

April Section Meeting: A Coal Conversion Technology Breakthrough

Coal is the most abundant fossil fuel in the world. Best information indicates that on a Btu basis coal is three times more abundant than oil and gas combined. And, unlike oil and gas, coal is distributed to all continents and in many countries. So coal should have a major role not only as a fuel source, but as a chemicals source replacing less abundant and less well distributed oil and gas.

The technology breakthrough resulted from investigations by the author whose home state of Wyoming is the largest producer of coal in the US. In 2010 the production was 480 million tons, almost 40% of the nation's total. Basically the technology is coal refining analogous to oil refining in that coal is "cracked" (not gasified) to produce a slate of value-added products. The process involves injecting coal mixed with internally generated CO and H₂ into an insulated tube where "cracking" occurs exothermally in a very short time of one to three seconds. The products are char and gas. The char is a uniform, high heat content (12,000 Btu/lb) material that has 90% of the coal sulfur and 65% of the coal nitrogen removed (these are recovered as elemental sulfur and ammonia and are products). The char may be used as a not polluting fuel or it may be marketed as activated carbon or as semi-coke. The gas is successively condensed to produce naphtha, BTX, and a chemical feedstock (or as a fuel). The non-condensable gas is methane, about half of which is a product, and the other half is reformed to produce the CO and H₂ needed for the reaction. Since the values of the products move with the value of oil

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April Section Meeting

Topic:	A Coal Conversion Technology Breakthrough
Speakers:	E.G. Meyer, Ph.D. University of Wyoming; Advanced Clean Coal Technologies, LLC
Date:	Tuesday, April 16 th
Time:	6:00 Networking 6:30 Dinner 7:30 Presentation
Location:	Hotel VQ 1975 Mile High Stadium Circle Denver 80204
Cost:	Members: \$20 (w/RSVP)* Non-Members: \$25 Students & Unemployed: \$10

Please RSVP by FRIDAY, April 12th, (early RSVPs are greatly appreciated!) indicating your name, phone number, and number of attendees. Please RSVP to Martin Vorum at rockyaiche@yahoo.com.

*Add \$5 for attending meeting without RSVP

while the cost of coal does not, with oil at \$100/bbl the value added factor is 8.6 (1.5 for oil refining) and the ROI for a 5000 tpd plant is 112%. The process has a single step and since the through put is rapid, the equipment is quite small reducing capital cost. The demo plant will be 50 tpd (financed and built in China). Engineering, yield, and economic data will be given in the presentation.

E.G. Meyer obtained his B.S. and M.S. degrees from Carnegie Technology (now Carnegie Mellon University), served in the U.S. Navy during WWII, and worked for NM Tech Research Division in Albuquerque. He also attended the University of New Mexico receiving his Ph.D. in 1950, appointed professor, then graduate dean and director of research at New Mexico Highlands University. In 1963 he was appointed professor and dean of the college of arts and sciences at University of Wyoming, later Vice President for graduate studies and research. Dr. Meyer retired in 1990 and is currently emeritus professor and dean of University of Wyoming; Fellow AAAS, Fellow ACS, and Senior Member of AIChE. He is also president and founder of Advanced Clean Coal Technologies, LLC since 2004.

OFFICER ELECTIONS FOR ROCKY MOUNTAIN AIChE BOARD MEMBERS

With our program year coming to a close, it is time give a big thank you to our board members for the past year and elect officers for the coming year. If you would like to volunteer for an officer position, please contact Kevin Milliman at Kmilliman94@gmail.com.

Judges Needed for Colorado School of Mine's Poster Contest

Colorado School of Mines' Department of Chemical and Biological Engineering hosts a summer

undergraduate research program each year. We will have a poster session in August and would like to have local professionals as judges and attendees. Please take one minute to fill out the survey at the link below if you are interested in attending and/or judging the posters.

<https://docs.google.com/forms/d/1xZudUdM4dL2hODqR8UUFRIOLK-DzkY3I3aYtlhfeuac/viewform>

Obscure Engineering Conversions

- Ratio of an igloo's circumference to its diameter = Eskimo Pi
- 2000 pounds of Chinese Soup = Won ton
- 1 millionth of a mouthwash = 1 microscope
- Time between slipping on a peel and smacking the pavement = 1 bananosecond
- Weight an evangelist carries with God = 1 billigram
- Time it takes to sail 220 yards at 1 nautical mile per hour = Knotfurlong
- 365.25 days of drinking low-calorie beer = 1 Lite year
- 16.5 feet in the Twilight Zone = 1 Rod Serling
- Half a large intestine = 1 semicolon
- 1,000,000 aches = 1 megahurtz
- Basic unit of laryngitis = 1 hoarsepower
- Shortest distance between two jokes = a straight line
- 2000 mockingbirds = two kilomockingbirds
- 1 kilogram of falling figs = 1 Fig Newton
- 1000 ccs of wet socks = 1 literhosen
- 8 nickels = 2 paradigms

AIChE Meetings

2013

- Apr 5-7 2013 Rocky Mountain Student Regional Conference
New Mexico State University
- Apr 28-May 2 AIChE 2013 Spring Meeting and 9th Global Congress on Process Safety
San Antonio, TX
- May 1-2 Industrial Water Use and Reuse Workshop
San Antonio, Texas
- June 11-13 2013 Process Development Symposium
Oak Brook, IL
- June 23-26 Massive Energy Storage for the Broader Use of Renewable Energy Sources
Newport Beach, CA

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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.

AIChE Rocky Mountain is a public non-profit 501(c)(3) organizations and thus any and all donations are tax deductible.

Rocky Mountain AIChE News Publication Schedule

May 2013 issue

Articles due Wednesday, May 8th

Publish on Friday, May 10th

Meeting on Tuesday, May 21st

MEETING SCHEDULE

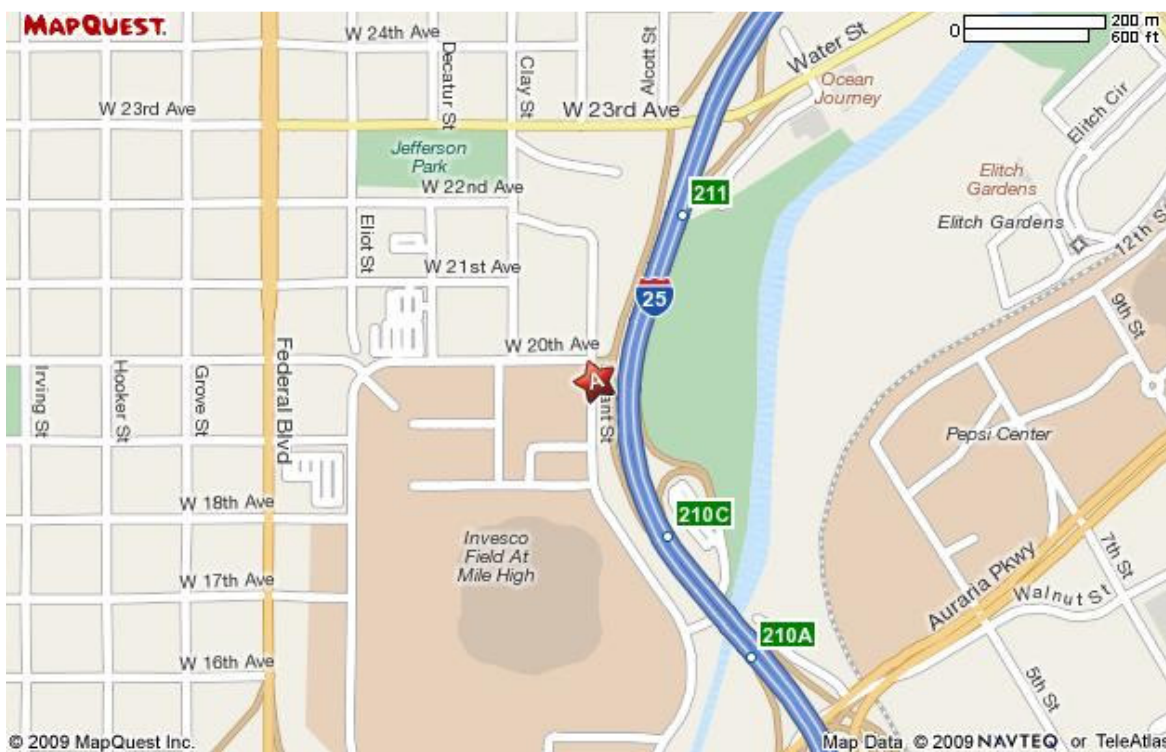
The Rocky Mountain District of AIChE generally meets the third Tuesday of every month, September through November and January through May.

Rocky Mountain AIChE News
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exit 210B
toward 17th.
Turn right at
Bryant Street
and look for
destination on
right.

Southbound
on I-25, take
the US85/US6
exit, then a
slight left at
Bryant St. and
look for
destination on
the left.