



## 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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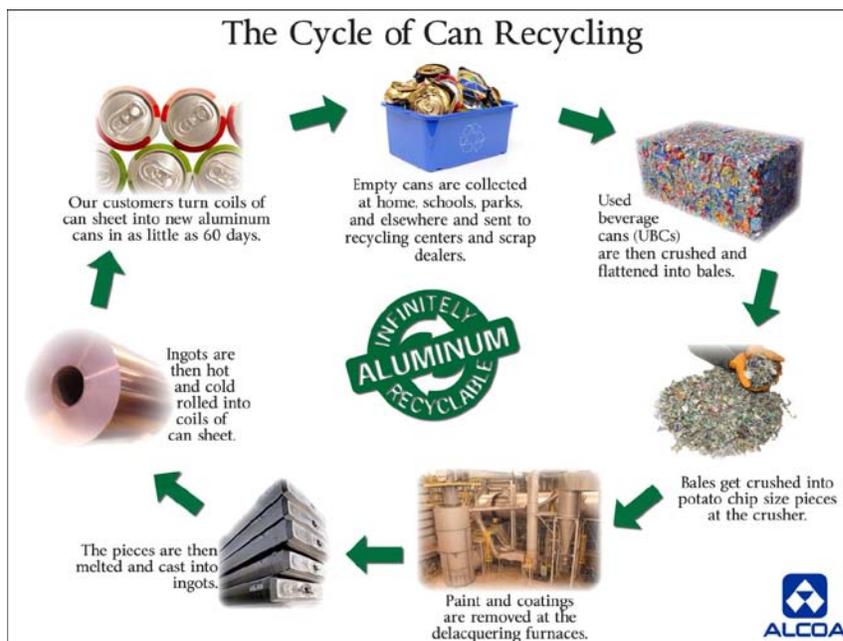
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## March 2011 Meeting

Date: Thursday, March 17, 2011  
Cost: \$20 (for dinner)  
Location: ALCOA South Plant, 300 N. Hall Road, Alcoa, TN with dinner following the tour at the Courtyard Grill in Alcoa TN  
5:45 pm Program – Assemble in ALCOA South Plant parking lot for tour  
7:30 pm Executive Committee Meeting (All members welcome) and Dinner from menu at Courtyard Grill, Alcoa TN

Program – ALCOA Can Reclamation Facility Tour

**Abstract** – ALCOA's David Sissom will conduct a tour of the Can Reclamation Area at the ALCOA South Plant, 300 N. Hall Road, Alcoa, TN. A safety briefing and overview of the recycling process will be given before the tour to provide participants with an overview of the process. Please note the safety equipment requirements for the tour, described on Page 2.



**Please make your reservations no later than either noon on March 17, or if you need to borrow safety boots from ALCOA by March 14 by contacting**

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

## March Meeting – ALCOA Tour Information

Aluminum cans are the real success story of the recycling movement. Recycling scrap aluminum requires only 5% of the energy used to make new aluminum. By far, the most valuable component in the consumer waste stream, they enjoy the greatest public recognition as a recycled household item. Aluminum cans are often the economic backbone of municipal and private recycling programs. The price can fluctuate with the commodity price for new aluminum, but aluminum can scrap has always had a strong price in comparison to other recyclables. The market price for scrap aluminum cans has ranged in the last year from about \$0.80 to \$1.00 per pound and is currently about \$0.82 per pound.

The March meeting will be an opportunity for our members to get a behind the scenes tour of ALCOA's newly renovated aluminum can recycling facility. I am sure that most of us have wondered at one time or another, what happens to those cans that we are recycling.

ALCOA's David Sissom is supervisor of the Can Reclamation Area and will conduct a tour of his plant that is located at the ALCOA South Plant. A safety briefing and overview of the recycling process will be given before the tour to provide everyone with a basic understanding of the process. When in the meeting room, we'll have a brief presentation on the chemistry and importance of metallurgy/chemical mix in the aluminum can recycling process.

The presentation will also include a safety briefing of the recycling process so that we will have a basic understanding of what we are going to see before we actually get out on the plant floor. After the pre-tour presentation everyone will be required to don our personal protective equipment. ALCOA will provide hard hats, safety glasses, and hearing protection. If anyone has

their own steel-toed boots, it would be wise to wear them, otherwise, ALCOA will need to know your boot/shoe size 2-3 days in advance so they can "loan" you the boots for the tour. If you need safety boot, please inform Linda Puckett, [puckettlf@ornl.gov](mailto:puckettlf@ornl.gov), (865)574-6147 or Lori Daniels, [lori.daniels@utk.edu](mailto:lori.daniels@utk.edu), (865)974-2421 and give them your shoe size by close of business Monday, March 14.

Because the tour must be conducted during daylight hours, the itinerary for the March meeting will be somewhat different from the norm.

Here is what is planned for the tour and meeting and the prerequisites for the tour:

- Assemble in the ALCOA parking lot by 5:45 pm sharp.
- Alcoa will provide a bus or van for transport to the recycling center. Latecomers who miss the bus will miss the tour.
- Everyone must attend a short safety briefing
- Cotton clothing is required – Jeans are acceptable. Anyone in polyester or nylon clothing will not be allowed to tour.
- There will be a brief presentation before and after the tour where we will be given the opportunity to ask questions. We should be back to the parking area by about 7:30 pm.
- The tour will begin at the Alcoa South plant - 300 N. Hall Road, Alcoa, TN



Guests of the ALCOA Can Reclamation dedication event in March 2010 view new equipment installed as part of the recycling expansion. The project includes a new crusher, furnace, state of the art environmental controls and associated handling equipment.

## March Meeting – ALCOA Tour Information (continued)

- After the tour and discussions we will return to our vehicles in the parking lot and travel to the Courtyard Grill (near the intersection of Alcoa Highway and Pellissippi Parkway) for dinner and the executive committee meeting.

second red light (Bessemer Street) and then take an immediate right into the plant parking lot. Please park at the bottom of the lot and ALCOA will bring the bus/transport vehicle to us.

### Directions:

From Pellissippi Parkway, exit onto Alcoa Highway, 129 South, toward the airport. At the split past the airport, go to the left. This is Hall Road. Turn left at the

## Members Forum – Testimonials on the Benefits of Membership

This column will publish a series of articles written by local section members that are intended to describe the reasons why members joined the AIChE and the benefits of being a member of the local section.

This forum represents an open invitation to all members to contribute to these monthly articles. It is our intent that these articles help others learn more about the real world benefits of being a member of the AIChE.

This fifth article comes from one of our local section Directors, Stuart Daw. Stuart is a senior staff member and Corporate Fellow at the Oak Ridge National Laboratory.

"Many budding chemical engineers seem to develop an early interest in mixing things together to see what will happen. At least that was true for me. If I got big color changes, thermal excursions, or (better yet) explosions, I considered it a successful experiment. Like Jacob Hutton, I had my own home laboratory. For me it was in an

unused utility room, where I spent many hours mixing together strange concoctions that my parents were only dimly aware of. Fortunately none of my experiments led to anything more catastrophic than singed eyebrows and a few marks on the walls. I knew I wanted to be a chemical engineer even before high school. They used chemistry to make stuff happen.

My first exposure to AIChE was as an undergraduate at the University of Florida (UF). At that time (the early 1970s) we had a very active student section with strong encouragement from the Chemical Engineering (CHE) faculty. I was fortunate to have some very seasoned mentors, including Professors. Mack Tyner, Frank May, John O'Connell, and Robert Walker. I believe John O'Connell (now at University of Virginia) is still active in the AIChE National organization to this day. These professors were very demanding academically, but they were also really good at explaining how to bridge the gap between the things

we learned in class with the real world problems that CHEs have to solve. They were excellent role models about how good engineers have to mix technical skills with a strong sense of ethics and an awareness of 'people' issues that aren't typically discussed in textbooks. All of this was firmly reinforced in the UF AIChE student chapter.

After UF, I went to work for DuPont as a process development engineer for several years. This experience really helped me to understand what chemical engineering is all about at the plant level. I also learned to appreciate how hard it is to take an idea that looks good in the lab and translate it into commercial reality. During that time I was fortunate to get to know some of the world experts in chemical engineering, like Lou DeFrate, Elmer Monroe, Mell Pell, who were in DuPont's elite consulting group. Many of these guys were authors of major sections of Perry's Handbook, and here they were available to me with a simple phone call. It was an amazing experience. At the same time I was

## Members Forum – (Continued)

exposed to an impressive range of technical presentations through the local Nashville section of the AIChE. One particular talk I recall vividly is a presentation by Professor Stuart Churchill, from the University of Pennsylvania. He talked about a general approach he had developed for correlating the major parameters of almost any type of transport phenomenon. I could immediately see the value of what he developed in my work at DuPont. And now, over 35 years later, I am still using his correlating technique in my work at ORNL.

After leaving DuPont, I came to ORNL, where also I completed my graduate work at the University of Tennessee. For several years my combined work and class schedule was simply too crowded to have much involvement in the local AIChE section, although I still frequently attended national

meetings and presented papers. More recently I have again become involved in the local AIChE section. For me, the presentations are one of the most enjoyable parts of the local meetings. The range of topics is broad enough to interest almost anyone with a technical background, and I am continually impressed with the quality.

In hindsight I now see that the contacts I made at both local and national meetings have been important milestones in the development of my career. The opportunities for networking, mentoring, and exposure to new ideas (both technical and social) at both levels of AIChE are probably the most important benefits we derive as members. Compared to other professional societies, AIChE is especially good at bringing together multi-disciplinary perspectives on both technical and political issues. In today's highly

irrational political climate, I think we, as engineers, have an obligation to do better at speaking up collectively on technology related concerns. The AIChE can and should be a major path of communication for those who have chosen chemical engineering as their life's work. That doesn't mean we all have to agree on everything (it would be bad if we did), but it does mean that we need to work together to provide a sound framework through which our dialogues can be communicated. AIChE is the only organization I know of which is in a position to provide that framework for the CHE community."

## February Meeting Summary - Dark Matter and Dark Energy: An Introduction to the New Cosmology

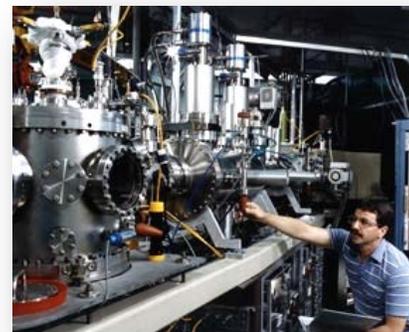
The Knoxville-Oak Ridge AIChE section February meeting was held at Calhoun's on the River near the campus of the University of Tennessee, Knoxville. The meeting was a joint collaboration with the local section of the American Nuclear Society (ANS) with a total of about 75 people attending to hear Dr. Michael Guidry, Department of Physics and Astronomy, University of Tennessee / Physics Division - Computer Science and Mathematics Division, Oak Ridge National Laboratory provide an enlightening discussion of Dark Matter and Dark Energy with an introduction to the new cosmology. Dr. Guidry presented scientific, quantitative evidence that the overwhelming bulk of mass-energy in the Universe is in a form that we have never observed in the laboratory, and that is very different from the traditional matter and energy that we see around us every day. These go by the somewhat fanciful names of "dark matter" and "dark energy", because we observe their gravitational influence in many contexts but so far have not been able to detect them by any other means. Although this energy and matter exists and has gravitational influences in the Universe its density is very low and would be equivalent to about 5 Hydrogen atoms in a cubic meter. Because of its low density, this dark energy would be difficult to harvest to power our lights, cars and industries. As more is learned about dark energy and dark matter perhaps one day someone will discover the means to harvest and concentrate the dark energy into a useable energy source.

## Knoxville-Oak Ridge Section Elects New Chair-Elect for 2011

The Knoxville-Oak Ridge Section has elected Mr. William Johnson as the new Chair-Elect for 2011. Mr. Johnson joined Oak Ridge National Laboratory as a Research Associate in September of 2009. Prior to joining ORNL, William was a process engineer at Intel Corporation for 2.5 years in Hillsboro, Oregon. William's research expertise is focused on catalysis and reaction engineering specifically with lean NO<sub>x</sub> reduction, environmental catalysis, reforming technologies, and micro-channel reactors.

William earned his Ph.D. in chemical engineering from the University of Michigan - Ann Arbor in 2007. He also finished his masters and bachelor degrees in chemical engineering from the University of Michigan - Ann Arbor in 2001 and 1999 respectively.

William has a passion for service in a variety of capacities including in engineering societies. He grew up in Detroit, Michigan involved in pre-college engineering programs and is an avid supporter of exposing youth to careers in STEM fields that can also be integrated with a business, legal, and policy field.



(Source: DOE Digital photo archive at:  
<http://www.doedigitalarchive.doe.gov/>)

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"All truly wise thoughts have been thought already, thousands of times; but to truly make them ours, we must think them over again, honestly, till they take root in our personal experience."

**Johann Wolfgang von Goethe**

1749-1832

German writer

## Activities Calendar

Date	Time	Topic	Speaker	Location
Mar 13-17		2011 AIChE Spring Meeting & 7 <sup>th</sup> Global Congress on Process Safety		Hyatt Regency Chicago, Chicago, IL
Mar 17	5:45 PM	ALCOA aluminum can recycling facility Tour	David Sissom	ALCOA, South Plant, Alcoa, TN
Mar 28-31		SASEF 2011 – 60 <sup>th</sup> Anniversary		Thompson-Boling Arena, Knoxville, TN
Mar 31	6:30 PM	Student Awards – CBE Spring Banquet		Calhoun's on the River, Neyland Dr, Knoxville
May 5	6:00 PM	Uranium Processing Facility – Behind the Scenes Tour	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!



(Source: DOE Digital photo archive at: <http://www.doedigitalarchive.doe.gov/>)

"Behind an able man there are always other able men"

*Chinese Proverb*

## Officers

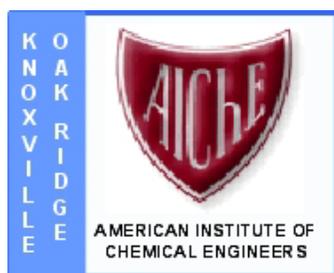
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We're on the Web!

See us at:

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

## About Our Organization – AIChE eLibrary

The **AIChE eLibrary** puts hundreds of engineering and scientific references, handbooks, standards, and databases right on your desktop, 24/7. The highly interactive **AIChE eLibrary** lets you work with your own data as you:

- Search for content across the entire collection
- Analyze results, reorganize data and export information
- Manipulate interactive tables, graphs, equations and spreadsheets
- Perform 'what if' experiments on the data

AIChE Members now have access to an updated platform with newly developed features and continued access to a unique set of ChemE titles.

The **AIChE eLibrary** features Knovel, a web-based application, which

integrates trusted technical information with search and analytical tools. AIChE members can use many new features including simplified user navigation, improved browsing, and user interface, as well as the ability to save and organize frequent searches, titles, and content. Members can also share titles and content of interest with colleagues using the new Knovel platform.

You'll also access essential chemical engineering content like the 8<sup>th</sup> edition of **Perry's Handbook of Chemical Engineering**, the Plastics Design Library Series, and ChemEssentials as well as books in the AIChE Center for Chemical Process Safety Guidelines Series.

Perry's Handbook of Chemical **Engineering 8<sup>th</sup> Edition** is now in the **AIChE eLibrary**. From fundamentals to the latest

computer applications, this latest edition of **Perry's** includes 75 Digitized Graphs and 20 Interactive Tables of physical properties for over 2,300 organic and inorganic substances.

(Source: AIChE website  
<http://www.aiche.org/Publications/eLibrary/index.aspx>)

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