

January Section Meeting – Dense Hydrogen Transport Membranes for CO₂ Capture for a FutureGen Plant

The goal of the US Department of Energy's FutureGen initiative is to design and build the fossil-fuel power plant of the future – a plant with near-zero emissions of mercury, acid gases, or carbon dioxide. One of the most challenging aspects of this plan is the ability to capture and sequester CO₂, the primary greenhouse gas responsible for global warming. There are three main options for enhanced CO₂ capture: post-combustion capture, use of oxyfuel systems (where oxygen, not air, is used as the oxidant), and pre-combustion decarbonization. In pre-combustion decarbonization fuel is reacted with oxygen and/or steam to produce mainly carbon monoxide and hydrogen. The CO is reacted with steam in a water-gas-shift reactor to give CO₂ and more hydrogen. The CO₂ is separated and the hydrogen can be used as fuel or in a hydrogen fuel cell. This process, in principle, is the same for coal, oil or natural gas. One of the keys to this approach is the efficient separation of hydrogen from the CO₂-rich stream after the water-gas-shift reactor.

Eltron Research and Development is a Boulder-based small business dedicated to providing creative, useful solutions to industry. Eltron's main areas of expertise are materials, catalysis and catalytic systems, electrochemistry, sensors, and membranes. Founded in 1982, Eltron employs a staff of 43, including 17 Ph.D. scientists and engineers and 20 associates with M.S. or B.S. degrees. Eltron has developed a family of dense membranes that enable
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January Section Meeting

- Topic:** Dense Hydrogen Transport Membranes for CO₂ Capture for a FutureGen Plant
- Speaker:** Douglas S. Jack, VP Business Development, Eltron Research Inc.
- Date:** Tuesday, January 16th
- Time:** 6:00-6:45 Social Time (cash bar)
6:45-7:45 Dinner
7:45-8:45 Presentation
- Location:** Dolan's Restaurant
2319 Arapahoe, Boulder
303-444-8758
- Menu:** Seafood appetizers and salad followed by entrée choice of Grilled Trout, Seafood Pasta, or Grilled Top Sirloin. Dessert of seasonal fruit or chocolate cake. Cash Bar.
- Cost:** Members: \$20
(w/RSVP)* Non-Members: \$25
Students & Unemployed: \$10

Please RSVP by **Friday, January 12th** (early RSVPs are greatly appreciated!) indicating your name, phone number, and number of attendees. Please RSVP to Craig Turchi by voicemail at 303-874-8285 or email at rockyaiche@yahoo.com.

*Add \$5 for attending meeting without RSVP

Note: Payment will be requested from no-shows (unless reservation is cancelled by RSVP deadline)

high hydrogen separation rates in any hydrogen generation facility. The membranes compete favorably with pressure swing adsorption (PSA) systems – the current state-of-the-art for CO₂ separation. Unlike PSA systems, Eltron's membranes can retain the hydrogen at gasification pressures while operating at water-gas-shift temperatures and delivering hydrogen at pressures up to pipeline pressures.

Douglas Jack, project manager for Eltron's Hydrogen Transport Membrane program will describe the development and utility of dense membranes for CO₂ separation and sequestration. Mr. Jack received a B.S. in Chemical Engineering and a B.S. in Chemistry in 1978. He has been an active member of both the American Chemical Society and AIChE since 1982. Prior to joining Eltron, he worked for ConocoPhillips as Manager of Major Program Development. Mr. Jack also has worked for du Pont, Exxon, and Phillips Petroleum in his career. Mr. Jack is an inventor or co-inventor on 14 patents, with an additional 9 published patent applications.

MARK YOUR CALENDAR!!

The Rocky Mountain Sections of the American Chemical Society and American Institute of Chemical Engineers will be jointly sponsoring a two and a half day regional conference in 2007. The event will be held at the Adams Mark in Denver beginning on August 30 and continuing through September 1, 2007. Conference symposia are currently under development and calls for papers will be forthcoming. All papers will be indexed in the Chemical Abstracts, so it provides a tremendous opportunity for students, professionals, and academics to further their careers.

We will be encouraging local section members to help with various planning activities including coordinating exhibitors, arranging an optional local social event, and identifying potential sponsors for the conference. Anyone interested in assisting with the planning is encouraged to contact Kevin Milliman at kmilliman@ogenvironmental.com or 720.529.9777.

November CEC Meeting

by Daniel LaRiviere, Jacobs Engineering Group

The Colorado Engineering Council (CEC) convened at Sweet Tomatoes Restaurant in Highlands Ranch. Three topics highlighted the evening's discussion: Magellan Center, Proposed Changes to the Bylaws, and Engineer's Week.

Pamala Gibson presented herself and the Magellan Center to the Council and is seeking help to conduct a survey regarding engineering in Colorado and its influence on the local economy. Magellan Center is a 501c3, charitable, nonprofit organization whose mission is to help individuals and businesses help themselves by obtaining and maintaining the skills and tools they need to be financially self-sufficient. Pamala believes that engineering professionals, as a group, could exert pressure for change in government and, if the results of the survey indicate that engineers have group economic power, be more capable of swaying popular opinion. She explained that there are many dynamics between small and large businesses and their respective governing taxation that results in a loss of higher-paying technical jobs in the state of Colorado. She hopes to publish the results of her survey as early as next April and will be looking for engineers to volunteer their opinions in the near future. The local section will need to determine if it wants to participate in the survey – please let me know how you feel about it by dropping me an email either for and against. If there is interest, I will try to organize the survey.

Dr. Doron Kishoni, President of the CEC, has been pushing several, mostly inconsequential, changes to the bylaws of the CEC. Changes reflected the use of specific wording for clarifications and/or the removal of specific deadlines from the various meetings of Council that were found to be too restrictive. Regarding these changes, the vote by the constituent members was passed with 18 in favor, 0 against, and several unvoiced opinions.

Dave Krenek, Professional Engineers of Colorado (PEC) representative to the CEC, presented the dates for the Legislative Breakfast and the E-week Dinner as being Thursday, February 22nd and Friday, February 23rd, respectively. The first forum allows interested engineers the ability to meet with state representatives to discuss legislative issues. The second forum is a celebration of our profession in collaboration with the national effort. More information on the local and national efforts can be found at www.pec.org and www.eweek.org, respectively.

NEW MEXICO CORNER

November Meeting Highlights

In a joint meeting on November 9th the professional members of AIChE-NM met with the student sections of both the University of New Mexico (UNM) in Albuquerque and New Mexico Institute of Mining and Technology (NMT) in Socorro. At the meeting, a panel of professional engineers held an open forum for chemical engineering students to learn a little more about "Chemical Engineering in the Real World." The panelists answered the students' questions and provided information about their careers in chemical engineering.

With an exceptional turnout from the student sections, the students were able to make contact with members at the professional level, as well as learn more about the diversity of the field of chemical engineering. The five panelists (Kerrie Greenfelder, George Fotou, Leon Levine, Anne Grillet, and George Bailey) all had different experiences in chemical engineering, including water treatment, fine particle synthesis, food processing, multiphase flows, and nuclear engineering. Each panelist was able to share their wisdom about the "Real World," as well as providing each student with valuable career advice.

Contact Kerrie Greenfelder for information about the next New Mexico meeting.

Kerrie Greenfelder
New Mexico Liaison
GreenfelderKL@cdm.com



**Top right:
Attendees of the
November New
Mexico AIChE
Meeting**

**Middle & Bottom
right: Professional
Engineer Panelists**

AIChE Meetings

2007

- Jan. 14-18 SBE's 1st Int'l
Conference on
Biomolecular
Engineering
Coronado Isld, CA
- Feb 4-7 2nd North American
Symposium on
Chemical Reaction
Engineering
Houston, TX
- Apr 22-27 2007 Spring Nat'l
Houston, TX
- Apr 25-27 2007 Management
Conference
Houston, TX
- Sept 16-20 2007 Ammonia
Conference
Henderson, NV

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National AIChE.

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The objectives of AIChE are to advance chemical engineering in theory and practice, to maintain a high professional standard among its members, and to serve society, particularly where chemical, engineering can contribute to the public interest.

How to Place an Ad or Job Posting

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MEETING SCHEDULE

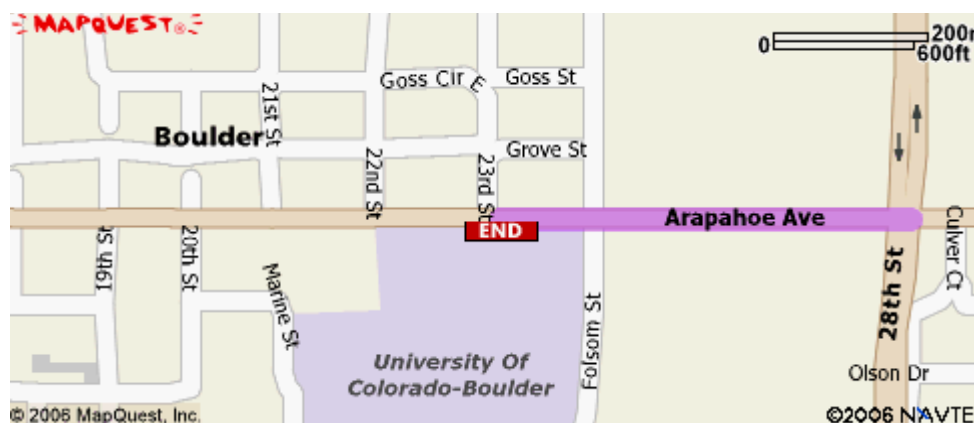
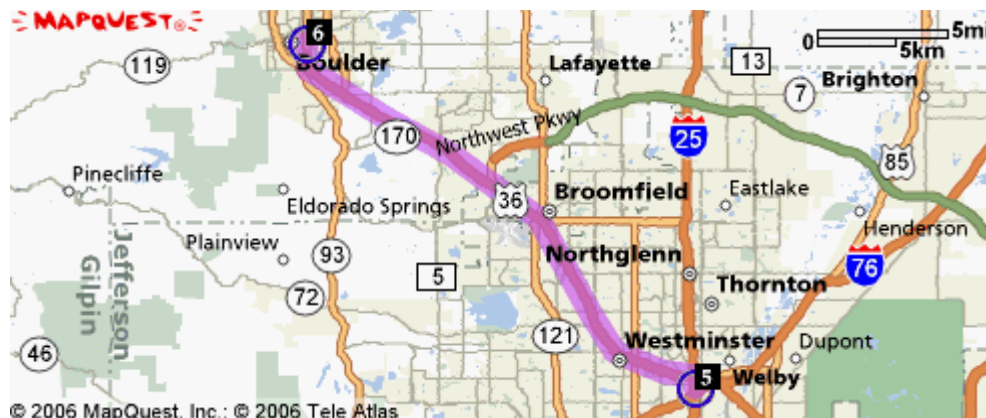
The Rocky Mountain District of AIChE generally meets the third Tuesday of every month, September through November and January through May.

Rocky Mountain AIChE News
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On the Web at:

<http://www.aiche-rm.org>

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this newsletter electronically!*



DIRECTIONS:
Travel north on
I-25. Take US 36
towards Boulder.
US 36 turns into
28th Street when
you enter Boulder.
Turn left onto
Arapahoe Avenue
and go .3 miles
until you see
Dolan's
Restaurant at 23rd
Street.