

Rocky Mountain AIChE News

November 2013

Volume 23 Number 3

November Section Meeting: Hazen Tour and Presentation on “Gold Recovery from Refractory Ores”

Tour: Hazen Research, Inc. is an employee-owned industrial research and development firm located in Golden, Colorado. The company was founded in 1961 by a small group of metallurgists with strong backgrounds in research and process development for the mining and chemical industries. Over the years, Hazen has grown to its present size of 220 employees with 17 buildings containing an extensive inventory of laboratory and pilot plant equipment. Hazen serves clients from all over the world on projects ranging from bench-scale experiments and analyses to multimillion-dollar continuous pilot plants.

Hazen has developed hundreds of hydrometallurgical, pyrometallurgical, and mineral beneficiation processes for most commercial metals and industrial minerals, and for many inorganic chemicals. Energy clients have utilized Hazen's expertise to develop processes involving coal upgrading, combustion of alternative fuels, and conversion of a wide variety of feedstocks into energy sources. Waste characterization and treatability studies, waste reduction options, and valuable byproduct recovery from waste streams are routinely performed for industrial clients.

During the tour, you will see a number of bench-scale and pilot plant facilities utilizing a wide number of unit operations for processing ores and other feedstocks into valuable products. The data generated from the laboratory and pilot projects are

(continued on page 2)

November Section Meeting

Topic:	Hazen Tour and Presentation on “Gold Recovery from Refractory Ores”
Speaker:	David Martin & Dennis Gertenbach
Date:	Tuesday, November 19th
Time:	6:00 Tour 6:45 Travel to hotel & networking 7:15 Dinner 8:00 Presentation
Menu:	Please RSVP with your menu selection (menu on page 2)
Locations:	Tour @ Hazen Research Inc. 4601 Indiana St., Golden Dinner @ The Golden Hotel 800 Eleventh St., Golden
Cost:	Members: \$20 (w/RSVP)* Non-Members: \$25 Students & Unemployed: \$10

Please RSVP by FRIDAY, November 15th, indicating your name, phone number, number of attendees and MENU SELECTION. Please RSVP at rockyaiche@yahoo.com by Nov 15.

*Add \$5 for attending meeting without RSVP

NOTE: We ask that if you have your own hard hat and safety glasses please bring them with you. There is a limited number available at the tour location. Closed-toe shoes are required.

(continued from page 1)

used to evaluate the technical and economic feasibility of processes and provide engineering data for the design of commercial plants.

Presentation: "Processing Refractory Gold Ores"

Gold has held an allure to mankind through the centuries and is still sought for its value and commercial applications. However, easily extractable gold deposits are rare and current development efforts center on lower-grade, refractory ores. In some ores, the gold is contained in sulfide minerals, such as pyrite, marcasite, or arsenopyrite, that must be oxidized to expose the gold to subsequent leaching and recovery. Other gold ores contain carbonaceous matter that adsorbs gold from solution. This is known as preg-robbing and significantly reduces gold recovery.

Three process options are generally considered for refractory gold ores that oxidize sulfide ores and deactivate preg-robbing carbonaceous



matter: thermal oxidation (roasting) in air, aqueous pressure oxidation at elevated temperature and pressure, and biological oxidation using microbes. Each of these will be discussed, demonstrating the need for a deep understanding of science and engineering when developing processes, while staying focused on commercial profitability. Since 1961 Hazen Research has completed more than 1,500 gold-related projects. Many of the commercial gold plants in the United States and throughout the world treating refractory ores utilize process information developed at Hazen.

David Martin: Mr. Martin is a project manager with over 40 years' diversified engineering, management, and manufacturing experience in the food, energy, chemical, and pharmaceutical industries. With a strong background in chemistry, engineering, and chemical engineering, he has worked in research and development, design, sales, construction, and management. His experience includes research,

sales, operations, engineering, and technical staff management. He has held positions of responsibility for capital and operating budgets ranging in scope from small-facility retrofit projects to the design and construction of pharmaceutical facilities valued at more than \$10 million. Mr. Martin received his BS in chemistry from Colorado State University in 1972, completed graduate studies in chemical engineering at the Colorado School of Mines, and an MBA from the University of Phoenix in 1994.

Dennis Gertenbach: Dr. Gertenbach is a chemical engineer with over 30 years' experience. He has been involved with a wide variety of process development projects involving inorganic and bio-based feedstocks. The projects range from laboratory studies through managing pilot plants that demonstrate a particular process. He also has commercial process design, startup, and troubleshooting experience. Projects have included processes to extract and purify metallurgical products, reduce or eliminate waste streams, develop industrial feedstocks from biological sources, and manufacture natural products for the food and health industries. Dr. Gertenbach earned his BS in 1974, MS in 1977, and PhD in 1980 in chemical engineering from the Colorado School of Mines.

MENU CHOICES FOR NOVEMBER AIChE MEETING

Guests must pre-select a menu item when they RSVP by Friday, November 15th, 2013.

VEGETABLE NAPOLEON

Grilled Portobello Mushroom with Goat Cheese, Grilled Vegetables & Roasted Garlic Mashed Potatoes

ROASTED CHICKEN

Herbed Pan Jus, Roasted Garlic Mashed Potatoes & Zucchini Slaw

HONEY SEARED MAHI MAHI

In a Citrus Butter, Poblano Citrus Rice, Sweet Corn & Leeks

GRILLED PORK CHOP

With Shallot Jam, Goat Cheese, Roasted Garlic Mashed Potatoes & Sautéed Spinach

AIChE Meetings

2013

Nov 3-8 2013 AIChE
Annual Meeting
Hilton Union Sq
San Francisco, CA

Dec 10-12 2013 AIChE
Northeast
Manufacturing
Conference at the
ChemShow
Javits Convention
Center
New York City,
NY

2014

Mar 10-11 6th Annual
Midwest Regional
Conference
University of
Illinois at Chicago

Mar 16-19 4th International
Conference on
Stem Cell
Engineering
Coronado Island
Marriott Resort
and Spa,
Coronado, CA

National AIChE Contact Info

AIChExpress Service Center:
(US/Canada): 1-800-AIChemE
(1-800-242-4363)

(International): 203/702-7660

Fax: 203/775-5177

E-mail: xpress@aiche.org

Member Services: 800.242.4363

Career Services: 646.495.1330

Awards & Honors: 646.495.1317

Address: 3 Park Avenue
New York, NY 10016-5991

Web Page: <http://www.aiche.org>

Rocky Mountain AIChE Officers

Martin Vorum	Chair	303/843-3019 martinxp9@yahoo.com
Brian Olson	Vice-Chair / Program	720/ 286-3488 brian.olson@ch2m.com
Crystal Smalley	Treasurer	303/ 353-3726 crystal.smalley@merrick.com
Mike Mutnan	Secretary	mmutnan@juno.com
Cory Jensen	Membership	970/219-5990 cory.jensen.co@gmail.com
Tom Wellborn	Director	(303) 933-0533 twellborn@astraenergy.net
Kevin Milliman	Past Chair	303/704-7530 Kmilliman94@gmail.com
Mike Moes	Communication	303/796-0535 mmoes@ekiconsult.com
Patrick Burton	New Mexico Liaison	pdburto@sandia.gov
Dr. Patrick Johnson	Wyoming/SD Liaison	pjohns27@uwyo.edu
Cory Jensen	Student Chapter Liaison	970/219-5990 cory.jensen.co@gmail.com
Laura Moes	Editor and Web Admin	303/770-2432 lauramoes@msn.com

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

January 2014 issue

Articles due Wednesday, January 1st

Publish on Friday, January 3rd

Meeting on Tuesday, January 14th

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
America Institute of Chemical Engineers
7900 S. Monaco Ct.
Centennial, CO 80112-1326

On the Web at:

<http://rockymtn.aiche.org>

*Send your E-MAIL address to
mmoes@ekiconsult.com to receive
this newsletter electronically!*

Directions from downtown:

Drive north on I-25 and take exit 214A onto I-70 westbound. Take exit 266 for CO-72/Ward Rd toward W 44th Ave and turn left onto Ward Rd. Turn right onto Co Rd 58/W 44th Ave and then turn right onto Indiana St. Drive about 1.5 miles and find Hazen Research on the left (A on the map).

Directions to Golden Hotel

from Hazen: Head south on Indiana St. towards CO Rd 58/W 44th Ave. Turn right onto 44th Ave and drive about 2.9 miles. Continue onto 10th Street and then turn left onto Washington Ave. Turn right onto 11th Street and look for the Golden Hotel on the right.

