

### February Section Meeting: NREL Hydrogen Program

The National Renewable Energy Laboratory (NREL) research program on hydrogen technologies spans applied science through technology development and demonstration, working with industry, academia, and a network of associated federal organizations. In broad terms, our program's mission is to develop a spectrum of technologies needed for sustainable hydrogen-based transportation.

NREL plays a major role in the national program of research and development on hydrogen manufacture, handling, and applications to address:

- production from renewable energy sources,
- delivery technologies and integrated delivery systems,
- storage systems for vehicles,
- fuel cells,
- safety,
- codes and standards,
- education,
- manufacturing R&D,
- validation of technologies,
- systems analysis, and
- policy and regulatory frameworks.

NREL's hydrogen program will be presented with discussion of the various renewable hydrogen production pathways, key technical barriers, and progress.

The National Renewable Energy Laboratory is an arm of the U.S. Department of Energy (DOE), working in collaboration with other key federal  
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### February Section Meeting

**Topic:** Nat'l Renewable Energy Laboratory Hydrogen Program

**Speaker:** Dr. Robert Evans

**Date:** Tuesday, February 19<sup>th</sup>

**Time:** 6:00 – 6:45 Social  
6:45 – 7:45 Dinner  
7:45 – 8:45 Presentation

**Location:** Nat'l Renewable Energy Laboratory  
1617 Cole Blvd., Golden 80401

**Cost:** Members: \$20  
(w/RSVP)\* Non-Members: \$25  
Students & Unemployed: \$10

Please RSVP by **Friday, February 15<sup>th</sup>** (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](mailto: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)*

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cabinet-level departments and with related laboratories in the DOE complex.

Bob Evans is a Senior Scientist at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. He works within the Hydrogen Technologies and Systems Center and is leading the NREL activities pursuing methods to convert biomass to hydrogen.

He began working at NREL in 1983, when the lab was known as the Solar Energy Research Institute. He is engaged in studies of fundamental and applied thermochemical and catalytic processes, as they relate to the chemistry of biomass pyrolysis and catalytic oxidation. His work spans the use of catalysts for the conversion of biomass, wastes, and plastics to hydrogen, fuels, and chemicals. Bob also is technology manager for a thermochemical water splitting program funded by DOE-Nuclear Energy.

Bob has authored more than thirty scientific publications related to the thermochemical conversion of biomass.

Bob received a B.A. in Chemistry from the University of Rhode Island in 1972 and a Ph.D. in Resource Chemistry with an emphasis on organic geochemistry in 1982, also from the University of Rhode Island.

## **Engineering Graduate Student Visit Day at CSU**

Colorado State University's College of Engineering will be hosting an Engineering Graduate Student Visit Day on Friday, March 7, 2008. The day will be full of opportunities for prospective students to connect with faculty and learn more about the engineering graduate programs and research opportunities at CSU.

The visit day will be hosted by the college and its departments/programs of biomedical engineering, chemical and biological engineering, civil and environmental engineering, electrical and computer engineering, and mechanical engineering. More information about the visit day and online

registration can be found at [http://www.engr.colostate.edu/academics/student\\_services/events/grad\\_visit\\_day.shtml](http://www.engr.colostate.edu/academics/student_services/events/grad_visit_day.shtml)

## **Engineers Needed to Speak to High School Students in Colorado Springs**

To celebrate National Engineers Week this year, Project Lead The Way pre-engineering program teachers at Coronado High School are inviting engineers to speak to their students from February 11 - 22, 2008. These teachers are asking you to speak to these high school girls and boys about your field of engineering, type of work, job description and projects you are involved in.

This is a wonderful opportunity to speak to students who have demonstrated their interest in engineering by enrolling in these pre-engineering classes. If you would like to volunteer, please contact teacher Gary Hilty at (719) 328-3754 or [hiltygl@d11.org](mailto:hiltygl@d11.org) with the times and dates you would be available. Class periods are 45 minute blocks between 7:50 a.m. and 1:00 p.m. Coronado High School is located at 1590 W. Fillmore Street in Colorado Springs.

## **Annual Colorado Engineers Week Dinner**

Date: Friday, February 22, 2008  
Location: Doubletree Hotel  
3203 Quebec St., Denver, CO  
Speaker: Dr. G. P. "Bud" Peterson, Chancellor,  
University of Colorado at Boulder  
Topic: Envisioning the Future of U. S.  
Education Institutions in a Global  
Frontier  
Cost: \$50 per person

### **Schedule**

6:00 – 6:30 Engineer Induction and Reception  
6:30 – 7:45 Dinner  
7:45 – 8:00 Welcome and Introductions  
8:00 – 8:15 Engineer Presentation  
8:15 – 9:15 Program

Click this link for more details:

<http://www.pec.org/PEC%20Engineers%20Week%20-%20COMPLETED.html>

**AIChE Student Conference  
Sponsored by New Mexico Tech  
March 7-9 2008**

Register online for the AIChE Student Conference held in Socorro, New Mexico, March 7-9, 2008. Some highlights include an explosive demonstration at EMRTC on Friday; paper, poster, ChemE car and dodgeball competitions on Saturday; and a morning tour of the Very Large Array (VLA) on Sunday. The fee is \$20 so register early at website <http://infohost.nmt.edu/~aiche/regional>.

**NEW MEXICO CORNER**

*If you'd like to volunteer to speak at a future meeting or if you have any meeting/activity ideas, please let me know! Participation in the Albuquerque area has increased over the last year and I'd like to keep this trend going! Again, a warm "Thank You" to all of the AIChE-NM members for making our little subsection a great one! See you soon!*

*Kerrie Greenfelder, New Mexico Liaison  
[GreenfelderKL@cdm.com](mailto:GreenfelderKL@cdm.com)*

**PICTURES FROM NEW MEXICO  
FEBRUARY MEETING**



Speaker Patrick D. Burton, University of New Mexico



# *EMPLOYMENT - Positions Available*

## **RANGE FUELS, INC.**

On November 6, 2007 Range Fuels, Inc. broke ground on a commercial-scale cellulosic ethanol plant near Soperton, Georgia. This plant will be the first in the United States to produce a commercial quantities of ethanol from biomass, such as wood, grasses, and com stover.

Locally, Range Fuels has offices in Broomfield and a development center (R&D and engineering) in Denver. Current openings at Range Fuels in Colorado are listed below. If you are interested in pursuing a career at Range Fuels, please submit your résumé stating qualifications and relevant experience to [careers@rangefuels.com](mailto:careers@rangefuels.com). These opportunities, as well as openings in Georgia, can also be found online at <http://www.rangefuels.com/careers>.

Chemical and Process Engineers with at least 8 to 10 years of experience in at least one of the areas of expertise outlined below. Minimum of B.S. Degree, with M.S. or Ph.D. preferred. Industrial experience required.

### **Heat Transfer**

Responsible for mechanical design and optimization support for fired heaters and gasification equipment specification and requisition, technical bid evaluation, design and drawing review, developing standard design methods and spreadsheets structured to permit design optimization quickly, support fired heater proposal activities, understanding of all aspects of overall furnace execution in order to provide timely mechanical design support, planning mechanical design execution strategy for overall completion of project within schedule. Must have both Thermal and Mechanical Design experience. CFD modeling experience is highly desirable.

### **Reactor Design**

Will play a key role in developing, validating and applying reaction kinetics and process simulation models for the design of proprietary catalytic reactor systems. Will develop and validate reaction and reactor models. In addition, will review, analyze, interpret experimental data and draw conclusions to guide process scale up. Will assist in the design of experiments or tests to validate models as needed and develop and maintain proprietary design tools and software packages. Experience requirements include modeling process reactor and / or gas processing systems and high temperature / high pressure reactor operation. Prior experience with technologies such as gasification, gas treatment, gas separation, heterogeneous catalysis and solids handling is desired. CFD modeling experience is highly desirable.

### **Separations**

Responsibilities will include designing liquid separation systems including distillation, drying, phase separations, degassing for mixed alcohol streams, optimizing distillation and drying designs. Requires experience in heat integration optimization. Requires experience in developing novel purification techniques, optimization, trouble-shooting, installing and commissioning distillation and drying units. Steady State and Dynamic distillation process simulation using ASPEN, PROII and CHEMCAD highly desirable.

***RANGE FUELS, INC. JOB POSITIONS CONTINUED ON NEXT PAGE***

## **RANGE FUELS, INC. JOB POSITIONS CONTINUED FROM PREVIOUS PAGE**

### **Gasification and Steam Reforming**

Responsible for process design and engineering packages for biomass processing to syngas for downstream conversions. Responsible for conceptual designs, PFDs, mass and energy balances, P&IDs, equipment process specifications, and HAZOPS. Interaction with suppliers, contractors and operations through R&D studies, detailed design, construction, and startups. Also, process engineering consulting services, evaluation of alternative designs, and optimizing new facilities. Experience with ASPEN Plus, Hysys, or PRO II required. Also, experience with biomass or other solids gasification and syngas processing desirable.

### **Solids & Materials Handling**

Responsible for developing material handling solutions, primarily for wood chips. Experience in wood handling, storage and conveyance is required. Experience with wood drying, chipping and milling, and ash handling is desirable. Must have direct understanding of details related to belt conveying, screw conveying, walking floors, pneumatic conveying and other more innovative solutions. Would also be helpful to have experience with conveying solids under elevated pressures and temperatures.

### **Utilities**

Responsible for leading front end engineering design efforts for utilities systems for cellulosic ethanol projects. Systems will include steam generation, cooling water, chilled water, water treatment systems, oxygen systems, compressed air and electrical power systems. Will interface with, and lead company selected consultants and / or engineering firms that will provide detailed engineering of these packages.

### **Gas Purification**

Responsible for designing systems to purify components of biomass derived synthesis gas. Must possess expertise with removal of acid gases including CO<sub>2</sub>, trace impurities and particulates from gas streams. Also requires experience with commercial solvent based, membrane, mol sieves and other novel gas purification technologies. Minimum of 3 to 5 years experience in production or Plant environment

### **Rotating Equipment**

Responsible for the unit specification and packaged equipment design of centrifugal and plunger pump packages, blowers, reciprocating and centrifugal compression equipment and the associated drives and package trim and controls. Successful applicant will have extensive background within a operating environment. and able to support manufacturing, operations and maintenance.

### **Pressure Vessel / Heat Exchanger Design**

Responsible for the design of pressure vessels, heat exchangers separators columns and piping. Equipment designs to conform to ASME Section VIII div 1, 2 pressure vessel codes and ANSI piping codes. Background in TEMA designs in various heat exchanger types a must. Ability to design to various seismic and structural codes for vessel supports and nozzle loadings. FES background is preferred. A hands on person with industrial operating and field experience is highly desirable.

### **Heat Transfer, Fixed Equipment**

Responsible for the mechanical design and selection of heat exchangers and heat transfer systems following TEMA guidelines and other innovative systems. applicant will utilize modeling techniques for sizing and flow dynamics. Heat transfer applications within a variety of media can be expected. A strong track record of innovative design solutions to real world problems in heat transfer applications a real plus. This position will support core process plant design efforts and continuing plant operations

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Send **Position Available** notices to [lauramoes@msn.com](mailto:lauramoes@msn.com). \$25/month per listing.

Listing will also be placed on web page ([aiche.org/rockymtn](http://aiche.org/rockymtn)).

## AIChE Meetings

### 2008

Apr 6-10	Spring Nat'l Conf. New Orleans, LA
June 22-25	2008 Process Development Symposium Hancock, MA
July 22-24	SBE's 4 <sup>th</sup> Int'l Conference on Bioengineering and Nanotechnology Dublin, Ireland
Sept 7-11	2008 Ammonia Symposium San Antonio, TX
Nov 16-21	AIChE Annual Mtg. Philadelphia, PA

For further information, contact  
National AIChE.

### National AIChE Contact Info

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Rocky Mountain AIChE News is published eight times a year by the Rocky Mountain section of AIChE. Opinions expressed herein are those of the authors and are not necessarily those of AIChE nor the officers of this section.

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.

## Rocky Mountain AIChE News Publication Schedule

March 2008 issue

Articles due Wednesday, March 5<sup>th</sup>

Publish on Friday, March 7<sup>th</sup>

Meeting on Tuesday, March 18<sup>th</sup>

## MEETING SCHEDULE

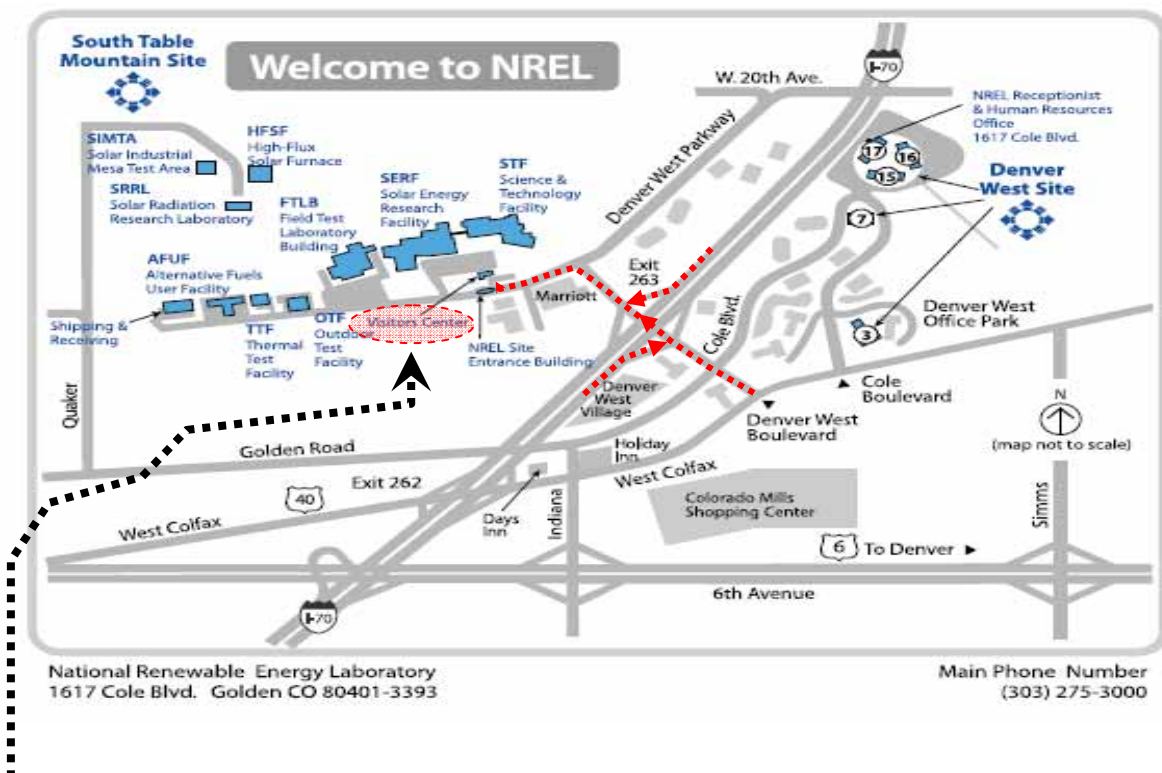
*The Rocky Mountain District of AIChE generally meets the third Tuesday of every month, September through November and January through May.*

Rocky Mountain AIChE News  
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On the Web at:

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

Send your E-MAIL address to  
[mmoes@ekiconsult.com](mailto:mmoes@ekiconsult.com) to receive  
this newsletter electronically!



**To NREL Visitors' Center -- Follow dashed red lines from I-70 or Colfax:**

1. Exit from I-70 onto Denver West Boulevard. Turn to NORTHWEST; or turn northwest onto D/W Blvd. from Colfax Avenue.
2. Turn LEFT at light (west-bound) onto Denver West Parkway (north side of I-70).
3. Proceed past 4-way stop at approximately ¼ mile, and go 200 - 300 yards further, turning RIGHT into Visitors' Center small parking lot behind RTD bus stop and just before NREL's security gate.