AIChExtra

Liquefied Natural Gas — Setting the Environmental and Safety Agenda

September 11–14 • Vancouver, Canada • Hyatt Regency

As a North American energy source, liquefied natural gas (LNG) is projected to increase tenfold by 2030, but how will we meet the required expansion in infrastructure, facilities and operation, while ensuring safety and a clean environment? And who will set the standards that will shape the future of this expanding industry?

AIChE and the Canadian Society for Chemical Engineering (CSChE) invite LNG related professionals, concerned citizens and government policy makers to help chart a roadmap for the future of LNG at "LNG — The Environment & Safety Agenda." This technology workshop for transporters, suppliers and policy makers will take place September 11–14 in Vancouver, Canada, at the Hyatt Regency. In more than 25 practical presentations, speakers will explore issues related to design, transportation, distribution and operational standards required for public acceptance and safe sustainable operation.

"Our goal is for participants to walk away with a thorough understanding of the current state of LNG technology, likely paths of development and, most importantly, actionable solutions," said Joe Cramer, AIChE's Director of Programming. Major themes include:

• **Planning and Siting of LNG Terminals:** Will examine the regulatory approval process in the U.S., Canada and Mexico and factors that contribute to the successful completion of the process.

• **Operations Emergency Planning:** Focuses on current environmental and emergency regulations that apply to LNG projects, the role of emergency preparedness and response, safety elements in place, and analysis of spill scenarios.

• **Design Considerations for LNG Liquefaction and Terminals:** Will explore the critical issues in designing onshore and offshore terminal facilities, liquefaction, vaporization and storage issues.

• **Risk and the Public:** Will explore the relative risks of LNG vs. other energy sources, how to minimize risks and the public acceptability of these risks. Risks associated with both terminals and transportation will also be addressed.

Beyond the sharing of technical information, the workshop will also offer a chance for collaboration and action. As part of the final workshop session, a facilitator will lead interested participants in drafting a resolution to define a set of principles for LNG development that emphasizes environmental sustainability and safety practices.

The conference is open to all, therefore attendees will hail from a variety of professional backgrounds, with diverse responsibilities, like operations management of LNG facilities; transportation of LNG; safety, health and environment management; loss prevention; security and emergency response; community planning, and regulatory affairs related to LNG facilities.

REGISTER TODAY

To learn more and to register for the conference, visit www.aiche.org/LNG or call AIChE Customer Service at 800-242-4363 or 212-591-8100.

Registration fees are $645 for members and $845 for non-members.

AIChE Board Elections: Voting Underway

Over the last two months, *AIChExtra* has featured position statements and bios for president-elect and director candidates for election to the 2006 Board of Directors. As a member, you are encouraged to vote for your elected officers who will lead the Institute in meeting its strategic, programmatic, and financial goals.

Earlier this month, all members should have received a paper ballot in the mail. A member can choose to vote by paper ballot or by electronic proxy,* but may cast only one vote.

To access the electronic submission, on or after August 10, members can log on to www.cssconsult.com/elections/aiche2006

Your membership number will serve as your personal identification number. The same rigorous standards guarding your privacy will be applied to both paper ballots and electronic proxies. The online electronic proxy submission process will be available August 10 through September 14.

All paper ballots and electronic proxies must be received by September 14. Results will be announced at the AIChE Annual Meeting in Cincinnati , OH and in the December issue of *Extra*.

If you haven't received your paper ballot by August 10, please contact AIChE Customer Service at 1-800-242-4363 or 212-591-8100 (outside of the U.S.); E-mail: election@aiche.org.

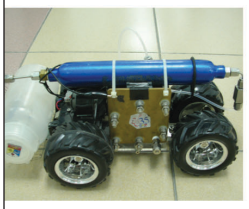
*Electronic Proxy Ballot

Under New York law, a member can vote a proxy by electronic means. A proxy is a limited power of attorney affirmatively given to another person(s) to act in his/her stead. You will authorize President Siirola and Secretary Shelton to vote on your behalf for the indicated candidates.

Correction: The Teller's Committee meeting date is September 22, and not September 24, as noted in the June (p. 58) and July (p. 58) issues of *CEP*.

Dude, where's my Chem-E-Car?

John Naylor investigates the fiercely-competitive world of Chem-E-Car



Pictured (from top): Tulsa's hydrogen hurricane; Malaysia's fuel cell design; Pre-competition favourites University of Tulsa

FOR a dozen university teams, this year's World Congress is indeed more than just "chemical engineers, taking to other chemical engineers about chemical engineering"; it's about Chem-E-Car and competing for the coveted world championship title.

The contest, which is open only to undergraduates, will bring together an international field of entrants from Puerto Rico to New Zealand in what has been billed as the first true Chem-E-Car world championship. Competitors at Glasgow include the reigning AIChE and Australasian Chem-E-Car champions as well as the self-proclaimed unofficial world record holders. With prize money of £1000 it is unsurprising that the competition is taken so seriously and accusations of espionage have already clouded the event.

Many universities will be unfamiliar with the concept but, in the Asia-pacific and US regions at least, it is quickly becoming a highly competitive and extremely serious part of campus life.

In its simplest form, Chem-E-Car rules state that each team must design and construct a car that uses a chemical reaction for motive power and control the distance it travels carrying a specified load, as decided by competition officials. Students are responsible for carrying out a full safety and hazard assessment of their vehicle and must give consideration to the capture and disposal of emissions from the reaction.

Chem-E-Car competition co-ordinator Suzi Mewes said: "We've sent out invitations to universities all over the world and the response we've had has been terrific. We've managed to get the top Chem-E-Car designers to commit to Glasgow and I think this is the closest we're going to get to a world championship competition."

The University of Tulsa comes to Glasgow with the tag of pre-congress favourite. The reigning AIChE champions saw off heavy competition from 31 challengers at the 2004 AIChE student conference in Austin, Texas and have a wealth of experience, having competed in US regional and national competitions since 2000. Their design, known as the *Hydrogen Hurricane*, is based on a hydrogen fuel cell concept that uses the cell to charge a bank of capacitors on the vehicle. A magnesium strip connects the circuit between the capacitors and motor. The strip is slowly eaten away by a hydrochloric acid solution, which acts as a timer to control the distance travelled.

Fierce competition will come from the University of Canterbury; the team has an impressive pedigree, winning two out of its three competitions entered. Most recently the CAPENZ26 (Chemical and process engineering number 26) team triumphed at the Australasian grand final in Sydney where its *Air-0* vehicle completed a perfect race, stopping right on the finish line, resulting in the team's claim to hold the "unofficial world record".

The University of Puerto Rico, together with its famously enthusiastic and vocal support, is expected to feature strongly in the field. The team has chosen to use a proton exchange membrane (PEM) fuel cell to power a small electric motor on the car. The vehicle, named *Cokí*, is one of the most impressively-styled entries, designed to look like a Cadillac Escalade.

Entrants from the University of Malaysia and Rensselaer Polytechnic Institute (US) are also among those who have opted to go with the popular PEM fuel cell design. The *RPI Bullet* from Rensselaer finished a credible fifth position at the AIChE competition where it made its Chem-E-Car debut.

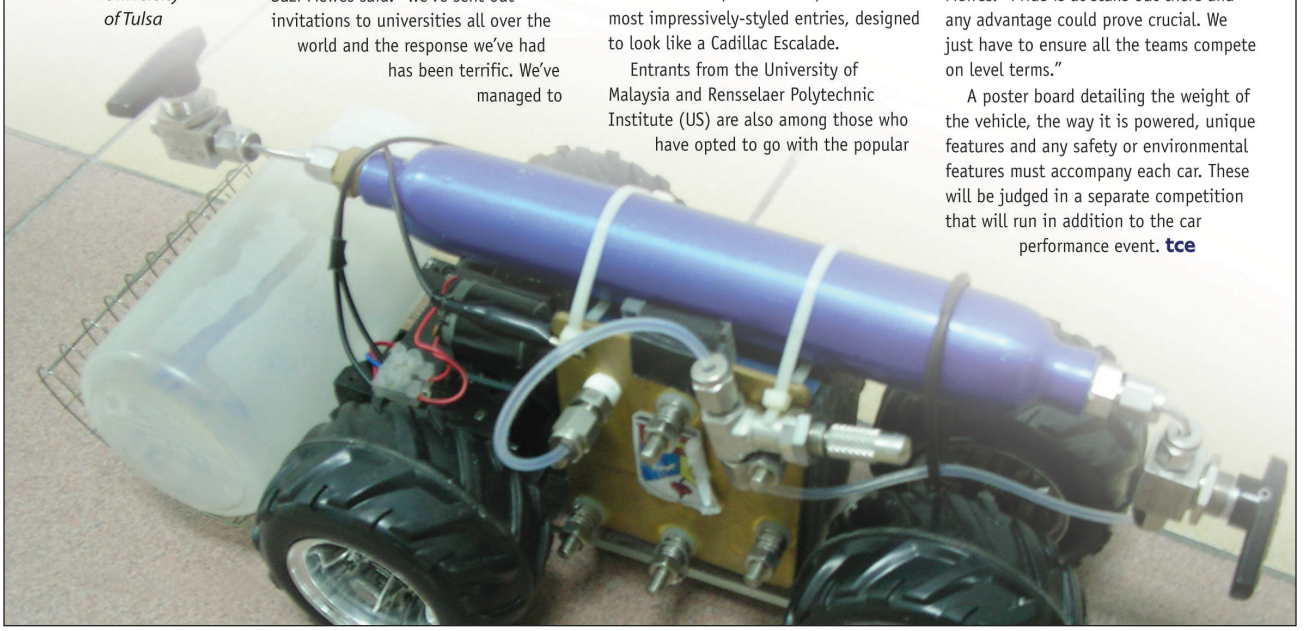
The Universities of Strathclyde, Newcastle and Nottingham – who are all competing in their first Chem-E-Car competition – make up the UK contingent. Monash University (Australia) is bringing two teams to Glasgow, including the much-fancied *Road-King* vehicle. A four-strong delegation from Iran (visa-pending) completes the international line-up.

"I think the teams to watch will be Tulsa and Monash, they're the ones with most experience but you can never rule out the Puerto Ricans, especially cheered on by their passionate supporters," Mewes commented. "The UK teams are an unknown quantity so it will be especially interesting to see what designs they come up with."

Details of the payload, which will be between 0 and 500 ml water, and the distance, between 15 and 30 m, will be announced to the teams one hour before the start of the competition. However, the Glasgow Science Centre, where the Chem-E-Car course is being laid out under tight security, has reported some suspicious activity. Reports claim that an individual, acting on behalf of one of the Chem-E-Car teams, has gained entry to the venue and was spotted making notes and taking photos of the competition site.

"It's indicative of the importance of this event to some universities," says Mewes. "Pride is at stake out there and any advantage could prove crucial. We just have to ensure all the teams compete on level terms."

A poster board detailing the weight of the vehicle, the way it is powered, unique features and any safety or environmental features must accompany each car. These will be judged in a separate competition that will run in addition to the car performance event. **tce**



Engineering a Kiss

Member shares chocolate challenges with Local Sections

At first glance, the Hershey Kiss is simply a piece of chocolate candy. But further examination however exposes a complex shape, which evolves from a single pointed tip flowing outward and expanding through three dimensions through curved shoulders to a perfectly flat two dimensional bottom.

In his speech, "It's Candy…How hard can it be?" Craig Moyer, director, Capital Programs, Hershey Foods Corp., examines the chemistry, physics and mechanics of manufacturing the Hershey Kiss. A member of AIChE's Speaker's Bureau, Moyer has presented his talk to over 10 interested local sections.

Indeed, chocolate manufacturing has generated much interest for chemical engineering contributions and employment. "Chocolate seems to be a topic all are interested in as it is so different than what they are normally working with," said Moyer.

A Harrisburg, PA, native, and member of the Susquehanna Local Section, Moyer has worked at Hershey since 1973 and has held various responsibilities beginning in Quality Assurance and progressing through various engineering positions in Product & Process Development as, well as Project Engineering and Project Management.

As director of Capital Programs, Moyer is responsible for managing Hershey Foods' annual capital program, which approaches $200 million in support of the corporation's business initiatives.

Interested Local Sections can contact Moyer — phone: 717-534-6406 or e-mail: cfmoyer@hersheys.com.

Want to be a speaker?
To sign up with AIChE Speaker's Bureau, contact Anette Ngijol at 212-591-7484 or anets@aiche.org. Stay tuned for Speaker's Bureau updates in the fall 2005.

James E. Bailey Award for Outstanding Contributions in Biological Engineering

Sponsored by AIChE's Society for Biological Engineering (SBE) and endowed by Cytos Biotechnology, this award recognizes outstanding contributions in the field of biological engineering. Named in memory of Professor Jay Bailey for his numerous pioneering contributions to biotechnology, the award will honor an individual who has had an important impact on bioengineering and whose achievements have advanced the profession. The recipient should have a long and distinguished record of service. He/she should also be involved in the direct engagement of biology with engineering.

The recipient will receive a plaque, a $3,000 honorarium, complimentary registration for the meeting, and travel expenses to the AIChE Annual Meeting in Cincinnati, OH, where the award will be presented.

This award is open to SBE members and non-members, however, current members of the SBE Managing Board are ineligible. The deadline for nominations is July 31, 2005. To learn more and nominate, visit http://bio.aiche.org/awards/.

Minority Universities Selected for Energy Research Grants Projects

The Dept. of Energy has awarded grants to several institutions for energy research through the Historically Black Colleges and Universities and Other Minority Institutions (HBCU) program. Carried out under DOE's Office of Fossil Energy, the program gives minority students valuable hands-on experience in developing technologies to promote the efficient and environmentally safe use of coal, oil and natural gas. The universities selected by the DOE include:

• **Hampton University, VA** — Researchers will use a novel absorption process called "phase transitional absorption" to capture carbon dioxide from flue gas. DOE grant: $200,000. Project duration: 36 months.

• **West Virginia State University R&D Corp.** — Scientists will create a catalyst to convert carbon dioxide in the presence of sunlight into a useful fuel, such as methane or methanol. DOE grant: $199,053. Project duration: 36 months.

• **University of Texas at El Paso** — Researchers from the university and Argonne National Laboratory will explore super-high-temperature (in excess of 1,000°C) alloys and composites from niobium-tungsten-chromium systems. DOE grant: $200,000. Project duration: 36 months.

The university also received a second grant in which researchers will study the flame dynamics of syngas for the production of fundamental combustion data to aid the design of fuel-flexible and low-emission gas turbine combustors. DOE share: $20,000. Project duration: 12 months.

• **Colorado State University at Pueblo** — Researchers will explore the viability of combining fly-ash and woody biomass waste into a fuel briquette for testing in a laboratory setting and in a coal-fired power plant. The project is also a study of the technical requirements and economic feasibility of establishing a fly-ash/sawdust briquette manufacturing facility. DOE grant: $73,963. Project duration: 12 months.

• **North Carolina A&T State University** — Scientists will develop a composite membrane based on palladium and palladium-silver alloy for hydrogen separation. The researchers will use steam reforming of methanol by equilibrium shift to demonstrate the membrane as a membrane-reactor-separator. DOE grant: $199,996. Project duration: 36 months.

• **University of Houston** — Researchers will use spectroscopy, remote sensing data, and geochemistry data to identify and map chemical and mineralogical alterations in rocks and soils caused by long-term hydrocarbon microseepages in the Patrick Draw area of southwest Wyoming. The information will be used to develop a new methodology for remotely mapping alteration zones produced by hydrocarbon microseepages. DOE grant: $19,995. Project duration: 12 months.

• **California State University, Los Angeles** — Scientists will develop catalysts that will promote important carbon-carbon bond formation reactions under mild conditions using small molecules that can be derived from coal. DOE grant: $20,000. Project duration: 12 months.

Kathy Pearson Receives Safety Professional of the Year Award

Member Katherine E. Pearson, of Rohm and Haas Texas in Deer Park, is the recipient of the Texas Chemical Council's (TCC) A.D. Cyphers Safety Professional of the Year (SPOTY) Award for 2004.

Named after the first chair of the TCC Occupational Safety Committee who brought focus to industry safety processes and had a passion for keeping people injury-free, the SPOTY is a peer award that recognizes a professional who has displayed his/her commitment to safety.

Katherine E. Pearson with Jerry Ehrman, chairman of the TCC Occupational Safety Committee and the plant manager for Dupont's Orange plant.

Pearson is currently a senior risk analyst spending most of her time leading process hazards analyses using a team approach. She provides technical consultations regarding risks involved in proposed changes, and works with project teams to promote systems-oriented thinking and employee involvement.

In 2003, Pearson also led security vulnerability assessments for the corporation and resubmitted her site's risk management plan (RMP). During Pearson's 21 years at Rohm and Haas Texas, she has worked in the engineering, production and safety areas.

Previously, as assistant safety director, Pearson was instrumental in the development and implementation of the Rohm and Haas Texas Safety Manual. She also developed computer-based training modules for management of change, Responsible Care and monomer's handling. Pearson provided the technical lead in the development of an electronic action tracking system. This system was successful and has since been converted to a web-based system and rolled out throughout the corporation. The systems Pearson helped develop contributed to the Rohm and Haas Texas site receiving OSHA's Voluntary Protection Program (VPP) Star award in 1999.

An active member of AIChE, Pearson is a director of the AIChE Safety & Health Division. She worked on the CCPS Guidelines for Investigating Chemical Process Incidents published in 2003. Pearson has also worked on the Texas Chemical Council Safety Seminar Planning Committee since 1995, including chair in 1998, and chair of the training sub-committee from 1999–2002 and again in 2004.

Pearson earned her B.S. degree in chemical engineering from the Georgia Institute of Technology Cooperative Program in 1984 and obtained her professional engineer's license in 1992.

AIChE Members Inducted in as ASEE Fellows

The following members were recognized as Fellows of the American Society for Engineering (ASEE) at the ASEE Annual Conference and Expo on June 15. Fellow member status is a distinctions award to those who have been members for at least 10 years and have made valuable contributions to engineering education.

Adeyinka Adeyiga
Professor
Dept. of Chemical Engineering
Hampton University

Thomas Edgar
Professor
Dept. of Chemical Engineering
University of Texas-Austin

Carl Locke, Jr.
Professor
Dept. of Chemical & Petroleum Engineering
University of Kansas

Thomas Regan
Professor Emeritus
Dept. of Chemical Engineering
West Virginia University

Joseph Shaeiwitz
Associate Professor
Dept. of Chemical Engineering
University of Pittsburgh

OBITUARIES

Marcel J. Bogart*, 92, Whittier, CA
Raymond Burghardt, 89, Sarasota, FL
John Duffie*, 76, Madison, WI
John H. Engel, 79, Sweeny, TX
William P. Griffith, 79, Germantown, TN
Robert Hamlin, 77, Duncan, OK
George F. Holahan, 66, Cazenovia, NY
Harry W. Lambe, 79, Middleton, MA
Ben Malek, 65, Friendswood, TX
Michael Mohr, 72, Cambridge, MA
Robert Reiss, 66, La Jolla, CA
Thomas J. Stewart, Jr., 91, Titusville, FL
William Suhr, 94, Hockessin, DE
Rodney T. Swain, 84, Darien, CT
John Villiers-Fisher, 85, Knoxville, TN
Franklin W. Wyatt, 80, Charleston, WV

* Fellow member

Call for Papers: Sustainable Engineering Forum Topical Conference, Spring 2006

There is an increasing pressure from consumers and regulatory agencies on companies to develop more sustainable business practices The best sustainable decisions are made with the acknowledgement of health, safety, and the environment (HSE) as a valued component of business.

The 3rd Annual Institute for Sustainability (IfS) Sustainable Engineering Forum, April 23–27, 2006, Orlando, FL, will focus on the design, development and practical implementation of sustainability as a key component of HSE and long-range development of business workflows.

Speakers from industry, academia, and regulatory communities will discuss:

- Managers and their response to HSE management systems and sustainability
- Sustainability and universities
- Auditing and how to make a resulting change in performance
- Green engineering
- Business cases for sustainability

Electronic abstracts may be submitted through the AIChE Spring conference website, www.aiche.org/spring. The call for papers will end November 14, 2005. For further information, please contact Rebecca Pehler, Webb Murray and Associates, Inc., at rcpehler@kingwoodcable.net or Richard Smith, Texas Commission on Environmental Quality, at rismith@tceq.state.tx.us.