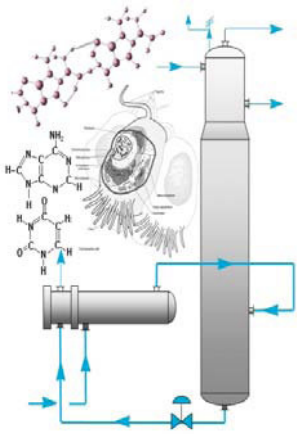
AIChE Chicago Section

January Newsletter



Inside this issue:

AIChE Chicago

January 2012 Meeting Notice

A New Paradigm in

Transformational

Energy Research

Dr. Eric Toone

Deputy Director of Technology for Advanced Research Projects Agency—Energy (ARPA-E)

Date: ***Thursday, January 19th, 2012***

Location: ***European Crystal Banquet & Conference Center***

519 W Algonquin Rd, Arlington Heights, IL 60005

(847)437-5590

Cost: **Members: $35** **Non-Members: $40**
Students: $5 **Unemployed Members: $15**

To Register CLICK the Link:

http://www.cvent.com/d/bcqk47/4W

Agenda

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

Chair's Corner

One term that has come into use, perhaps even overuse, in the workplace in recent years is "synergy," where a merger of capabilities leads in new directions. Often it is forced on us as the result of a corporate merger. Sometimes in those situations the benefits are never realized. It is probably more productize to look for synergistic opportunities and take advantage of them.

As chemical engineers, however, our education is pretty insular. We take courses in our major and feel there is no need for other subjects. Our interaction with people in other majors is limited to dorm life or extracurricular activities.

On the job, though, we are placed in an environment with people who hold technical degrees in other fields. Most engineering firms employ civil, mechanical, and electrical engineers. On a few occasions, I have attended meetings where all of these disciplines were present. We may not understand everything that is being discussed, but the best possible decision can be made by considering everyone's input.

Those who work for operating companies probably encounter chemists on the job. One analytical chemist told me that chemical engineers keep submitting samples until they get the result they want. Seriously, though, analytical chemistry is important for closing a material balance. These allow you to troubleshoot a process and find areas where valuable product is being lost. Perhaps my best experience with synergy occurred at a meeting with chemists to develop a rapid moisture analysis technique. We ended up with something considerably cheaper than the Raman analyzer that was initially under consideration.

Another area where chemical engineers can interact with our chemist cousins is in research and development. We may end up implementing process changes that result from their lab-scale projects. Once I was able to narrow down the source of an impurity after consulting with a research chemist. That saved a lot of needless effort on my part.

Even colleges have gotten in on the act. Many engineering schools now sponsor design teams that draw from all across the campus. Solar cars and the ChemE Car competition are a couple of examples. My alma mater, the Missouri University of Science & Technology, recently created a building just to house these projects. All of these programs provide a cross-pollination that results in better designs.

As we look to the future of chemical engineering, alternative fuels will probably be a big part of it. This is yet another area where synergy can help to bring down costs and make a technology viable. It will be important, for example, to work with biologists on fermentation processes. These are used not only for fuels but increasingly for pharmaceuticals and other chemicals as well. To facilitate this cooperation, many universities now have a department of chemical and biological engineering.

In all of these efforts, finding opportunities for synergy will result in faster, better solutions.

January Meeting Information

Dr. Eric Toone

"A New Paradigm in Transformational Energy Research"

Abstract:

In the Spring of 2009 President Obama announced $400M in American Recovery and Reinvestment Act (ARRA) funding for a new agency – the Advanced Research Projects Agency, or ARPA-E. The Agency exists to fund high risk, high reward transformational research to reduce energy related emissions, reduce imports of energy from foreign sources, improve energy efficiency in all economic sectors, and ensure American technological lead in advanced energy technologies. In two years the agency awarded over $350M in support of 121 projects across the entire energy landscape, including renewable energy, biofuels, building efficiency, carbon capture, and the electrification of transportation. But achieving impactful change in the energy space requires successful negotiation of a path to commercialization plagued by pitfalls that often frustrate the deployment of technoloigical innovation. This lecture will describe the history and mission of ARPA-E, highlight some of the revolutionary technologies currently supported by ARPA-E, and examine through example critical considerations for the deployment of transformational energy technology

Biography:

Dr. Eric Toone is the Deputy Director for Technology for the Advanced Research Projects Agency – Energy (ARPA-E), responsible for oversight of all ARPA-E Technology and directs the ARPA-E's Electrofuels program. In addition to his role at ARPA-E, Toone is currently the Anne T. and Robert M. Bass Professor of Chemistry and Professor of Biochemistry at Duke University.

Toone is a scientific founder of two venture-backed companies: Aerie Pharmaceuticals, a research-based ophthalmology company, and Vindica Pharmaceuticals, a nitric oxide delivery company. He has served as a permanent member of the Bioorganic and Natural Products Study Section at the National Institutes of Health, and is currently a member of the NSERC Organic & Inorganic Review panel (Canada). Toone has authored over 100 scientific papers and over 30 patents. He is an associate editor of the journal Biopolymers and the editor in chief of the monograph series Advances in Enzymology.

He studied chemistry as an undergraduate at the University of Guelph, graduating in 1983. That same year he moved to the University of Toronto to begin graduate studies with Professor J. Bryan Jones. Toone graduated from the University of Toronto in 1988 and moved to Harvard University to continue his studies with Professor George Whitesides.

http://www.cvent.com/d/bcqk47

AIChE National's Live Webinars in January

Maintenance and Reliability for Chemical Engineers, Part Three-The Tools of Reliability
Presented by David A. Rosenthal
Wednesday, January 11, 2012, 2 p.m. - 3 p.m. ET

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, January 18, 2012, 2:00 - 3:00 p.m. ET

SEF Webinar: Green Design, Green Energy, and Sustainability
Presented by Dr. Urmila M. Diwekar
Wednesday, January 25, 2012, 2:00 - 3:00 p.m. ET

All webinars meet at the date and time indicated above and last one hour. With AIChE's ChemE on Demand, AIChE members get 6 credits with their annual membership. Credits can be used to obtain individual items listed at ChemE on Demand including the above webinars and all archived content. Each time you use a credit you gain permanent access to the content you've selected. When you use all your credits you can still access content at the low member's price. Undergraduate student members get free access to archived webinars. To register visit http://apps.aiche.org/chemeondemand/home.aspx.

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
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Ph 630-420-5936, fax 630-420-4832
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Upcoming Meetings

Chicago Section Monthly Meeting European Crystal Banquet and Convention Center Arlington Heights, IL **January 19, 2012**
Carbon Management Technology Conference Caribe Royale Hotel & Convention Center Orlando, Florida **February 7-9, 2012**
Sustainability in (Bio)Pharmaceuticals Sheraton Old San Juan San Juan, PR **February 19-22, 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**

Outreach Call for Volunteers

The Whitney Young Magnet High School Junior Engineering Club is looking for volunteer engineers who have the knowledge to help us build a biodiesel system: basically a system which will convert donated grease (old oil) into diesel fuel. We need oversight on the design and construction for this small system (using a water heater) process.

Goal: To make diesel fuel and donate it to a food pantry bus.

Time: Part-time consultant needed during design/construction/process. We hope to start in Jan. or Feb. We are located near downtown Chicago at 211 S Laflin in Chicago and will be constructing it at University of Illinois.

If interested, or if you have questions: please email Jan Dudzik at j_dudzik@hotmail.com or call 630 674 8846 (cell)

AIChE National News

President
David A. Rosenthal (as 2011 president-elect, succeeds to the presidency in 2012)

President-Elect
Phillip R. Westmoreland (2012)

Directors (three-year term, beginning 2012)
John Cirucci, John G. Ekerdt, Jack Hipple, and Rosemarie D. Wesson

Institute and Board of Directors Awards Deadline is February 15, 2012
AIChE's Board of Directors is accepting nominations for the Founders Award for Outstanding Contributions to the Field of Chemical Engineering and for the F. J. & Dorothy Van Antwerpen Award for Service to the Institute. Nominations for these awards must be postmarked by **February 15, 2012**. Additionally, nominations for the Institute's awards recognizing achievements across the chemical engineering profession are also due **February 15**.
For award details and information on the nomination process, please visit: http://www.aiche.org/About/Awards/InstituteandBoard.aspx.

Division Awards Deadlines Approaching

The deadline for several Division Awards is approaching.

Committee or Division	*Award*	*Deadline*
Fuels & Petrochemicals Division (F&P)	The Harry West Student Paper Award	January 31, 2012
	Fuels and Petrochemicals Division Scholarship	January 31, 2012
Food, Pharmaceutical & Bioengineering Division (FP&BE)	Food, Pharmaceutical and Bioengineering Division Distinguished Service Award in Chemical Engineering	February 15, 2012
	Food, Pharmaceutical and Bioengineering Division Award in Chemical Engineering	February 15, 2012

Young Professionals (YPAB) News

Whirlyball

Date: Thursday, January 26th, 2012

Time: 6:00pm

Location: Whirlyball of Lombard, 800 E. Roosevelt Rd., Lombard, IL (behind the A&W/ KFC).

Whirlyball of Lombard offers food, drinks, and of course Whirlyball. More info can be found on the Lombard Whirlyball Website.

RSVP to Janet, chujl@middough.com, by January 11th and state whether you would be interested in Whirlyball. Cost is $14-21/person depending on the number of participants.

Whirlyball was one of our most popular events last year! Don't miss it!

Check out our photos from last year's event on our website to see what Whirlyball is all about!

December Happy Hour

A dozen young professionals came out to the YP Happy Hour on December 8, 2011 at the Stadium Sports Club in Des Plaines.

The Stadium Sports Club hosted a trivia night, and the YP's played under the team name of the Newtonians. Although no trivia questions involved fluid flow or pump sizing, the YP's won 2nd place!

Historical Engineering Events in January

January 1, 1853 – The world's first practical steam-powered fire engine made its debut.
In the spring of 1852, Abel Shawk, Alexander Bonner Latta, and Miles Greenwood began construction on the first practical steam-powered fire engine. While other fire engines had existed, theirs was significantly faster, being able to pump water in a mere ten minutes. Once finished they presented their engine to Cincinnati Fire Department on January 1st, 1853 (their own city). This engine was nicked name 'Uncle Joe Ross' and with the success of this and other steam powered fire engines, the City of Cincinnati went on to create the first professional fire department in the United States.

January 2, 1959 – the first lunar space ship shot to escape the Earth's gravitational pull.
The unmanned Luna I was launched by the Soviet Union less than two years after their launch of Sputnik, the Earth's first artificial satellite. Luna 1 passed to within 4,600 miles of the moon before moving on to a solar orbit.

January 3, 1957 – The world's first electric wristwatch is released. The Hamilton watch company began research on an electric watch in 1946. Ten years later they released their watch with great success. Prior to this watch most watches kept time using a balance wheel that was kept in motion using a spring. This spring had to be wound by the wearer everyday.

The Hamilton watch, while using the same balance wheel, used electromagnets to keep it in motion. One of the biggest challenges was finding a battery that was powerful enough to power the watch for a year, but also be small enough to fit inside the watch case.

January 5, 1892 – Construction began on the Golden Gate Bridge. After years of gathering support and funding for the bridge, Joseph Strauss oversaw its construction. The project was so massive that a Golden Gate District was formed to build the bridge. All in all the bridge ended up costing about 27 million dollars.

January 6, 1851 – Foucault physically demonstrates the rotation of the Earth.

January 7, 1913 – William Merriam Burton is awarded the patent for thermal cracking. Cracking is a process where organic molecules and broken down into simpler molecules by breaking carbon-carbon bonds. This process is used to breakdown crude oil into one of its many products.

January 8, 1889 – Hollerith patents tabulating machine. Herman Hollerith is widely regarded as the father of modern automatic computation. He chose the punched card as the basis for storing and processing information and he built the first punched-card tabulating and sorting machines as well as the first key punch, and he founded the company that was to become IBM.

January 09, 1839 – Louis Daguerre announces his photographic process.
The first permanent photograph was made in 1826 by Joseph Niepce. Together with Louis Daguerre they further refined the process. The process involved silver-coated copper plates mixed with iodine to create a layer of silver iodine. After being exposed to light for several minutes the plate was exposed to mercury vapor and heated to 75 degrees Celsius.

January 11, 1954 – Although radio weather broadcasts have been around since 1922, it was not until 1953 that BBC executives, gathered for a luncheon, introduced the idea of presenting a weather forecast on television. These BBC executives searched the Met Office and chose the 32-year-old George Cowling, a former Royal Air Force meteorologist, to take on this new idea. Cowling delivered the first televised weather forecast on January 11th, 1954 at 7:55 PM from BBC's Lime Grove Studios.

January 12, 2010 – 7.0 Magnitude Earthquake in Haiti. The earthquake struck a highly populated region of this impoverished Caribbean island approximately 17 km from the capital city of Port-au-Prince. Hundreds of thousands died, many more injured, many buildings were destroyed or seriously damaged, infrastructures collapsed and millions became homeless and without food.

January 13, 1942 – Henry Ford patents a plastic automobile.

The plastic car Ford patented used soy-based plastics and was 25% to 33% lighter than conventional cars of his day. Ford's dream was to use agricultural-based plastics to provide another market for farmers to sell their crops.

January 14, 2005 – Huygens Probe Lands on Titan.

After spending seven years in space, the Huygens probe separated from the main Cassini spacecraft on December 24, 2004, and spent the next three weeks traveling to the moon Titan. After beginning its descent, it transmitted scientific data for nearly five hours before running out of power. The Huygens probe was named after the Dutch astronomer Christiaan Huygens. He is credited with the discovery of Titan and thus it was deemed fitting to name the probe after him.

January 15, 1955 – first solar-heated and radiation-cooled house in the United States. Respect for the powers of the sun has been a critical part of building design since humans first built shelters for protection from the environment.

January 17, 1871 - U.S. patent issued for an "endless wire rope way" cable car (No.110,971). The inventor of the cable car was Andrew S. Hallidie (center image above) and contracted by the Clay Street Hill Railroad Company in San Francisco.

January 20, 1986 – First federal holiday honoring Martin Luther King. Through fifteen years of the persistent efforts of Congress Members John Conyers (Michigan), Shirley Chisholm (New York) and an army of other supports, Martin Luther King Day legislation was passed in 1983. A number of changes were required for it to be acceptable as a federal holiday. The date was changed to the third Monday in January, rather than his birthday of January 15, so as to distance it from Christmas and New Years. Several states resisted celebrating the holiday for various reasons. Several southern states included celebrations for various Confederate generals on that day. Arizona voters didn't approve the holiday until 1992 after pressure from a tourist boycott. Only recently in 2000 was it first officially observed in all 50 states.

January 23, 1996 – The first version of the Java programming language is released. Java was developed independently of the Web, starting in 1991 with a small group of Sun engineers called the "Green Team". Their vision was that the next wave in computing was the union of digital consumer devices and computers. James Gosling led the team and worked around the clock to release this first version originally called *Oak*.

January 24, 1984 – Apple Computer unveils the Macintosh personal computer. Apple introduced "the Mac" through its famous "1984" television commercial that was played at the 1984 Super Bowl.

January 26, 1697- Isaac Newton solves Bernoulli's brachistochrone problem, inventing the "calculus of variations". The story goes that Jean Bernoulli gave Isaac Newton a challenge solve the following problem in six months:

We are given two fixed points in a vertical plane. A particle starts from rest at one of the points and travels to the other under its own weight. Find the path that the particle must follow in order to reach its destination in the briefest time.

Rather than take 6 months, Newton is reported to have solved the problem the next day.

January 26, 1926 – Scottish Engineer John Baird gives first public demonstration of television in London. According to BBC News, his first prototype in 1924 was crudely made of a washstand, a tea chest and a project lamp in a biscuit tin, scanning disks made from carboard and lenses, all held together with srcap wood, darning needles, strings and sealing wax.

January 28, 1986 – Space Shuttle Challenger explodes after launch, killing the entire crew. American's stared in shock at their televisions watching the Challenger accident in full motion video.

January 31, 1958 – Explorer 1 became the United States of America's first satellite to orbit the Earth after it was launched on January 31, 1958. After the Soviet Union's successful launch of Sputnik I on October 4, 1957, the United States of America embarked upon a program to launch it own artificial satellite. The first American attempt to launch a satellite using a Vanguard 1 rocket occurred in December 1957 and failed miserably.

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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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