

Energy and Sustainability Boost Minneapolis Annual Meeting

An expanded International Congress on Energy and the First World Congress on Sustainable Engineering were just two of the major events that attracted and engaged large audiences, and contributed to the success of AIChE's 2011 Annual Meeting, held Oct. 16–21 in Minneapolis, MN.

The meeting — which also served as a venue for AIChE's celebration of the International Year of Chemistry (IYC-2011) — was attended by more than 5,000 professionals from industry, academia, and governmental organizations worldwide, making it the third-largest AIChE meeting to date. Nearly 800 technical sessions garnered rave reviews from attendees, and the diverse array of perspectives on the chemical industry and its future generated lively discussion. Meeting attendees also found opportunities for learning and networking at a variety of exhibits, poster sessions, lectures, and social gatherings.



▲ Young professionals gathered at a variety of networking events and special sessions tailored to their career interests.

More than 1,150 chemical engineering undergraduates participated in the Annual Student Conference (covered in the Nov. issue of *CEP*, p. 56), which featured professional development workshops, scholarly competitions, and a major poster session. Another highlight of the Student Conference was the Annual Chem-E-Car Competition, won by the student team from the Univ. of Puerto Rico.

Kicking off the Annual Meeting on

Monday morning, Oct. 17, an International Year of Chemistry Plenary session featured a talk by Thomas W. Peterson of the National Science Foundation. Peterson emphasized the importance of basic research investment to economic growth, and the need for the U.S. to educate and encourage a new generation of engineers and entrepreneurs to succeed on the global business and technology stage.



▲ The Chemical Science Innovation Symposium was one of the many Annual Meeting sessions that attracted large and attentive audiences.

Two subsequent special sessions, “Chemical Science Innovation — The Future of the U.S. Chemical Enterprise,” expanded on this topic. Part of the International Congress on Energy, and co-sponsored by the Council for Chemical Research, these sessions offered insight into how chemical science innovation is fostered; the role of the U.S. in global initiatives; challenges in materials, chemicals, and energy sustainability; and the workforce of the future, among other topics. (See the



▲ Above left: At the the Honors Ceremony, AIChE President Maria Burka presented the Board of Directors' Van Antwerpen Award to Warren Seider of the Univ. of Pennsylvania. Seider was recognized for his dedication and service to AIChE through education, accreditation, publications, conference programming, and Institute leadership. Above right: Rakesh Agrawal of Purdue Univ. received the Board of Directors' Founders Award for his contributions to cryogenics, separation, and energy technologies.

Nov. 2011 issue of *CEP*, p. 57.)

Reflecting on the energy and sustainability congresses, and on the meeting overall, Joe Cramer, AIChE's director emeritus of technical programming, said, “The program really shows how energy, water use, and sustainability are far from independent subjects, and must be approached with a full cognizance of their interrelationship.” He added, “Next year's Annual Meeting in Pittsburgh should build upon this complex relationship.”

The Water Technology for Developed and Developing Countries Topical Conference debuted in Minneapolis. Other topical conferences covered nanomaterials for energy applications; sensors; systems biology; and the environmental aspects, applications, and implications of nanomaterials and nanotechnology. This year's Quality by Design (QbD) Topical Conference, which focused on comprehensive QbD in pharmaceutical development and manufacture, represented a new collaboration between AIChE's Food, Pharmaceutical, and Bioengineering Div., the U.S. Food and Drug Administration (FDA), and the Manufacturing Science and Engineering Section of the American Association of Pharmaceutical Scientists (AAPS). The Annual Meeting of the American Electrophoresis Society rounded out the lineup of topical conferences.





▲ Michael Deem of Rice Univ. presented the Professional Progress Award Lecture.

Learning from the discipline's best

Interspersed among the hundreds of spectrum-spanning technical sessions, other not-to-be-missed Annual Meeting events included keynote lectures, where some of chemical engineering's most prominent scientists and leaders discussed new developments in the field.

The Professional Progress Award Lecture was presented on Tuesday, Oct. 18, by Michael Deem, the John W. Cox Professor of Bioengineering and a professor of physics and astronomy at Rice Univ. In his talk — “ $F = ma$ of Biology?” — Deem described his efforts to find fundamental mathematical laws of biology, and their implications for engineering design in areas as diverse as ecological food networks and the immune system.

Also on Tuesday, AIChE's Society for Biological Engineering (SBE) sponsored the James E. Bailey Award Lecture. Named in honor of the late bioengineering pioneer and educator, the Bailey Lecture was presented by Chaitan Khosla, chair and professor in the departments of chemistry, chemical engineering, and biochemistry at Stanford Univ. Khosla's lecture, entitled “Natural Products and the Chemical Engineer,” drew an attentive crowd

► Chaitan Khosla of Stanford Univ. delivered the Society for Biological Engineering's (SBE) James E. Bailey Award Lecture.



that heard him discuss the potential — and engineering challenges — of natural products in applications ranging from new drugs to coatings to consumer electronics.

William J. Koros, the Roberto C. Goizueta Chair and Georgia Research Alliance Eminent Scholar in Membranes at the Georgia Institute of Technology, presented the 63rd Institute Lecture on Wednesday, Oct. 19. In a talk entitled “Beyond Water: Expanding the Spectrum of Efficient Large Scale Separations,”



▲ William Koros of Georgia Tech presented the 63rd Institute Lecture.

Koros described how innovation in membrane materials, structures, modules, and system design have fundamentally changed the water purification industry over the past four decades, and how recent developments have spread beyond water to gaseous species that are more difficult to separate.

On Thursday, Oct. 20, Xerox Corp. received AIChE's Corporate Innovation Award. Hadi Mahabadi, Vice President and Director at Xerox Research Centre of Canada, accepted the award and delivered a lecture on the development and commercialization of his company's emulsion aggregation toner technology.

The Corporate Innovation honor was one of many awards presented at



▲ The Corporate Innovation Award Lecture was presented by Hadi Mahabadi of Xerox Research Centre of Canada.

the meeting by AIChE and its divisions and forums. The most prestigious of these awards — the Institute and Board of Directors' Awards — were presented at the Honors Ceremony on Oct. 16 (and announced in the Oct. issue of *CEP*, p. 50). These honors included a growing roster of awards that recognize chemical engineering achievements and contributions to the industrial areas of the practice. (See p. 51 for a related article.)

CEP



▲ At left, Michael Domach (Carnegie Mellon Univ.), editor of *Biotechnology Progress*, presents the journal's inaugural Biotechnology Progress Award to Gregory Stephanopoulos (MIT). The award, which recognizes excellence in publications in bioengineering, was presented prior to the Society for Biological Engineering's Bailey Award Lecture.

AIChE Says “Thank You”

AIChE extends its thanks to the Annual Meeting's corporate sponsors: **Chevron** (Gold Sponsor); **Process Systems Enterprise (PSE)** (plasma screen displays); **American Elements** and **Xerox** (Silver Sponsors); and **Air Products**, **Chemstations**, **Eastman**, and **ProSim** (Bronze Sponsors).

The meeting programmers also tip their proverbial caps to the Meeting Program Co-Chairs — **Alon McCormick** (Univ. of Minnesota, Twin Cities) and **Jim Hill** (Iowa State Univ.) — whose dedication, knowledge and hospitality were invaluable in pre-meeting planning.



Institute News

President's Corner

A Year of Change and Growth

At the Annual Business Meeting in October, I started my recap of 2011 with Charles Dickens' famous quote from *A Tale of Two Cities*: "It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness . . ." This has, in fact, been a year of contrasts, some very promising, some disappointing, but I posit that AIChE is moving in the right direction and has a good future.

The world economy is in turmoil, and we face problems related to energy, the environment, water, food, health care, and terrorism, among many others. At the same time, chemical engineers are in a prime position to address some of these grand challenges — and it is just these important challenges that make being a chemical engineer today so rewarding.

Because it is not easy to accomplish much in a one-year term of office, the job of AIChE President actually begins more than a year earlier, with the phone call reporting election as President-Elect. That was certainly my experience in September 2009, when I thought, "What am I going to do for AIChE in 2011 that will make a difference?" Being a planner, I made a list: we live in a global society, we are facing an energy crisis, we are facing a crisis with the world running out of both potable and nonpotable water, we need to focus more on educating our members from the onset about safety, and we need to do a better public relations job of highlighting what chemical engineers are doing to address some of society's most pressing problems.

Since 2005, AIChE's International Committee has been working diligently to establish new communication avenues with colleagues across the globe. We have, in fact, made great strides — we now have five interna-

tional local sections and 12 international student chapters, and CEP has started publishing a series of articles about chemical engineering and the chemical industries around the world.

We formed a Blue Ribbon Committee to assess whether promoting uniform accreditation, and possibly some form of individual credentialing, could be an added value to attract new members worldwide. The group, led by Tom Edgar, concluded that AIChE should work with local societies abroad in the accreditation area, and this is now being actively pursued. New individual credentialing activities are being pursued in parallel with the Institute for Sustainability's (IfS) activities in developing a program to credential AIChE members in sustainability; you will hear more about this soon.

I am also pleased to report that this month, ACS President Nancy Jackson and I will launch a joint project on sustainability metrics for energy systems. This multidisciplinary effort is intended to add clarity to the knowledge base and enhance the professional societies' roles and impact on the evaluation of energy systems.

The Blue Ribbon Committee on Education Services (BREDS), led by Scott Fogler, John Chen, and Jeff Sirola, is developing recommendations for tailoring our educational activities to the technical information needs and delivery preferences of our members. E-learning, which was launched in June 2011, has surpassed our expectations — with 150 people registering for eight courses, and 500 participating in the biofuels safety course offered free to members by the Center for Chemical Process Safety (CCPS). Our webinars — on topics ranging from report writing to the disaster at the Fukushima Daiichi nuclear plant — remain popular, with attendance

ranging from 50 to 900.

AIChE continues to demonstrate leadership in process safety. CCPS is growing and expanding its influence globally. Corporate membership is up by 16%, to 144 members; much of this growth came from our new Asia-Pacific office in Mumbai. The year saw increased emphasis on process safety education, with AIChE leading the change in ABET accreditation of BS chemical engineering programs that requires graduates to have knowledge of how to control process safety hazards. We also enjoyed great success with the roll-out of the CCPS Process Safety Boot Camp and several new E-learning courses.

The International Year of Chemistry (IYC) has provided a platform for us to work with our chemist colleagues locally, nationally, and internationally on such critical issues as clean air, safe water, dependable medicines, advanced materials, and sustainable energy. We wrapped up the year with the AIChE IYC Gala, which raised more than \$300,000 for the Institute's energy and water initiatives.

So yes, it was both a promising and a disappointing year. We continued to lose members, but at the same time we ventured outside the box to explore new activities. We are reassessing our programs to ascertain how we can best serve future generations of chemical engineers. This organization, founded in 1908 by men with great foresight about this emerging profession, needs to continually evolve and adapt.

I enjoyed working with the dedicated AIChE staff and thank them for the great support they provided me in 2011. I also thank you for the opportunity to serve you for the past year. And, it really has been a lot of fun.

— Maria K. Burka, 2011 President

New "Progress" Award Rounds Out Industry Award Portfolio

In 2012, for the first time, AIChE will offer its Industrial Progress Award. The Industrial Progress Award recognizes significant contributions by individuals working in industries served by chemical engineers who have not reached their 40th birthday on the first day of the year in which the award is given.

This new award joins a list of others recognizing excellence in industrial practice that AIChE's Board of Directors has established and expanded since 2008, AIChE's centennial year. The Sustainable Energy Award was first presented in 2009. In 2010, the Industrial Research and Development Award, the Industry Leadership Award, the Process Operations Award, and the Engineering and Construction Award were given for the first time. Coupled with the earlier Lawrence B. Evans Award in Chemical Engineering Practice and the Corporate Innovation Award, this expanded portfolio highlights and rewards the work of chemical engineers who pursue careers in companies across the chemical enterprise, including energy, pharmaceutical and biotechnology firms, as well as chemical, engineering and construction, consulting, and process equipment suppliers.

What kinds of efforts and activities garner this recognition? To stimulate interest and participation in the industrial awards program, Neil Yeoman, a member of AIChE's Board of Directors who championed the creation of the new industrial awards, recommends, as a starting point, reviewing the records of those who've previously been chosen for these honors, and then looking for things that seem to be beyond the ordinary.

The 2011 Industrial Research and Development Award went to Eastman Chemical Co. for the development and commercialization of the East-

man Tritan copolyester. The Eastman team was composed of Chris Killian, Emmett Crawford, David Porter, Tony Messina, Ted Germroth, Dante Rustrom, Lucian Boldea, Burt Capel, Greg Nelson, and Mark Costa. In 2010, Daniel Arriola, Edmund Carnahan, Phillip Hustad, Roger Kuhlman, and Timothy Wenzel of the Dow Chemical Co. took the award for discovering a new mechanism for polymerization, and using it to create unique polymers in existing reactors.

This year, Ganesh Kailasam of Dow received the Industrial Leadership Award. This followed the 2010 recognition of S. Shariq Yosufzai of Chevron Corp. with the inaugural presentation of this award.

In 2010, the first Engineering and Construction Award went to a team from Marathon Petroleum Co. for its Garyville Major Expansion Project, an effort spearheaded by Nelson Almond, Jim Shoriak, and Rich Beddell. Also that year, Melanie Miller and Jean Tom of Bristol-Myers Squibb garnered the first Process Operations Award for implementation of recipe control in pharmaceutical process development.

The 2010 Sustainable Energy Award went to Andrea Bozzano, Donald Eizenga, Tim Kalnes, Joseph

Kocal, Giovanni Faraci, Charles Luebke, Michael McCall, and David Myers of the UOP-ENI Biologically Based Fuels Team for its work producing bio-based jet fuel and diesel using the existing fuels infrastructure. The inaugural award in 2009 recognized the creation and commercialization of Accellerase, an enzyme for hydrolyzing biomass, by Genencor, a division of Danisco, and the Accellerase project team of Aaron Kelly, Colin Mitchinson, Suzanne Lantz, Mike Arbige, and Philippe Lavielle.

In addition to those new industrial awards, presentation of the 2011 and 2010 Lawrence B. Evans Award in Chemical Engineering Practice went to Paul McKenzie of Johnson & Johnson and Teh C. Ho of ExxonMobil, respectively. In 2011, the Corporate Innovation Lecture was delivered by Hadi Mahabadi of the Xerox Research Centre of Canada, and in 2010, Ann Lee of Genentech delivered the award address.

The Corporate Innovation Award is a company award; the Sustainable Energy Award can be won by an individual, a small team, or an entire company; and the rest of these awards are specifically for individuals. The Law-

Article continues on pg. 53



▲ Engineering and business leaders from Eastman Chemical Co. attended AIChE's Honors Ceremony, Oct. 16, 2011, in Minneapolis, MN — where they accepted the Institute's Industrial Research and Development Award on behalf of the team that developed the Eastman Tritan copolyester.

Photo by Greg Helgeson

Rosenthal Responds to Questions About Relocation

As previously reported, AIChE's lease for its office in New York is expiring in 2013. Earlier this year, the Board of Directors commissioned a study by Quatt Associates, an independent consulting firm, to examine multiple locations as well as the option of remaining in the Greater New York area. The study found that the costs of a move from the New York area (with attendant severance, retention, recruitment, and staff transition expenses) would be prohibitively high and would not be recouped any sooner than 2022 depending on location.

Based on these findings, the Board voted to seek new AIChE offices in the Greater New York area when the current lease expires, and invited members to submit questions and comments.

Recently, CEP sat down with David A. Rosenthal, AIChE's 2012 president, to review some of those questions and to hear his responses. Additionally, Rosenthal and other officers conducted two web-based briefings for members on the issue on December 5th and 6th. Further details of the study and other relocation-related matters can also be found at www.aiche.org/move.aspx.

CEP: A popular question related to how much AIChE will have to spend on rent after the move.

Rosenthal: We haven't settled on a particular space. However, we expect that the cost per square foot will be

at least 20% lower than our current rent.

CEP: While several comments were supportive of the Board's reasoning and decision, some members wondered about the need for — and the scope of — the retention and severance costs the Board cited. Could you provide some insight?

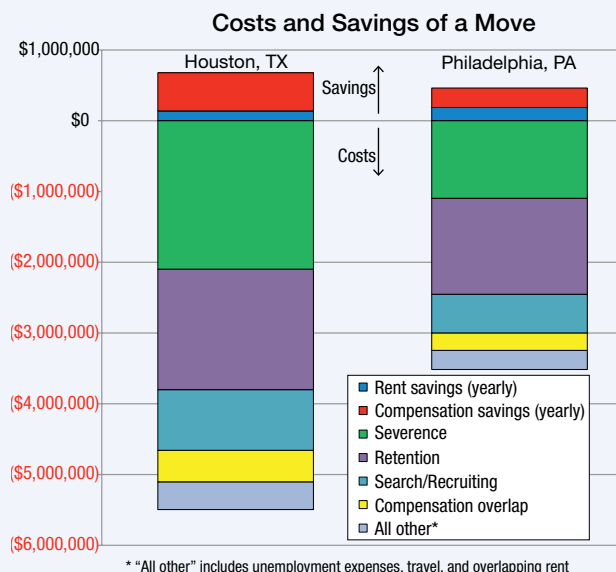
Rosenthal: Like many organizations, AIChE has a severance policy that has been in place for many years. Of course, the government requires that we pay unemployment costs, as well. The issue of retention expenses arises because, if we were to make a distant move, we would want key staff to stay with AIChE during the transition until their replacements are hired. The accompanying graph (Figure 1) may shed some light on the scale and scope of these expenses.

CEP: What other locations did you consider?

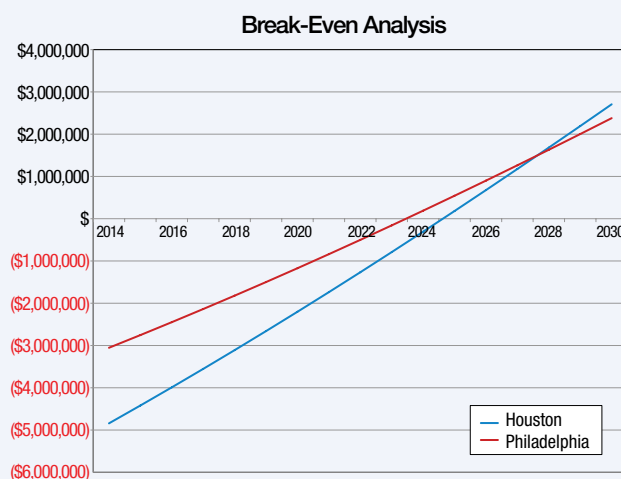
Rosenthal: We considered many locations over the last few years, including Washington, Chicago, Boston, and San Francisco, along with Houston and Philadelphia. The first four cities were excluded early on since rents were as high, if not higher, than New York. Our Quatt Associates study focused on Houston, Philadelphia and Greater New York.

CEP: Who picked Quatt Associates for the study, and why?

Rosenthal: The Board evaluated the proposals of several companies and chose Quatt, a Washington, DC-



▲ Figure 1. The projected costs and savings resulting from a relocation of AIChE's headquarters are compared in this graph. In either case, costs over the next ten-plus years were projected to exceed the likely savings.



▲ Figure 2. A break-even analysis compares the relative time to recoup expenses of a relocation to Houston or Philadelphia, the two most-closely studied options for a relocation of AIChE's headquarters. It was determined that the cost of a relocation would be financially untenable.

based firm, to perform the analysis because of its comprehensive approach and experience with associations.

CEP: What does "Greater New York area" mean?

Rosenthal: The Greater New York area means Manhattan and nearby, transportation-accessible areas, including the other boroughs and parts of New Jersey.

CEP: Figure 2 illustrates the payback period for the Houston and Philadelphia options. Why is ten years considered too long a payback period?

Rosenthal: In business, the rule of thumb is that a reasonable payback period is less than four years for a tactical investment and less than seven years for something more strategic. Also, the Board considered that our current portfolio of investments includes funds that have a payback of one or two years, and we would forego those gains if we had a major relocation. While AIChE's finances are stable, the Board believes that they would need to be even stronger to support an expensive move. The Board also gave continuity and quality of member services significant consideration.

CEP: Did AIChE consider buying a building in New York or elsewhere?

Rosenthal: Unfortunately, we don't have the financial resources to buy a building at this time. The down-payment is prohibitive.

CEP: Did the Board ask a company to donate space?

Rosenthal: We asked, but were unable to find a chemical or pharmaceutical company that would donate the space.

CEP: Only one member asked, but why wasn't this issue put to a vote of the membership?

Rosenthal: AIChE's Constitution says the Board of Directors, elected by the members, "shall have supervision and care of all property of the Institute and shall transact all business of the Institute for it and on its behalf." The Constitution allows the Board to delegate authority as it deems desirable, but does not provide for referenda or elections for anything other than officers, directors and amendments to the Constitution.

CEP: Thank you. Any final words?

Rosenthal: It is my expressed intention that the relocation decision be financially sound, in the best interests of AIChE, transparent, and effectively communicated to our members and other stakeholders. I invite our members' feedback at NYrelocation@aiiche.org and to continually monitor our webpage for continual updates.

Industry Awards (cont'd)

rence B. Evans Award in Chemical Engineering Practice and the Industrial Progress Award can each only be won by a single individual, while the others — the Industrial R&D Award, the E&C Award, the Process Operations Award, and the Industrial Leadership Award — can be won by either an individual or a small team. If won by an individual, it would typically be for a long record of accomplishments. If won by a small team, it would typically be for a specific successful project.

Nomination deadlines for 2012 awards

Because the Industrial Progress Award is new, its deadline for nominations — for 2012 only — is May 1. The deadline for nominations for the Lawrence B. Evans Practice Award, the Sustainable Energy Award, the Industrial leadership Award, and the Corporate Innovation Award for 2012 is the usual Feb. 15. Because of some confusion regarding eligibility, the deadline for the rest of these awards — for 2012 only — is Apr. 15.

Additional information and nomination forms are available on AIChE website at www.aiiche.org/Awards.

DIPPR PUBLISHES REVISED PHYSICAL PROPERTIES DATABASE

A IChE's Design Institute for Physical Properties Data (DIPPR) — one of the Institute's Industry Technology Alliances — has released a revised and expanded version of its database of physical properties standards, known as "Project 801."

DIPPR's Project 801 Database is an extensive collection of rigorously evaluated pure component data on industrially important chemical compounds. The latest version of the database contains thermophysical property data for 2,030 compounds — with 49 values stated for each compound. It presents raw data and expert-recommended values for 34 constant properties, as well as literature data and expert-recommended equation coefficients for 15 temperature-dependent properties. Users will also find references, notes, and quality codes for all data points.

The database is available in a variety of package options, including a package that includes DIADDEM software, which interfaces with the DIPPR 801 Database, enhancing the user's ability to calculate, plot, and compare the thermophysical properties in the database.

For information on how to obtain the Project 801 Database, visit: www.aiiche.org/dippr/products/801.aspx.

Established in 1978, DIPPR has become one of the leading cooperative physical property data efforts in the United States. Information about DIPPR, its products, and membership benefits is available at: www.aiiche.org/dippr.

2012 AIChE Election Results

The Tellers have examined the votes for candidates for Officers and Directors of the Institute, and have declared the following to be the winners of the election. The newly elected AIChE officers were formally announced on Oct. 17, 2011, at the annual business meeting in Minneapolis, MN.

President (by automatic succession)



David A. Rosenthal
Jacobs Engineering
Group

President-Elect



Phillip R. Westmoreland
North Carolina State Univ.

Directors (2012–2014)



John Cirucci
Air Products



John G. Ekerdt
Univ. of Texas at Austin



Jack Hipple
Innovation-TRIZ



Rosemary D. Wesson
National Science Foundation

In Memoriam

Edwin G. Fleck, 77, Newark, DE
Harold A. Haley, 91, Media, PA
Jay S. Master, 65, Sugar Land, TX
Herbert C. McKee, 91, Houston, TX
William L. Messmore, 79, McAllen, TX
John J. O'Neill, 92, Pinehurst, NC
Austin C. Olson, 93, Menlo Park, CA
John W. Pike, 86, New Rochelle, NY

AIChE Calendar



Conferences

For information and registration details, visit www.aiche.org/conferences or call Customer Service at 1-800-242-4363 or 1-203-702-7660 (outside the U.S.)

FEBRUARY
7–9, 2012

Carbon Management Technology Conference
Caribe Royal Hotel and Convention Center • Orlando, FL

FEBRUARY
19–22, 2012

Sustainability in (Bio)Pharmaceuticals
Sheraton Old San Juan • San Juan, PR

APRIL
1–5, 2012

2012 AIChE Spring Meeting & 8th Global Congress on Process Safety
Houston Hilton and George R. Brown Convention Center • Houston, TX

APRIL
3–4, 2012

Institute for Sustainability's Sustainable Packaging Symposium 2012: Advancing the Greener Supply Chain
Houston Hilton and George R. Brown Convention Center • Houston, TX

APRIL 29 – MAY 2, 2012

Society for Biological Engineering's 3rd International Conference on Stem Cell Engineering
Sheraton Seattle • Seattle, WA

APRIL 30 – MAY 3, 2012

2012 Offshore Technology Conference
Reliant Center • Houston, TX



Webinars

Register and view live and archived webinars at <http://www.aiche.org/webinars/>

DEC. 7, 2011
2:00–3:00 PM ET

The Science of Classifying Solids: Screening and Air Classification
Presented by Dr. Karl V. Jacob

DEC. 14, 2011
2:00–3:00 PM ET

Chemical Reactions: Control the Intended, Avoid the Unintended
Presented by Robert W. Johnson

JAN. 4, 2012
2:00–3:00 PM ET

AIChE's Leadership Webinars: Chemical Engineering Essentials from Academic Authors - Session Ten: Chemical Reaction Engineering Part Two: Non-Isothermal Design and Analysis
Presented by Dr. H. Scott Fogler

JAN. 11, 2012
2:00–3:00 PM ET

Maintenance and Reliability for Chemical Engineers, Part Three: The Tools of Reliability
Presented by David A. Rosenthal, P.E.