THE OCTAGON

Volume 92, No. 1 , January 2009 Lehigh Valley Section of the American Chemical Society

In This Issue:

805th Meeting of the LVACS

Thursday January 22, 2009
Penn State - Lehigh Valley Campus

Location: Penn State, Lehigh Valley Campus, Fogelsville, PA. For details please see meetings link at our website, www.esu.edu/lvacs

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Reception: 6:00 PM punch, cheese, and crackers

Dinner: 6:30 PM House Salad, Beef Stroganoff and Rice, Corn and Glazed Carrots, Chocolate Cake dessert Hot Coffee and Tea, and water, vegetarian option available.

Meeting: At the conclusion of dinner

Talk: At the conclusion of the business meeting

Cost: $20.00 ($10.00 for students and retirees)

Reservations: Receptions desk (610-285-5000) or Marie Handwerk <mam48@psu.edu>.

Directions: see http://www.lv.psu.edu/Information/directions.htm?cn716

Speaker: Dr. James Hansel, Air Products and Chemicals, Inc. [retired]

Jim Hansel is a retired engineer and educator with 47 years of experience within industrial R&D as well as university research and university teaching. He received his doctor of science degree from Stevens Institute of Technology. He recently retired from 25 years at Air Products and Chemicals. Among many accomplishments at Air Products he pioneered the transfer of industrial hydrogen safety to the emerging automotive hydrogen fuel cell vehicles. Prior to Air Products he spent eight years at Engelhard Industries where he was a key member of the team that developed the automotive exhaust three way catalytic converter and the associated engine control system that has been utilized on 800 million automobiles to date. His university teaching includes three years as adjunct associate professor of mechanical engineering at Columbia University as well as eight years as adjunct professor of mechanical and chemical engineering at Penn State main campus. Dr. Hansel is the author or coauthor of 45 publications and he holds 8 patents. He has received world recognition and numerous awards during his career.

Talk: ***"Future Fuels and Future Cars"***

This presentation brings into focus the numerous technical and non- technical factors that need to be considered regarding this subject. These factors are having a profound effect on the selection of vehicle power sources and fuels, as well as the vehicle designs. The discussion launches from the shortcomings of current systems and leads to short term and long term alternatives – including the trade-offs. Also presented are a number of upcoming significant improvements in safe vehicle operation due to the full integration of on-board radar, global positioning and electronics.

Chem Shorts for Kids

by Dr. Kathleen A. Carrado, Argonne National Labs
kcarrado@anl.gov

A ROCK TESTER

Kids, in this activity you can pretend to be a geologist and test some rocks and other natural materials using a common chemical method.

You'll need a small sampling of rocks, making sure that some of them are limestone or marble, chalk, a few seashells, vinegar and/or lemon juice, and some clear plastic cups. Put the seashells in one cup, each rock in it's own cup, and a piece of chalk in a cup. Label each of them if necessary, especially to keep track of the rocks. Pour the lemon juice or vinegar over each material and note what happens. You should see bubbles form on some of the materials, although not from all of the rocks.

What's happening here? Vinegar and lemon juice are both weak, dilute acids (acetic acid and citric acid, respectively). Calcium carbonate is a chemical compound found in many natural materials, such as limestone and seashells. When calcium carbonate is exposed to acid, it chemically changes into new materials. One of these is carbon dioxide gas, which form the bubbles that you observe in the cup. When limestone is exposed to great heat and pressure under the earth's surface for many years, it turns into marble. It is still calcium carbonate and that is why marble will form bubbles with acid also. You get similar results when using chalk because it, too, is made of limestone.

Submitted by: Kathleen A. Carrado, Chair of the Elementary Education Committee.

Reference: "Earth Science for Every Kid" by Janice VanCleave, NY: Wiley Publ., 1991, p. 32 and "Simple Science Experiments with Everyday Materials" by Muriel Mandell, NY: Sterling, 1990, p. 54.

A DO-IT-YOURSELF FAST FOOD "MILK" SHAKE

Kids, in this activity you will learn how to make a thick - a very thick - liquid. It will be non-toxic, non-corrosive, cheap, and edible. It will, in fact, in many ways resemble a typical fast food restaurant milkshake.

You'll need 12 oz of water, and a tablespoon each of milk, chocolate syrup, and powdered xanthan gum. What in the world is xanthan gum and where do you find it? Most specialty health food stores and pharmacies should have some of this substance. When these ingredients are mixed in a blender for a few minutes, the result looks virtually indistinguishable from your local fast food shake. The taste won't be quite as good; however, you can add more syrup, or a touch of sugar or vanilla extract, and ice chips to make it closer.

What's happening here? Xanthan gum is a synthetic carbohydrate polymer, similar to natural gums. It is one of many common thickening agents used as food additives. It forms what is called a "hydrophillic colloid", or small particles that can soak up amazing amounts of water. Other examples are agar, arabic gum, bentonite (a clay!), celluloses, and polyethylene glycol. Look on lists of ingredients to find these substances, especially on "fat free" or "reduced fat" alternatives (they replace the smoothness of the fat). You may also find carrageenan, a polysaccharide derived from seaweed. Rumor has it that this is what is really used in those fast food shakes - so much for the actual amount of "milk" in them!

Submitted by: Kathleen Carrado, Chair, Elementary Education Committee.

Reference: Larry Lippman on the internet at: www.polymers.com/dotcom/pdcmag/ slime.html.

WHAT'S THE MATTER?

Matter is another word for the material that makes up all the stuff in the whole world. The three forms, or states, of matter are solids, liquids, and gases. One very useful thing about matter is the way it can change between it's forms. In this activity you'll watch matter change from one state to another!

You'll need ice, 3 clear plastic cups, water, a measuring cup, masking tape, ballpoint pen, paper towels, and a really humid day. Use the masking tape and pen to label the cups A, B, and C. Place 1/2 cup cold water in each cup. Wipe the outside of the cups with the paper towels to insure they are dry. Leave cup A alone as your control experiment. Add one ice cube to cup B. Fill cup C with ice until it is nearly full. Let them sit 5 minutes. Look at the outside of the cups. Describe what you see, then use your finger to test for any liquid on the outside of the cups. What is this liquid and where did it come from?

What's happening here? You are watching a gas change to a liquid as a result of condensation. The liquid came from

water vapor (water in its gaseous state) in the air, which has condensed to form liquid on the surface of the cold cup. Does one cup seem to have more liquid on the outside than another? Why do you think it does?

Submitted by: Kathleen Carrado, Chair, Elementary Education Committee.

Reference: WonderScience, 1997, 11(5).

HOMEMADE LEMON-LIME SODA

Kids, you can make a bubbly lemon, lemon-lime, or orange soda that is actually pretty tasty. You'll need a lemon, lime, or orange, and a glass, water, baking soda, and sugar. This is what you do: squeeze the juice from a lemon or orange into the glass. If you want the lemon-lime taste, add some juice from a lime to the lemon juice. According to how much juice you were able to get, add an equal amount of water. Stir in a teaspoon of baking soda, and observe what happens. Check out the taste, then add sugar if you like (or some other sweetener), tweaking the ingredients until it tastes perfect to you. Actually, any citrus fruit will do. If you happen to like grapefruit, you could also try one of these alone or in combination with one of the other fruits mentioned.

What's happening here? You are watching a gas being created by a reaction in-a-glass. The baking soda, or sodium bicarbonate ($NaHCO_3$), is reacting with citric acid from the juice to create carbon dioxide gas. This is why you need a citrus fruit for this experiment. All sodas get their fizz from trapped carbon dioxide (CO_2) bubbles, although it is usually added via pressurization. In other words, the bubbles in real soda are created by carbon dioxide gas that is added under pressure to a solution of water and a flavored sweetener, and that's all there is to soda-pop!

Submitted by: Kathleen Carrado, Chair, Elementary Education Committee.

Reference: Simple Science Experiments with Everyday Materials, by Muriel Mandell, 1989, Sterling Publishing Co., NY.

APPLES WITH APPEAL

When Archie cuts up apples,
The slices all turn brown.
They don't look very yummy,
Which makes his buddies frown.
But Archie is a good cook
Who knows a special way
To stop the color changing
At any time of day!

Kids, if you want to test out Archie's secret, you'll need paper towels, paper, 3 fresh apple wedges, lemon juice, and water. Spread out the paper towels. Make a large chart on the paper with columns of "water", "lemon juice", and "nothing". Place the apple wedges on the chart, one for each column. Pour some water on the first wedge, lemon juice on the second, and do nothing to the third. Wait one hour and observe your apples. What has happened? Do you know why? When it's protective skin is gone, certain substances in an apple will react with oxygen in the air and turn brown. Citric acid in the lemon juice has stopped the reaction of oxygen that turns the apple brown. This trick of using lemon juice, or orange juice, is used by Archie and many other cooks to keep apples, bananas, and other fruit looking good for fruit salads, etc.!

Taken From: Apples, Bubbles, and Crystals: Your Science ABCs, by A. Bennett & J. Kessler, 1996, McGraw-Hill, NY.

FLOATING PEANUTS

Fern the Duck catches peanuts
She eats them in a wink.
She has to catch them quickly,
Or else the peanuts sink.
Fern can give some good advice
That slower ducks should note.
Moving to saltwater helps,
'Cause there the peanuts float!

Kids, here's how you can test Fern's theory for yourself. Use masking tape and a pencil to label two clear plastic cups as "fresh water" and "salt water". Add water to each cup until 3/4 full. Add 6 teaspoons of table salt to the salt water cup and mix with a spoon for a few minutes. Add a peanut (the kind that is already shelled) to each cup, and observe what happens. You should see Fern's theory in action: the peanut in the fresh water will instantly sink while the peanut in the salt water will float. In fact it will float all night! Objects float if they're lighter than the amount of liquid that they displace, or push aside. They sink if they're heavier. Fern's peanuts are heavier than the fresh water that they displace, so they sink. Dissolving salt in fresh water makes the same amount of liquid heavier, allowing the peanut to float. It's the same reason that you float more easily in the ocean than in a lake!

Taken From: Apples, Bubbles, and Crystals: Your Science ABCs, by A. Bennett & J. Kessler, 1996, McGraw Hill, NY.

Spring 2009 LVACS Meetings

February - Cedar Crest College
***March* - TBA -**
High School Teachers' Night
***April - Moravian College* -**
Student Poster Session -
Student Awards Night
***May* -**
Winery tour and wine tasting

LVACS 2009 Elections to be held at January Meeting - Call for Nominations

Nominations for 2009 LVACS Officers are being accepted. Open offices and nominations received to date are listed below.
To nominate a colleague or to self nominate for any office please contact the current Chairperson, Julie Ealy or Chair-Elect, Chester Crane (see www.esu.edu/lvacs for contact information)

Nominations will close and the election will be held at the January meeting at Penn State, Lehigh Valley. Ballots will be available at the meeting.

Current Nominations for Open Offices
Chair- Elect: James Ealy
Treasurer - Al Martin
Secretary - Julie Ealy
Councilor - Roger Egolf and Pam Kistler
(councilor and alternate councilor positions are 3 year terms)

This Month in Chemical History

Harold Goldwhite, California State University, Los Angeles - hgoldwh@calstatela.edu

To quote verbatim from an earlier essay: "The idea of critically reviewing substantial areas of chemistry and producing a periodic report of progress originated with the great Swedish chemist of the early nineteenth century, Jons Jacob Berzelius (1779-1848). The original series of Jahresberichte , Berzelius' brain child and the first of the Annual Reports, did not survive its originator. But there are other long-lived series of such reports".

This essay will focus on Volume VI of the Annual Reports on the Progress of Chemistry issued by the Chemical Society (of London) which has now metamorphosed into the Royal Society of Chemistry. This ambitious attempt to encapsulate the total of the significant work in chemistry for a whole year covers 1909 in a mere 270 pages.
It was, relatively, a peaceful year in world history; 5 years before World War I. Tensions were building in Europe but had not yet reached a boiling point.

Reviewing general and physical chemistry T. M. Lowry, of Bronsted-Lowry fame, looks first at pressure effects on physical and chemical properties. R.Threlfall has found no conversion of graphite to diamond at pressures up to 10,000 atmospheres and "temperatures up to the melting point of magnesia" – about 3100K. A new form of ice (shades of Vonnegut?), Ice III, has been observed at 3000kg/square cm. P.W. Bridgman, the high-pressure guru, has described two new high-pressure gauges bases on a direct measurement of gas volume and on the resistance of a mercury column. New precision has been achieved in measuring osmotic pressure, including investigations by the Earl of Berkeley and his colleagues; so much for the stereotype of the indolent nobility. Detailed studies of the thermal dissociation of calcium carbonate by Le Chatelier show marked deviations among different experimental studies, perhaps attributable to different levels of adsorption of carbon dioxide by differently sized particles. E.C. Franklin has been studying conductivities of electrolyte solutions in liquid ammonia; he had done many pioneering studies of this remarkable solvent. Ostwald's dilution law relating concentration and degree of ionization, has been investigated for a wide range of carboxylic acids.

In reviewing inorganic chemistry H. B. Baker (whose work on intensive drying I wrote on some years ago in the Journal of Chemical Education) writes: "it is difficult to give a general idea of a year's work" – presumably in the 22 pages or so allocated to him. He makes some interesting remarks which could well apply

to work done a century later!

" In an ideal chemical world, nothing would be published until a complete account of the subject of research could be presented. But apart from the general question of publishing carefully worked out installments of a large research, the scramble for priority, happily not common in this country[!], is often responsible for the appearance of immature work."

Sir William Ramsay has been unable to detect helium in the radioactive breakdown of thorium. There has been much discussion of Prout's hypothesis , that all atomic masses should be integral on the scale of H = 1, but since 1909 was before the fuller understanding of isotopes the arguments descended into numerology rather than verifiable science. Meanwhile new determinations of atomic weights have improved values for, among others, chlorine, nitrogen, and carbon.

Silane and disilane have been obtained as pure compounds, and various chlorosilanes probably containing chains of four and six silicon atoms have been characterized. Raschig has isolated chloramine for the first time, and the dangerous nitrogen trichloride has also been prepared in pure form. A new electrolytic ozonizer produces as much as 23% of ozone in oxygen. The disputed existence of sulfur dichloride has now been confirmed.

In the next essay I look at other areas of chemistry from the perspective of 1909.

Part II:

In continuing to review some significant developments in chemistry as reported in "Annual Reports of the Progress of Chemistry for 1909", published by The Chemical Society in 1910 I turn my attention first to the section on organic chemistry written by Cecil H. Desch and Arthur Lapworth. The latter was a significant pioneer in physical organic chemistry. To put the period in perspective (recall that Bohr's theory of the hydrogen atom is still in the future) let me quote: "The chemical importance of certain physical properties, notably colour and fluorescence, in their relation to structure, has been dealt with in several previous Annual Reports ….we are still far from possessing a complete theory of the phenomena. …The formulation of ideas of structure in terms of the electron theory has so far made little progress in organic chemistry, the conception being still too indefinite for immediate application to so complex a problem."

A later paragraph goes on to say: "The influence of unsaturated or double linkings on the properties of a compound … and the nature of so-called "partial valencies" are questions which recur..." We tend to think of Alfred Werner in connection with his insightful investigations into coordination compounds, but he came to that area via chemical and stereochemical studies of oximes with Hantzsch, and the 1909 Report goes into considerable detail on Werner's ideas on how "elements of decidedly electropositive or negative character" will exert their polar character on reactions of unsaturated compounds containing them in contrast to the relatively non-polar carbon and hydrogen.

Perhaps reflecting Lapworth's interests there is an extended section on "Mechanism of Chemical Change" of organic systems, including interpretation of the effects of acid catalysts in reactions of carbonyl compounds; kinetic studies of the rate of formation of urea from ammonium ions and cyanate ions (Woehler's famous synthesis); the Walden inversion; and isomeric changes such as the Hofmann and Beckmann reactions. The new catalytic reactions of Sabatier and Senderens include reductions with hydrogen over metal catalysts; and hydration, dehydration, oxidation, and elimination of hydrogen halide – versatile systems indeed. E. Fischer's syntheses of polypeptides and of amino-acids are reported.

A section on stereochemistry by H. O. Jones features prominently the first resolutions of organic compounds that have "enantiomorphism of the molecule without being assignable to a single asymmetric atom…" Perkin, Pope and Wallach resolved 1-methylcyclohexylidene-4-acetic acid and Mills and Miss Bain (!) 4-oximinocyclohexanecarboxylic acid. Each of these molecules is devoid of a plane of symmetry but contains no individual "asymmetric" atom. Optically active compounds with an "asymmetric" silicon atom have been resolved. Pasteur's biochemical method has been used to partially resolve benzaldehydecyanohydrin; emulsin catalyses the

hydrolysis of the d-enantiomer more rapidly than that of the l-enantiomer. In addition a number of amino-acids have been resolved by the action of yeast in the presence of sugar including d-phenylalanine and d-serine. Further examples of optically active nitrogen compounds have been studied including the quite simple methylethylaniline oxide, resolved via its d-bromocamphorsulfonate salt.

I conclude with the report on radioactivity by none other than Frederick Soddy, Rutherford's collaborator, coiner of the term isotope, and Nobel Laureate for chemistry in 1921. The report starts with a metaphorical bang. Alpha radiation has been conclusively proved to be doubly charged helium atoms. The emanation from 140 mg of radium was collected and its emission spectrum confirmed that helium was produced by radium decay. You'll recall that this work is prior to Rutherford's proposal of the nuclear atom, and the next reports foreshadow that work. Two methods: zinc sulfide scintillations; and the Geiger counter announced by Rutherford and Geiger; can count individual alpha particles. The ratio e/m for beta particles has experimentally been determined to decrease as the velocity of the particles (electrons) approaches that of light. The results are in complete accord with the Lorentz equation and this "experimental proof appears also to have important metaphysical [!] consequences in establishing the Lorentz-Einstein principle of relativity." Gamma rays are still, in 1909, regarded as particulate and the contemporary theory, known as the neutral-pair theory, holds that a gamma ray consists of an electrically neutral pair of a negative and a positive electron.` I cannot claim to have read carefully every word of Soddy's review, but I think I am correct in claiming that he never uses the word transmutation in describing radioactive change – an interesting reflection on the disrepute in which this alchemical term was held at that period.

News from National ACS

The American Chemical Society Scholars Program is Accepting Applications for the 2009-2010 Academic Year

Now in its 14th year, the program has supported over 1990 students during their undergraduate studies in the chemical sciences. For more information and to access the on-line application form, go to www.acs.org/scholars, call toll-free 800-227-5558, ext. 6250; e-mail scholars@acs.org; or write to the American Chemical Society Scholars Program, 1155 16th Street, NW, Washington, DC 20036. The deadline is March 1, 2009.

ACS Short Courses in 2009

ACS Short Courses are one- to five-day, in-person seminars designed to help chemical scientists and technicians keep current in today's competitive marketplace. Our 2009 schedule is out – please visit www.acs.org/shortcourses to register and for more information.

Short Course Circuits

The ACS Short Course Circuit offers you the opportunity to take advantage of a wider range of our course offerings in a single location and network with a variety of your colleagues.

February 9 – 13, 2009 | Woodbridge, NJ Circuit
Courses in Analytical Chemistry, Organic Chemistry, Medicinal Chemistry, Laboratory Safety, Chemical Engineering, Management, and Cheminformatics

February 23 – 27, 2009 | San Francisco, CA Circuit
Courses in Analytical Chemistry, Organic Chemistry, Medicinal Chemistry, Biochemistry, Laboratory Safety, Chemical Engineering, Management, Quality Assurance, and Cheminformatics

May 4 – 8, 2009 | Durham, NC Circuit
Courses in Analytical Chemistry, Organic Chemistry, Medicinal Chemistry, Laboratory Safety, Chemical Engineering, Management, Polymer Chemistry, Quality Assurance, and Cheminformatics

May 17 – 22, 2009 | Boston, MA Circuit
Courses in Analytical Chemistry, Organic Chemistry, Medicinal Chemistry, Laboratory Safety, Chemical Engineering, and Biochemistry

November 2009 | La Jolla, CA Circuit

Courses in Analytical Chemistry, Organic Chemistry, Medicinal Chemistry, Laboratory Safety, Management, Cheminformatics, and Quality Assurance

Short Courses at the ACS National Meetings
Going to an ACS National Meeting? Short Courses are held at each ACS National Meeting and offers you the opportunity to take advantage of a wide range of our course offerings before and during the meeting.

March 21 – 26, 2009 | Salt Lake City, UT – ACS Spring National Meeting
Courses in Organic Chemistry, Chemical Engineering, Management, Cheminformatics, Spectroscopy, Polymer Chemistry, Intellectual Property, and Toxicology

August 15-20, 2009 | Washington, DC – ACS Fall National Meeting
Courses in Food Chemistry, Analytical Chemistry, Biochemistry, Organic Chemistry, Medicinal Chemistry, Laboratory Safety, Chemical Engineering, Management, Cheminformatics, Polymer Chemistry, Intellectual Property, Quality Assurance, and Toxicology

Laboratory/Lecture Courses
Get in-class and hands-on experience with Laboratory/Lecture Courses from the ACS.

March 30 – April 3; July 13 – 17; October 5 – 9; November 2009 (tentative) | Chicago, IL
High Performance Liquid Chromatography: Fundamentals, Troubleshooting, and Method Development

April 20 – 24; July 20 – 24, November 9 – 13; December 2009 (tentative) | Chicago, IL
Gas Chromatography: Fundamentals, Troubleshooting, and Method Development

March 15 – 20; August 9 – 14; December 6 – 11 | Virginia Tech, Blacksburg, VA
Polymer Chemistry: Principles and Practice

October 2009 | Virginia Tech, Blacksburg, VA
Fundamentals of Polymers and Interfaces for Adhesives, Composites, and Sustainable Structures

ACS Careers Industry Forum:
Monthly Teleconferences featuring Luminaries in the Chemical Sciences
Join us for the next ACS Careers Industry Forum
Date and Time: Thursday, January 9th, 2009, 2-3 p.m. ET
Speaker: Dr. Thomas H. Lane, President-Elect of ACS, Director, Global Science and Technology Outreach and Senior Research Scientist, Dow Corning Corporation.
Topic: "Mastering the Necessary Skills for the Present and for the Future" Take this personal opportunity to listen to the newly elected President of ACS discussing skills you will need now and in the future to launch your career to new heights. Sign up to participate. For downloads or transcripts of past forums please click on the ACS Careers Industry Forum tab located at the top of the ACS Careers Blog. This is a free service via conference call. We want to hear from you. Please post comments on our blog at http://www.acs.org/careers.

You're Invited to the Presidential Symposium on Leadership!

Join us at the ACS Spring National Meeting, March 23, 2009 for the ACS Presidential Symposium on Leadership: Facing the Challenges of Today and Tomorrow.

The ACS Presidential Symposium will focus on leadership, specifically today's challenges and training practices in industry and academia. You will hear why developing leaders is key to the success of the chemical enterprise. Additionally participants, facilitators and leaders in the Leadership Development System will be recognized for their contributions.

You'll be engaged by personal stories of how developing the necessary skills and taking on leadership roles has impacted their careers and the success of the projects they lead. Be there for the launch of the new Leadership Development System, a comprehensive leadership curriculum designed to provide members with the courses and tools to build and strengthen their leadership capabilities.

Joe Folkman, Ph.D., President and co-founder of Zenger Folkman, a renowned expert in the field of leadership

and measurement will set the stage. John Holman, Director of the National Learning Center, University of York, United Kingdom, Cheryl Martin, Vice President and General Manager, Paints and Coatings Materials, Rohm and Haas, and Omar Asensio, Sr. Product Development Engineer, Avery Dennison Corporation – will inspire with their personal stories and share insights on how leadership is the cornerstone to their success. Tom Lane, 2009 ACS President will launch the Leadership Development System, a initiative 10 years in the making, and discuss how the ACS Leadership Development System is building skills and creating leaders.

Join us at the Spring National Meeting for the ACS Presidential Symposium
Leadership - Facing the Challenges of Today and Tomorrow
March 23, 2009
Symposium: 1:30 p.m. – 5:00 p.m.
Reception 5:00—7:00 p.m.
Visit www.acs.org/leaderdevelopment for more information.

Chemistry in Cancer Research: A Vital Partnership in Cancer Drug Discovery and Development
February 8-11, 2009 – New Orleans, LA

Chemistry plays a critical role in research on cancer diagnosis, prevention, and treatment. ACS and the American Association for Cancer Research (AACR) have organized a second joint conference to provide a forum for research discussions among chemists with cancer research interests.

The conference will encompass research highlights across a span of chemistry-related topics, from the use of chemical tools in cancer target identification and validation, the design of chemical libraries for hit-seeking, strategies for hit-seeking and lead optimization in drug discovery, strategies for drug targeting and delivery, and the use of imaging, proteomics, process chemistry and analytical chemistry in cancer drug development. Each session will include three symposium talks, followed by short presentations from abstracts submitted by young investigators. We anticipate that this conference will energize younger chemical investigators and inform them of the many opportunities to apply the power of chemistry to important problems in cancer research.

To view the conference program and register, please visit the conference website at: www.chemistryincancerresearch.org.

Make Plans NOW to Attend the 2009 ACS National Meetings !

Visit www.acs.org for additional information for the 2009 meetings. Check future editions of Cut and Paste for updated information on future meetings or contact division@acs.org for more information about programming at the meetings.

237th ACS National Meeting—Salt Lake City—March 22-26, 2009
Theme: Nanoscience: Challenges for the Future

The Keynote Address, From Nature and Back Again: Giving New Life to Materials for Energy, will be delivered on Sunday evening by Dr. Angela M. Belcher, Germeshausen Professor of Materials Science and Engineering and Biological Engineering, Massachusetts Institute of Technology.

A Plenary Session will be held on Monday afternoon from 4:00 – 7:00 PM. Professors Vicki Colvin (Rice University, Departments of Chemistry and Biomolecular Engineering), Jim Hutchison (University of Oregon, Materials Science Institute), George Whitesides (Harvard University, Department of Chemistry & Chemical Biology); and Grant Willson (University of Texas, Austin, Department of Chemical Engineering) have accepted invitations to present in the Plenary Session.

Seven themed symposia are being organized by leading researchers in nanoscience and will be primarily sponsored by one of the ACS technical divisions.

They are: Frontiers in Imaging Biological Nanostructures; Nano Meets Neuro: Novel Challenges for Nanoscience in Probing Brain Chemistry; Integrating Nanoscience into the College and High

School Classroom; Molecular Rotors and Motors; Frontier Applications of Nanotechnology in Engineering Extracellular Matrices; Chemical Methods of Nanofabrication; and Genetically Designed Molecular Materials.

238th ACS National Meeting—Washington, DC—August 16-20, 2009
Theme: Chemistry and Global Security: Challenges and Opportunities

Symposia will feature presentations that include a focus on the Chemistry of CO2 and Climate Change; Chemical and Biological Terrorism Defense

239th ACS National Meeting—San Francisco—March 21-25, 2010
Theme: Green Chemistry for a Sustainable World

240th ACS National Meeting—Boston—August 22-26, 2010
Theme: Chemistry for Preventing and Fighting Disease

Important News for International Travelers. New Automated System Implemented for the Visa Waiver Program (VWP)

The VWP enables citizens of certain countries to travel to the United States for tourism or business for 90 days or less without obtaining a visa. The Department of Homeland Security has implemented a new Electronic System for Travel Authorization (ESTA) to screen passengers traveling to the U.S. under the Visa Waiver Program. The Department of Homeland Security began accepting voluntary ESTA applications on August 1, 2008 and it is anticipated that ESTA will become mandatory for WVP travelers on January 12, 2009. Also, on October 17, President Bush announced the imminent expansion of the Visa Waiver Program to include the Czech Republic, Estonia, Latvia, Lithuania, Hungary, the Republic of Korea and the Slovak Republic. However, the United States must still complete certain internal steps required by statute before the expansion can be completed. It is expected that Nationals of these countries will become eligible for the VWP in mid- November provided they possess a biometric passport and register on-line through the Electronic System for Travel Authorization (ESTA). In the mean time, and until the expansion is completed, Nationals of the mentioned countries must continue to require visas to travel to the United States. Please visit http://www.cbp.gov/xp/cgov/travel/id_visa/esta/ or http://travel.state.gov/visa/temp/without/without_1990.html to learn more.

ACS-IREU Exchange Program

The American Chemical Society (ACS), in collaboration with the Deutscher Akademischer Austausch Dienst (DAAD), the German Chemical Society (GDCh) and the European Chemistry Thematic Network (ECTN), successfully completed the 2008 International Research Experiences for Undergraduates (IREU) exchange program, sponsored by the National Science Foundation (NSF). Fifteen U.S. students conducted chemistry related research at German universities and research institutes under the DAAD Research Internships in Science and Engineering (RISE) infrastructure. Three additional U.S. students were hosted (one each) by the University of Strathclyde in Scotland, the University of Perugia in Italy, and CPE-Lyon in France. Simultaneously, a total of eighteen European students funded by the DAAD and the ECTN, conducted summer research at U.S. Research Experiences for Undergraduates (REU) sites. The students spent 8-10 weeks collaborating on research projects with their faculty and graduate student mentors. Most participants presented their research results at the Fall ACS National Meeting in Philadelphia. During a reception hosted by the ACS International Activities Committee, students expressed their gratitude and remarked that this experience had been a once in a lifetime opportunity to sharpen their research skills in a cross-cultural setting and develop a global scientific perspective.

The program will be offered again in the summer of 2009. Applications will be available from mid November, 2008 to January 31, 2009. Applicants are expected to be sophomores or juniors with some prior research experience. All outstanding students including members of underrepresented minorities are strongly encouraged to apply. More information can be found at the ACS-IREU website: www.acs.org/ireu.