

The Newsletter of
AIChE's Fuels and
Petrochemicals Division

Flashpoint

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Fall 2011

The Chair's Corner

by Colin Bowen

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Dear Colleagues,

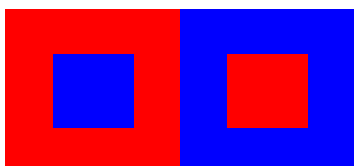
I trust you all enjoyed your summer, despite the heat in Texas. Now that I am retired, I visit many places other than Houston, most of which have cooler and better weather in the summer. The weather in Houston at the next AIChE Spring Meeting in April should be very nice.

The Fuels & Petrochemicals Division (F&PD) will again be involved at the next AIChE Annual Meeting in Minneapolis, similar to the one in Salt Lake City, last year in November.

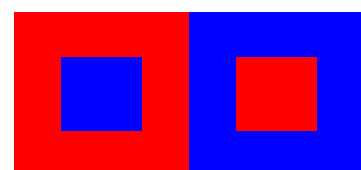
I will be attending along with several other F&PD members for the Executive Committee Meeting on Sunday afternoon prior to the Annual Meeting. F&PD will also host and co-sponsor many sessions throughout the week.

In addition, F&PD plans to participate at the Annual Student Conference (ASC) on Saturday afternoon. At the ASC, seasoned F&PD members will share their experiences and present valuable information to students seeking guidance in their search for employment in the energy sector.

For those younger professionals interested in becoming more involved with the F&PD, please see us on Saturday during the ASC or on Sunday at the executive committee meeting.



F&PD is now on the professional networking website, LinkedIn. To connect with other professionals and expand your professional network, please connect with us on LinkedIn at <http://www.linkedin.com/in/aichefpd>.



Upcoming Events

October 6-7, 2011



3rd AIChE Regional Process Technology Conference —
Moody Gardens Hotel and Convention Center, Galveston, TX

October 16-21, 2011



AIChE Annual Meeting & International Congress on Energy —
Minneapolis Convention Center, Minneapolis, MN

April 1-5, 2012



AIChE Spring Meeting & 8th Global Congress on Process Safety
Hilton-Americas Houston and George Brown Convention Center,
Houston, TX

Fuels and Petrochemicals Programming Update

By Belma Demirel



Annual Meeting, October 16-21, 2011, Minneapolis Convention Center, Minneapolis, MN

The main focus of the F&PD at this year's Annual meeting is to cover recent advances in alternative fuels and new energy technologies, energy storage, and refining and solid-liquid separation in the petroleum industry, in addition to advances in oil drilling technology under extreme conditions. Non-technical sessions will have many papers and panel discussions on developing leadership skills. Click on the following link for more detailed information, <http://aiche.confex.com/aiche/2011/webprogram/16.html>.

Spring Meeting, April 1-5, 2012, Hilton-Americas and George Brown Convention Center, Houston, TX

Call for Papers to present at the AIChE 2012 Spring Meeting is open until October 14, 2011

We plan on having a very rich program covering the areas in Gas Utilization, Refinery Processing, Alternative Fuels and New technologies, and Petrochemicals and Derivatives. Sessions offered under each topic include but are not limited to are Hydrogen Management; Coal, Biomass and Natural Gas to Liquids; LNG; Gasification technologies and Gas Clean-up; Production of Fuels and Chemicals from Fisher-Tropsch Hydrocarbons; Syngas to Ammonia; CO₂ Conversion; Greenhouse Gases and Sequestration; Aromatics and Petrochemicals Processing; Process Control and Optimization; Advances in Hydroprocessing; Advances in Design and Operations of Crude, Vacuum and Delayed Coking Units; Advances in Separations; Advances in Sulfur Recovery; Energy Optimization; and Biofuels. The Spring Meeting has had more industrial focus and we anticipate a larger audience from Houston area. This is a great opportunity to learn more about industries and their challenges. FPD will open with a welcome session on Monday, April 2nd with a keynote speaker, Michael J. Dolan, SVP, Exxon Mobil Corporation. In addition, there will be Gas Utilization luncheon and F&PD Dinner.

A complete list of all sessions and topics can be found on-line at <http://aiche.confex.com/aiche/s12/webprogrampreliminary/index.html>. Below are the links for specifically FPD tracks:

[Topical 4: 24th Ethylene Producers' Conference](#)

[Topical 7: 15th Topical on Refinery Processing](#)

Annual Student Conference by Tim Olsen

The Annual Student Conference is four days of career information, social events, competitions, and fun. Student engineers from more than 100 schools will celebrate the Chemical Engineering profession, along with young professional members, AIChE leaders, and industry professionals from numerous engineering specialties.

The Fuels & Petrochemicals Division will participate directly with the Annual Student Conference on Saturday, October 15th. Several F&PD members will be at the meeting to present, "Interviewing in the Energy Sector: Careers in Traditional and Alternative Fuels", and participate on a discussion panel about post-graduate education.

[Topical 6: 12th Topical Conference on Gas Utilization](#)

[Group 16: Advances in Aromatics and Petrochem Processing](#)

F&PD is looking for sponsors for events at the Spring and Fall meeting. Events can include coffee breaks, lunches, student receptions, awards and YPAB Events. If interested send email to: communications@aiche-fpd.org

2011 Regional Process Technology Conference in Galveston *by Alan Rossiter*

Hundreds of chemical engineers and other professionals in the chemical processing and petrochemical industries are expected to convene at the Moody Gardens Hotel in Galveston, TX, Oct. 6-7, when AIChE and its South Texas Local Section present the Institute's 3rd Regional Process Technology Conference. The conference will build on the success of the 2009 and 2010 regional conferences, which each attracted 400 attendees from the Texas Gulf Coast region and beyond.

The conference location on Galveston Bay is convenient for engineers and technologists in the region. Many companies have cut travel budgets and professional development funding due to the current state of the economy. Against this backdrop, one goal of the conference organizers is to provide an easily accessible, high-quality technical program for chemical engineers in the Greater Houston area and across the Gulf States — home to the largest concentration of petroleum refining, chemical processing, engineering and technology firms in the U.S.



This year's keynote speaker is **John Lienhard, Professor Emeritus of Mechanical Engineering and History at the University of Houston and the author and voice of KUHF's 'The Engines of our Ingenuity'**. Dr Lienhard will talk on "The Art of Invention: Slipping free of our mind-made manacles". The technical program will cover an array of topics relevant to industries in the area, with sessions devoted to:

- **Developments in the field of process safety.** This is an issue of utmost importance to the chemical industry. The session will cover practical applications of process safety, including evaluating risk and investigating accidents. The speakers include Sam Mannan, University Professor and Director of the Process Safety Center at Texas A & M, and John Bresland, Chemical Safety and Hazard Investigation Board Member, both leading figures in the PSM field.

- **Opportunities and challenges in the refining industry.** The conference will have two sessions on this important subject, addressing the current status and future trends in refining technology advancements. Topics include catalysis and processing schemes to handle heavy and sour crudes, automation, engineering tools and estimation methods, renewable diesel and heat integration.

- **Energy efficiency.** In this session, industry experts will discuss a wide range of practical ways to lower energy consumption while maintaining or increasing the production of valuable products. Topics include heat exchanger cleaning, combined heat and power, energy savings for centrifugal compressors, and reducing energy losses in flares.

Other key subjects that will be covered in the conference include: advances in petrochemical technologies; distillation and separation; thermodynamics and process simulation; catalysis and reaction engineering; and carbon capture and storage. There will also be a presentation on engineering ethics and professionalism from C. W. Clark of the Texas Board of Professional Engineers. Attendees can receive PDH credits for their participation in the technical sessions.

Registration fees for the conference have been kept low: AIChE members who register before October 4 pay \$150 for one-day attendance, or \$200 for the full two-day conference (lunches included). Registration and complete program information for the Regional Process Technology Conference, as well opportunities for exhibitors and sponsors, are available at <http://www.aiche.org/Conferences/2011Regional/Galveston.aspx>.



Award News: Nominations Being Accepted

Nominations are open for the three F&PD awards that are given at the AIChE Spring Meeting. Click [here](#) for more details about these awards.

Fuels & Petrochemicals Division

Award. This award recognizes individuals who have made substantial technological contributions to the advancement of the fuels and petrochemicals industries. The award recipient is the speaker at the Division's award dinner held at the AIChE Spring Meeting.

Fuels & Petrochemicals Division Distinguished Service Award.

This award recognizes an individual's outstanding service to the Fuels and Petrochemicals Division. The candidate must have participated extensively in a variety of division activities demonstrating leadership, and have served the division a minimum of five years. Send nominations for both of the above to the F&PD's Past Chair, pastchair@aiiche-fpd.org.

Harry West Student Paper Award

The Harry West Student Paper award will be undergoing a revamp this year. In the past, this Award was presented to *one* undergraduate student member of AIChE and F&PD who submits the best paper on any subject relevant to fuels, petrochemicals or safety. We will now be offering *three* student paper awards. The best relevant posters at the student poster session of the AIChE Annual Meeting will be given a special invitation to submit papers along with general submissions from

student members of AIChE and F&PD. Papers are not restricted to research topics and may include design case studies and reviews. All papers must describe the student's own original contribution, but may be part of a larger project to which the submitter contributed. Papers should be submitted to the awards committee, c/o communications@aiiche-fpd.org.

The awards will no longer be presented at the Spring AIChE meeting, but will be given out at the winners local section/student chapter meeting (if feasible) and awarded winners will be recognized in Flashpoint. Their papers will be published on F&PD's website, and they will be recognized at the following year's AIChE Annual Student Brunch. *Deadline for the paper submission is November 30, 2011.*

Fuels & Petrochemicals Division Scholarship

F&PD awards two- \$1,000 one-time Scholarships to exemplary high school seniors. F&PD is committed to introducing high school students to careers in Fuels & Petrochemicals through its programs, helping to fuel the industry's need for top talent. Eligible applicants are graduating high school seniors with exemplary academic records and demonstrated leadership potential. Eligible applicants must plan to attend an accredited four year university in the fall and major in engineering or science. *Deadline is January 31, 2012.* Send the application, along with all required documentation to communications@aiiche-fpd.org.

Chicago Local Section Sponsors Seminar for Teachers & Guidance Counselors

The Chicago Local Section of AIChE hosted a seminar for Chicago Public School teachers and guidance counselors at the Jardine Water Treatment Plant at the Navy Pier on April 1, 2011. Thirty-six representatives from various Chicago schools attended the seminar. The participants received a 90-minute tour of the water treatment plant followed by lunch and presentations by AIChE engineers. The seminar concluded with a Q&A session that was held with a panel of AIChE engineers.

The teachers and guidance counselors came away from the session with a better understanding of what chemical engineers do and their important role in our society. With the knowledge acquired at the seminar they will be in a better position to encourage and motivate their K-12 students to study math and science. The seminar was an enriching experience for both the teachers and their AIChE hosts.

The Chicago Local Section of AIChE would like to thank the City of Chicago, the Chicago Police department, and the men and women of the Jardine Water Treatment Plant who made this event possible.



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MeetingPreview

ANNUAL MEETING HEADS TO MINNEAPOLIS, OCT. 16–21 Energy and ChE Innovation are among the Major Themes

A celebration of the International Year of Chemistry, an exploration of chemical science innovation, and the launch of an expanded International Congress on Energy will be among the headline events when AIChE takes its 2011 Annual Meeting to the Minneapolis Convention Center in October. The meeting's 750-plus sessions include a new World

Congress on Sustainable Engineering and a new conference on Water Technology for Developed and Developing Countries, as well as a variety of topical conferences, major lectures, plenary talks, and collaborations with other organizations.

Minneapolis/St. Paul, consistently ranked as one of the most livable metropolitan areas in the U.S. — noted for its literacy, culture, green space, cleanliness, and “cool factor” — will provide an enjoyable setting where attendees can meet and interact with colleagues and many of chemical engineering's leaders and innovators.

The AIChE Annual Meeting has earned an international reputation as the premier forum for chemical engineers working in research and development, with one of its distinguishing features being its focus on both technical innovation and the professional growth of chemical engineers. More than 4,500 engineers and scientists are expected to attend this year's conference to hear some of the profession's top thinkers present their ahead-of-the-curve research and to gain insight into best practices and exciting developments in the field's growth areas. Short courses, poster sessions, plenaries, and presentations



▲ Downtown Minneapolis as viewed from across the Mississippi River.

by distinguished lecturers round out the agenda, and countless networking opportunities — both formal and informal — will permit attendees to make professional connections and catch up with colleagues and friends.

For information about conference registration and the complete schedule of events, visit www.aiche.org/annual.

Headline events

The Annual Meeting's programmers have covered virtually all of the critical areas in the chemical engineering field. In 2011, signature events include:

- *The International Year of Chemistry Plenary*, Monday, Oct. 17, 11:15 am – 12:15 pm. The United Nations General Assembly has declared 2011 as the International Year of Chemistry (IYC) — prompting a series of international events to inspire public appreciation of chemistry in meeting world needs, as well as to generate enthusiasm for the creative future of chemistry and chemical engineering among future generations of scientists and engineers. The IYC festivities continue in Minneapolis at this plenary session that celebrates the achievements of chemistry and its

contributions to the well-being of people everywhere. Thomas Peterson, Assistant Director for Engineering at the National Science Foundation (NSF), will speak about “The Importance of Basic Research Investment to Economic Growth,” examining the societal impact of research investments in chemistry and chemical engineering made by NSF.

- *Annual Meeting*

Plenary: Chemical Science

Innovation — The Future of the U.S. Chemical Enterprise, Monday, Oct. 17, 12:30 pm – 5:45 pm. Co-sponsored by the Council for Chemical Research, this two-session symposium features thought-leaders from a variety of disciplines who will offer their perspectives and visions for the future of chemical science innovation in the U.S. The speakers include chief technology officers of major corporations in the chemicals and materials industries, university presidents, a national laboratory director, and a private foundation director. They will explore topics such as: how chemical science innovation is fostered; the importance to the U.S. of global initiatives; the challenges to materials, chemicals, and energy sustainability; and developing the workforce of the future.

- *The Second International Congress on Energy* (ICE, www.energy-congress.org), presented by AIChE's Center for Energy Initiatives, brings together scientists and engineers working in areas ranging from bioenergy to carbon capture and separation science for a comprehensive review of research and development in sustainable energy supplies. Expanding on the success of the 2010 ICE



11 AICHE®

Annual Meeting, Minneapolis, MN

event, the organizers have restructured the congress's 100 technical sessions to provide in-depth coverage of four key program areas: Global Solar and Nuclear Energy in the 21st Century (including a plenary session, "What Makes Energy Clean?"); Lignocellulosics: Biorefineries and Sustainable Energy; Hydrogen Production and Storage; and Innovations of Green Process Engineering for Sustainable Energy and Environment.

• *The First Annual World Congress on Sustainable Engineering* will provide chemical engineers with a voice in shaping sustainable development. AICHE's Sustainable Engineering Forum, together with the Environmental and Forest Bioproducts Divisions, are collaborating on this congress, which focuses on the measurement, design, technological advancement, and educational training related to process sustainability, and includes three plenary sessions and posters session on bioresources engineering and sustainable biorefineries.

Major topical conferences

• *The Quality by Design (QbD) Topical Conference and Plenary* focuses this year on comprehensive QbD in pharmaceutical development and manufacture. It represents a new collaboration between AICHE's Food, Pharmaceuticals 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), which are co-sponsoring this event. Beginning with a plenary session on Monday, Oct. 17, experts on QbD will update attendees on critical issues and the future direction of QbD, including applications of QbD, and QbD for process development and product development. The conference will include a roundtable (Tuesday, Oct. 18), chaired by Christine Seymour, Pfizer Global Research and Development, and Huiquan Wu, FDA, Div. of Product Quality Research. Special "Excellence in Integrated QbD Practice" awards will be presented to speakers whose conference presentations further advance the practice of QbD.

• *Water Technology for Developed and Developing Countries*, a topical conference co-sponsored by AICHE's Water Initiative group, concentrates on separations technology, and includes a plenary session on water technology,

sessions on membrane separations, and an industry-university poster session covering water treatment, water reuse, and materials development.

Another key event is the 10th Annual Meeting of the American Electrophoresis Society (AES), which presents both experimental and computational research related to electrophoretic separation of biomaterials such as proteins, DNA, and cells and cellular materials. The conference includes a plenary session and poster reception.

Additional topical conferences cover nanomaterials for energy applications; sensors; systems biology; and the environmental aspects, applications, and implications of nanomaterials and nanotechnology — plus much more.

World-class presentations

The Annual Meeting's keynote lectures allow attendees to hear some of the world's most prominent scientists discuss new developments in the field. Among the major lectures this year:

• *Professional Progress Award Lecture*, Tuesday, Oct. 18, 11:15 am – 12:15 pm. This will be presented by the Institute's 2010 Professional Progress Award

recipient, Michael Deem, the John W. Cox Professor of Bioengineering and a professor of physics and astronomy at Rice Univ. Deem's



▲ Deem

lecture, "F = ma of Biology?," will explore his efforts to find fundamental mathematical laws of biology and their implications for engineering design — from ecological food networks to the immune system and its response to vaccines.

• *James E. Bailey Award Lecture*, Tuesday, Oct. 18, 6:00 pm – 7:00 pm. The Society for Biological Engineers' (SBE) Bailey Award recognizes

SHORT COURSE AND WORKSHOPS

Ten short courses will be offered beginning Sunday, Oct. 16, prior to the start of the meeting, including: Benchmarking for Sustainability; Crystallization Process Development; Quality by Design Biologics; Synthetic Biology; Cellulosic Biomass Commercialization; Career Development for Women in Chemical Engineering; and How to Meet New ABET Requirements on Hazard Management. An additional course, Multiphysics Modeling in Chemical Reaction Engineering, will be offered on Wed., Oct. 19. Professional development hour (PDH) credits will be available. The short courses are open to everyone and do not require registration for the Annual Meeting, and they have much lower fees than comparable courses not co-located with the meeting. Seating is limited, so preregistration is advised. For detailed descriptions of the short courses and to register, visit the Annual Meeting web site: www.iche.org/annual.

MeetingPreview

outstanding contributions in the

field of biological engineering. This year's recipient, Chaitan Khosla, chair and professor in the departments of chemistry, chemical engineering, and biochemistry at Stanford Univ., will talk about "Natural Products and the Chemical Engineer."



▲ Khosla

• *The 63rd Institute Lecture*, Wednesday, Oct. 19, 11:15 am – 12:15 pm. William J. Koros, the Roberto C. Goizueta Chair and Georgia Research Alliance Eminent Scholar in Membranes at the Georgia Institute of Technology, will deliver this year's Institute Lecture. His talk is entitled "Beyond Water: Expanding the Spectrum of Efficient Large Scale Separations." (See the related article on p. 62.)



▲ Koros

• *The 4th Corporate Innovation Award Lecture*, Thursday, Oct. 20, 11:15 am – 12:15 pm. This honor recognizes corporations or corporate divisions for innovation that has resulted in the successful commercial development of new products or new processes for making useful products. The 2011 award recipient is Xerox Corp., in recognition of its emulsion aggregation toner technology, which will be discussed in the lecture.

Among other lectures and awards, many of AIChE's technical division and forums will be honoring their annual award winners at special sessions and dinners, and newly elected AIChE Fellows will be recognized at the Fellows Breakfast on Tuesday, Oct. 18.

Not to be missed

On Sunday, Oct. 16, 5:00 pm – 6:30 pm, prior to the Annual Meeting's Welcome Reception, AIChE will salute some of the chemical engineering profession's eminent individuals at the *Honors Ceremony*. Recently established prizes that recognize accomplishments in industrial practice, including the Industry Leadership Award and the Industrial Research and Development Award, join a long list of many established honors. (The recipients of the 2011 Institute and Board of Directors' Awards will be announced in the October issue of *CEP*.)

The National Student Conference (Oct. 14–17) helps undergraduate chemical engineers to connect with both professional engineers and AIChE as a professional home. Some 1,500 students from more than 100 chemical engineering schools are expected to attend the conference for professional development workshops, scholarly competitions, poster presentations, and networking events. The Student Conference overlaps with the professional meeting on Sunday and Monday, allowing for greater interaction between students and professionals.

Program and registration information for the Annual Meeting is available at www.aiche.org/annual

A popular highlight of the Student Conference — and a signature event for AIChE — is the national *Chem-E-Car Competition*, where undergraduate teams — the top qualifiers in the Spring 2011 regional competitions — will run their chemical-reaction-powered shoebox-size vehicles for the national prize. Sponsored by Chevron, the competition incorporates a comprehensive safety program — including documentation, vehicle inspections, a poster session, and annual safety training workshops required for participating teams. The Chem-E-Car Competition takes place Sunday, Oct. 16, beginning at 2:00 pm.

Get involved

Over the course of the Annual Meeting, AIChE members (and other chemical engineers) who are interested in taking a more active role in their professional society will find many opportunities to interact with the Institute's most dynamic members, at a variety of receptions, dinners, award presentations, and other special events sponsored by the Institute's committees, technical divisions, and forums. Among these are gatherings of the Women's Initiatives Committee, the Minority Affairs Committee, the Local Sections Committee, the Student Chapters Committee, and the Young Professionals' Advisory Board, as well as a recognition reception of AIChE's volunteer leaders.

All of these groups need motivated volunteers to help build and sustain quality programs and services for AIChE members. These events at the Annual Meeting provide excellent opportunities for involvement in Institute leadership.

CEP

TOPICAL CONFERENCE PROCEEDINGS AVAILABLE ONLINE

AIChE now provides its Annual Meeting Proceedings both online or on CD-ROM. Conference Proceedings may be ordered in advance using the conference registration form. All submitted papers received prior to the pre-conference deadline will be included, and where papers are not uploaded, paper proposal abstracts will be provided. The email addresses of speakers will also be included to facilitate contact. The pre-meeting price for online proceedings is \$95, and \$130 for an online/CD-ROM bundle. After the meeting, the price of the CD-ROM will increase and availability will be subject to supply.