



American Institute of Chemical Engineers Knoxville-Oak Ridge Section

For additional information see our Web site at: <http://www.ornl.gov/sci/aiche/>
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October 2009 Meeting

Date: Thursday, October 15, 2009
Cost: \$20.00
Location: Mandarin House, Knoxville, TN – Private dining area
Menu: Buffet
5:30 pm Executive Committee Meeting (all members welcome)
6:00 pm Dinner
7:00 pm Program – Mr. Randall Moore, Business Line Manager, Shaw Environmental and Infrastructure, Inc. – **Enhanced Mercury Oxidation (EMO™)**

Abstract – EMO™ is a proprietary chemical injection process that reduces mercury emissions from combustion sources. EMO™ uses an effective oxidizing agent to convert elemental mercury to a mercury salt, which can then be removed from the gas stream using standard particulate control technology or existing wet scrubbing techniques. The EMO™ solution if injected directly into the flue gas just in the post combustion duct work. A custom-designed array of liquid injection nozzles is configured to optimize performance and minimize the required concentration of oxidant.

EMO™ technology is most effective for sources where native mercury oxidization is low due to the lack of sufficient halogens in the fuel, (typically coal). It is also effective on process streams with bituminous coal sources not having selective catalytic reduction technology and on process streams where additional oxidation is required to meet more stringent regulatory limits.

Shaw's first full scale demonstration was conducted this September at a coal fired unit in Maryland. The initial results from those tests have not only confirmed the technologies efficacy, but demonstrated a reduction in elemental mercury emissions beyond expectations, essentially eliminating elemental mercury during several trials.

The presentation will touch on mercury toxicity, the driver for tighter emission controls, the technology and the implementation for coal fired power plants and industrial boilers.

Bio – Randall Moore has been with Shaw for 24 years and currently serves as Business Line Manager for Commercial, State and Local Government Programs as well as Director of the Knoxville Office of Shaw Environmental and Infrastructure, Inc. Mr. Moore holds a B.S. in Mechanical Engineering from the University of Tennessee, Knoxville and an M.S. in Engineering Management from the University of Tennessee Space Institute, Tullahoma. Since 2006, he has led a team whose mission is to identify, develop, and exploit new and emerging technologies for pollution control. To date, the group has conducted projects related to cellulosic ethanol, carbon capture and sequestration, activated carbon injection optimization, enhanced mercury oxidation (EMO™), multi-pollutant control technology, and coal-to-diesel production plants. Mr. Moore's team has demonstrated EMO™ at full scale and will move toward commercialization as mercury regulations are reintroduced.

Please make your reservations by noon, **October 15**, by contacting
Linda Puckett, puckettlf@ornl.gov, (865)574-6147 or
Lori Daniels, lori.daniels@utk.edu, (865)974-2421

**The Section will subsidize up to 15 students,
including graduate students**

Separation Science and Technology Symposium

The 16th Symposium on Separation Science and Technology for Energy Application will be held at the Park Vista Hotel in Gatlinburg, TN on October 18-22, 2009. The topical focus of the symposium is on separations that are key to the development of sustainable energy systems and energy-efficient processes. Presentations in oral and poster sessions will be made on a variety of fundamental and applied separations topics related to advanced energy systems.

Program

Sunday, October 18	Evening:	Registration check-in
Monday, October 19	Morning:	Plenary Session
	Afternoon:	Membrane Separations
	Evening:	Poster Session and mixer
Tuesday, October 20	Morning:	Adsorption and Ion Exchange
	Afternoon:	Open
	Evening:	Novel Separation Methods
Wednesday, October 21	Morning:	Nuclear Fuel Cycle Separations
	Afternoon:	Solvent Extraction
	Evening:	Banquet
Thursday, October 22	Morning:	Department of Energy Applications

Papers from the symposium will be printed in the proceedings, which is published as a special issue refereed journal, [Separation Science and Technology](#).

The presentation of oral papers will be done without concurrent sessions to facilitate cross-discipline discussion among experts with different interests. The poster session, which offers refreshments and is structured less formally than the oral sessions, is a featured event at this meeting and typically attracts full participation from the attendees.

Please inform your associates and friends about this symposium. Additional information on this symposium is available at <http://sst.ornl.gov/index.htm>.

Local Section Assists with Funding for Students to Attend Separation Science and Technology Symposium

The Knoxville/Oak Ridge Section of American Institute of Chemical Engineers has contributed \$300 to the U.T. Chemical and Biomolecular Engineering Department to help pay for three students, Travis Russell, Jon Garrison, and Christina Karni, to present posters of their work and to

attend the Symposium on Separation Science and Technology for Energy Applications in Gatlinburg, Oct 18-22.

Employer Salary Survey

In addition to the annual salary survey conducted for the Chemical Engineering profession by the AIChE and published in the August 2009 edition of Chemical Engineering Progress, the National Association of Colleges & Employers (NACE) provides complimentary information across a number of employers and disciplines focusing on all Bachelor's degree graduates. The October 7, 2009 edition of the College of Engineering Newsletter included the results of the fall 2009 NACE starting salary survey for 2008-09 Bachelor's degree graduates. Based on the number of offers reported, accounting and engineering firms head the list of employers hiring Bachelor's degree graduates. Although employers in the petroleum and gas products field rank ninth on the list in terms of the number of offers reported, they offered the highest average annual salary (\$73,245). The AIChE salary survey reports a median salary of \$66,000 for Chemical Engineering Bachelor's degree graduates with <6 years experience. Additional information on the NACE survey results is shown in Table 1.

(Sources: October 7, 2009 College of Engineering Newsletter and August 2009 Chemical Engineering Progress, Vol. 105/No. 8)

Table 1. Top employers for Fall 2009.
(October 7, 2009 College of Engineering Newsletter)

Employer Type	Average Salary Offer	Number of Offers
Accounting Services	\$49,770	766
Educational Services	\$35,206	627
Engineering Services	\$57,016	587
Consulting Services	\$53,975	417
Government (Federal)	\$45,731	400
Financial Services	\$50,345	352
Retail/Wholesale Trade	\$40,456	344
Aerospace	\$58,356	290
Petroleum & Coal Products	\$73,245	277
Hospitals	\$44,749	240



Local Section Members Lead Topical Meeting at 2009 AIChE Annual Meeting

Local Section members Sharon Robinson and Jacob Hutton will lead one of several Topical Meetings to be held during the 2009 AIChE Annual Meeting in Nashville, TN. Knoxville-Oak Ridge Section members are leading Topical F: Sustainable Southeastern Energy Portfolio, which encompasses the following sessions:

Topical F: Sustainable Southeastern Energy Portfolio

Monday, November 9, 2009

[Monday](#) | [Tuesday](#) | [top](#)

8:30 AM-11:00 AM

(#6) - [18002 2009 Annual Meeting Plenary Session - Looking Forward - Energy Policy & Technology](#)

3:15 PM-5:45 PM

(#142) - [TF001 Energy Efficiency Leadership in the Southeast](#)

Tuesday, November 10, 2009

[Monday](#) | [Tuesday](#) | [top](#)

8:30 AM-11:00 AM

(#228) - [TF002 The Nuclear Revival: New Opportunities in the Southeast](#)

12:30 PM-3:00 PM

(#275) - [TF000 Sustainable Biofuels and the Impact in the Southeast](#)

Tentative Activities Calendar

Date	Time	Topic	Speaker	Location
Oct 18-22		Sixteenth Symposium on Separation Science and Technology for Energy Applications		Park Vista Hotel Gatlinburg, TN
Nov 8-12		2009 AIChE Annual Meeting		Gaylord Opryland Hotel Nashville, TN
Nov 19	6:00 PM	TVA Green Power Program	TBD	Calhoun's, Turkey Creek
Dec 10	6:00 PM	Zero Energy Homes	Jennifer Banner, Schadd Cos./Brian McMurry, Barber McMurry Architects	Calhoun's, Turkey Creek
Jan 21	6:00 PM	TBD	TBD	Calhoun's, Turkey Creek
Feb 9	6:00 PM	Joint with ANS	TBD	Calhoun's, Turkey Creek
Mar 18	6:00 PM	TBD	TBD	Calhoun's, Turkey Creek
Apr	6:00 PM	U.T. Student Awards Night	TBD	TBD
May	6:00 PM	TBD	TBD	Calhoun's, Turkey Creek

Sponsoring Opportunities

We continue to accept advertising in the newsletter in order to provide funds to support student participation in the meetings.

Rates per newsletter are:

\$80 full-page advertisement

\$45 half-page advertisement

\$25 quarter-page advertisement

The section will also continue to accept individual or corporate sponsors to provide student meals at section meetings. The sponsor will be recognized at the meeting and in the Newsletter.

The cost to sponsor one meeting is **\$200**. It's a great way to encourage students to attend the local meetings and become future members in the Institute!



(Image courtesy of NASA)

Officers

Chair:	Michael Hollander	300-5645	enviroms@att.net
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"Heavier-than-air flying machines are impossible."

*Lord William Thomas Kelvin,
Scottish mathematician and
physicist, 1824-1907*

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We're on the Web!

See us at:

<http://www.ornl.gov/sci/aiche/>

About Our Organization... 2009 AIChE Annual Meeting: Nashville, TN

The 2009 Annual Meeting of the AIChE will be held at the Gaylord Hotel in Nashville, TN on November 8-13, 2009. This year's Meeting includes 19 Core Programming areas and 12 Topical Conferences focused on the latest developments in areas ranging from core chemical engineering fundamentals to emerging technologies in Quality by Design (*co-sponsored by U.S. FDA*), Energy, Sustainability and Nanotechnology. More than 4,000 attendees are expected to attend the over 700 sessions scheduled for this year's meeting.

Featured Events include:

- **Professional Progress Award Lecture** – "Modular Biocatalysts" by Chaitan Khosla, Chair, Chemical Engineering; Wells H.

Rausser and Harold M. Petiprin Professor in the School of Engineering; Professor of Chemical Engineering, Chemistry, and Biochemistry, Stanford University

- **SBE's James E. Bailey Award Lecture** – "A Tale of Two Energy Problems: Fuel Shortage and Obesity" by James C. Liao, Chancellor's Professor, Department of Chemical & Biomolecular Engineering, University of California, Los Angeles

- **61st Institute Lecture** – "Separation Science and Technology in the 21st Century" – From an Industrial Perspective of Energy, Sustainability and Globalization" by Norman N. Li, President and Founder, NL Chemical Technology, Inc.

- **2009 Corporate Innovation Award and**

Lecture – "Megatrends Creating Opportunities" by Uma Chowdhry, Senior Vice President & Chief Science and Technology Officer, DuPont

- **2009 Annual Meeting Plenary Session** - "Looking Forward - Energy Policy & Technology"

- **Industrial/Innovation/Sustainability Plenary Session** - "The Innovation Equation: Corporate Social Responsibility + Sustainability = Innovation" by Bob Kumpf, Chief Administrative Officer, Bayer MaterialScience LLC

(Source:

<http://www.aiche.org/Conferences/AnnualMeeting/index.aspx>)

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