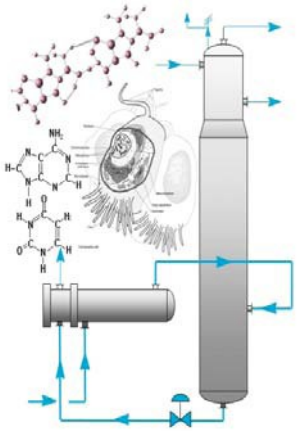
AIChE Chicago Section

February Newsletter



Inside this issue:

AIChE Chicago

February 2012 Meeting Notice

Natural Gas and Oil Shales:

Boom or Bust?

Brian C. Gahan, P.E.

President of Laser Rock Technologies, LLC

Date: ***Wednesday, February 15th, 2012***

Location: ***Greek Islands West***

300 East 22nd St. Lombard, IL
(630)932-4545

Cost: **Members: $30** **Non-Members: $35**

Students: $5 **Unemployed Members: $15**

To Register Click the Link;

http://www.cvent.com/d/lcqlc6/4W

Agenda

5:30 PM	**Social Hour**
6:30 PM	**Buffet Dinner,**
7:30 PM	**General Meeting**

Chair's Corner

In recent years, we have all seen how the electronics revolution has affected our lives. The proliferation of products includes smart phones, DVDs, and tablets. One wonders whether other fields, such as the chemical industry, have had such a record of innovation. Not long ago, a physicist asked me what's new in chemical engineering.

The first thing that came to mind was shale gas. While its existence has been know for some time, the technology to extract it economically was developed only in the past dozen years or so. As a result, natural gas prices have dropped substantially, and chemical manufacturers now have a low-cost raw material.

Another breakthrough that I mentioned was chromatographic separation. Chromatography has long been used as an analytical tool. However, someone realized that it could be scaled for industrial use. Now we have a technology that can separate compounds whose properties are too similar to allow processing by traditional unit operations, such as fractional distillation.

Magnetic resonance imaging (MRI) resulted from another analytical method that found a different application. Nuclear magnetic resonance (NMR) had long been used in analytical chemistry. However, a chemist and a physicist, not a doctor, figured out how to adapt it to map the inside of the human body. Nor is this the only case where people with tech backgrounds contributed to the health care sector. For example, chemical engineers make pharmaceuticals, while mechanical and electrical engineers design the diagnostic and life-support devices used in the field of medicine. Indeed, scientists and engineers are largely responsible for the benefits of modern medical science.

So, our field continues to move forward, even though it may not be obvious to the general public. Sometimes the reason it appears that progress is not being made is that the industry is often slow to adopt new breakthroughs. Many companies will try new technology only when nothing else works. Yet firms in the electronics sector that failed to realize the importance of digital technology fell behind. Clearly, innovation is a key to success. Those who recognize the upside potential will reap the rewards of market leadership.

2012 Dupage Engineers Week Expo

Join us for a fun, free, family interactive event with displays and presentations that will excite children about science and engineering at the DuPage Engineers Week Expo. The Expo is geared toward children in K-8th Grade, however, all ages will enjoy this event!

When: Saturday, February 25, 2012 from 10:30 AM - 3:30 PM

Where: Illinois Institute of Technology: 201 East Loop Road, Wheaton, IL

Cost: Free, and open to the public

Volunteers needed to interact with kids and teach them all about Chemical Engineering! Volunteers will be split into two shifts:
1. 10:00 am - 12:45 pm
2. 12:45 pm - 3:30 pm

Please contact me (melewis25@gmail.com) or Jessica Swary (jessicaswary@msn.com) if you are interested.

January Meeting

Joint ACS/AIChE meeting January 19, 2012 at the European Crystal.

Dr Eric Toone, soon to be director of the DoE ARPA-E program shook the house with his Futuristic presentation on game changers in the emerging energy sector. ARPA-E has given out more than $500 million dollars in grants in the last 3 years to Companies, Universities and Research Institutions that have potential projects that can make a quantum leap in how energy is developed, used and conserved. These are high risk - high reward projects that can change the energy scene.

Dr Toone is a very popular speaker; the day before our program he made presentation at Fermi Lab, where they talked about a new form of self limiting atomic reactor.

A common theme expressed by people who heard his talk said that if Dr Toone/ARPA-E made this presentation to high school and college students it would dramatically increase the number of students in STEM programs. As well as adding direction to current undergraduate chemical engineering programs.

His presentation was videoed at Fermi Lab and will be available at their web site:

http://vms-db-srv.fnal.gov/fmi/xsl/VMS_Site_2/000Return/video/r_streaming.xsl?EitherDate=+&Title=&Presenter=&Technical+Level=&SeriesNameForWeb=Colloquium&-sortfield.1=EitherDate&-sortorder.1=descend&-sortfield.2=Serial&-sortorder.2=ascend&-

February Meeting Information

Natural Gas and Oil Shales: Boom or Bust?

Abstract:

The United States is a mature petroleum producing nation where production from domestic conventional petroleum reserves has been declining since the 1980's. Recent production trends have focused on exploiting resources trapped in unconventional deposits including shale formations. Domestic shale oil resources have been estimated at 2 trillion barrels (Johnson, Crawford, & Bunger, 2004), and shale gas resources estimated at 482 trillion cubic feet (Energy Information Administration, 2012). Production from these low permeability deposits has required the development of specialized stimulation treatments, including advanced hydraulic fracturing applications.

The development of these resources has brought a surge of activity to the domestic industry, with technical, economic, environmental and regulatory implications. Although successful applications have been made thus far, what does the future hold for oil and gas production from shales, and what impacts may result through the development of this resource base?

Speaker's Bio;

Brian C. Gahan is founder and president of Laser Rock Technologies, LLC; a private energy consulting firm in Cary, IL. He has more than 30 years experience in the petroleum industry working in energy, financial, academic, and R&D organizations. Gahan, a registered professional engineer in Ohio and Illinois, earned a BS in Petroleum Engineering from Marietta College; an MBA from the Katz Graduate School of Business, University of Pittsburgh; and a Master of Chemical Engineering at Illinois Institute of Technology.

He is a Fellow of the American Institute of Chemical Engineers (AIChE), a Distinguished Lecturer for Society of Petroleum Engineers (SPE), and was elected to Sigma Xi, the Scientific Research Society. He is a past chair for the Chicago Section of AIChE, and the Pittsburgh Section of SPE. Gahan has authored more than 40 technical papers and publications. He is also a United States Air Force officer serving in the Illinois Air National Guard as Chief Bioenvironmental Engineer for the 126th Air Refueling Wing, Scott Air Force Base, IL.

YPAB News

Joint Auto Show Outing with SAE Chicago YP, Sponsored by Navistar

SAE Chicago and Navistar are providing free tickets to the auto show for the first 100 people who claim them. Ticket prices are normally $11. To claim your ticket send an email to aaron.matthews@navistar.com and meet with the other local engineers at Ricobene's before heading to the show.

We will first meet at the restaurant to socialize and have the option to enjoy fresh Ricobene's pizza and sandwiches. Once you have your ticket you are free to enjoy the auto show for as long as you would like!

Date: Saturday, February 11th, 2012
Time: 11:00am-1:00pm
Location: Ricobene's 252 W. 26th Street Chicago, IL 60616 (Under the Dan Ryan Expressway)

2012 Dupage Engineers Week Expo

Join us for a fun, free, family interactive event with displays and presentations that will excite children about science and engineering at the DuPage Engineers Week Expo. The Expo is geared toward children in K-8th Grade, however, all ages will enjoy this event!

When: Saturday, February 25, 2012 from 10:30 AM - 3:30 PM
Where: Illinois Institute of Technology: 201 East Loop Road, Wheaton, IL
Cost: Free, and open to the public

YPAB will be hosting a table at this year's event. ***Volunteers needed*** to interact with kids and teach them all about Chemical Engineering! Please email jessicaswary@msn.com for more information.

Whirlyball Event

YPAB held their annual Whirlyball tournament in

Lombard on Jan 26th. This was our biggest tournament yet! What a great start to 2012!

Chicago YPAB Featured in National YPAB Newsletter

National YPAB has started a newsletter, and the Chicago YPAB section has been featured in the first issue! Read all about it here: http://chenected.aiche.org/professional-career-development/meet-a-young-professional-local-section-chicago/

Historical Engineering Events in February

February 2, 1897 – Ice cream scoop patented by Alfred L. Cralle, the first African-American in Pittsburgh to receive a patent. His patent became the model for ice cream scoops in households soon after and the basis for many scoops today.

February 3, 1958 - Rachael Carson publishes the Silent Spring. Rachel Carson, a writer, scientist and ecologist, worked seventeen years for the US Fish and Wildlife Service, where she learned about the problems of pesticides on the environment.

February 6, 1959 - Kilby patents the integrated circuit. Jack Kilby at Texas Instruments and Robert Noyce at the small Fairchild Semiconductor start-up company were both working on the concept of an integrated circuit in 1958.

February 7, 1984 – The first untethered spacewalks were made by Space Shuttle Challenger astronauts Bruce McCandless II and Robert L. Stewart. Each used a manned maneuvering unit (MMU) in an orbit 150 nautical miles above the Earth. McCandless was the first to leave the cargo bay untethered in space

February 10, 1874 – Water-closed railway cars patented by Lewis Latimer, U.S. patent (No. 147,363). Latimer is better known for his patents for improvement in incandescent electric lamps while working for Edison.

February 11, 1939 – a "one page note" appeared in the magazine *Nature* by Lise Meitner and her nephew Otto Robert Frisch, entitled "Disintegration of Uranium by Neutrons: A New Type of Nuclear Reaction," where for the first time a theoretical explanation for the splitting of uranium atoms was published and the term "fission" was coined for that process using the analogy of cell division in biology.

February 13, 1959 – the first Barbie doll goes on sale. Barbie's inventor, Ruth Handler, was inspired by seeing that her daughter, Barbie, and her girl friends enjoyed playing with adult female dolls, but most dolls at the time were baby dolls.

February 14, 1990 - First photo of the solar system is taken and dubbed the "family portrait" of our solar system as seen from outside. Voyager 1 was launched on September 5, 1977 and it passed Saturn in November 1980.

February 14, 1946 – ENIAC, the world's first digital electronic computer, is unveiled. ENIAC – Electronic Numerical Integrator and Computer – the world's first operational, general purpose, electronic digital computer, developed at the Moore School of Electrical Engineering, University of Pennsylvania.

February 16, 2005 – the Kyoto Protocol of the United Nations Framework on Climate Change goes into effect. In 1992 the Framework Convention on Climate Change (UNFCCC) was adopted in order to meet the looming concerns of global warming.

February 17, 1998 – " Voyager 1 becomes the most distant human-made object from the Sun. Voyager 1 was launched on September 5, 1977 and it passed Saturn in November 1980.

February 17, 2009 – Television originally scheduled to go digital in the U.S. Congress mandated this as the date when all full-power TV stations would cease to broadcast analog programming.

February 18, 1901 – First vacuum cleaner patented by Hubert Cecil Booth, an English structural engineer. This design had the disadvantage that it had no way to collect the dust and never became a commercial success.

February 21, 1994 - Whirlpool begins production of refrigerators without freon. In the 1930s, refrigerators began to use freon as a refrigerant. However, the use of freon became an environmental concern once it was identified as a ozone-depleting chemical.

February 22, 1876 – Johns Hopkins opens as first research university in America .At his inauguration, Johns Hopkins first president, Daniel Coit Gilman asked: *What are we aiming at? The encouragement of research … and the advancement of individual scholars, who by their excellence will advance the sciences they pursue, and the society where they dwell.*

February 23, 1893 – Rudolf Diesel patents the diesel engine in Germany. Rudolf Diesel's goal was to improve on the efficiency of the gasoline-engine that used the Otto cycle. His new concept for the engine was to compress the air in the cylinder adiabatically

February 25, 1837 – Thomas Davenport patents the electric motor and electric railway. Thomas Davenport, an American blacksmith, first invented the DC electrical motor in 1834 and used it to make a small model of electrical railway in 1835.

February 27, 1932 – Chadwick publishes his discovery of the neutron. Until 1932, the atom was known to consist of a positively charged nucleus surrounded by enough negatively charged electrons to make the atom electrically neutral

February 29, 1940 – The Nobel Prize in Physics was presented to Ernest Lawrence "for the invention and development of the cyclotron and for results obtained with it, especially with regard to artificial radioactive elements".

AIChE 2012 Process Development Symposium Planning Conference

Dear Colleagues,

AIChE and the Process Development Division are planning the next biannual Process Development Symposium for the Hotel Hyatt in King of Prussia near Philadelphia for *June 5-7, 2012*. The conference webpage can be viewed at http://processdevelopmentsymposium.aiche.org/ . Lionel O'Young (President of Clearwater Bay Technology) and I are co-chairing a session on Multi-Functional Teams which is scheduled for Thursday , June 7th. The webpage shows the following very brief initial session description "Combining chemists and chemical engineers, good and bad practices as seen by capital project managers, communication with commercial partners on cost and timing, etc.".

In the good old days, chemical engineers only needed to work a bit with the chemists to get most of the know-how and insights for designing a commercially successful chemical process. However in today's multi disciplinary world , chemical engineers need to work with biologists, chemists, environmental, sustainability and safety professional to better understand the entire process from concept to commercialization. The team may need to understand the behavior of the enzyme used in the bio-reactors; to work with the electronic engineers to better define the specifications of the new materials to be used in a new device; and with safety and environmental experts to be sure the process complies with the best safety practices and is environmentally sustainable. That means it is necessary for the chemical engineers to work closely with many other technical and non-technical disciplines. Then the question becomes how to best institute a team that economically and efficiently achieves this end. In this session, we are seeking speakers who will share their successes and failures **in the design of multi functional teams and the execution of these projects.**

So please contact Lionel or myself to discuss your interest. I think this is going to be a very successful symposium and that our speakers will find it a rewarding experience.

Look forward to seeing you all in 2012 and hopefully in King of Prussia next June.

Sincerely, ***Joe Cramer***

Upcoming Meetings

Carbon Management Technology Conference Caribe Royale Hotel & Convention Center Orlando, Florida February 7-9, 2012
Spring Meeting and 8th Global Congress on Process Safety Houston Hilton and George Brown Convention Center Houston, TX April 1-5, 2012
3rd International Conference in Stem Cell Engineering Sheraton Seattle Seattle, WA April 29 - May 2, 2012
2012 AIChE Process Development Symposium HYATT house King of Prussia, PA June 5-7, 2012
6th International Conference on Bioengineering and Nanotechnology University of California, Berkeley Campus Berkeley, CA June 24-27, 2012
4th Latin American Conference on Process Safety Hotel Sofitel Rio de Janeiro Copacabana Rio de Janeiro, Brasil July 3-5, 2012
2012 Annual Safety in Ammonia Plants And Related Facilities Symposium Hyatt Regency Chicago Chicago, IL September 9–13, 2012
2012 Annual Meeting Pittsburgh Convention Center Pittsburgh, PA October 28 - November 2, 2012
Sustainability in (Bio)Pharmaceuticals Sheraton Old San Juan San Juan, PR November 11-14, 2012

NOMINATIONS REQUESTED FOR THE ERNEST W. THIELE AWARD

The Ernest W. Thiele award is sponsored by BP and recognizes the outstanding contributions to our profession by a Midwest region chemical engineer. This award was established by the AIChE Chicago Section and is presented annually to a Midwest region AIChE member. This internationally recognized award consists of an engraved plaque and $1000 honorarium presented at our sectional meeting.

Nomination forms and additional information can be obtained from the Thiele Committee Chair. Completed nominations are due to the committee chair no later than *March 1, 2012.*

One of the highest honors a distinguished chemical engineer can receive is our Chicago Section Thiele award. Please consider nominating a deserving engineer for this prestigious award.

Jim Simnick
BP Amoco Complex, J-8
150 W. Warrenville Road, Naperville, IL 60566
Ph 630-420-5936, fax 630-420-4832
email: james.simnick@bp.com

AIChE Live Webinars

AIChE Webinar: Outcomes of the EPA/NSP/AIChE Center for Sustainable Technology Practices Sustainable Supply Chain Design Scientific Workshop

Presented by Professor Ignacio E. Grossmann, moderated by Dr. Darlene Schuster

Wednesday, February 8, 2012

This webinar was originally scheduled for Wed., Jan. 18, 2012 at 2 PM ET.

The Sustainable Supply Chain Design (SSCD) Scientific Workshop, Sponsored by EPA, NSF and the AIChE Center for Sustainable Technology Practices was held in mid-September of 2011. This webinar presents an overview of the outcomes of the Workshop.

The purpose of the Workshop was to foster collaboration and promote the development of a research community focused on sustainability and supply chains. This was accomplished by bringing together a diverse group of researchers and other professionals with experience relevant to sustainable supply chain design.

From experts with experience working within a broad, systems perspective, an understanding of the key shortcomings of current practices was elicited. The Workshop also identified practical ways in which new or repurposed approaches could be integrated within existing frameworks.

In the case of experts with experience working within a narrower focus, the participants worked together to understand how these approaches could be integrated within existing frameworks or larger-scale models.

The Workshop also explored opportunities for applying discipline-specific approaches to other problems related to the design of sustainable supply chains.

AIChE Webinar: Two-Phase Gas/Liquid Pipe Flow and Relief Sizing

Professor Ron Darby

Wednesday, February 15, 2012

This webinar covers methods for identifying flow regimes and determining friction loss in two-phase distributed and homogeneous gas/liquid pipe flows and sizing relief valves for frozen and flashing homogeneous two-phase flow. Attendees will learn to:

* Identify Two-Phase Separated Flow Regimes in Horizontal and Vertical Pipe Flows
* Define Flow Parameters that govern Two-Phase Gas/Liquid Pipe Flow
* Size Safety Relief Valves for Frozen and Flashing Equilibrium or non-Equilibrium Homogeneous Two-Phase Flow
* and learn Calculational Methods for Friction Loss in Homogeneous and Separated Two-Phase Flow

Engineers and engineering supervisors concerned with handling two-phase gas/liquid fluids in pipe flow and relief systems will benefit from attending.

AIChE National's Live Webinars

SBE Webinar: Microbial-Electrocatalytic Biofuel Production by Dr. Steven Singer

Dr. Steven Singer - Lawrence Berkeley National Lab

Thursday, February 23, 2012

Dr Singer and his lab are developing an integrated Microbial-ElectroCatalytic (MEC) system to produce advanced biofuels from H_2/CO_2. We have engineered *Ralstonia eutropha*, an aerobic chemolithoautotroph, to produce biofuel products by manipulating the polyhydroxybutyrate, fatty acid and isoprenoid biosynthesis pathways and we are testing novel reactor designs to generate these molecules from H_2/CO_2 at high titer. We are also synthesizing defined inorganic electrocatalysts that generate H_2 in neutral, aqueous conditions conducive to microbial growth. Strategies to tether these catalysts to electrode surfaces and to the surface of *R. eutropha* have been developed, and the targeted binding of inorganic complexes to the outer membrane of engineered *R. eutropha* strains has been demonstrated. Additionally, we have used heterogeneous catalysts to oligomerize 1-butanol to a mixtures of hydrocarbons that may be used as gasoline and jet fuel replacements. This work highlights the potential for combining synthetic biological and chemical approaches to produce biofuels.

This Webinar is FREE to members of SBE. Simply click 'Attend this Webinar' below and our system will recognize your log in and charge you $0.

AIChE members may join SBE for only $15. Join SBE now (processing takes about 24 hours) and return to this page with your new log-in and you will receive this webinar for FREE.

AIChE Webinar: Explosion Protection with In-Line Flame Arresters

Presented by Dr. Michael Davies

Wednesday, February 29, 2012

This webinar educates participants on explosion protection concepts regarding in-line flame arresters. It begins by demonstrating flame arrester function with short video sequences. From there, it discusses limits of use and distinguishes between different types of arresters based on the explosion and combustion types for which they are tested. This new knowledge is applied so each participant understands how to choose the correct type of arrester based on vapor group and process conditions (e.g. temperature and pressure). Finally, the webinar provides a "layer of protection" concept to assure flashback protection from incinerators and other ignition sources and demonstrates sizing of devices, taking into account various process parameters.

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aichechicago@gmail.com

http://www.aiche-chicago.org/Section_Info/Volunteer.html

Submitting Articles to AIChE Columns

We welcome email submissions for our monthly newsletter. Commercial announcements are subject to the fee schedule below. News stories, editorials, technical or career related non-commercial contributions are always welcome with no charge. We consider job postings, announcements of for-fee training courses, expositions, conferences as commercial. Categorization of announcements is at the sole discretion of the Chicago AIChE Board of Directors. Chicago AIChE may publicize activities of interest to our members by cooperating professional societies and other non-profits without charge.

Please submit your material to **aichechicago@gmail.com** with "newsletter article" as a subject line.

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