of World War II, the U.S. military released to the public many "high tech" synthetic materials that were previously restricted or unavailable. These state-of-the-art materials included silicones, Dacron, polyurethanes, nylon, titanium, and Teflon (which was discovered purely by accident). Remarkable new biomaterials continue to be developed for use in making heart-assist devices, artificial kidneys, contact lenses, vascular grafts, shunts, sutures, prostheses, and hundreds of other products. Throughout the century, scientists and engineers learned new methods to analyze, process, refine, and add to materials in ways that maximized their properties, enhanced their performance, and met design challenges. New analytical techniques, molecular and atomic imaging, and quantum calculations for atomic and molecular systems are available to

help optimize materials choices and manufacturing approaches. They have changed an empirical methodology into a directed, rapid approach to the materials requirements.

Taken from www.greatachievements.org Barb Moriarty





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A primary letter of recommendation should be submitted by someone familiar with the nominee's work and should be no more than six pages in length. It should include a discussion of his or her work's significance, a list of publications, presentations, and awards, and a statement of the nominee's willingness to present their work at an EAS Award Symposium. Each Award consists of an honorarium, plaque, travel expenses, and the opportunity for the awardee to present his or her work to the attendees at an Award Symposium.

Nomination materials should be addressed to: Chairman, EAS Awards Committee P. O. Box 633, Montchanin, DE 19710-0633 USA For more information visit our web site: http://www.eas.org



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# New Web Site for Safety, Health and Environmental Professionals

The National Safety Council (NSC) has a new web site that integrates their internal databases along with researched online resources. The new Web site, called Crossroads (www.crossroads.nsc.org) provides information on injury statistics, hazardous chemical profiles, safety data sheets, topical articles, expert Q & A, and other hard to find features. Using this Web site, you can avoid searching through hundreds of irrelevant citations for other chemical-related sites because they have done the research for you. The site outlines specific topic areas and organizes the data in an easy-to-find manner. Furthermore, the data is developed and maintained by experienced professionals at NSC. The National Safety Council is a not-for-profit, nongovernmental, international membership organization that is dedicated to reducing unintentional injuries in the workplace, in homes and in the community.

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### **CALL FOR PAPERS**

The 35th Midwest Regional Meeting will be held Wednesday. October 25th through Saturday, October 28th, 2000 in St. Louis. The meeting, hosted by the St. Louis Section, will be held at the King Henry VIII Hotel located on Lindbergh Blvd, one-half mile north of I-70 and one mile south of I-270. The hotel is located 5 minutes from Lambert International Airport. Please visit the meeting web site, http://www.umsl.edu/~acs/mrm.html.

Special, invited symposia are planned in the areas of Supramolecular Chemistry, Organometallic Chemistry in Organic Synthesis, Frontiers of Drug Discovery, Organic/Inorganic Hybrid Materials, Frontiers in Analytical Chemistry, Green Chemistry, Chemistry of Radioactive Drugs, Natural Products, Biotechniques, Chemical Education, Minority Chemists.

Other special events planned for the meeting include the Midwest Award Banquet, the Midwest Region Award for High School Chemistry Teaching, an ACS Regional Director's Breakfast, a Women Chemist's Luncheon, a Younger Chemist's Committee/Student Affiliates Mixer and Poster Session, a Special Event for Undergraduates, the ACS Career Resources Center, and an Exhibit of scientific equipment, products, services, publishers, and academic institutions.

Contributed papers and poster presentations are welcome in the areas of Analytical Chemistry, Biochemistry, Inorganic Chemistry, Medicinal Chemistry, Organic Chemistry, Physical Chemistry, Polymer Chemistry, and Surface Chemistry. Abstracts must be submitted by hard copy on the standard ACS abstract form. Authors should also provide an email address so that they may be advised of the receipt of their abstract and of their schedule assignment in the program. Please submit by July 14th to: 35th MWRM Abstracts, c/o Dr. Keith J. Stine, Department of Chemistry, University of Missouri - St. Louis. St. Louis, MO 63121.

Current sponsors for the meeting include Monsanto, Searle, and Steris Corporation. Additional sponsors are welcome, please contact Dr. Chris Spilling, General Chair, 314-516-5314, cspill@jinx.umsl.edu.

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CALENDAR

**May 31-June 1, 2000.** NIST will hold a workshop entitled "Combinatorial Materials Science: A National Dialogue" in Gaithersburg, MD. For more information contact Alamgir Karim at (301) 975-6588 or visit the website at www.nist.gov/combi.

June 4-7, 2000. The 32nd Great Lakes Regional Meeting will be held in Fargo, ND.

**June 11-13, 2000.** The 48th American Society for Mass Spectrometry Conference on Mass Spectrometry and Allied Topics, will be held in Long Beach, California. For more information contact the American Society for Mass Spectrometry, 1201 Don Diego Avenue, Santa Fe, New Mexico 87505, at (505)989-4517 or e-mail: asms@asms.org.

**June 23, 2000.** The Chicago Section American Chemical Society presents the final meeting of the 1999-2000 year to be held at Steven's in Elmhurst. The speaker will be David Piazza of Naperville Surgical Assoc. on" Why palms are pink and poop is brown." For additional information call the Section Office at (847) 647-8405.

August 20-24, 2000. The 220th American Chemical society National Meeting will be held in Washington, DC.

**October 6, 2000.** Northwestern University and the Chicago Section American Chemical Society celebrate the Basolo Medal. For additional information call the Section Office at (847) 647-8405.

**October 19-20, 2000.** Professional and Analytical Consulting Services (PACS) will present a conference on Sampling, On-Site Analysis and Sample Preparation in Pittsburgh, PA. For more information contact Barbara Sherman, PACS at (724) 457-6576 or (800) 367-2587.

**October 25-28, 2000.** The 35th Midwest Regional Meeting will be held in St. Louis, MO. The meeting, hosted by the St. Louis Section, will be held at the King Henry VIII Hotel located on Lindbergh Blvd, one-half mile north of I-70 and one mile south of I-270. The hotel is located 5 minutes from Lambert International Airport. For more information visit the meeting web site at http://www.umsl.edu/~acs/mrm.html.

**November 17, 2000.** The Chicago Section American Chemical Society and the University of Chicago present the Stieglitz Lecture. For additional information call the Section Office at (847) 647-8405.

**December 15, 2000.** The Chicago Section American Chemical Society presents the Annual Holiday Party. For additional information call the Section Office at (847) 647-8405.

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